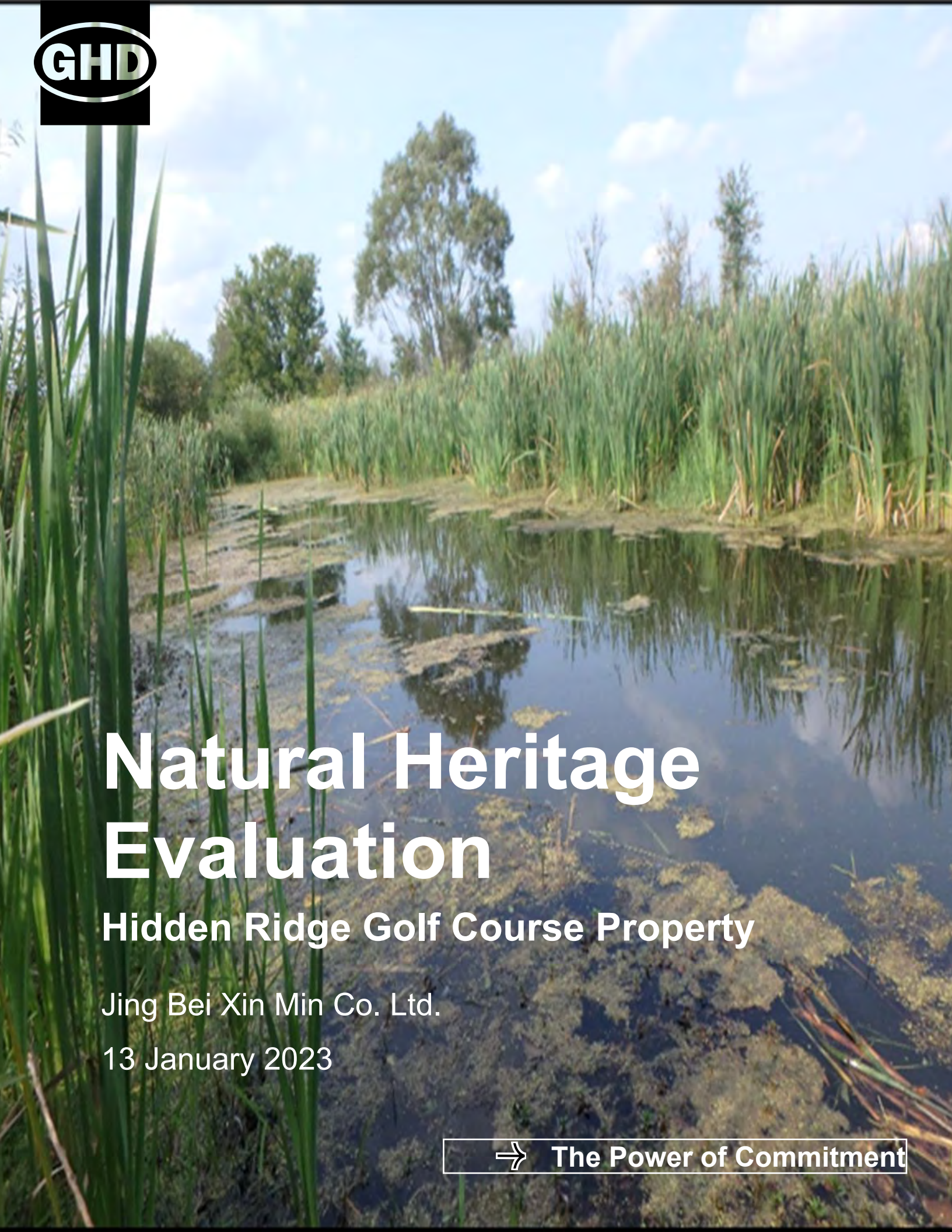

Natural Heritage Evaluation

Hidden Ridge Golf Course Property

Jing Bei Xin Min Co. Ltd.

13 January 2023

The Power of Commitment

Project name		Hidden Ridge Phase 2 NHE				
Document title		Natural Heritage Evaluation | Hidden Ridge Golf Course Property				
Project number		12562874				
File name		12562874-01-RPT-Hidden Ridge Phase 2 NHE_V3				
Revision	Author	Reviewer		Approved for issue		
		Name	Signature	Name	Signature	Date
S3	Stacey Zwiers, Candice Talbot	Amanda Smith		Chris Ellingwood		August 4, 2022
S4	Stacey Zwiers, Candice Talbot	Amanda Smith		Chris Ellingwood		August 10, 2022
S4	Stacey Zwiers Candice Talbot	Amanda Smith		Chris Ellingwood		January 13, 2023

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1. Introduction

1.1 Background

GHD Limited has been retained by China Canada Jing Bei Xin Min Intl. Co. Ltd. to complete a Natural Heritage Evaluation addendum (NHE) for Phase 2 of the Hidden Ridge Golf Course property draft plan of subdivision located in Zephyr, Ontario, from here on referred to as Site. The Site is currently a golf course, that core use creates a moderate level of disturbance from golfers and maintenance. At the same time, natural environment features are present on site, including; birds, wildlife, wetland, and fish that have adapted to the golf course grounds.

The project Phase 1 NHE was completed by GHD Limited (previously NEA), April 9th, 2020. The Phase 1 report included recommendations for Phase 2 constraints and buffers to assist in the detailed design process. As per the Phase 1 report recommendations, the Phase 2 submission is the following updated NHE report which focuses on the updated development plan, effects on the natural environment, and results of the supplemental field surveys completed in 2022.

This Natural Heritage Evaluation (NHE) addendum is required as the proposed plan of subdivision 'development' is within the Greenbelt Plan area. The addendum must meet the requirements of the Greenbelt Plan, Township of Uxbridge Official Plan and zoning bylaws and Lake Simcoe Lake Simcoe Region Conservation Authority (LSRCA) policy and legislation.

The natural resources field surveys for Phase 2 were completed and reported on in the Phase 1 report. However, following review of the Phase 2 NHE Terms of Reference in March 2021, the Lake Simcoe Region Conservation Authority (LSRCA) requested one additional vegetation survey and three amphibian surveys within the Phase 2 Site. The additional surveys were completed by GHD in 2022 and are incorporated within this report.

1.2 Location and Site

The property is located 309 Zephyr Road, southeast of the corner of Zephyr Road and 3rd Concession Road and is described as Part of Lots 24 and 25, Concession 3 in the Hamlet of Zephyr in the Region of Durham, from here on refered to as 'Site' (Figure 1). The Site encompases the western portion of the property, which includes former golf course grounds, hedgerows, open field meadows, unnamed ponds, and the edge of wetland and woodland features, equaling approximately 47 acres. The Site excludes the large-scale natural features associated with the Zephyr-Egypt Wetland Complex PSW that encompasses the eastern portion of the property, as those features are protected and will remain undeveloped.

Phase 2 is located directly south of Phase 1 and consists of 17 residential lots, as well as roads and servicing (Ecovue Consultation Services Inc., Hidden Ridge Golf Course, Draft Plan of Subdivision DP1, dated July 28, 2021) (Appendix H).

The Site is located within the boundaries of the Greenbelt Plan. Key Natural Heritage Features on the property or within 120 m of the property include:

- Protected Countryside designation
- Significant woodland
- Possible habitat for threatened or endangered species
- Watercourse and hydrological features (ponds)
- Provincially significant Zephyr-Egypt wetland complex
- Provincially significant Zephyr-Egypt Life Science ANSI
- Fish and Aquatic habitat

The Greenbelt Plan requires the completion of a Natural Heritage Evaluation when a development is proposed within or in the area of influence of a key natural heritage feature. The property is also within the Regulated Area of LSRCA.

1.3 Scope and Limitations

This report has been prepared by GHD for *[Client]* and may only be used and relied on by *[Client]* for the purpose agreed between GHD and *[Client]* as set out in section 1 of this report.

GHD otherwise disclaims responsibility to any person other than *[Client]* arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer section(s) 1 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

1.4 Study Rationale

This section identifies federal, provincial and other regulatory legislation, policies, official plans (OP) and OP amendments that are applicable and relevant to the Site and the immediate vicinity. This includes policies that triggered the study. These documents may identify natural features, Species at Risk and other habitat as well as other features relevant to this Site.

1.4.1 Federal Legislation

1.4.1.1 Migratory Birds Convention Act

The purpose of the Migratory Birds Convention Act (MBCA 1994) is to implement the Convention by protecting and conserving migratory birds — as populations and individual birds — and their nests. No work is permitted to proceed that would result in the destruction of active nests (i.e., nests with eggs or young birds) or the wounding or killing of bird species protected under the MBCA and/or Regulations under that Act.

1.4.1.2 Fisheries Act, 1985 (R.S.C., 1985, c. F-14)

The purpose of the Fisheries Act, Fish and Fish Habitat Program is to help conserve and protect fisheries and aquatic ecosystems. Specifically, the fish and fish habitat protection provisions are intended to prevent projects taking place in and around fish habitat from causing the death of fish or the harmful alternation, disruption or destruction (HADD) of fish habitat. In addition, the Act administers relevant provision of the Species at Risk Act.

If death of fish or the harmful alteration, disruption or destruction of fish habitat have the potential to result from a project, an authorization may be required from the Minister of Fisheries, Oceans and the Canadian Coast Guard as per Paragraph 34 or 35 of the Fisheries Act Regulations.

1.4.2 Provincial Legislation

1.4.2.1 Endangered Species Act, 2007

The purposes of the Ontario Endangered Species Act (ESA 2007) are to:

1. To identify species at risk based on the best available scientific information, including information obtained from community knowledge and aboriginal traditional knowledge;
2. To protect species that are at risk and their habitats, and to promote the recovery of species that are at risk;
3. To promote stewardship activities to assist in the protection and recovery of species that are at risk. 2007, c. 6, s. 1. (Government of Ontario, 2019)

The ESA clearly defines the five classifications of species status as extinct, extirpated, endangered, threatened, or special concern, and provides guidelines on the process of species status determination.

Regulations made under this Act include Ontario Regulation 230/08 and 242/08. Ontario Regulation 230/08 provides the list of Species at Risk (SAR) in Ontario, which is updated regularly. This list was most recently consolidated on August 1, 2018 (Government of Ontario, 2019b). Species status provided in the list is assessed by an independent body, the Committee on the Status of Species at Risk in Ontario (COSSARO), based on the best-available science and Aboriginal Traditional Knowledge.

General habitat protection is afforded to all species listed as endangered or threatened. General habitat descriptions are technical, science-based documents that have been developed for some of the species that are most likely to be affected by human activity (Government of Ontario 2019c). Further information including a Recovery Strategy or Management Plan is required for each listed species, on a timeline dictated by the species status. Ontario Regulation 242/08 explains possible exemptions to the ESA and details on how the purpose of the ESA is to be carried out.

1.4.2.2 Provincial Policy Statement, 2020

The Provincial Policy Statement, 2020 (PPS) is the statement of the Ontario government's policies on land use planning. It applies province-wide (in the province of Ontario) and provides provincial policy direction on land use planning. Municipalities use the PPS to develop their official plans and to guide and inform decisions on other planning matters. The PPS is issued under Section 3 of the Planning Act and all decisions affecting land use planning matters 'shall be consistent with' the Provincial Policy Statement (Government of Ontario, 2020).

Portions of Sections 2.1.4-2.1.8 of the Provincial Policy Statement (PPS 2020) apply to this project.

2.1.4 Development and site alteration shall not be permitted in:

a. significant wetlands in Ecoregions 5E, 6E and 7E1; and
b. significant coastal wetlands.

2.1.5 Development and site alteration shall not be permitted in:

c. significant wetlands in the Canadian Shield north of Ecoregions 5E, 6E and 7E1;
d. significant woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River) 1;
e. significant valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River) 1;
f. significant wildlife habitat;
g. significant areas of natural and scientific interest; and
h. coastal wetlands in Ecoregions 5E, 6E and 7E1 that are not subject to policy

2.1.4(b) unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.

2.1.6 Development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements.

2.1.7 Development and site alteration shall not be permitted in habitat of endangered species and threatened species, except in accordance with provincial and federal requirements.

2.1.8 Development and site alteration shall not be permitted on adjacent lands to the natural heritage features and areas identified in policies 2.1.4, 2.1.5, and 2.1.6 unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions.

1.4.2.3 Greenbelt Plan (2017)

The proposed development location is entirely within the Protected Countryside designation of the Greenbelt Plan (Map 14). The property contains a portion of mapped Natural Heritage features in the east (wetlands). The following policies (Section 3.2.4) apply:

3.2.4 Key Natural Heritage Features and Key Hydrologic Features Policies

Key natural heritage features include:

- Significant habitat of endangered species, threatened species and special concern species;
- Fish habitat;
- Wetlands;
- Life Science Areas of Natural and Scientific Interest (ANSIs);
- Significant valleylands;
- Significant woodlands;
- Significant wildlife habitat;
- Sand barrens, savannahs and tallgrass prairies; and
- Alvars
- Key hydrologic features 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, the following policies shall apply:

1. Development or site alteration is not permitted in key hydrologic features and key natural heritage features within the Natural Heritage System, including any associated vegetation protection zone, with the exception of:
   a. Forest, fish and wildlife management;
   b. Conservation and flood or erosion control projects, but only if they have been demonstrated to be necessary in the public interest and after all alternatives have been considered; or
   c. Infrastructure, aggregate, recreational, shoreline and existing uses, as described by and subject to the general policies of section 4 of this Plan.
2. Beyond the Natural Heritage System within the Protected Countryside (as shown on Schedule 4), key hydrologic features are defined by and subject to the natural features policies of section 3.2.4.
3. Beyond the Natural Heritage System within the Protected Countryside (as shown on Schedule 4), key natural heritage features are not subject to the natural features policies of section 3.2.4 of this Plan, but are to be defined pursuant to, and subject to the policies of, the PPS.
4. In the case of 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 metres wide measured from the outside boundary of the key natural heritage feature or hydrologic feature.

5. A proposal for a new development or site alteration within 120 metres 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, which identify a vegetation protection zone which:
    a. Is a 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 function; and
    b. Is established to achieve, and be maintained as natural self-sustaining vegetation

1.4.2.4 A Place to Grow: Growth Plan for the Greater Golden Horseshoe, 2020

A Place to Grow: Growth Plan for the Greater Golden Horseshoe 2020 came into effect on August 28th, 2020 replacing the Growth Plan for the Greater Golden Horseshoe 2019 (OMMAH 2019). The Growth Plan for the Greater Golden Horseshoe 2020 (herein referred to as GPGGH 2020) is a strategic, long-range, comprehensive, and integrated approach to guide future growth in Ontario. It includes planning for infrastructure, land use, economic development, and population health (OMMAH 2019).

The project is located within the area of the Growth Plan. To address these challenges and ensure the protection and effective use of finite resources, A Place to Grow Plan, together with the Greenbelt Plan, Oak Ridges Moraine Conservation Plan, and the Niagara Escarpment Plan, builds on the Provincial Policy Statement (PPS) to establish a unique land use planning framework for the GGH that supports the achievement of complete communities, a thriving economy, a clean and healthy environment, and social equity. As the site is also in the Greenbelt Plan area, that plan is more restrictive regarding natural features. The Growth Plan does not include natural heritage features within urban settlement boundaries.

1.4.3 Local and Other Regulatory Bodies

1.4.3.1 Durham Regional Official Plan (2020)

Schedule ‘A’ – Map ‘A2’ (Regional Structure) designates the property as “Hamlet”. Schedule B – Map ‘B1b’ – greenbelt Natural Heritage System and Key Natural Heritage and Hydrologic Features shows the property (eastern half) contains a portion of and is adjacent to Key Natural Heritage and Hydrologic Features and Greenbelt Natural Heritage System.

Guidelines under the Greenbelt Plan, Section 3.2.2: Natural Heritage System Policies were also followed. Furthermore, Section 6.26 of the Lake Simcoe Protection Plan identifies the guidelines of the Natural Heritage Evaluation.

The Greenbelt Plan requires the completion of a Natural Heritage Evaluation when development is proposed within or in the area of influence of a key natural heritage feature. The property is also within the Regulated Area of LSRCA.

1.4.3.2 Township of Uxbridge Official Plan (January 2014 Office Consolidation)

Schedule ‘A6’ Zoning By-law map (Detail of Zephyr Area) indicates the property is zoned Open Space (OS) with the eastern half of the property zoned Environmental Protection (EP).

1.4.3.3 Lake Simcoe Region Conservation Authority

The Conservation Authority whose jurisdiction the Site falls within is the Lake Simcoe Region Conservation Authority. Under the Conservation Authorities Act, Ontario Regulation 179/06, Regulation of Development Interference with Wetlands and Alterations to Shorelines and Watercourses is applicable. Several wetland communities were identified on the property.

1.5 Other Resources Referenced

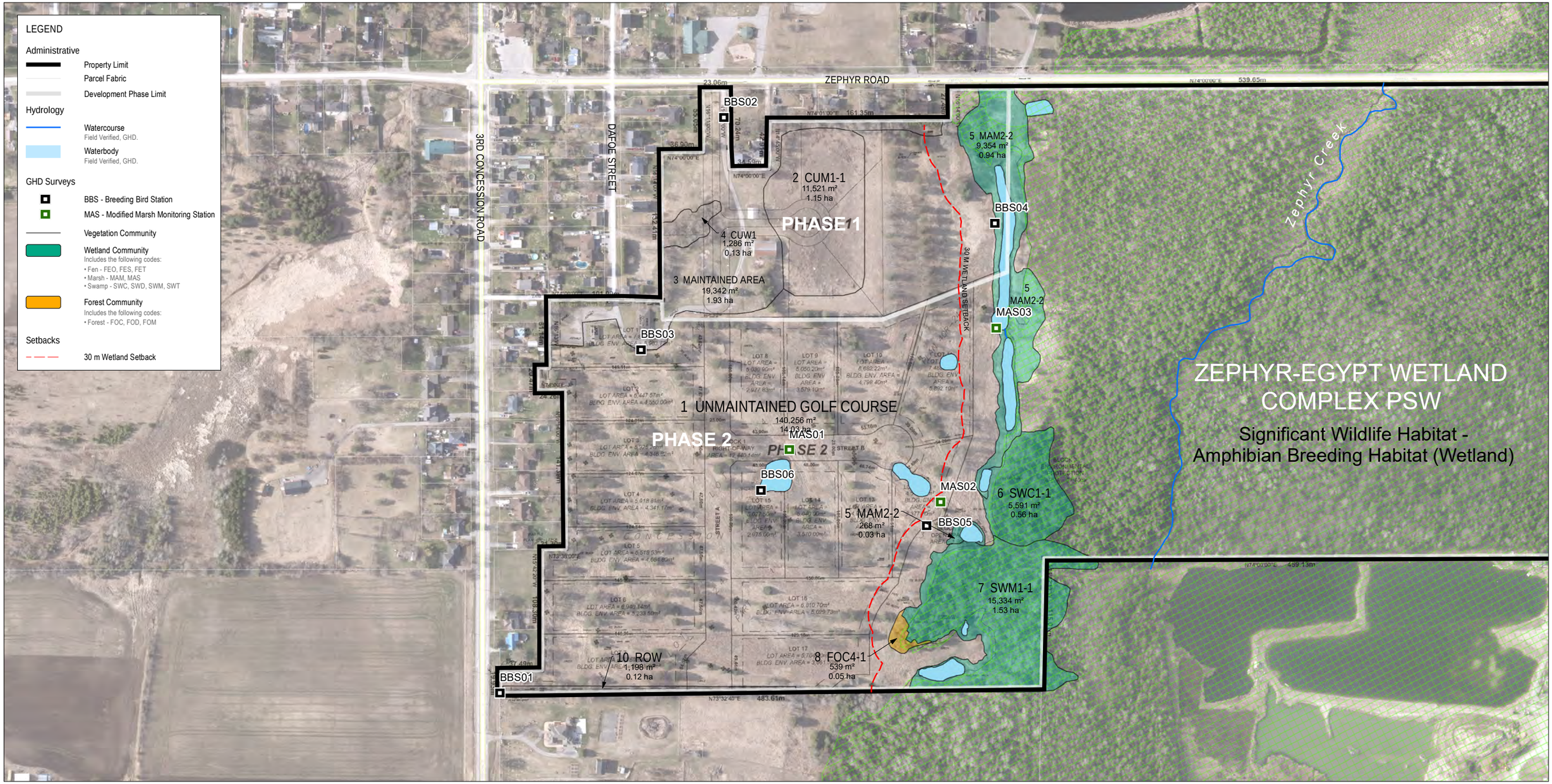
Prior to field surveys, background information for the Site and surrounding lands from a variety of sources were reviewed to provide context for the setting and sensitivity of the site. Background information sources include:

1.5.1 Data Sources

- Orthophotography/Satellite Imagery
- OMNRF Land Information Ontario (LIO) database mapping and Natural Heritage Information Centre (NHIC) Make a Map tool (2019)
- Ontario Breeding Bird Atlas data (Bird Studies Canada, (BSC) 2001-2005 field data)
- NatureCounts data (Bird Studies Canada, 2020)
- Ontario Ministry of Natural Resources Fish-On Line, Fish Species List (OMNR, 2019)
- Department of Fisheries and Oceans (DFO) Aquatic Species at Risk Mapping (DFO, 2022)

1.5.2 Literature and Resources

- Natural Heritage Reference Manual (MNRF, 2010)
- Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E. Peterborough, 38pp. (OMNRF, 2015)



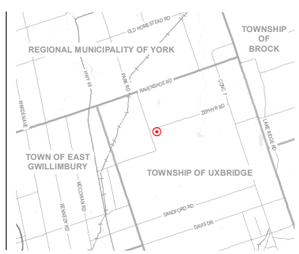
ELC TYPES - 1ST APPROXIMATION

Ecological Land Classification for Southern Ontario: First Approximation and Its Application. 1998.

ELC CODE	ECOSITE-VEGETATION TYPE DESCRIPTION
CUM1-1	Dry-Moist Old Field Meadow
CUW1	Mineral Cultural Woodland
FOC4-1	Fresh-Moist White Cedar Coniferous Forest
MAM2-2	Reed-Canary Grass Mineral Meadow Marsh
SWC1-1	White Cedar Mineral Coniferous Swamp
SWD4-2	White Birch-Poplar Mineral Deciduous Swamp
SWM1-1	White Cedar-Hardwood Mineral Mixed Swamp

CITATIONS

- Draft Plan of Subdivision. 17-1672. .EcoVue Consulting. July 28, 2021.
- 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, Southcentral Science Section, Science Development and Transfer Branch. SCSS Field Guide FG-02.
- Imagery Source: © Regional Municipality of Durham, 2020.



REVISION & WORK HISTORY

REV	BY	DATE	DESCRIPTION	REQUEST
0	W.P.	2018-03-13	Initial map creation.	C.E.
1	W.P.	2018-03-16	Changes to vegetation communities.	C.E.
2	W.P.	2020-03-26	Changes to orthophotography and site plan.	K.R.
3	W.P.	2020-04-14	Changes to vegetation communities.	K.R.
4	W.P.	2021-09-27	Full updates to template, property boundaries, vegetation and parcels.	C.E.
5	W.P.	2022-07-22	Updates to surveys. Adding new survey stations.	C.D.T.

DATA DISCLAIMERS

- Produced by GHD Limited under Licence with the Ontario Ministry of Natural Resources and Forestry© Queen's Printer for Ontario, 2022.

Map Projection: Transverse Mercator
Horizontal Datum: North American 1983
Grid: NAD 1983 UTM Zone 17N

SCALE
1 cm : 34 meters
0 10 20 30 40
Meters

JING BEI XIN MIN CO. LTD
Zephyr Road, Zephyr, ON
Pt Lots 24 & 25, Con 3, Geo. Township of Scott
Township of Uxbridge
Regional Municipality of Durham
Lake Simcoe Region Conservation Authority

NATURAL HERITAGE EVALUATION

VEGETATION COMMUNITIES, TERRESTRIAL FEATURES & CONSTRAINTS

Project No.	12562874
Revision No.	04
Date	08/05/2022

FIGURE 1

Document Path: Q:\GIS\PROJECTS\12562000s\12562874\Layouts\202109_RPT001\12562874_202109_RPT001_GIS001 - Vegetation Communities, Terrestrial Features and Constraints.mxd
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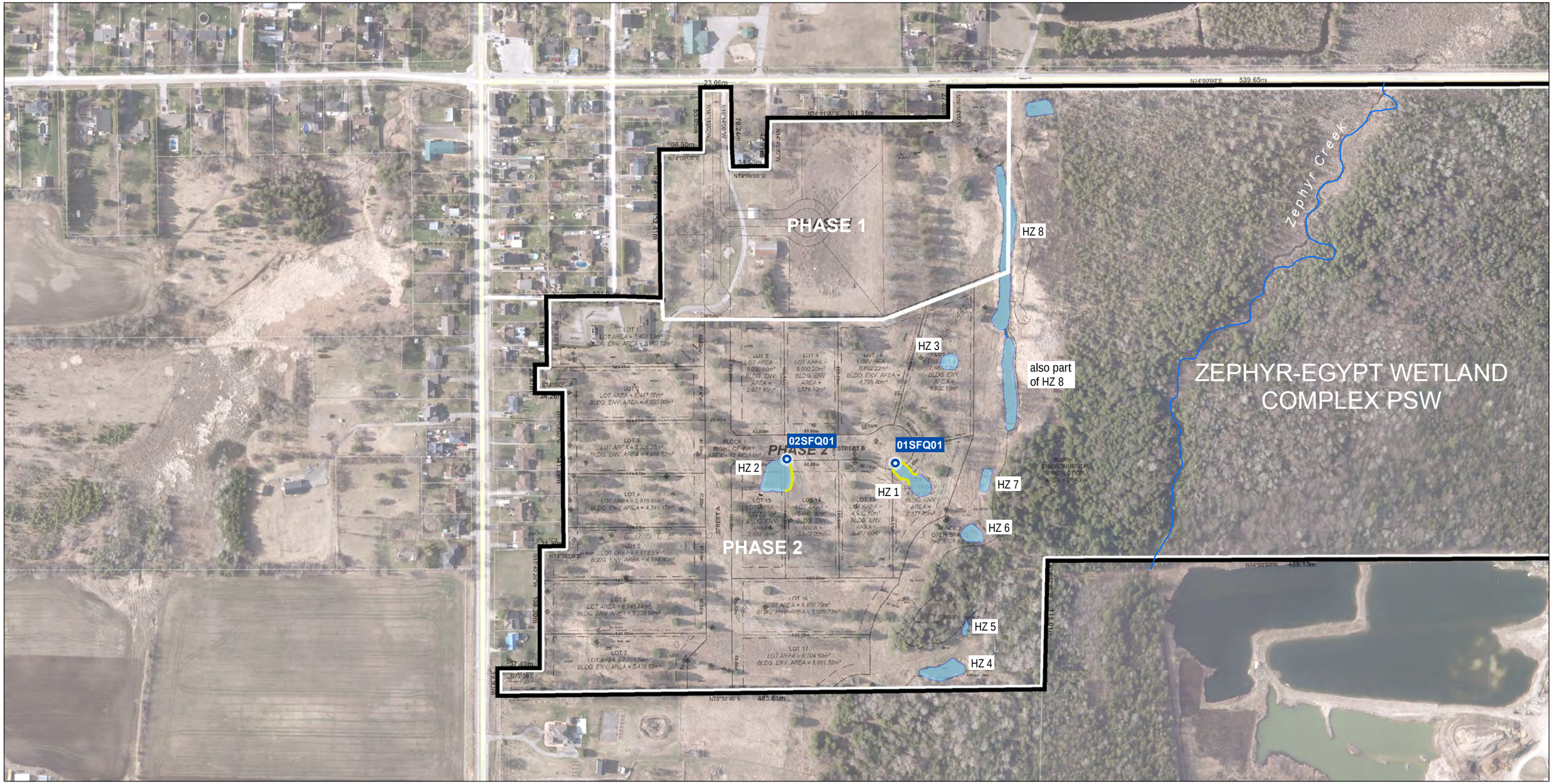

LEGEND

Administrative
- Property Limit
- Parcel Fabric
- Development Phase Limit

Hydrology
- Watercourse/Drainage
  Field Verified, GHD.
- Waterbody / River / Drainage
  Field Verified, GHD.

GHD Surveys
- Surface Water Quality Survey Station (SFQ)
- Fish Community Survey

CITATIONS

- Draft Plan of Subdivision. 17-1672. .EcoVue Consulting. July 28, 2021.
- Imagery Source: © Regional Municipality of Durham, 2020.

REVISION & WORK HISTORY

REV	BY	DATE	DESCRIPTION	REQUEST
0	W.P.	2018-03-13	Initial map creation.	S.Z.
1	W.P.	2020-03-27	Updates to orthophotography and site plan.	S.Z.
2	W.P.	2021-09-27	Updates to template.	S.Z.

DATA DISCLAIMERS

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Map Projection: Transverse Mercator
Horizontal Datum: North American 1983
Grid: NAD 1983 UTM Zone 17N

SCALE
1 cm : 34 meters
0 10 20 30 40
Meters

JING BEI XIN MIN CO. LTD
Zephyr Road, Zephyr, ON
Pt Lots 24 & 25, Con 3, Geo. Township of Scott
Township of Uxbridge
Regional Municipality of Durham
Lake Simcoe Region Conservation Authority

NATURAL HERITAGE EVALUATION

AQUATIC SURVEY LOCATIONS

Project No.	12562874
Revision No.	02
Date	9/29/2021

FIGURE 2

Document Path: Q:\GIS\PROJECTS\12562000s\12562874\Layouts\202109_RPT001\12562874_202109_RPT001_GIS002 - Aquatic Survey Locations.mxd
Date Saved: 9/29/2021 9:45:35 AM

1.6 Description of Development

The Phase 2 proposed development includes the creation of 17 estate lots to be developed with single-family dwellings, as well as roads and servicing. Please note, Phase 1 of the development is located adjacent to Zephyr Road and was addressed in the NHE report submitted in April 2020.

The development interactions with the natural features in Phase 2 will be addressed in this report. The draft site plan is included in Appendix H.

1.7 Scope of Report

This EIS report provides the following information as outlined in the Terms of Reference and agency correspondence:

- Baseline ELC delineation and mapping of the area, including soil sampling
- Breeding bird surveys
- Amphibian breeding surveys
- Incidental observations of amphibians, birds, snakes, and other wildlife
- Presence of significant trees (butternut) or regionally rare plants
- Detailed tree inventory and assessment of woodland designation
- Assessment of habitat for wildlife including wildlife linkages
- Ecological functions of the woodland, including Significant Wildlife Habitat
- Presence of habitat of threatened or endangered species (butternut, bats, woodland bird species)
- Fish and aquatic habitat assessments and surface water quality sampling.

This report will only deal with the suitability of the site from a biological perspective and the constraints due to the presence of the key natural heritage features and NHS policies. Any other approvals or constraints due to zoning, flood and fill regulations, water balances, health regulations, archaeology, slope stability studies, minimum distance separation or other approvals for the township and other agencies are the responsibility of the owner.

2. Study Methods

2.1 General Approach

The field inventories for the Phase 2 development area were completed in 2017 and spring 2022 by GHD staff. The following field assessments have been completed for the Phase 2 development area: background natural features review, vegetation communities, wildlife, breeding birds, amphibian call surveys, fish community, fish habitat, surface water quality, and species at risk screening.

Our approach to preparation of the Phase 2 NHE consisted of four distinct phases.

1. Reviewed and updated the Phase 1 background information. The background review included recent air photography, Township of Uxbridge Official Plan, Greenbelt Plan land use and key natural features GIS mapping, NDMNRF GIS database mapping and woodland layers and other correspondence or files.
2. Preparing a Terms of Reference report for the Phase 2 report to verify if any further field inventories were required by the Township or Lake Simcoe Region Conservation Authority.
3. Conducting additional field inventories as requested by LSRCA from the Terms of Reference comments and consultation. Inventories included three amphibian call surveys and one additional ELC and botanical inventory.
4. Preparation of the NHE report based upon both the updated literature and development plan following the requirements in the Growth Plan for the Greater Golden Horseshoe, Provincial Policy Statement, Township of

Uxbridge Official Plan, Town zoning bylaw and the Greenbelt Plan. The report focuses on the maintenance of these features and their functions. The impact assessment and mitigation measures focus on the wetland and ANSI, maintaining water infiltration, wildlife issues and natural linkage and corridors in the area. The report identifies planning, design and construction practices that will maintain or enhance the identified features and functions in this area of the Greenbelt.

The NHE report will be submitted by Ecovue to the Township. They in turn will forward the report to LSRCA for environmental review and comments. As such, our report will meet all of the requirements of the Official Plan, Greenbelt Plan and the conservation authority planning policies and NHE requirements.

2.2 Site Study Methodology

2.2.1 Physical Site Characteristics

Site characteristics were assessed during field visits. This assessment included general documentation of existing disturbances, current property use, age of vegetation cover, topography and natural features.

2.2.2 Biophysical Inventory

2.2.2.1 Vegetation

ELC Survey Method

Two season vegetation surveys were completed for the Site, spring and summer. All vegetation encountered in the Site were inventoried during spring and summer site visits in 2017, and again in spring of 2022. Delineation and classification of the vegetation community types was based on the Ecological Land Classification for Southern Ontario (Lee et al., 1998). General notes on disturbance, topography, soil types, soil moisture and state of each community were also compiled.

Rare, significant or unusual species were searched for. Species significance or rarity on a national, provincial, regional and local level was based on published literature and standard status lists. These included SARA (2021), COSEWIC (2021), COSSARO (2021), Ontario Endangered Species Act (2008), Riley (1989).

2.2.2.2 Birds

Breeding Bird Survey (BBS) Survey

Bird surveys were conducted following the protocols of the Ontario Breeding Bird Atlas (OBBA) point count methodologies. Surveys were conducted in the peak season (April 15th-August 15th) approximately 10-15 days apart. All birds seen or heard within the five-minute station period were documented and breeding evidence codes recorded. Surveys were conducted in the early morning.

2.2.2.3 Amphibians

MMP Amphibian Surveys

Targeted spring surveys were completed in the evening to detect any calling amphibians (i.e., frogs or toads). Surveys were conducted following a modified Marsh Monitoring Program protocol. Surveys were conducted when evening temperatures were a minimum of 5ºC and 10ºC and for 3 minutes per survey time period, starting no earlier than 30 minutes after Stations are placed so that calling amphibians were detected from all wetland and adjacent upland habitats. MMP protocol requires 250 m spacing between stations. For these surveys, stations are placed in close proximity to wetland pockets regardless of the distance between stations. The timing for the surveys was such that surveyors recorded observations no earlier than 30 minutes after sunset and no later than midnight. Field conditions were recorded upon arrival (cloud cover, temperature, wind, precipitation). Surveyors noted whether any species detected were within (or outside of) 100 meters of the survey station.

Protocol from Environment Canada's Marsh Monitoring Program was utilized using associated call level codes. Code 1: Calls not simultaneous, number of individuals can be accurately counted. Code 2: Some calls simultaneous, number of individuals can be reliably estimated. Code 3: Full chorus, calls continuous and overlapping, number of individuals cannot be reliably estimated.

2.2.2.4 Other Wildlife

While surveyors were on site conducting surveys of vegetation communities (i.e., ELC and wetland) observations of any wildlife encountered on site was recorded (including mammals, amphibians and reptiles). Documentation included notes about the species detected, their location and the type of encounter (i.e., direct sightings and indirect evidence such as calls, tracks, scat, burrows, dens, trails and browse).

2.2.2.5 Significant Wildlife Habitat

The identification of Significant Wildlife Habitat was completed in several stages. As part of the background review, natural areas in the Site were examined along with orthophotography. A candidate list of SWH criteria/feature was determined. During the field visits, searches for evidence of those identified candidate features were conducted and the features assessed.

After the field inventories, GHD biologists analyzed the information collected and determined which SWH features (if any) were confirmed based on the habitats on site and on the Ecological Land Classification communities present on the subject property, using the criteria for Significant Wildlife Habitat in Ecoregion 6E (2015).

2.2.2.6 Fish and Aquatic Habitat

Aquatic Habitat Assessment

Aquatic habitat assessments were conducted using standardized provincial aquatic protocols (OSAP, MTO). Aquatic habitat was quantified and characterized based on local substrate composition, vegetation, flow influence and condition, sediment transport, cover, channel morphology, groundwater indicators, riparian habitat, barrier presence and form, land use and landscape influences, human modifications and unique features. Appropriate assessment types were determined on-site based on feature type using professional judgment.

Surface water quality was collected by GHD biologists. Measured parameters included dissolved oxygen (mg/L), conductivity (us/cm), total dissolved solids (mg/L) and water temperature (°C) using a handheld YSI Professional Plus System. The pH was recorded with a handheld waterproof pH meter and turbidity was recorded with a handheld LaMotte2020.

The Canadian Water Quality Guidelines for the Protection of Aquatic Life (Canadian Council of Ministers of the Environment, 2002) and the Provincial Water Quality Objectives (PWQO) were used to interpret water quality data (Energy, 1994).

Fish Community

Fish community sampling was conducted by GHD within the Site using a Smith-Root Model 24 backpack electrofisher, single pass technique (Stanfield, 2017). The single pass survey technique allowed biologists to characterize the fish community and provide a qualitative assessment of species abundance at the site. This method requires a high shocking intensity (7-15 sec/m2) and typically captures 60% of the fish population when all habitats are sampled (Stanfield, 2017). A seine net was also used in the pond habitats where an electrofisher could not be safely used. The seine net dimension were 4.5 m x 1.2 m with a bag 0.9 m (wide) x 1.2 m (deep) x 1.2 m (height). Fish total length (mm) and weight (g) were recorded for the first ten individuals of each species at each site. The remaining individuals for each species were counted and weighed in bulk.

3. Survey Results

The following section presents GHD site-specific survey data only. Supporting information, the background review or other sources will be presented and discussed in Section 4.0 -Discussions and Analysis.

3.1 Physical Site Characteristics

The topography of the surrounding area is rolling and generally drains east into the Zephyr-Egypt Wetland Complex PSW. Phase 2 land of the subject property is approximately 34 acres in size and includes an abandoned / unmaintained golf course and associated buildings and laneways. The surrounding lands include residential and rural developments, as well as natural areas. The proposed subdivision is located in the cleared area associated with the previous golf course lands.

3.2 Biological Inventories

3.2.1 Vegetation

3.2.1.1 Level of Effort

The vegetation communities were delineated within the study by GHD biologists according to the methodologies outlined in Section 2.2.2.1. A summary of the level of effort and environmental conditions have been provided in Table 1.

Table 1 Vegetation Survey – Level of Effort and Environmental Conditions

Survey Date	Survey Type	Weather	Start Time	Effort
July 6, 2017	ELC	Sunny (30% cloud cover), humid, BWS 0-1, no precipitation during surveys, air temperature 22-28 °C	08:45	2.5
June 7, 2022		Cloudy (100% cloud cover), BWS 1-2, no precipitation during the surveys, air temperature 16C	20:32	2

3.2.1.2 ELC Code Descriptions

Ten (10) vegetation communities were identified within the entire Site. However, 2 communities (Community 2 and 4 as seen on Figure 1) were located in Phase 1 only, outside of the Phase 2 Site. These communities will be omitted from the descriptions below. Each community within the Phase 2 area is described below and illustrated in Figure 1.

A total of 179 plant species were identified in the entire Site. The majority of these are common species, typical of rural, edge, wetland and woodland communities. A complete plant list is found in Appendix A.

Community 1: Unmaintained Golf Course (no ELC code applicable)

This community represents the central portion of the Site, which has been used as a golf course in the past and is now unmaintained. The area is characterized by grassy areas interspersed with patches and rows of trees. Trees in this community include red pine (*Pinus resinosa*), Scot's pine (*P. sylvestris*), white spruce (*Picea glauca*), weeping willow (*Salix babylonica*), Norway maple (*Acer platanoides*), sugar maple (*A. saccharum ssp. saccharum*), and silver maple (*A. saccharinum*). The ground layer is generally dominated by grasses, including red fescue (*Festuca rubra*), Kentucky bluegrass (*Poa pratensis*), fowl meadow grass (*P. palustris*), awnless brome grass (*Bromus inermis*), timothy (*Phleum pretense*), and quackgrass (*Elymus repens*). In addition, a number of common forbs typical of disturbed sites have begun to colonize the area such as common dandelion (*Taraxacum officniale*), white clover (*Trifolium repens*), tall buttercup (*Ranunculus acris*), Queen Anne's lace (*Daucus carota*), bird's-foot trefoil (*Lotus corniculatus*) and broad-leaved plantain (*Plantago major*).

Photo 1: Community 1 (Photo Date: July 6, 2017).

Community 3: Maintained Area Around Buildings (No ELC Code Applicable)

This community is confined to the area immediately adjacent to the existing buildings and laneway at the north end of the subject property. Several tree species are present including Manitoba maple, Norway maple and eastern white cedar (*Thuja occidentalis*). The scattered understory includes staghorn sumac (*Rhus typhina*), European buckthorn (*Rhamnus cathartica*), lilac (*Syringia vulgaris*), wild red raspberry (*Rubus idaeus*), Virginia creeper (*Parthenocissus inserta*) and wild grape (*Vitis riparia*). The ground cover is dominated by common lawn and field species such as awnless brome grass, Kentucky bluegrass, bird's-foot trefoil, Canada thistle, Queen Anne's lace, common dandelion, tall buttercup, broad-leaved plantain, narrow-leaved plantain (*Plantago lanceolata*), white clover, cow vetch (*Vicia cracca*), common milkweed (*Asclepias syriaca*), common yarrow and swallow-wort.

Photo 2: Community 3 (Photo Date: July 6, 2017).

Community 5: Reed Canary Grass Mineral Meadow Marsh (MAM2-2)

Community 5 represents the portion of the Zephyr-Egypt Wetland Complex PSW directly adjacent to the unmaintained golf course area at the north end of the subject property (portions of Phase 1 and 2 areas). The bulk of this community is dominated by reed canary grass (*Phalaris arundinacea*), with spotted jewelweed (*Impatiens capensis*) and late goldenrod (*Solidago gigantea*) dominating the transitional edge areas, and other common species scattered throughout including coltsfoot (*Tussilago farfara*), field horsetail (*Equisetum arvense*), common cattail (*Typha latifolia*), grass-leaved goldenrod (*Euthamia graminifolia*), marsh bedstraw (*Galium palustris*), swamp milkweed (*Asclepias incarnata*), calico aster (*Sypmyotrichum lateriflorum var. lateriflorum*) and tall white aster (*S. lanceolatum ssp. lanceolatum*). Scattered trees and shrubs include Manitoba maple, Freeman's maple (*Acer x freemanii*), American elm, balsam poplar (*Populus balsamifera*), slender willow (*Salix petiolaris*), Bebb's willow (*S. bebbiana*), pussy willow (*S. discolor*), and red-osier dogwood (*Cornus stolonifera*). The ponded areas in the central portion of Community 5 include aquatic species such as common duckweed (*Lemna minor*), common waterplantain (*Alisma plantago-aquatica*), water horsetail (*Equisetum fluviatile*), wild mint (*Mentha arvensis*), American brooklime (*Veronica americana*), and cursed crowfoot (*Ranunculus scleratus*).

Photo 3: Community 5 (Photo Date: July 6, 2017).

Community 6: White Cedar Mineral Coniferous Swamp (SWC1-1)

This community is in the southeast portion of the subject property and comprises a part of the Zephyr-Egypt Wetland Complex PSW. The canopy in this community is dominated by eastern white cedar, though other trees are scattered throughout, including Manitoba maple, red maple (*Acer rubrum*), white birch (*Betula papyrifera*), and American elm (*Ulmus americana*). The understory includes European buckthorn, wild red raspberry, choke cherry (*Prunus virginiana*), alternate-leaved dogwood (*Cornus alternifolia*), and American black currant (*Ribes americanum*). The ground layer is rich in ferns and forbs typical of cedar swamps, such as spotted jewelweed, bulbet bladder fern (*Cystopteris bulbifera*), sensitive fern (*Onoclea sensibilis*), Canada mayflower (*Maianthemum canadense*), ostrich fern (*Matteuccia struthiopteris*), wild sarsaparilla (*Aralia nudicaulis*), and northern lady fern (*Athyrium felix-femina*).

Photo 4: Community 6 (Photo Date: July 6, 2017).

Community 7: White Cedar – Hardwood Mineral Mixed Swamp (SWM1-1)

This community is in the southeast corner of the subject property and comprises a part of the Zephyr-Egypt Wetland Complex PSW. The canopy in this community includes a mix of eastern white cedar, Manitoba maple, trembling aspen (*Populus tremuloides*) and balsam poplar. The understory includes European buckthorn, choke cherry and alternate-leaved dogwood. The ground layer is similar to that of Community 6 including spotted jewelweed, bulbet bladder fern, and sensitive fern, as well as Canada enchanter's nightshade (*Circaea lutetiana ssp. canadensis*), fowl manna grass (*Glyceria striata*), Jack-in-the-pulpit (*Arisaema triphyllum*), and rice cut grass (*Leersia oryzoides*).

Photo 5: Community 7 (Photo Date: July 6, 2017).

Community 8: Fresh – Moist White Cedar Coniferous Forest (FOC4-1)

Community 8 represents a small upland forest area that is contiguous with the mixed swamp of Community 7, in the southeast corner of the subject property. The canopy in this community is dominated by eastern white cedar, with some scattered Manitoba maple and American basswood (*Tilia americana*) also present. The understory is limited to European buckthorn. The ground layer in this community is very sparse, which is typical of dense cedar stands, where little light can penetrate to the forest floor. Species present include herb Robert (*Geranium robertianum*), common dandelion, garlic mustard (*Alliaria petiolata*), Canada enchanter's nightshade, yellow avens, Canada goldenrod and tall buttercup.

Photo 6: Community 8 (Photo Date: July 6, 2017).

Community 9: Poplar Mineral Deciduous Swamp (SWD4-3)

Community 9 is located at the southern boundary of the subject property. The canopy in this community includes abundant trembling aspen with occasional black walnut (*Juglans nigra*), black ash (*Fraxinus nigra*), eastern white cedar, scattered white willow (*Salix alba*), Manitoba maple, American elm, white birch, balsam fir (*Abies balsamea*) and white spruce (*Picea glauca*). The understory includes red-osier dogwood, European buckthorn, Tartarian honeysuckle (*Lonicera tatarica*), wild grape and Virginia creeper. The ground layer is fairly diverse, characterized by abundant spotted jewelweed and sensitive fern with frequent fowl manna grass and purple-stemmed aster (*Symphyotrichum puniceum*) and occasional swallow-wort, late goldenrod and rice cut grass.

Photo 7: Community 9 (Photo Date: July 6, 2017).

Community 10: Deciduous Hedgerow (No ELC Code Applicable)

Community 10 represents a young hedgerow that runs along the south edge of the subject property. This hedgerow was dominated by European buckthorn, with a scattered canopy of Manitoba maple, eastern white cedar, trembling aspen, American basswood and small leaf linden (*Tilia cordata*). The ground layer was limited to a few common species such as Canada goldenrod, swallow-wort, tall buttercup and Canada thistle (*Cirsium arvense*).

Photo 8: Community 10 (Photo Date: July 6, 2017).

3.2.2 Birds

3.2.2.1 Bird Surveys - Level of Effort

Surveys for grassland birds were conducted in the Site by GHD biologists according to the methodologies outlined in Section 2.2.2.2. A summary of the level of effort and environmental conditions at the time of survey have been provided in Table 2.

Table 2 Bird Survey – Level of Effort

Survey Date	Survey Type	Weather	Start Time	Effort
June 27, 2017	Breeding Bird Surveys	Sunny (10% cloud cover), BWS 0, no precipitation during surveys, air temperature 11 °C	06:15	0.5
July 6, 2017	Breeding Bird Surveys	Sunny (30% cloud cover), humid, BWS 0-1, no precipitation during surveys, air temperature 22-28 °C	08:40	1

3.2.2.2 Breeding Bird Surveys

A total of 36 bird species were observed during field surveys in 2017 including common rural, edge and woodland species such as American robin (*Turdus migratorius*), black-capped chickadee (*Poecile atricapillus*), European starling (*Sturnus vulgaris*), cedar waxwing (*Bombycilla cedrorum*), yellow warbler (*Dendroica petechia*), common yellowthroat (*Geothlypis trichas*), chipping sparrow (*Spizella passerina*), song sparrow (*Melospiza melodia*), northern cardinal (*Cardinalis cardinalis*) and American goldfinch (*Carduelis tristis*) (Appendix C).

3.2.3 Amphibians

3.2.3.1 Level of Effort

Three amphibian surveys were conducted by GHD biologists according to a modified Marsh Monitoring Protocol (refer to section 2.2.2.3). Table 3 summarizes the effort level and weather conditions of these surveys.

Table 3 Amphibian Surveys – Level of Effort

Survey Date	Survey Type	Weather	Start Time
April 21st, 2022	Breeding Amphibian Survey	11C/ 9/10 Cloud Cover/ 0 Wind Scale/ No precipitation	20:40
May 9th, 2022		15C/ 7/10 Cloud Cover/ 4 Wild Scale/ No precipitation	21:00
June 7th, 2022		14C/ 9/10 Cloud Cover/ 2 Wind Scale/ No precipitation	21:40

3.2.3.2 MMP Surveys

Four (4) species of frogs were found during GDH biologist's amphibian breeding surveys in the spring/summer of 2022 (Appendix D). Wood frog (*Lithobates sylvaticus)*, spring peeper (*Pseudacris crucifer*), green frog (*Lithobates clamitans*) and American toad (*Anaxyrus americanus*) were all heard in proximity to the three (3) stations on Site, which were all near potential breeding habitats of permanent water bodies and wetlands (Figure 1).

Amphibian breeding survey station 1 which targeted an existing golf course pond, contained only one species; green frog with a call index of 1, only on the third visit (June 7, 2022). Two other species, American toad and spring peeper were also heard, but were outside of the survey area and in the distant PSW to the east.

Amphibian breeding survey station 2 targeted an existing golf course pond. Spring peepers with call codes of 3 were identified in visits 1and 2. Green frog was identified in visits 2 and 3, with both visits recording call code level 1. It should be noted that while conducting these surveys call level codes of 3 were occurring in the nearby PSW of spring peeper, wood frog and American toad.

Amphibian breeding survey station 3 targeted the east pond and PSW. This station recorded call level codes of 3 for spring peepers and wood frog within the 150 m station radius. A call level code of 1 was recorded for green frog on the third visit. American toad was heard at a call level 3 as well, but was outside of the station radius. Wood frog egg masses were also identified in large numbers in the PSW ponds.

3.2.4 Wildlife

A total of three (3) mammal species were observed by GHD biologists during the surveys in 2017 - eastern cottontail (*Sylvilagus floridanus*), white-tailed deer (*Odocoileus virginianus*) (tracks), and eastern chipmunk (*Tamias striatus*). In 2022, biologists observed a white-tail deer and a young Milk snake (*Lampropeltis Triangulum*). It is likely that the Site also supports a suite of other mammal species common to rural and edge habitats that were not observed, such as: coyote (*Canis latrans*), eastern gray squirrel *(Sciurus carolinensis*), red squirrel *(Tamiasciurus hudsonicus)* and red fox (*Vulpes vulpes*).

GHD biologists also recorded six herpetozoa species – American bullfrog (*Lithobates catesbeianus*), green frog (*Rana clamitans*), grey treefrog (*Hyla versicolor*), northern leopard frog (*Lithobates pipiens*), snapping turtle (*Chelydra serpentina*) midland painted turtle (*Chrysemys picta marginata*) and milksnake (*Lampropeltis triangulata).* The frogs were heard and/or seen in various locations throughout the site. The snapping turtle was found in the Habitat Zone 1 pond, and midland painted turtles were seen in the Habitat Zone 1 and Habitat Zone 2 ponds, both located within vegetation Community 1 (i.e., the central golf course area). The milksnake was identified basking in Community 3. Refer to Figure 2 for Habitat Zone locations.

3.2.5 Significant Wildlife Habitat

During our review of candidate significant wildlife habitat, the following were identified as potentially present on site: Turtle Wintering Areas, amphibian breeding habitat (woodland), amphibian breeding habitat (wetland), Woodland area-sensitive bird breeding habitat, habitat for Special Concern and Rare Wildlife species.

After 2022 surveys, it was determined that amphibian breeding habitat (wetlands) was confirmed on and adjacent to the Site, as well as Special Concern and Rare Wildlife Species.

3.2.6 Significant Woodland

Significant Woodland was identified within the southeast portion of the Site as Communities 6, 7, 8 and 9 (Figure 1). The woodland was associated with the swamp communities and their treed portions within the Provincially Significant Wetland.

3.2.7 Wetland

The Zephyr-Egypt Wetland Complex PSW was located along the east portion of the entire Site (Communities 5, 6, 7 and 9; Figure 1).

3.2.8 Fish and Aquatic Habitat

3.2.8.1 Level of Effort

Surveys for fish and aquatic habitat were conducted on August 21st, 2017. Surveys were conducted following the methodologies outlined in Section 2.2.2.6. A summary of the level of effort and environmental conditions at the time of assessment have been provided in Table 3.3.

Table 4 Fish and Aquatic Habitat Surveys – Level of Effort

Survey Date	Survey Type	Weather	Start Time	Effort (Person hrs.)
August 17, 2021	Aquatic Habitat Assessments, Fish Community Surveys and Surface Water Quality	Sunny (0% cloud cover), humid, BWS 0-2, no precipitation during surveys, air temperature 30.9 °C and water temperature 22.7°C and 24.5 °C.	10:00	7 (x2 staff)
Note: BWS-Beaufort Wind Scale (Government of Canada, 2017),				

Aquatic Habitat Assessments

The Site is part of the Black River subwatershed, one of the healthiest subwatersheds in the Lake Simcoe basin. The Black River subwatershed occupies 375km^2 of lands south of the eastern portion of Lake Simcoe. The main tributaries in the subwatershed include Harrison Creek, Mount Albert Creek, Vivian Creek, and Zephyr Creek. These watercourses mainly flow through natural features and agricultural areas before reaching Sutton, Ontario and out letting into Lake Simcoe (LSRCA, 2010). There were several unnamed ponds located within the Site. These ponds were likely manmade for the purpose of the golf course.

The Site was classified into eight aquatic habitat zones (Habitat Zone 1-8). Habitat zones were established based on barriers, difference in substrate composition, riparian habitat, percent in-stream cover, hydrological connection, and unique features. The aquatic habitat zone locations have been illustrated in Figure 2 and their attributes have been summarized in Table 3.4.

The distinguishing features of these habitat zones was location, in-stream and overhead cover. All the ponds expect for Habitat Zone 8 were isolated and not connected to any other waterbodies within the Site, therefore preventing fish movement to and from the other ponds. The in-water substrate was dominated by fine organics except for Habitat Zone 7 (Table 4).

Habitat Zone Descriptions

Habitat Zone 1 was one of the northeastern ponds (Figure 2) and had an area of approximately 672 m^2. The minimum water depth of 0.1 m and maximum water depth of 1.2 m. The overhead cover was low consisting of non-woody vegetation. The instream cover was dense consisting of submergent, emergent and floating aquatic vegetation (Table 3.4). The dominant vegetation species include Eurasian water-milfoil (*Myriophyllum spicatum*), stonewort (*Chara spp*.), common floating pondweed (*Potamogeton natans*) and common cattail *(Typha latifolia).* Please refer Section 3.2.1, Community 1 for full vegetation community details. During the time of assessments biologists noted the presence of fish within this zone.

Photo 9: Habitat Zone 1, photo pond, riparian and in-water habitat. Photo facing northwest (Photo Date: August 21, 2017).

Habitat Zone 2 was an unnamed pond approximately 97 m west of Habitat Zone 1 (Figure 2). The unnamed pond had a total area of approximately 884 m^2, minimum water depth of 0.1 m and maximum water depth of 1.5 m. The overhead cover was sparse consisting of non-woody vegetation. The instream over was dense with submergent aquatic vegetation (Table 3.4). The dominant species include needle spike-rush (*Eleocharis acicularis*) and stonewort (*Chara spp*). Please refer Section 3.2.1, Community 1 for full vegetation community details. During the time of assessment, GHD noted the presence of fish within this zone.

Photo 10 (left) and 11 (right): Habitat Zone 2, photo showing unnamed pond, riparian and in-water habitat. Photo facing northwest (Photo Date: August 21, 2017).

Habitat Zone 3 was in an unnamed pond located 100 m northeast of Habitat Zone 1 (Figure 2). The unnamed pond was completely choked out by cattails *(Typha latifolia)*. The minimum water depth of 0.1 m and a maximum water depth of 0.3 m. The overhead and instream cover were dense, and completely composed of cattails (Table 3.4). During the time of assessment biologists noted that there were no fish observed in the pond and there were only a few pockets of standing water. Please refer Section 3.2.1.2 Community 1 for full vegetation community details.

Photo 12a: Habitat Zone 3, photo showing pond (outlined in red) and riparian habitat. Photo facing northeast (Photo Date: August 21, 2017).

Photo12b: Habitat Zone 3, photo showing dense cattails in pond (Photo Date: August 21, 2017).

Habitat Zone 4 was in an unnamed pond approximately 151 m southeast of Habitat Zone 1 (Figure 2). It was located within the White Cedar – Hardwood Mineral Mixed Swamp (Figure 1 - Vegetation Community 7).

The pond had a total area of approximately 382 m^2 with a minimum water depth of 0.2 m and a maximum water depth of 1 m. The overhead cover was low consisting of trees, shrubs and non -woody vegetation. The instream cover was dominated by submergent aquatic vegetation (Table 3.4). The dominant aquatic vegetation species included stonewort (*Chara spp*), common cattail *(Typha latifolia)*, broad-fruited bur-reed (*Sparganium eurycarpum*), common coontail (*Ceratophyllum demersum*), swamp milkweed (*Asclepias incarnata*) and narrow-leaved cattail (*Typha angustifolia*). Please refer Section 3.2.1, Community 7 for full vegetation community details. Biologists noted that fish were not observed in the pond at the time of the assessment.

Photo 13: Habitat Zone 4, photo showing the western portion of pond, riparian and in-water habitat. Photo facing southwest (Photo Date: August 21, 2017).

Photo 14: Habitat Zone 4, photo showing the eastern portion of pond, riparian and in-water habitat. Photo facing southeast (Photo Date: August 21, 2017).

Habitat Zone 5 was in an unnamed pond approximately 22 m northeast of Habitat Zone 4 (Figure 2). The pond had a total area of 102 m^2. It was located within the White Cedar – Hardwood Mineral Mixed Swamp (Vegetation Community 7) with a minimum water depth of 1 m and a maximum water depth of 1.5 m. The overhead cover was low consisting of shrubs, trees, and overhanging banks. The instream cover was dense with aquatic vegetation and algae (Table 3.4). The dominant aquatic vegetation species included algae, star duckweed (*Lemna trisulca*), common water-meal (*Wolffia columbiana*), common duckweed (*Lemna minor*), and common cattail *(Typha latifolia).* Please refer Section 3.2.1.2 Community 7 for full vegetation community details. No fish were observed in this pond at the time of the assessment.

Photo 15: Habitat Zone 5, photo showing the pond, riparian and in-water habitat. Photo facing northeast (Photo Date: August 21, 2017).

Habitat Zone 6 was in an unnamed pond approximately 67 m northwest of Habitat Zone 5 (Figure 2). The pond had a total area of 258 m^2. It was located within the Reed Canary Grass Mineral Meadow Marsh (Vegetation Community 5) with a minimum water depth of 0.1 m and a maximum water depth of 0.5 m. The overhead cover was low with trees, woody debris, and non-woody debris. The instream cover was dense with small woody debris, submergent aquatic vegetation, emergent aquatic vegetation, and algae (Table 3.4). The dominant aquatic vegetation species present included stonewort (*Chara spp*), common cattail (*Typha latifolia*) and common reed grass (*Calamagrostis deschampioides*). Please refer Section 3.2.1 Community 5 for full vegetation community details. Biologists noted that fish were observed in the pond at the time of the assessment.

Photo 16: Habitat Zone 6, photo showing the pond, riparian and in-water habitat. Photo facing southeast (Photo Date: August 21, 2017).

Habitat Zone 7 was located approximately 31 m north of Habitat Zone 6 in an unnamed pond (Figure 2). The pond had a total area of 158 m^2 and was located between Reed Canary Grass Mineral Meadow Marsh and the White Cedar Mineral Coniferous Swamp (Vegetation Community 5 and 6).

The substrate was composed of sand, silt and fine organics, the water depth ranged from 0.1 m to 0.4 m. The overhead cover was moderate consisting of shrubs, trees and woody debris. The instream cover was also moderate with small woody debris and algae (Table 3.4). The dominant aquatic vegetation species included: algae, common duckweed (*Lemna minor*), water arum (*Calla palustris*), common cattail *(Typha latifolia)* and straight-leaved pondweed (*Potamogeton strictifolius*). Please refer Section 3.2.1.2 Vegetation 5 for full vegetation community details. Biologists noted that fish were not observed in the pond at the time of the assessment.

Photo 17: Habitat Zone 7, photo showing the pond, riparian and in-water habitat. Photo facing northeast (Photo Date: August 21, 2017).

Habitat Zone 8 was in an unnamed pond approximately 98 m northeast of Habitat Zone 7 (Figure 2) and had a total area of approximately 2,193 m^2. Due to the size of this pond, biologists were unable to determine the connectivity. This pond was located within the Reed Canary Grass Mineral Meadow Marsh (Vegetation Community 5) and adjacent to the Zephyr-Egypt Wetland Complex PSW. Zephyr Creek is located east of this Habitat Zone within the PSW. It should be noted that only the southern portion of this pond is located within the Phase 2 lands.

The dominant substrate was fine organics with a minimum water depth of 0.1 m and a maximum water depth of 1 m. The overhead cover was low consisting of shrubs. The instream cover was also considered low with algae and aquatic vegetation (Table 3.4). The dominant aquatic vegetation species included common cattail *(Typha latifoli)* and common duckweed (*Lemna minor*). Please refer Section 3.2.1, Community 5 for full vegetation community details. Biologists noted that fish were not observed in the portion of the pond visible at the time of the assessment.

Photo 18: Habitat Zone 8, photo showing the northern portion of pond, riparian and in-water habitat. Photo facing northeast (Photo Date: August 21, 2017).

Photo 19: Habitat Zone 8, photo showing the southern portion unnamed pond, riparian and in-water habitat. Photo facing southeast (Photo Date: August 21, 2017).

Table 5 Detailed Aquatic Habitat Observations

Habitat Zone	Substrate Composition	In-Stream Cover	Canopy Cover (%)	Overhead Cover	Average Water Depth Range (m)	Zone Area (m^2)
1	100% fine organics	70% submergent aquatic vegetation 10% emergent aquatic vegetation 5% floating aquatic vegetation	0-24	2% non-woody vegetation	0.1-1.2	672
2	100% fine organics	80% submergent aquatic vegetation	0-24	15% non-woody vegetation	0.1-1.5	884
3	100% fine organics	100% emergent aquatic vegetation	0-24	100% cattails	0.1-0.3	76
4	100% fine organics	2% small woody debris 80% submergent aquatic vegetation	0-24	2% trees 5% woody debris 1% non-woody debris	0.2-1	382
5	100% fine organics	95% floating aquatic vegetation	0-24	5% shrubs 5% trees 5% woody debris 1% overhanging banks	1-1.5	102
6	100% fine organics	80% submergent aquatic vegetation 2% emergent aquatic vegetation	0-24	2% trees 2% woody debris 1% overhanging banks	0.1-0.5	258
7	30% sand 20% silt 50% fine organics	5% small woody debris 5% submergent aquatic vegetation 10% emergent aquatic vegetation 20% floating aquatic vegetation	25-49	5% shrubs 20% trees 10% woody debris	0.1-0.4	158
8	100% fine organics	5% floating aquatic vegetation 5% algae	0-24	10% shrubs	0.1-1	2.19

Surface water quality was collected in Habitat Zone 1 and 2 on August 21st 2017approximately 0.3 m and 0.4 m below the surface of the water (Figure 1). A summary of results and information on the parameter specifics has been provided in Table 6.

Table 6 Surface Water Quality Results

Water Quality Parameters	Habitat Zone		Accepted Parameter Range
	01	02	
Date (dd/mm/yy)	21/08/17	21/08/17	N/A
Time (hh:mm)	11:00	15:09	N/A
Weather conditions	Clear, sunny, hot, humid, BWS 2.	Clear, sunny, hot, humid, BWS 1.	N/A
Sample Depth (m)	0.3	0.4	N/A
Air Temperature (°C)	30.9	31	N/A
Water Temperature (°C)	22.7	24.5	N/A
Dissolved Oxygen (mg/L)	9.45	10.04	5-8*
Total Dissolved Solids (mg/L)	193.05	243.10	N/A
Conductivity (SPC·us/cm)	284.5	370.4	N/A
Salinity (ppt)	0.14	0.18	N/A
pH	7.42	7.81	8-10**
Turbidity (NTU)	1.43	1.24	Normal**
Note: BWS=Beaufort wind scale (Government of Canada, 2017), N/A= not applicable and/or specific guidelines not available. *lowest acceptable range for cool water biota (Canadian Council of Ministers of the Environment, 2002), ** Provincial Water Quality Objectives (PWQO) (Energy, 1994).			

Fish Community

Existing fish community data was not available for the unnamed ponds within the Site. Therefore GHD conducted fish community surveys on August 21, 2017 in two of the unnamed ponds (Habitat Zone 1 and 2) (Figure 2). It should be noted that although there was a total of eight unnamed ponds in the Site. Only two ponds were sampled as they are located directly in the development area. The remaining ponds were visually assessed for fish presence during the detailed habitat assessments.

Cumulatively, 96 fish were collected in Habitat Zone 1 (Figure 2). A total of three species made up the fish community and represented the following families: *Cyprinidae* and *Gasterosteidae*. The fish community was composed of a mixture of cool and warm water fish species that are common to the Black River Sub watershed. The most abundant fish species collected were the Common Carp (*Cyprinus carpio*) and Blacknose Shiner (*Notropis heterodon*), both species had a total count of 44 individuals (Table 7).

The fish species in Habitat Zone 2 was similar to Habitat Zone 1, with a total of 73 fish individuals observed. The fish community was composed of three species representing the *Cyprinidae* family. The fish community present was made up of cool and warm water fish species that are common to the Black River Sub watershed. The most abundant fish species collected was the Common Carp (Table 7).

A summary of the fish community, environmental conditions and level of effort have been illustrated in Table 7.

Photo 20: Photo showing Common Carp (Cyprinus carpio) collected in Habitat Zone 1 (Photo Date: August 21st 2017).

Photo 21: Photo showing Goldfish (Carassius auratus) collected in Habitat Zone 2 (Photo Date: August 21st 2017).

Table 7 Fish Community Data for Habitat Zone 1 and 2

Family Name	Common Name	Scientific Name	Thermal Regime	Spawning Season	Habitat Zones	
					1	2
Cyprinidae	Blacknose Shiner	*Notropis heterodon*	Coolwater	Summer (June-August)	44	9
	Common Carp	*Cyprinus carpio*	Warmwater	Spring-Summer (May-August)	44	59
	Goldfish	*Carassius auratus*	Warmwater	Spring-Summer (May-July)	0	6
Gasterosteidae	Brook Stickleback	*Culaea inconstans*	Coolwater	Spring-Summer (May-July)	7	0
Catch Summary						
				Abundance	95	74
				Species Diversity	3	3
Incidentals						
Chelydridae	Common Snapping Turtle	*Chelydra serpentina*	N/A		1	0
Lithobates	Northern Leopard Frog (tadpole)	*Lithobates pipiens*	N/A		1	0
Environmental Conditions						
				Air Temperature (°C)	30.9	31
				Stream Temperature (°C)	22.7	24.5
Sample Attributes						
				Date (dd-mmm-yy)	21-Aug-17	21-Aug-17
				Gear Type*	SN	EF
				Total Effort	1 haul	7.59 sec/m^2
				Frequency (hertz)	N/A	70
				Voltage	N/A	350
				Shocker Seconds	N/A	508
				Sample Length (m)	60	33.48
				Average Sample Width (m)	4.5	2

Note: The thermal regime and spawning season for each fish species was obtained from *Ontario Freshwater Fishes Life History Database* (Eakins, 2019).
EF=Electrofisher, SN=Seine Net

4. Discussion and Analysis

4.1 Species and Communities

4.1.1 Vegetation

The NHIC database does not list any plant Species at Risk (SAR) records in this area. One of the plant species, the black ash, found by GHD biologists during the field visits in 2017 is considered significant on a national and provincial (Appendix B) (COSEWIC, 2021; COSSARO, 2021; SARA, 2021, Riley, 1989). Black ash (*Fraxinus nigra*) is listed as Threatened at a national level (COSEWIC, 2019) and endangered on a provincial level (COSSARO, 2020). This species was identified only in Community 9, and thus off property. As such, the presence of this species on private property does not require an Ontario Endangered Species Act permit, as federal species are only protected when on federal land.

Several regionally rare species have been identified on the property as per the Lake Simcoe Environmental Management Strategy – State of Lake Simcoe report (2003) and Riley (1989) regionally rare plant lists. The LSEMS list identifies marsh horsetail (Community 5), red pine (Community 1), moonseed (Community 6), black walnut (Community 9), pale snapweed (Community 5), straight-leaved pondweed (Community 5), Canadian rush (Community 1 and 5) and foxtail sedge (Community 1) as being regionally rare. The Riley list for the Lake Simcoe area lists field thistle (Community 1, 6 and 7), and tall goldenrod (Community 1, 2, 3, 4, 5 and 9) as additional species.

No vegetation communities found by GHD biologists during the field visits in 2017 are considered significant on a national, provincial or local level (COSEWIC, 2021; COSSARO, 2021).

4.1.2 Birds

No nationally, provincially or regionally significant bird species were recorded during the field survey in 2017 (Appendix C) (COSEWIC, 2021; COSSARO, 2021). One bird species, yellow-bellied sapsucker (*Sphyrapicus varius*), is area sensitive (Appendix C) and was identified in Community 1. Area-sensitive birds require a minimum hectarage of suitable habitat to maintain their population.

The Ontario Breeding Bird Atlas data for the 10 km x 10 km square that includes the property (17PJ98) includes 13 bird species that are provincially or nationally significant: common nighthawk (*Chordeiles minor*), eastern whip-poor-will (*Antrostomus vociferus*), chimney swift (*Chaetura pelagica*), red-headed woodpecker (*Melanerpes erythrocephalus*), eastern wood-pewee (*Contopus virens*), bank swallow (*Riparia riparia*), barn swallow (*Hirundo rustica*), wood thrush (*Hylocichla mustelina*), golden-winged warbler (*Vermivora chrysoptera*), Canada warbler (*Cardellina canadensis*), grasshopper sparrow (*Ammodramus savannarum*), bobolink (*Dolichonyx oryzivorus*) and eastern meadowlark (*Sturnella magna*). None of these bird species were observed during the field inventories. The records from the atlas listed above are likely associated with larger natural features found in the broader vicinity of the site including the PSW adjacent to the east.

4.1.3 Amphibians

No nationally, provincially, or regionally significant amphibian species were recorded (COSEWIC, 2021; COSSARO, 2021).

The Ontario species atlas data for the 10 km x 10 km square that includes the property (17PJ98) includes 8 frog and toad species: American Bullfrog (*Lithobates catesbeianus*), Gray Treefrog (*Dryophytes versicolor*), Green Frog (*Lithobates clamitans*), Northern Leopard Frog (*Lithobates pipiens*), Spring Peeper (*Pseudacris crucifer*), Western Chorus Frog (*Pseudacris triseriata*) (not recorded here since 1981), Wood Frog (*Lithobates sylvaticus)*, and American Toad (*Anaxyrus americanus*). On the species atlas, American Toad was not recorded since 1984, but was heard during the surveys. Of these species, only four (4) were found during amphibian surveys (see 3.2.1.1).

4.1.4 Other Wildlife

Three wildlife SAR were observed by GHD biologists during the site visit in 2017 – snapping turtle, which is listed as Special Concern both provincially and federally (COSSARO, 2021; COSEWIC, 2021), Midland Painted Turtle which is listed as Special Concern federally (COSEWIC, 2021), and Milksnake, which is listed as Special Concern on a federal level (COSEWIC, 2021). Both turtles were found in the Habitat Zone 1 pond on July 6th and August 21st, 2017. The snapping turtle observed was a mature turtle, approximately 0.5 m in length. The pond likely serves as a suitable foraging site, providing summer habitat. No sign of turtle nesting was observed. Given the shallow depth and small size of the pond, it is unlikely to provide over-wintering habitat for turtles. It is probable that critical life-stage habitat (i.e., nesting and over-wintering) for snapping turtle and painted turtle is limited to the adjacent PSW, which provides a much larger and more diverse range of habitat features. The milksnake was identified on June 7th, 2022, basking in Community 1. Potential hibernacula were not identified on site, however overwintering habitat may be present in adjacent buildings (garages, residential basements and sheds). Overwintering habitat may also be present in the adjacent PSW.

The Ontario Reptile and Amphibian Atlas shows records of one additional SAR herpetofauna for Blanding's turtle (*Emydoidea blandingii*) in the 10 km x 10 km square. This species was not observed during the surveys in 2017 or 2022.

There may be suitable habitat for Blanding's turtle associated with the adjacent PSW, and those ponds, as it uses similar habitat for overwintering and foraging as the more common snapping turtle.

4.2 Natural Features

4.2.1 Provincially Significant Wetlands

All wetland communities on site have been designated as Provincially Significant Wetlands belong to the Zephyr-Egypt PSW. These wetlands include swamp and marsh types, as well as portions of open water. Most of these wetlands are associated with Zephyr creek and its surrounding floodplains

These wetlands provide crucial flood protection to surrounding lands, and important habitat for large numbers of uncommon to rare wildlife and plant species, as well as Significant Wildlife Habitat (See Section 4.2.2).

4.2.2 Significant Wildlife Habitat

Significant wildlife habitat often occurs within other natural heritage features and areas covered by Policy 2.1 of the Provincial Policy statement (e.g., significant wetlands). Therefore, it has been suggested that identification and evaluation of significant wildlife habitat is best undertaken after other natural heritage features have been identified (Natural Heritage Reference Manual, 2010). GHD biologists analyzed the information collected from the ecological communities on the subject property using the criteria for Significant Wildlife Habitat in Ecoregion 6E (2015) and confirmed 1 SWH on the property: Amphibian Breeding Habitat (Wetlands), Habitat for Special Concern and Rare Wildlife Species, due to the presence of field thistle (S3) snapping turtle, Midland painted turtle and milksnake. For SWH justifications see Table 8.

Table 8 Significant Wildlife Habitat – Candidate and Confirmed

Wildlife Habitat	Wildlife Species	Candidate SWH and Confirmed Habitat Criteria		Confirmed SWH and Defining Criteria	Candidate Habitat found within the Site	Confirmed Habitat found within the Site
Turtle Wintering Areas ***Rationale:*** Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant.	– Northern Map Turtle – Snapping Turtle – Midland Painted Turtle	MA, OA and SA, ELC Community Series; FEO and BOO Northern Map Turtle; Open Water areas such as deeper rivers or streams and lakes with current can also be used as over-wintering habitat.	– For most turtles, wintering areas are in the same general area as their core habitat. Water has to be deep enough not to freeze and have soft mud substrates. – Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate Dissolved Oxygen – Man-made ponds such as sewage lagoons or storm water ponds should not be considered SWH. **Information Sources** – EIS studies carried out by Conservation Authorities. – Field Naturalists Clubs – OMNRF Ecologist or Biologist – NHIC	– Presence of 5 over-wintering Midland Painted Turtles is significant. – One or more Northern Map Turtle or Snapping Turtle over-wintering within a wetland is significant. – The mapped ELC ecosite area with the over wintering turtles is the SWH. If the hibernation site is within a stream or river, the deep-water pool where the turtles are over wintering is the SWH. – Over wintering areas may be identified by searching for congregations (Basking Areas) of turtles on warm, sunny days during the fall (Sept.–Oct.) or spring (Mar.–May). – Congregation of turtles is more common where wintering areas are limited and therefore significant.	Ponds on site are manmade and therefore not considered SWH. Overwintering habitat may be present in the adjacent PSW	Not confirmed.
Amphibian Breeding Habitat (Woodland) ***Rationale:*** These habitats are extremely important to amphibian biodiversity within a landscape and often represent the only breeding habitat for local amphibian populations	– Eastern Newt – Blue-spotted Salamander – Spotted Salamander – Gray Treefrog – Spring Peeper – Western Chorus Frog – Wood frog	All Ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD Breeding pools within the woodland or the shortest distance from forest habitat are more significant because they are more likely to be used due to reduced risk to migrating amphibians.	– Presence of a wetland, pond or woodland pool (including vernal pools) >500 m2 (about 25 m diameter) within or adjacent (within 120 m) to a woodland (no minimum size). Some small wetlands may not be mapped and may be important breeding pools for amphibians. – Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat. **Information Sources** – Ontario Herpetofaunal Summary Atlas (or other similar atlases) for records – Local landowners may also provide assistance as they may hear spring-time choruses of amphibians on their property. – OMNRF Districts and wetland evaluations – Field Naturalist clubs	Studies confirm; – Presence of breeding population of one or more of the listed newt/salamander species or two or more of the listed frog species with at least 20 individuals (adults or eggs masses) or two or more of the listed frog species with Call Level Codes of 3. – A combination of observational study and call count surveys will be required during the spring (March–June) when amphibians are concentrated around suitable breeding habitat within or near the woodland/wetlands. The habitat is the wetland area plus a 230 m radius of woodland area. If a wetland area is adjacent to a woodland, a travel corridor connecting the wetland to the woodland is to be included in the habitat.	Extensive wetland in adjacent PSW. Likely amphibian breeding occurring in PSW.	Not confirmed

Wildlife Habitat	Wildlife Species	Candidate SWH and Confirmed Habitat Criteria		Confirmed SWH and Defining Criteria	Candidate Habitat found within the Site	Confirmed Habitat found within the Site
			– Canadian Wildlife Service Amphibian Road Call Survey Ontario Vernal Pool Association: http://www.ontariovernalpools.org			
Amphibian Breeding Habitat (Wetland) ***Rationale:*** Wetlands supporting breeding for these amphibian species are extremely important and fairly rare within Central Ontario landscapes	– Eastern Newt – American Toad – Spotted Salamander – Four-toed Salamander – Blue-spotted Salamander – Gray Treefrog – Western Chorus Frog – Northern Leopard Frog – Pickerel Frog – Green Frog – Mink Frog – Bullfrog	ELC Community Classes SW, MA, FE, BO, OA and SA. Typically these wetland ecosites will be isolated (>120 m) from woodland ecosites; however, larger wetlands containing predominantly aquatic species (e.g. Bullfrog) may be adjacent to woodlands	– Wetlands >500 m2 (about 25 m diameter),ccvii supporting high species diversity are significant; some small or ephemeral habitats may not be identified on MNRF mapping and could be important amphibian breeding habitats. – Presence of shrubs and logs increase significance of pond for some amphibian species because of available structure for calling, foraging, escape and concealment from predators. – Bullfrogs require permanent water bodies with abundant emergent vegetation. **Information Sources** – Ontario Herpetofaunal Summary Atlas (or other similar atlases) – Canadian Wildlife Service Amphibian Road Surveys and Backyard Amphibian Call Count. – OMNRF Districts and wetland evaluations. Reports and other information available from Conservation Authorities.	Studies confirm: – Presence of breeding population of one or more of the listed newt/salamander species or two or more of the listed frog/toad species with at least 20 individuals (adults or eggs masses) or two or more of the listed frog/toad species with Call Level Codes of 3. or; Wetland with confirmed breeding Bullfrogs are significant. – The ELC ecosite wetland area and the shoreline are the SWH. – A combination of observational study and call count surveys will be required during the spring (March–June) when amphibians are concentrated around suitable breeding habitat within or near the wetlands. If a SWH is determined for Amphibian Breeding Habitat (Wetlands) then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule.		Confirmed as present from MMP survey station 3 in PSW ponds. Station 2 also had a code level 3 for spring peeper, however the pond is manmade and not wetland. A fish and wildlife salvage is proposed to remove fish, reptiles and amphibians from this pond and relocate to protected areas.
Woodland Area-Sensitive Bird Breeding Habitat ***Rationale:*** Large, natural blocks of mature woodland habitat within the settled areas of Southern Ontario are important habitats for area sensitive interior forest songbirds.	– Yellow-bellied Sapsucker – Red-breasted Nuthatch – Veery – Blue-headed Vireo – Northern Parula – Black-throated Green Warbler – Blackburnian Warbler	All Ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD	– Habitats where interior forest breeding birds are breeding, typically large mature (>60 yrs old) forest stands or woodlots >30 ha. – Interior forest habitat is at least 200 m from forest edge habitat. **Information Sources** – Local birder clubs. – Canadian Wildlife Service (CWS) for the location of forest bird monitoring. – Bird Studies Canada conducted a 3-year study of 287 woodlands to determine the effects of forest fragmentation on forest	Studies confirm: – Presence of nesting or breeding pairs of three or more of the listed wildlife species. – Note: any site with breeding Cerulean Warblers or Canada Warblers is to be considered SWH. – Conduct field investigations in spring and early summer when birds are singing and defending their territories.	Only 1 of the listed species was identified on site. The yellow-bellied sapsucker.	Not confirmed

Wildlife Habitat	Wildlife Species	Candidate SWH and Confirmed Habitat Criteria		Confirmed SWH and Defining Criteria	Candidate Habitat found within the Site	Confirmed Habitat found within the Site
	– Black-throated Blue Warbler – Ovenbird – Scarlet Tanager – Winter Wren – Pileated Woodpecker **Special Concern:** – Cerulean Warbler – Canada Warbler		birds and to determine what forests were of greatest value to interior species Reports and other information available from Conservation Authorities.			
Special Concern and Rare Wildlife Species ***Rationale***: These species are quite rare or have experienced significant population declines in Ontario.	All Special Concern and Provincially Rare (S1–S3, SH) plant and animal species. Lists of these species are tracked by the NHIC.	All plant and animal element occurrences (EO) within a 1- or 10-km grid. Older element occurrences were recorded prior to GPS being available; therefore, location information may lack accuracy	When an element occurrence is identified within a 1 or 10 km grid for a Special Concern or provincially Rare species; linking candidate habitat on the site needs to be completed to ELC Ecosites **Information Sources** NHIC will have Special Concern and Provincially Rare (S1–S3, SH) species lists with element occurrences data. – NHIC Website “Get Information”: http://nhic.mnr.gov.on.ca – Ontario Breeding Bird Atlas Expert advice should be sought as many of the rare spp. have little information available about their requirements.	Studies Confirm: – Assessment/inventory of the site for the identified special concern or rare species needs to be completed during the time of year when the species is present or easily identifiable. The area of the habitat to the finest ELC scale that protects the habitat form and function is the SWH, this must be delineated through detailed field studies. The habitat needs be easily mapped and cover an important life stage component for a species e.g. specific nesting habitat or foraging habitat.		Yes- Midland painted turtle, milksnake and snapping turtle confirmed on site. Field thistle (S3) identified in Community 1.

4.2.3 Fish and Aquatic Habitat

Aquatic Habitat

The commercial anthropogenic offline ponds (Habitat Zones 1 to 7) have the potential to provide direct and indirect fish habitat. The three ponds (Habitat Zones 1-3) within the development envelope were verified as direct fish habitat, providing suitable habitat for all fish life history phases including; spawning, feeding, rearing, allochthonous, sediment and food supply and overwintering for three fish species, blacknose shiner, brook stickleback, common carp and goldfish. All commercial ponds (with the expectation of Habitat Zone 8) were isolated and not visually hydrologically connected to any other waterbodies within the Site including Zephyr-Egypt Wetland Complex PSW.

Fish habitat in Ontario is managed federally by the Minister of Fisheries and Oceans Canada and therefore, the Fisheries Act applies to all natural watercourses. However, Habitat Zones 1-8 on Site are exempted from the habitat protection provisions of the Fisheries Act (35) since they are classified as private, commercial and are isolated from all waterbodies that contain fish.

One pond (Habitat Zone 8) has the potential to be hydrologically connected the Zephyr-Egypt Wetland Complex PSW, Zephyr Creek. The pond has the potential to provide direct and indirect fish habitat to the downstream wetland and the watercourse. Specifically, it has the potential to provide hydrological connections, sources of nutrients, sediments and food supply inputs downstream to natural fish habitat. These attributes are important for the sustainability of the Zephyr Creek fish community. The Fisheries Act habitat regulations apply to Habitat Zone 8.

No critical habitat for Aquatic Species at Risk (DFO, 2019) or sensitive spawning habitat was identified within the Site (OMNR, 2012).

The surface water quality parameters collected within the Site were within the normal ranged for aquatic life except for pH. The pH was below the acceptable range for aquatic life. The baseline data may be used for construction and post construction effectiveness monitoring if required.

Fish Community

A total of three (3) fish species were present in Habitat Zones 1 and 2 and represented two families: *Cyprinidae* and *Gasterosteidae*. The fish community was composed of fish that prefer warm and coolwater thermal regimes. A fish species list for Zephyr Creek has been provided in Appendix G.

Cumulatively, eight fish species have been documented in Zephyr Creek. The fish species found in Zephyr Creek and within the Site area common and widely distributed throughout southern Ontario (Section 3.2.7.1 and Appendix G). The literature review found no provincially and/or nationally rare species documented within the Site (COSSARO, 2019; COSEWIC, 2019; OMNR, 2019)

Two common non-native/introduced fish species (common carp and goldfish) were observed on Site.

5. Impact Assessment and Recommendations

The following section provides a description of the predicted impacts that may result from the proposed development. It also highlights key mitigation measures to be implemented to avoid and/or minimize adverse effects to the natural environment features within or near the project. A full list of mitigation measures has been provided in Section 7.0.

5.1 Greenbelt Requirements

The Region of Durham and the Greenbelt Plan 2017 outline the components of a Natural Heritage Evaluation. These requirements are assessed in the following paragraphs.

a. No adverse effects on the key natural heritage features or related ecological functions.

The proposed Phase 2 development (single-family dwellings, streets and other services) was analyzed in terms of its location relative to the key natural heritage features. The development is setback more than 30 metres from the identified natural heritage features. An analysis of ecological function(s) of each feature conducted. In addition, the proposed timing of construction, potential disturbed area and the development design were considered in our determination of potential impacts and mitigation measures. Any vegetation clearing on the site will also need to occur outside of the breeding bird window (April 15 to August 15) to be compliant with the Migratory Birds Convention Act.

Provincially Significant Wetland

The Zephyr-Egypt Wetland Complex PSW is located on the eastern portion of the subject property (i.e. Communities 5, 6, 7 & 9) (Figure 1). The boundary of the wetland on the NDMNRF database is shown on Figure 1 by the green cross-hatched area. Based on our field surveys and boundary delineation exercise, the wetland boundary has been expanded to also include adjoining naturalized ponds and wetland features that were previously associated with the golf course. The wetlands provide a number of ecological functions, including their hydrology that supports the water levels that provide for amphibian habitat, fish habitat and wildlife habitat, and act as a wildlife corridor.

Phase 2 has been designed with 17 lots that are situated more than 30 metres. Four of these lots on the extreme east edge of the Site contain a portion of the proposed 30 metre Vegetation Protection Zone (VPZ) within their building envelope allotment. A minimum 30-metre VPZ is required from the edge of wetlands under the PPS and Growth Plan. The buffer area incorporates the former golf holes that have been abandoned for several years. As a result, those areas have regenerated in grasses and other herbaceous vegetation with some seedling trees establishing. There are also several trees that were between holes in that buffer zone. It is recommended that this area be left to continue to regenerate.

Installation of a permanent fence at the rear of the eastern lots in Phase 2 is recommended to prevent residents from using the VPZ or impacting the regenerating occurring from yard waste, mowing or other activities.

This wide VPZ would provide a separation between the wetland, the ponds and the developed lots. It will provide a transition zone for wildlife that use the upland-wetland ecozone for various life processes. An appropriate zoning would assist in preventing uses that may impact on the wetland and its functions.

Significant Woodlands

Significant woodland is present in the southeast portion of the subject property (i.e. Communities 6, 7, 8 & 9 – Figure 1). The woodland is associated with the swamp communities and treed portions of the provincially significant wetland. As the golf course created a defined edge between the maintained fairways and rough and the tree line, the forest edge has been well established. Where the woodland extends beyond the swamp communities it acts as a natural buffer to the PSW, as well as providing wildlife habitat and wildlife corridor functions.

Phase 2 is located beyond the woodland and the wetland boundary. This provides an adequate buffer to those features.

Significant Wildlife Habitat

Significant Wildlife Habitat – Amphibian Breeding Habitat (Wetland) has been confirmed in the PSW wetland and its adjacent ponds. The PSW and its associated pond along the east edge of the property will be protected by a 30-metre buffer, and thus protect the SWH and amphibian breeding habitat.

Additional amphibian breeding habitat meeting some of the criteria of SWH was identified from MMP station 2, and a shallow golf course hazard pond. As this pond was not wetland and was a commercial manmade golfcourse pond, GHD does not consider this SWH. This pond is slated for removal and will not have buffers attached to it. Given that turtles and amphibians were in this pond, GHD recommends a thorough fish and wildlife salvage be conducted to relocate these species before infilling. The species will

Habitat for Special Concern and Rare Wildlife was also confirmed on the property due to snapping turtle, midland painted turtle, milksnake and field thistle. Turtle habitat has been identified within the PSW and the golf course ponds. As stated, the PSW wetlands will be protected by a 30-metre buffer. As for the golf course ponds, a fish and wildlife salvage will be conducted before infilling to remove and relocate any potential turtles that may be using the ponds. It is unlikely that these shallow ponds contain overwintering turtle habitat. Exclusion fencing abutting the PSW boundary should be erected to prevent frogs and turtles from re-entering the Site and its ponds prior, during and after the construction process. A plant salvage should be conducted to remove field thistle, a ranked S3 plant species from the immediate construction envelope and relocated to an area suitable for this species. An ideal location would be within the buffer zone from the PSW.

Regionally Rare Plants

The LSEMS list identifies these regionally rare plant species: marsh horsetail (Community 5), red pine (Community 1), moonseed (Community 6), black walnut (Community 9), pale snapweed (Community 5), straight-leaved pondweed (Community 5), Canadian rush (Community 1 and 5) and foxtail sedge (Community 1) as being regionally rare. The Riley list for the Lake Simcoe area lists field thistle (Community 1, 6 and 7), and tall goldenrod (Community 1, 2, 3, 4, 5 and 9) as additional species.

Most species listed will be protected within the 30-metre buffer from the PSW. Species identified within Community 1 (Canadian rush, foxtail sedge, field thistle, red pine, tall goldenrod) will not be protected unless they are occurring within the 30-metre VPZ from the PSW. GHD does not recommend protections (plant salvage) for tall goldenrod and red pine, both of which have many records within the Lake Simcoe region. Salvage for Canadian rush, foxtail sedge, field thistle, should be conducted to relocate these species to an area outside of the limit of disturbance such as within the protected buffer area, which contains similar grassland habitats these species prefer.

b. **Connectivity along the system and between key natural heritage features and key hydrologic features located within 240 metres of each other will be maintained or, where possible, enhanced for the movement of native plants and animals across the landscape;**

Connectivity will be preserved through the implementation of a 30-metre VPZ from the PSW. As the site was predominantly old golf course, no connectivity features will be impacted through the Phase 2 development.

c. The removal of other natural features not identified as key natural heritage features and key hydrologic features should be avoided. Such features should be incorporated into the planning and design of the proposed use wherever possible.

No other key natural features were on the subject property. Three significant species, snapping turtle, midland painted turtle and black ash were identified on site. The turtles were identified in ponds outside of the buffer zone which are scheduled to be removed during development. Due to the presence of these turtle species, GHD recommends a fish and wildlife salvage to relocate fish, turtles and frogs to nearby ponds not slated for removal. The black ash was identified within the PSW and will not be impacted by the Phase 2 development should the 30-metre (VPZ) and sediment and erosion control measures be implemented.

Zephyr Creek and Ponds

Several ponds were identified in Phase 2 of the subject property (Figure 2). Habitat Zones 1 to 7 are anthropogenic commercial ponds and not connected to any waterbody, therefore, are not protected under the Fisheries Act fish habitat provisions and a protective buffer is not recommended. Habitat Zone 1-3 are proposed to be infilled. To prevent the death of fish under the Fisheries Act and protect individual turtle and amphibians, GHD recommends a fish and wildlife salvage be conducted to relocate fish, turtles and amphibians prior to in-water works or infilling.

The Habitat Zone 8 pond located at the northeastern portion of Phase 2 and has the potential to be connected to the Zephyr-Egypt Wetland Complex PSW and Zephyr Creel. Therefore, provides direct and indirect fish habitat and will be protected from development by a 30 m Vegetation Protection Zone (VPZ). Development includes vegetation removal or clearing, houses, pools, accessory buildings, lawns, septic, and utilities.

The remaining ponds (Habitat Zone 4-7) are encompassed within the 30 m Vegetation Protection Zone (VPZ) of PSW and will therefore avoid potential impacts from the proposed development.

A detailed sediment and erosion control plan will be prepared for all construction activities and phases to minimize disturbed soil and minimize the transportation of soils off-site into protected fish and fish habitat.

Additional mitigation measures have been provided in Section 7.0 of this report to further protect fish and fish habitat and ensure the project complies with the PPS and Fisheries Act. All recommendations will be incorporated into the final site plan.

Phase 2 of the development is located outside the 30-metre buffer from the fish habitat (Habitat Zone 8), Zephyr PSW/watercourse (Figure 1). No significant impacts to fish or fish habitat are anticipated from the proposed development provided the setbacks from all fish habitat is respected and the mitigation measures and recommendations are implemented as outlined in this report.

Table 9 Impact Assessment and Recommendation Summary

Feature or Function	Impact to Feature of Function	Mitigation	Residual Effect
Provincially Significant Wetlands	Possible sediment disturbance in PSW Possible sediment disturbance during construction of homes.	30m buffer from wetland boundary. Buffer area should be left to naturally vegetate or supplemented with native vegetation seed mixes or plantings. Silt fencing be installed around any future building envelopes during construction and after construction until area within construction envelope is vegetated. Obtain relevant permits from Conservation Authority	None
Significant Wildlife Habitat – *Special Concern and Rare Wildlife Species*	Potential disturbance to snapping turtle and midland painted turtle in wetlands and ponds. Potential death of turtles walking on site or nesting from machinery Potential death of milksnake due to machinery	Exclusion fencing installed at 30m buffer zone from wetlands Fish and wildlife salvage plan to be conducted in ponds scheduled to be infilled. Obtain relevant permits from NDMNRF	Loss of turtle ponds. Loss of snake hunting grounds and basking grounds.

Feature or Function	Impact to Feature of Function	Mitigation	Residual Effect
		Staff to be instructed to identify and report SAR if noticed on site.	
Birds – *Migratory Birds Convention Act*	Loss of nesting habitat for birds	No vegetation clearing during the active bird breeding season (April 15 – August 15). If clearing must occur in this time frame, an avian biologist should be called and then inspect the area to be cleared to ensure no nests are present.	Loss of nesting habitat.
Regionally Rare Plants	Loss of field thistle, Canada rush and foxtail sedge habitat.	Plant salvage should be conducted to remove these rare species from the developable area and into the 30m buffer zone.	None
Fish and Aquatic Habitat *Habitat Zone 1-3*	Potential death of fish due to infilling	Conduct fish and wildlife salvage prior to any in-water works. Obtain relevant permits from NDMNRF	Negligible
Fish and Aquatic Habitat *Habitat Zone 8*	Potential movement of sediment from development construction are into watercourse	Develop Sediment and Erosion control plan with qualified biologist. Apply 30m VPZ to protect fish and fish habitat.	Negligible

6. Policies and Legislative Compliance

The following section describes how the proposed development will be in conformance with the relevant federal, provincial and other regulatory legislation, policies, official plans and OP amendments that are applicable and relevant to the Site and the immediate vicinity.

6.1 Federal Legislation

6.1.1 Fisheries Act, 1985 (R.S.C., 1985, c. F-14)

The project will comply with the Fisheries Act protective provisions of the Fisheries Act by implementing the *DFO Measures to Protect Fish and Fish Habitat* and avoiding all work in and around water for waterbodies that are protected under the Fisheries Act. All project undertaking will: prevent the death of fish, maintain riparian vegetation, carry out work on land only, maintain fish passage, ensuring property sediment control, and preventing entry of deleterious substances in water.

6.1.2 Migratory Birds Convention Act, 1994 (S.C. 1994, c.22)

The core breeding period in Ontario for migratory birds under the MBCA for Bird Conservation Region 13 (i.e., the one the subject property lies within) extends from April 15th to August 15th (Environment and Climate Change Canada, 2014). As such clearing of trees and other vegetation for the development cannot occur during this timing window.

6.2 Provincial Legislation

6.2.1 Endangered Species Act, 2007

No butternut trees or other endangered or threatened species were found on site during GHD's site investigations. At this time, the project is in compliance with this Act.

6.2.2 Planning Act and Provincial Policy Statement, 2020

The subject property contains PSW and Significant Woodlands. As a result, Sections 2.1.4, 2.1.5 and 2.1.6 of the Provincial Policy Statement apply. Section 5.0 (Impact Assessment) and Section 7 (Summary of Recommendations) of this report, contain recommendations that allow the proposed development to proceed in a manner consistent with the Provincial Policy Statement (PPS).

6.2.3 Greenbelt Plan 2020

The Site is located within Protected Countryside as per the Greenbelt Plan land use designation, but outside of mapped NHS. Section 3.2.5 of the Greenbelt Plan. This report is in compliance with the Greenbelt Plan.

The pond located in Habitat Zone 8 would be considered a key hydrological feature as it has the potential to be connected to the PSW. The proposed development will not have a negative impact on the function of the pond or downstream fish habitat. Mitigation measures and recommendations have been recommended to ensure there is no negative impacts to the feature.

6.2.4 A Place to Grow: Growth Plan for the Greater Golden Horseshoe, 2020

The Growth Plan includes natural heritage features and key hydrologic features. The report outlines how the Growth Plan polices are met in respect to these features.

6.3 Local and Other Regulatory Bodies

6.3.1 Durham Region Official Plan

Recommendations in Section 5.0 of this report outlines how the Official Plan policies have been satisfied and impacts minimized in order to be in compliant with the Durham Region Official Plan Township of Uxbridge Official Plan (2014)

Recommendations in Section 5.0 (Impact Assessment and Recommendations) note the requirements and processes needed to be compliant with the Official Plan. This NHE outlines those policies and includes measures to limit impacts on the key natural heritage features and key hydrologic features.

6.3.2 Lake Simcoe Region Conservation Authority 179/06

The Zephyr-Egypt Wetland Complex PSW is located on the eastern portion of the property, a large pond (Habitat Zone 8) is located directly west of the PSW and has the potential to be connected. As such, the regulations of LSRCA are applicable to the Site. A 30 m Vegetation Protection Zone (VPZ) will be implemented from the wetland which will encompass the Habitat Zone 8. GHD has provided mitigation measures and recommendations to address any potential impacts to the wetlands, fish habitat and their ecological functions.

7. Summary of Recommendations

The following section is a comprehensive list of all project mitigation measures, recommendations, best management practices and or compensation measures (if required). Many recommendations have been discussed or referenced in the body of the text and others may be newly presented standard best management practices. This list is intended to assist project reviews, contractors and clients to understand all environmental recommendations and to ensure all parties have fulsome understanding of the project. The final conclusions of this report are based on the implementation of the following.

7.1 General

1. A minimum 30 m buffer (VPZ) from the wetland and northeastern pond (Habitat Zone 8) be maintained.
2. Cutting of trees in fence line to facilitate the development must be completed outside of the peak breeding bird nesting season (April 15th- August 15th).
3. The development envelope for subdivision be clearly defined and delineated and a line be staked and clearly marked in the field prior to any site preparation activities on the site.
4. During the clearing stage of the development, any trees within the border of the buffer should be simply limbed rather than entirely removed, when possible.
5. Prior to any site preparation activities (grading, placement of fill) erosion and sediment control measures should be installed along the four sides of construction envelope to ensure sediment laden runoff does not enter interfere with adjacent vegetation or natural features. The silt fence should be inspected and maintained throughout the construction phase and remain in place until the soils are stabilized and re-vegetated.
6. Obtain relevant permits from the Region and Township.
7. Incorporate native plantings into the landscaping around the building envelope.
8. Re-establish vegetation in the graded slopes along the new driveway and outside building envelope; these areas will be maintained as lawn or natural vegetation.
9. Remove invasive species around building envelope where possible (swallow-wort for example).
10. All structures have downspouts that spill out onto grassed surfaces and other infiltration measures (LID's) be created.
11. Fish and wildlife salvage plan to be prepared by professional biologist and NDMNRF permit to be acquired prior to conducting salvage.

7.2 Sediment and Erosion Controls

1. A heavy-duty reinforced silt fence will be installed and maintained along development envelope boundary. This line should be surveyed and staked in the field prior to any site preparation activities.
2. All sediment and erosion control products will be selected for the site based on the manufacturer's product specifications. Product installation and maintenance will follow the manufactures guidelines.
3. All sediment and erosion control measures shall be inspected daily during the construction phase and periodically afterwards to ensure they are functioning properly. The sediment and erosion control measures must be maintained and upgraded as required. Sediment fence shall be checked regularly to ensure they are maintained and working properly. Accumulated silt and debris will be removed from the fence and site after every precipitation event.
4. Construction will be undertaken during normal weather conditions, to the extent possible, and will avoid large precipitation events to minimize the risk of sedimentation off-site.
5. In the event that sediment and erosion control measures are not functioning, the construction supervisor shall order the work to be stopped. No further work shall be carried out until the construction methods and/or the

sediment control plan is adjusted to address the sediment/erosion problem(s). Such occurrences should be document by the site inspector and provided to a qualified biologist.

7.3 Fish and Wildlife Salvage Plan

The aquatic life and wildlife salvage will be completed by a professional biologist in all isolated work areas prior to in-water works and dewatering. The following plan will be implemented on-site:

1. A professional biologist will acquire Ministry of Northern Development, Mines, Natural Resources and Forestry (NDMNRF) Scientific Fish Collection Permit and potentially a Wildlife Collection Permit for the construction area prior to in-water works.
2. Biologist and contractor must coordinate prior to dewatering to confirm the work timing and environmental site conditions.
3. Collection and relocation of fish and wildlife will occur from all isolated in-water work areas prior to the commencement of any in-water works.
4. The contractor will have the appropriate size and number of pumps on site to dewater the isolated work area in an efficient manner.
5. The contractor will consult with biologist when to start and stop dewatering of the fish and wildlife salvage area. This is to ensure appropriate water levels are maintained for effective use of fish removal gear while minimizing negative impacts to fish.
6. Fish collection methods will be chosen on site by the biologist to best suit the environmental conditions, watercourse dimensions, estimated fish abundance and size. Both passive and active live fish collection techniques are recommended and may include seine net and backpack electrofishing.
7. Wildlife collection methods will be chosen on site by the biologists and may include, seine netting, trapping and other means to salvage these species from the work area.
8. At a minimum, the selected gear type will be fished three times or until the catch approaches zero to ensure all fish have been removed from the site.
9. Fish and wildlife will be released alive into another pond. The specific release site will be chosen by a biologist and will be of equal or greater habitat quality. Release site selection will include but not be limited to habitat type and availability, water temperature, probability of depredation and available cover.
10. Invasive fish species such as goldfish will be euthanized humanely on site and disposed of 30 m away from area of capture, as per NDMNRF fish collection permit specifications.
11. Biologist will submit a data summary and copy of the NDMNRF Fish Collection Record (FCR), and Mandatory Report of all Wildlife collected after all works have been completed.

7.4 Fish and Fish Habitat (DFO measures to protect fish and fish habitat)-Habitat Zone 8

1. No work in or near water to avoid killing fish by means other than fishing.
2. No development within the 30 m vegetative protection zone. The buffer will maintain riparian vegetation between areas of land activity and the high watermark of the watercourses.
3. No use of explosives in or near water.
4. Respect MNRF fish timing windows to protect fish.
5. Should work conditions change such that it is possible that fish or fish habitat may potentially be negatively impacted, all works shall cease until the problem has been corrected or authorization has been obtained from the appropriate authorities.
6. Maintain riparian vegetation.
7. Carry out all works and activities by avoiding all work in or near water. No placement of fill or the temporary or permanent structures below the high-water mark.

8. No disturbance of bank material or building structures in the area than may result in erosion or scouring.
9. Always maintain fish passage.
10. Prevent soil compaction using mats and pads.

7.5 Operation of Machinery

1. No machinery shall enter the shoreline or watercourse.
2. All heavy equipment, machinery, and tools required for the work shall be regularly inspected, maintained and operated to avoid leakage of fuels and liquids and shall be stored in a manner that prevents any deleterious substance from entering the soil or nearby watercourses.
3. Vehicle and equipment refuelling and/or maintenance shall be conducted within a defined staging area 30 m from any waterbody. If 30 m is not achievable a portable spill containment berm may be used. Portable spill containment berms can be rented by companies such as Wise Environmental Solution Inc (W.I.S.E, 2017).
4. Any part of a vehicle and/or equipment entering the water will be free of fluid leaks and externally cleaned/degreased to prevent deleterious substances from entering the water.
5. Any stockpiled materials will be stored and stabilized away from the water above the high-water mark at a minimum of 30 m. Stockpiles will be enclosed by sediment fencing or installed down gradient for the purpose of preventing movement of sediment away from the stockpile.
6. An emergency spill kit shall be kept on site and employed immediately should a spill occur. In the case of a spill, the Ontario Spill Action Center shall be notified immediately at 1-800-268-6060. All provincial and federal regulations shall be adhered to.
7. Maintain an adequate supply of clean-up materials on-site. Construction crews will be fully trained in their use to ensure timely and effective responses to spill incidents.

7.6 Concrete Leachate

1. Concrete leachate is alkaline and highly toxic to fish and aquatic life. Measures will be taken to prevent any incidence of concrete or concrete leachate from entering any waterbody.
2. Ensure that all works involving the use of concrete, cement, mortars, and other Portland cement or lime-containing construction materials (concrete) will **not** deposit, directly or indirectly, sediments, debris, concrete, concrete fines, wash or contact water into any waterbody.
3. All concrete, sealants or other compounds used for this project shall be utilized according to the appropriate Product Technical Data Sheet, stating guidelines and methods for proper use, and provided by the manufacturer of the product.

8. Conclusion

GHD has prepared this Natural Heritage Evaluation report to address potential environmental interactions associated with Phase 2 construction of the Hidden Ridge subdivision in Zephyr.

As the subject property was previously golf course lands, the subdivision was permitted based on the current zoning of the land. Based on our analysis, the development is in an area that would create the least amount of impact on Greenbelt key natural heritage features and functions, including the PSW and associated woodlands. Recommendations were made to minimize potential impacts on this feature during all phases of the project.

No negative impacts on key natural heritage features or the NHS area are anticipated provided all mitigation measures and recommendations are implemented as outlined in this report.

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Appendices

Appendix A

Plant Species by Community

APPENDIX A Plant Species by Community

Families and genera for the plant species found in this appendix are listed in taxonomic order. The species are listed alphabetically by scientific name within each genus.

Three standard reference works were used for the botanical nomenclature and taxonomy (Newmaster et. al., 1998; Gleason and Cronquist 1991; Voss 1980; 1985). Other published works for botanical names included; ferns (Cody and Britton 1989); grasses (Dore and McNeill 1980); orchids (Whiting and Catling 1986); shrubs (Soper and Heimburger 1982) and trees (Farrar 1995).

Total: Number of communities where plant species was recorded
X : Plant species recorded

Common Name	*Scientific Name*	Total	COMMUNITY NUMBER									
			1	2	3	4	5	6	7	8	9	10
STONEWORT FAMILY	*CHARACEAE*											
stonewort	*Chara spp.*	3	X				X		X			
HORSETAIL FAMILY	*EQUISETACEAE*											
field horsetail	*Equisetum arvense*	3					X		X		X	
water horsetail	*Equisetum fluviatile*	1					X					
marsh horsetail	*Equisetum palustre*	1					X					
variegated horsetail	*Equisetum variegatum*	1					X					
BEECH FERN FAMILY	*THELYPTERIDAE*											
marsh fern	*Thelypteris palustris*	1									X	
WOOD FERN FAMILY	*DRYOPTERIDACEAE*											
northern lady fern	*Athyrium filix-femina*	2						X	X			
bulbet bladder fern	*Cystopteris bulbifera*	2						X	X			
ostrich fern	*Matteuccia struthiopteris*	2						X	X			
sensitive fern	*Onoclea sensibilis*	5					X	X	X	X	X	

Common Name	*Scientific Name*	Total	COMMUNITY NUMBER									
			1	2	3	4	5	6	7	8	9	10
PINE FAMILY	*PINACEAE*											
balsam fir	*Abies balsamea*	1									X	
white spruce	*Picea glauca*	7	X	X	X		X			X	X	X
Colorado spruce	*Picea pungens*	1	X									
Austrian pine	*Pinus nigra*	4	X				X				X	X
red pine	*Pinus resinosa*	1	X									
Scot's pine	*Pinus sylvestris*	1	X									
CYPRESS FAMILY	*CUPRESSACEAE*											
eastern white cedar	*Thuja occidentalis*	7	X		X			X	X	X	X	X
HORNWORT FAMILY	*CERATOPHYLLACEAE*											
common coontail	*Ceratophyllum demersum*	1							X			
BUTTERCUP FAMILY	*RANUNCULACEAE*											
Canada anemone	*Anemone canadensis*	2						X	X			
virgin's bower	*Clematis virginiana*	1					X					
tall buttercup	*Ranunculus acris*	8	X	X	X		X		X	X	X	X
hooked buttercup	*Ranunculus recurvatus*	1						X				
cursed crowfoot	*Ranunculus sceleratus*	1					X					
MOONSEED FAMILY	*MENISPERMACEAE*											
moonseed	*Menispermum canadense*	1						X				
ELM FAMILY	*ULMACEAE*											
American elm	*Ulmus americana*	4			X		X	X			X	
NETTLE FAMILY	*URTICACEAE*											
false nettle	*Boehmeria cylindrica*	1					X					
European stinging nettle	*Urtica dioica L. ssp.dioica*	1					X					
American stinging nettle	*Urtica dioica ssp. Gracilis*	1	X									
small nettle	*Urtica urens*	1	X									
WALNUT FAMILY	*JUGLANDACEAE*											
black walnut	*Juglans nigra*	1									X	
hybrid butternut	*Juglans x sp.*	1				X						

Common Name	*Scientific Name*	Total	COMMUNITY NUMBER									
			1	2	3	4	5	6	7	8	9	10
BIRCH FAMILY	*BETULACEAE*											
white birch	*Betula papyrifera*	3						X	X		X	
PINK FAMILY	*CARYOPHYLLACEAE*											
bouncing bet	*Saponaria officinalis*	1		X								
white campion	*Silene latifolia*	3	X	X	X							
bladder campion	*Silene vulgaris*	4	X	X	X		X					
BUCKWHEAT FAMILY	*POLYGONACEAE*											
water smartweed	*Polygonum amphibium*	1					X					
curled dock	*Rumex crispus*	3	X		X		X					
ST. JOHN'S-WORT FAMILY	*GUTTIFERAE*											
common St. John's-wort	*Hypericum perforatum*	2		X	X							
LINDEN FAMILY	*TILIACEAE*											
American basswood	*Tilia americana*	4	X						X	X		X
small leaf linden	*Tilia cordata*	1										X
VIOLET FAMILY	*VIOLACEAE*											
dog violet	*Viola conspersa*	1				X						
GOURD FAMILY	*CUCURBITACEAE*											
wild cucumber	*Echinocystis lobata*	4	X						X	X	X	
WILLOW FAMILY	*SALICACEAE*											
balsam poplar	*Populus balsamifera*	5	X				X		X		X	X
trembling aspen	*Populus tremuloides*	4	X						X		X	X
Carolina poplar	*Populus X canadensis*	1	X									
white willow	*Salix alba L.*	1									X	
weeping willow	*Salix babylonica*	1	X									
Bebb's willow	*Salix bebbiana*	1					X					
pussy willow	*Salix discolor*	2					X	X				
Missouri willow	*Salix eriocephala*	1					X					
crack willow	*Salix fragilis*	1							X			
slender willow	*Salix petiolaris*	1					X					

Common Name	*Scientific Name*	Total	COMMUNITY NUMBER									
			1	2	3	4	5	6	7	8	9	10
MUSTARD FAMILY	*BRASSICACEAE*											
garlic mustard	*Alliaria petiolata*	5					X	X	X	X	X	
shepherd's purse	*Capsella bursa-pastoris*	1			X							
dame's rocket	*Hesperis matronalis*	1		X								
common peppergrass	*Lepidium densiflorum*	2	X		X							
watercress	*Nasturtium officinale*	1					X					
PRIMROSE FAMILY	*PRIMULACEAE*											
starflower	*Trientalis borealis*	1						X				
GOOSEBERRY FAMILY	*GROSSULARIACEAE*											
American black currant	*Ribes americanum*	1						X				
ROSE FAMILY	*ROSACEAE*											
agrimony	*Agrimonia gryposepela*	1		X								
common strawberry	*Fragaria virginiana*	1		X								
yellow avens	*Geum aleppicum*	4		X		X			X	X		
sulfur cinquefoil	*Potentilla recta*	1		X								
choke cherry	*Prunus virginiana*	2						X	X			
wild red raspberry	*Rubus idaeus*	7	X	X	X	X	X	X	X			
thimbleberry	*Rubus occidentalis*	1	X									
PEA FAMILY	*FABACEAE*											
everlasting pea	*Lathyrus sylvestris*	1		X								
bird's-foot trefoil	*Lotus corniculatus*	2	X		X							
black medick	*Medicago lupulina*	3	X	X	X							
alfalfa	*Medicago sativa ssp. Sativa*	3	X	X	X							
white sweet-clover	*Melilotus alba*	1			X							
red clover	*Trifolium pratense*	1		X								
white clover	*Trifolium repens*	2	X		X							
cow vetch	*Vicia cracca*	3	X	X	X							
WATER-MILFOIL FAMILY	*HALORAGACEAE*											
Eurasian water-milfoil	*Myriophyllum spicatum*	1	X									

Common Name	*Scientific Name*	Total	COMMUNITY NUMBER									
			1	2	3	4	5	6	7	8	9	10
EVENING PRIMROSE FAMILY	*ONAGRACEAE*											
Canada enchanter's nightshade	*Circaea lutetiana L. ssp.canadensis*	5					X	X	X	X	X	
DOGWOOD FAMILY	*CORNACEAE*											
alternate-leaf dogwood	*Cornus alternifolia*	2						X	X			
red-osier dogwood	*Cornus stolonifera*	2					X				X	
BUCKTHORN FAMILY	*RHAMNACEAE*											
European buckthorn	*Rhamnus cathartica*	9	X	X	X	X		X	X	X	X	X
GRAPE FAMILY	*VITACEAE*											
Virginia creeper	*Parthenocissus inserta*	6		X	X	X		X	X		X	
wild grape	*Vitis riparia*	3		X	X						X	
MAPLE FAMILY	*ACERACEAE*											
Manitoba maple	*Acer negundo*	10	X	X	X	X	X	X	X	X	X	X
Norway maple	*Acer platanoides*	3	X		X	X						
red maple	*Acer rubrum*	3	X				X	X				
silver maple	*Acer saccharinum*	3	X	X			X					
sugar maple	*Acer saccharum ssp.saccharum*	1	X									
Freeman's maple	*Acer x freemanii*	2	X				X					
CASHEW FAMILY	*ANACARDIACEAE*											
staghorn sumac	*Rhus typhina*	2			X				X			
GERANIUM FAMILY	*GERANIACEAE*											
herb Robert	*Geranium robertianum*	2							X	X		
TOUCH-ME-NOT FAMILY	*BALSAMINACEAE*											
spotted jewelweed	*Impatiens capensis*	4					X	X	X		X	
pale snapweed	*Impatiens pallida*	1					X					
GINSENG FAMILY	*ARALIACEAE*											
wild sarsaparilla	*Aralia nudicaulis*	2						X	X			
CARROT FAMILY	*APIACEAE*											
Queen-Anne's lace	*Daucus carota*	4	X	X	X		X					

Common Name	*Scientific Name*	Total	COMMUNITY NUMBER									
			1	2	3	4	5	6	7	8	9	10
MILKWEED FAMILY	*ASCLEPIADACEAE*											
swamp milkweed	*Asclepias incarnata*	3	X				X		X			
common milkweed	*Asclepias syriaca*	5	X	X	X		X				X	
swallow-wort	*Cynanchum rossicum*	9	X	X	X	X	X	X	X		X	X
NIGHTSHADE FAMILY	*SOLANACEAE*											
bitter nightshade	*Solanum dulcamara*	5	X				X	X		X	X	
BORAGE FAMILY	*BORAGINACEAE*											
Viper's bugloss	*Echium vulgare*	1	X									
MINT FAMILY	*LAMIACEAE*											
ground ivy	*Glechoma hederacea*	3	X				X		X			
American water-horehound	*Lycopus americanus*	2					X	X				
wild mint	*Mentha arvensis*	1					X					
PLANTAIN FAMILY	*PLANTAGINACEAE*											
narrow-leaved plantain	*Plantago lanceolata*	2	X		X							
broad-leaved plantain	*Plantago major*	3	X	X	X							
OLIVE FAMILY	*OLEACEAE*											
black ash	*Fraxinus nigra*	1									X	
green ash	*Fraxinus pennsylvanica var. subinteg*	1							X			
lilac	*Syringa vulgaris*	1			X							
FIGWORT FAMILY	*SCROPHULARIACEAE*											
butter-and-eggs	*Linaria vulgaris*	1			X							
common mullein	*Verbascum thapsus*	3	X	X			X					
American brooklime	*Veronica americana*	1					X					
MADDER FAMILY	*RUBIACEAE*											
rough bedstraw	*Galium asprellum*	2					X	X				
white bedstraw	*Galium mollugo*	3	X		X		X					
marsh bedstraw	*Galium palustre*	1					X					

Common Name	*Scientific Name*	Total	COMMUNITY NUMBER									
			1	2	3	4	5	6	7	8	9	10
HONEYSUCKLE FAMILY	*CAPRIFOLIACEAE*											
tartarian honeysuckle	*Lonicera tatarica*	2	X								X	
Guelder rose	*Viburnum americanum*	1										X

Common Name	*Scientific Name*	Total	COMMUNITY NUMBER									
			1	2	3	4	5	6	7	8	9	10
ASTER FAMILY	*ASTERACEAE*											
common yarrow	*Achillea millefolium*	5	X	X	X		X		X			
Russian knapweed	*Acroptilon repens*	1	X									
common burdock	*Arctium minus*	6	X	X	X	X	X			X		
ox-eye daisy	*Chrysanthemum leucanthemum*	2	X		X							
Canada thistle	*Cirsium arvense*	5	X	X	X		X					X
field thistle	*Cirsium discolor*	3	X					X	X			
bull thistle	*Cirsium vulgare*	2	X	X								
daisy fleabane	*Erigeron annuus*	3	X	X	X							
Philadelphia fleabane	*Erigeron philadelphicus ssp. philadel*	5	X	X			X	X	X			
spotted joe-pyeweed	*Eupatorium maculatum*	1					X					
boneset	*Eupatorium perfoliatum*	2							X		X	
grass-leaved goldenrod	*Euthamia graminifolia*	2	X				X					
king devil hawkweed	*Hieracium x florbundum*	1	X									
pineapple weed	*Matricaria matricarioides*	1			X							
tall goldenrod	*Solidago altissima*	6	X	X	X	X	X				X	
Canada goldenrod	*Solidago canadensis*	7	X	X			X	X	X	X		X
late goldenrod	*Solidago gigantea*	3		X			X				X	
rough goldenrod	*Solidago rugosa ssp. rugosa*	1									X	
field sow thistle	*Sonchus arvensis ssp.arvensis*	4	X	X	X		X					
panicled aster	*Symphyotrichum lanceolatum ssp.he*	1									X	
tall white aster	*Symphyotrichum lanceolatum ssp.lan*	1					X					
calico aster	*Symphyotrichum lateriflorum var.later*	1					X					
New England aster	*Symphyotrichum novae- angliae*	2		X			X					
purple-stemmed aster	*Symphyotrichum puniceum*	2					X				X	
common dandelion	*Taraxacum officinale*	7	X	X	X	X	X	X		X		
goat's-beard	*Tragopogon dubius*	2	X		X							
coltsfoot	*Tussilago farfara*	6	X	X			X	X	X		X	

Common Name	*Scientific Name*	Total	COMMUNITY NUMBER									
			1	2	3	4	5	6	7	8	9	10
WATER-PLANTAIN FAMILY	*ALISMATACEAE*											
common waterplantain	*Alisma plantago-aquatica*	1					X					
broad-leaved arrowhead	*Sagittaria latifolia*	1					X					
PONDWEED FAMILY	*POTAMOGETONACEAE*											
common floating pondweed	*Potamogeton natans*	1	X									
sago pondweed	*Potamogeton pectinatus*	1					X					
straight-leaved pondweed	*Potamogeton strictifolius*	1					X					
ARUM FAMILY	*ARACEAE*											
Jack-in-the-pulpit	*Arisaema triphyllum*	1							X			
water arum	*Calla palustris*	1					X					
DUCKWEED FAMILY	*LEMNACEAE*											
common duckweed	*Lemna minor*	3					X	X	X			
star duckweed	*Lemna trisulca*	1							X			
RUSH FAMILY	*JUNCACEAE*											
Canadian rush	*Juncus canadensis*	2	X				X					
path rush	*Juncus tenuis*	1					X					
SEDGE FAMILY	*CYPERACEAE*											
foxtail sedge	*Carex alopecoidea*	1	X									
common lake sedge	*Carex lacustris*	1					X					
hop sedge	*Carex lupulina*	1					X					
awl-fruited sedge	*Carex stipata*	1					X					
needle spike-rush	*Eleocharis acicularis*	2	X				X					
wool-grass	*Scirpus cyperinus*	2					X				X	

Common Name	*Scientific Name*	Total	COMMUNITY NUMBER									
			1	2	3	4	5	6	7	8	9	10
GRASS FAMILY	*POACEAE*											
creeping bent grass	*Agrostis stolonifera*	2	X				X					
marsh foxtail	*Alopecurus geniculatus*	1	X									
awnless brome grass	*Bromus inermis ssp.inermis*	3	X	X	X							
Canada bluejoint grass	*Calamagrostis canadensis*	2		X			X					
orchard grass	*Dactylis glomerata*	3	X	X	X							
quack grass	*Elymus repens*	2	X		X							
red fescue	*Festuca rubra*	1	X									
fowl manna grass	*Glyceria striata*	3						X	X		X	
rice cut grass	*Leersia oryzoides*	2							X		X	
reed canary grass	*Phalaris arundinacea*	6		X	X		X	X	X		X	
timothy	*Phleum pratense*	4	X	X	X		X					
common reed	*Phragmites australis*	1					X					
fowl meadow grass	*Poa palustris*	3	X				X				X	
Kentucky blue grass	*Poa pratensis*	5	X	X	X		X		X			
BUR-REED FAMILY	*SPARGANIACEAE*											
broad-fruited bur-reed	*Sparganium eurycarpum*	1							X			
CATTAIL FAMILY	*TYPHACEAE*											
narrow-leaved cattail	*Typha angustifolia*	2					X		X			
common cattail	*Typha latifolia*	5	X				X	X	X		X	
LILY FAMILY	*LILIACEAE*											
orange day-lily	*Hemerocallis fulva*	2	X		X							
Canada mayflower	*Maianthemum canadense*	1						X				
IRIS FAMILY	*IRIDACEAE*											
wild blue flag	*Iris versicolor*	1							X			
ORCHID FAMILY	*ORCHIDACEAE*											
helleborine	*Epipactis helleborine*	2	X						X			

Common Name	*Scientific Name*	Total	COMMUNITY NUMBER									
			1	2	3	4	5	6	7	8	9	10
Total Number of Plant Species	179		80	46	48	12	84	38	51	16	41	14
			Number of Plant Species Per Community									

Appendix B

List of Significant Plant Species

APPENDIX B List of Significant Plant Species

Plant species observed by GHD with significant status on national, provincial and relevant regional lists are listed with status codes and where applicable the most current year of publication. Three standard reference works were used for the botanical nomenclature and taxonomy (Newmaster et. al., 1998; Gleason and Cronquist 1991; Voss 1980; 1985). Other published works for botanical names included; ferns (Cody and Britton 1989); grasses (Dore and McNeill 1980); orchids (Whiting and Catling 1986); shrubs (Soper and Heimburger 1982) and trees (Farrar 1995).

NATIONAL RANKING

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

Species at Risk Act (SARA), SCHEDULE 1 (Subsections 2(1), 42(2) and 68(2)), Government of Cana

PROVINCIAL RANKING

Species at Risk in Ontario (COSSARO), Government of Ontario

Provincial Rank (SRANK), Natural Heritage Information Center, Government of Onta

REGIONAL RANKING

Riley PDVN	Riley, 1989, Peterboro/Durham/Victoria/Northumberland County
LSEMS, 2003	Lake Simcoe Environmental Management Strategy (LSEMS), 2003. State of the Lake Simcoe
Riley, Simcoe	Riley,1989, Simcoe

STATUS CODES

COSEWIC **COSSARO** **SARA**	**END *** - Endangered Species **THR *** - Threatened Species **SC *** - Species of Concern	***Year of Status Publication included in Code**
SRANK	**S1** - Extremely Rare **S2** - Very Rare **S3** - Rare to Uncommon	**Other national or provincial codes not listed**
Regional Lists	**R** - Rare native species **RS** -Regional significant **EXP** - Extirpated native species	**Other Regional codes not listed**

		NATIONAL RANKINGS		PROVINCIAL RANKINGS		REGIONAL RANKINGS				
Common Name	**Scientific Name**	**COSEWIC**	**SARA**	**COSSARO**	**SRank**	**Riley PDVN**	**LSEMS, 2003**	**Riley, Simcoe**		
marsh horsetail	Equisetum palustre						R			
red pine	Pinus resinosa						R			
moonseed	Menispermum canadense						R			
black walnut	Juglans nigra						R	R		
pale snapweed	Impatiens pallida						R			
black ash	Fraxinus nigra	THR Nov/18		END Oct/20						
field thistle	Cirsium discolor				S3			R		

Common Name	Scientific Name		COSEWIC	SARA	COSSARO	SRank	Riley PDVN	LSEMS, 2003	Riley, Simcoe		
tall goldenrod	Solidago altissima								R		
straight-leaved pondweed	Potamogeton strictifolius							R	R		
Canadian rush	Juncus canadensis							R			
foxtail sedge	Carex alopecoidea							R	R		
Plants with Ranking	**Total:** 11	**Status List Totals**	3	0	3		0	8	5	0	0

Appendix C

Bird Status Report

APPENDIX C Bird Status Report - Comprehensive

Bird species observed by GHD are listed in the order followed the American Ornithologists' Union (AOU) Check-list of North American birds (7th edition, 1999, 47th Supplement). Common and scientific nomenclature are based on those used by AOU. Breeding status and breeding evidence code are listed when observed. Any significant status for a species on national and provincial lists is displayed as well as those from relevant regional lists.

List Status :		
	END - endangered	A wildlife species facing imminent extirpation or extinction.
	END-R -endangered regulated	A wildlife species facing imminent extirpation or extinction in Ontario which has been regulated under Ontario's Endangered Species Act (ESA).
	THR - threatened	A wildlife species likely to become endangered if limiting factors are not reversed.
	SC - special concern	A wildlife species that may become threatened or an endangered species because of a combination of biological characteristics and identified threats.
	YES - Area Sensitive	A wildlife species that requires large areas of suitable habitat in order to sustain their population numbers.

*** Other status levels are not displayed**

List Sources:	
COSEWIC	The Committee on the Status of Endangered Wildlife in Canada, Oct 2021.
COSSARO	The Committee on the Status of Species at Risk in Ontario, Jan 2021
SARA	Species At Risk Act, Schedule 1, Government of Canada, Feb 2022
Area Sensitive	Significant Wildlife Technical Guide, Appendix C, OMNR, Oct. 2000
Region 6	Southern Ontario Wetland Evaluation Appendix 11B, Version 3.2, March 2013

Breeding Status: (Observed By GHD)

B -species observed in breeding season in suitable habitat with some evidence of breeding (confirmed, probable or possible as per Ontario Breeding Bird Atlas, 2002).
F -species observed in breeding season but no evidence of breeding or suitable nest sites available on the study site (includes flyovers, migrants and foraging colonial breeders).
M -species observed outside of breeding season for that species and in area outside of the known breeding range for that species.

Breeding Evidence Code: (Observed By GHD)

OBSERVED
X -species observed in its breeding season (no evidence of breeding).

POSSIBLE BREEDING
H -species observed in its breeding season in suitable nesting habitat
S -singing male present, or breeding calls heard, in its breeding season in suitable nesting habitat

PROBABLE BREEDING
P -pair observed in their breeding season in suitable nesting habitat
T -permanent territory presumed through registration of territorial song on at least 2days, a week or more apart, at the same place
D -courtship or display between a male and a female or 2 males, including courtship feeding or copulation
V -visiting probable nest site
A -agitated behaviour or anxiety calls of an adult
B -brood patch on adult female or cloacal protuberance on adult male
N -nest-building or excavation of nest hole

CONFIRMED BREEDING
DD -distraction display or injury feigning
NU -used nest or egg shell found (occupied or laid within the period of study)
FY -recently fledged young or downy young, including young incapable of sustained flight
AE -adults leaving or entering nest site in circumstances indicating occupied nest
FS -adult carrying fecal sac
CF -adult carrying food for young
NE -nest containing eggs
NY -nest with young seen or heard SOURCE: Ontario Breeding Bird Atlas March 2001

AOU Code	Common Name	Scientific Name	Observed Breeding Status	Breed Evidence Code	COSEWIC	COSSARO	SARA	Area Sensitive	Region 6		
WODU	Wood Duck	*Aix sponsa*	B	None				No			
GBHE	Great Blue Heron	*Ardea herodias*	B	None				No			
TUVU	Turkey Vulture	*Cathartes aura*	B	None				No			
OSPR	Osprey	*Pandion haliaetus*	B	S				No			
RTHA	Red-tailed Hawk	*Buteo jamaicensis*	B	H				No			
KILL	Killdeer	*Charadrius vociferus*	B	None				No			
MODO	Mourning Dove	*Zenaida macroura*	B	H				No			
BEKI	Belted Kingfisher	*Megaceryle alcyon*	B	None				No			
YBSS	Yellow-bellied Sapsucker	*Sphyrapicus varius*	B	H				Yes			
NOFL	Northern Flicker	*Colaptes auratus*	B	P				No			
EAPH	Eastern Phoebe	*Sayornis phoebe*	B	S				No			
GCFL	Great Crested Flycatcher	*Myiarchus crinitus*	B	H				No			
EAKI	Eastern Kingbird	*Tyrannus tyrannus*	B	H				No			
WAVI	Warbling Vireo	*Vireo gilvus*	B	S				No			
REVI	Red-eyed Vireo	*Vireo olivaceus*	B	S				No			
BLJA	Blue Jay	*Cyanocitta cristata*	B	H				No			
AMCR	American Crow	*Corvus brachyrhynchos*	B	H				No			
CORA	Common Raven	*Corvus corax*	B	None				No			
NRWS	Northern Rough-winged S	*Stelgidopteryx serripenni*	B	None				No			
BCCH	Black-capped Chickadee	*Poecile atricapillus*	B	S				No			
HOWR	House Wren	*Troglodytes aedon*	B	S				No			
AMRO	American Robin	*Turdus migratorius*	B	S				No			
GRCA	Gray Catbird	*Dumetella carolinensis*	B	S				No			
EUST	European Starling	*Sturnus vulgaris*	B	CF				No			
CEWX	Cedar Waxwing	*Bombycilla cedrorum*	B	P				No			
YEWA	Yellow Warbler	*Dendroica petechia*	B	S				No			

COYE	Common Yellowthroat	*Geothlypis trichas*	B	S				No				
CHSP	Chipping Sparrow	*Spizella passerina*	B	S				No				
SASP	Savannah Sparrow	*Passerculus sandwichens*	B	S				No				
SOSP	Song Sparrow	*Melospiza melodia*	B	S				No				
WTSP	White-throated Sparrow	*Zonotrichia albicollis*	B	S				No				
NOCA	Northern Cardinal	*Cardinalis cardinalis*	B	S				No				
INBU	Indigo Bunting	*Passerina cyanea*	B	S				No				
RWBL	Red-winged Blackbird	*Agelaius phoeniceus*	B	S				No				
COGR	Common Grackle	*Quiscalus quiscula*	B	H				No				
AMGO	American Goldfinch	*Carduelis tristis*	B	P				No				
TOTAL SPECIES OBSERVED:	**36**	**BREEDING SPECIES OBSERVED:**	**36**		**0**	**0**	**0**	**1**	**0**	**0**	**0**	

Appendix D

Herpetozoa Status Report By Station

Appendix D Breeding Herpetozoa Survey -Detailed Station Report

This report summarizes all herpetozoa (amphibian and reptiles) observations recorded by GHD for each visit to survey stations established within a project site. Details for each visit include station physical and spatial descriptions as well as sampling conditions and timing. Observations will note type of observation, quantity, call index, life stage and location when applicable.

AMPHIBIAN CALLING INDEX

1 - Individuals can be counted; there is space between calls
2 - Calls of individuals can be distinguished but there is some overlapping calls
3 - Full chorus, calls are constant, continuous and overlapping

Project ID: 17-076 Location: Zephyr

Project Name: Zephyr Development Project Remarks

Number of Herp Species Observed in Project: 4

Station No.: **MMP1**

/egetation Community No. (if applicable): **0**

Habitat Description: Golf Course Pond

UCLatitude: 0 Corrected Latitude: 0 UTM:

UCLongitude: 0 Corrected Longitude: 0 Way Point #:

Date: **5/9/2022**

SampleID: 532 Survey Method: Auditory Wind Conditions: 4 Background Noise: 1

Visit No.: 2 Survey Type: MMP CloudCover: 70 Remarks:

StatWayPt: Start Time: 9:00:00 PM Precipitation None

End Time: 9:05:00 PM Precipitation (within 24hrs) None

Temp Start: 15 Recorder:

Water Temp Start: Observers: JB EN

OBSERVATIONS

ObsID	Common Name	Observation Code	Call Index	Quantity	Life Stage	Distance (m)	Direction	AreaLoc	HWFName	Comment
1344	American Toad	Call	3		Adult			Out		in distant PSW
1343	Spring Peeper	Call	3		Adult			Out		in distant PSW

Number of Herp Species Observed in Sample: **2**

Date: 6/7/2022

SampleID:	535	Survey Method:	Auditory	Wind Conditions	2	Background Noise:	1
Visit No.:	3	Survey Type:	MMP	CloudCover:	90	Remarks:	
StatWayPt:		Start Time:	9:40:00 PM	Precipitation	None		
		End Time:	9:45:00 PM	Precipitation (within 24hrs)	Heavy Rai		
				Temp Start:	14	Recorder:	JB
				Water Temp Start:		Observers:	JB EN

OBSERVATIONS

ObsID	Common Name	Observation Code	Call Index	Quantity	Life Stage	Distance (m)	Direction	AreaLoc	HWFName	Comment
1345	Green Frog	Call	1	2	Adult	10	180	In		

Number of Herp Species Observed in Sample: 1

Number of Herp Species Observed in Station 3

Station No.: **MMP2**

/egetation Community No. (if applicable): **0**

Habitat Description: Golf Course Pond and PSW

UCLatitude: 0 Corrected Latitude: 0 UTM:

UCLongitude: 0 Corrected Longitude: 0 Way Point #:

Date: **4/21/2022**

SampleID: 530
Visit No.: 1
StatWayPt:

Survey Method: Auditory
Survey Type: MMP
Start Time: 8:52:00 PM
End Time: 8:55:00 PM

Wind Conditions 2
CloudCover: 100
Precipitation Light Rain
Precipitation (within 24hrs) Light Rain
Temp Start: 11
Water Temp Start:

Background Noise: 2
Remarks:

Recorder:
Observers: CT

OBSERVATIONS

ObsID	Common Name	Observation Code	Call Index	Quantity	Life Stage	Distance (m)	Direction	AreaLoc	HWFName	Comment
1338	Spring Peeper	Call	3	50	Adult	25	323	In		

Number of Herp Species Observed in Sample: **1**

Date: 5/9/2022

SampleID:	533	Survey Method:	Auditory	Wind Conditions	3	Background Noise:	1
Visit No.:	2	Survey Type:	MMP	CloudCover	70	Remarks:	
StatWayPt:		Start Time:	9:10:00 PM	Precipitation	None		
		End Time:	9:15:00 PM	Precipitation (within 24hrs)	None		
				Temp Start	14	Recorder:	JB
				Water Temp Start:		Observers:	JB EN

OBSERVATIONS

ObsID	Common Name	Observation Code	Call Index	Quantity	Life Stage	Distance (m)	Direction	AreaLoc	HWFName	Comment
1340	Green Frog	Call	1	1	Adult	10		In		
1339	Spring Peeper	Call	3		Adult	10	323	In		

Number of Herp Species Observed in Sample: 2

Date: 6/7/2022

SampleID:	536	Survey Method:	Auditory	Wind Conditions	2	Background Noise:	1
Visit No.:	3	Survey Type:	MMP	CloudCover	90	Remarks:	
StatWayPt:		Start Time:	9:50:00 PM	Precipitation	None		
		End Time:	9:56:00 PM	Precipitation (within 24hrs)	Heavy Rai		
				Temp Start	14	Recorder:	JB
				Water Temp Start:		Observers:	JB EN

OBSERVATIONS

ObsID	Common Name	Observation Code	Call Index	Quantity	Life Stage	Distance (m)	Direction	AreaLoc	HWFName	Comment
1346	Green Frog	Call	1	2	Adult	5	160	In		

Number of Herp Species Observed in Sample: 1

Number of Herp Species Observed in Station 2

Station No.: **MMP3**

/egetation Community No. (if applicable): **0**

Habitat Description: PSW

UCLatitude: 0 Corrected Latitude: 0 UTM:

UCLongitude: 0 Corrected Longitude: 0 Way Point #:

Date: **4/21/2022**

SampleID: 529 Survey Method: Auditory Wind Conditions 0 Background Noise: 1

Visit No.: 1 Survey Type: MMP CloudCover 9 Remarks:

StatWayPt: Start Time: 8:43:00 AM Precipitation None

End Time: 8:40:00 AM Precipitation (within 24hrs) Light Rain

Temp Start: Recorder:

Water Temp Start: Observers: CT

OBSERVATIONS

ObsID	Common Name	Observation Code	Call Index	Quantity	Life Stage	Distance (m)	Direction	AreaLoc	HWFName	Comment
1337	Wood Frog	Visual			Egg	0	188	In		
1336	Wood Frog	Call	3	50	Adult	0	188	In		
1335	Spring Peeper	Call	3	50	Adult	0	188	In		

Number of Herp Species Observed in Sample: **2**

Date: 5/9/2022

SampleID: 534
Visit No.: 2
StatWayPt:

Survey Method: Auditory
Survey Type: MMP
Start Time: 9:20:00 PM
End Time: 9:25:00 PM

Wind Conditions: 1
CloudCover: 70
Precipitation: None
Precipitation (within 24hrs): None
Temp Start: 13
Water Temp Start:

Background Noise: 0
Remarks:

Recorder: JB
Observers: JB EN

OBSERVATIONS

ObsID	Common Name	Observation Code	Call Index	Quantity	Life Stage	Distance (m)	Direction	AreaLoc	HWFName	Comment
1342	American Toad	Call	3		Adult			Out		
1341	Spring Peeper	Call	3	20	Adult	25	172	In		

Number of Herp Species Observed in Sample: 2

Date: 6/7/2022

SampleID: 537
Visit No.: 3
StatWayPt:

Survey Method: Auditory
Survey Type: MMP
Start Time: 10:02:00 PM
End Time: 10:07:00 PM

Wind Conditions: 1
CloudCover: 90
Precipitation: None
Precipitation (within 24hrs): Heavy Rai
Temp Start: 14
Water Temp Start:

Background Noise: 0
Remarks:

Recorder: JB
Observers: EN JB

OBSERVATIONS

ObsID	Common Name	Observation Code	Call Index	Quantity	Life Stage	Distance (m)	Direction	AreaLoc	HWFName	Comment
1348	Spring Peeper	Call	1	3	Adult	10	60	In		
1347	Green Frog	Call	1	2	Adult	10	60	In		

Number of Herp Species Observed in Sample: 2

Number of Herp Species Observed in Station 4

Number of Herp Species Observed in Project: 4

Appendix E

Herpetozoa Status Report

APPENDIX E Herpetozoa Status Report

Project ID: 12562874

Herpetozoa (amphibian and reptile) species observed by GHD are listed by class then by family taxonomic grouping. These species are identified by the common and scientific name used by the Natural heritage information Centre (NHIC). Any significant status for a species on national and provincial lists is displayed as well as those from relevant regional lists.

List Status :	**END - endangered**	A wildlife species facing imminent extirpation or extinction.
	END-R -endangered regulated	A wildlife species facing imminent extirpation or extinction in Ontario which has been regulated under Ontario's Endangered Species Act (ESA).
	THR - threatened	A wildlife species likely to become endangered if limiting factors are not reversed.
	SC - special concern	A wildlife species that may become threatened or an endangered species because of a combination of biological characteristics and identified threats.
	YES - Area Sensitive	A wildlife species that requires large areas of suitable habitat in order to sustain their population numbers.

*** Other status levels are not displayed**

List Sources:	**COSEWIC**	The Committee on the Status of Endangered Wildlife in Canada, October, 2021.
	COSSARO	The Committee on the Status of Species at Risk in Ontario, January, 2021.
	SARA	Species At Risk Act, Schedule 1, Government of Canada, 2022.
	Area Sensitive	Significant Wildlife Technical Guide, Appendix C, OMNR, Oct. 2000

Amphibian

Common Name	Scientific Name	COSEWIC	COSSARO	SARA	Area Sensitive
Toads	*Bufonidae*				
American Toad	*Anaxyrus americanus*				No
Treefrogs	*Hylidae*				
Spring Peeper	*Pseudacris crucifer*				No
Gray Treefrog	*Hyla versicolor*				No
True Frogs	*Ranidae*				
Wood Frog	*Lithobates sylvatica*				No
Northern Leopard Frog	*Lithobates pipiens*				No
Green Frog	*Lithobates clamitans*				No
American Bullfrog	*Lithobates catesbeiana*				Yes
No. of Species Observed: 7		**0**	**0**	**0**	**1**

Reptiles

Common Name	Scientific Name	COSEWIC	COSSARO	SARA	Area Sensitive
Snapping Turtles	*Chelydridae*				
Snapping Turtle	*Chelydra serpentina*	SC	SC	SC	No
Pond and Marsh Turtles	*Emydidae*				
Midland Painted Turtle	*Chrysemys picta marginata*	SC			No
Typical Snakes	*Colubridae*				
Milksnake	*Lampropeltis triangulum*	SC	NAR	SC	No
No. of Species Observed: 3		**3**	**2**	**2**	**0**

No. of Species Observed in Projec 10

Appendix F

Mammal Status Report

APPENDIX F Mammal Status Report

Mammal species observed by GHD are listed. These species are identified by the common and scientific name used by the Natural heritage information Centre (NHIC). Any significant status for a species on national and provincial lists is displayed as well as those from relevant regional lists.

List Status :	**END - endangered**	A wildlife species facing imminent extirpation or extinction.
	END-R -endangered regulated	A wildlife species facing imminent extirpation or extinction in Ontario which has been regulated under Ontario's Endangered Species Act (ESA).
	THR - threatened	A wildlife species likely to become endangered if limiting factors are not reversed.
	SC - special concern	A wildlife species that may become threatened or an endangered species because of a combination of biological characteristics and identified threats.
	YES - Area Sensitive	A wildlife species that requires large areas of suitable habitat in order to sustain their population numbers.

*** Other status levels are not displayed**

List Sources:	**COSEWIC**	The Committee on the Status of Endangered Wildlife in Canada, 2021
	COSSARO	The Committee on the Status of Species at Risk in Ontario, 2021.
	SARA	Species At Risk Act, Schedule 1, Government of Canada, 2022.
	Area Sensitive	Significant Wildlife Technical Guide, Appendix C, OMNR, Oct. 2000

Common Name	Scientific Name	COSEWIC	COSSARO	SARA	Area Sensitive
White-tailed Deer	*Odocoileus virginianus*				No
Eastern Cottontail	*Sylvilagus floridanus*				No
Eastern Chipmunk	*Tamias striatus*				No
No. of Species Observed in Projec 3		**0**	**0**	**0**	**0**

Appendix G

Fish Species List to Zephyr Creek

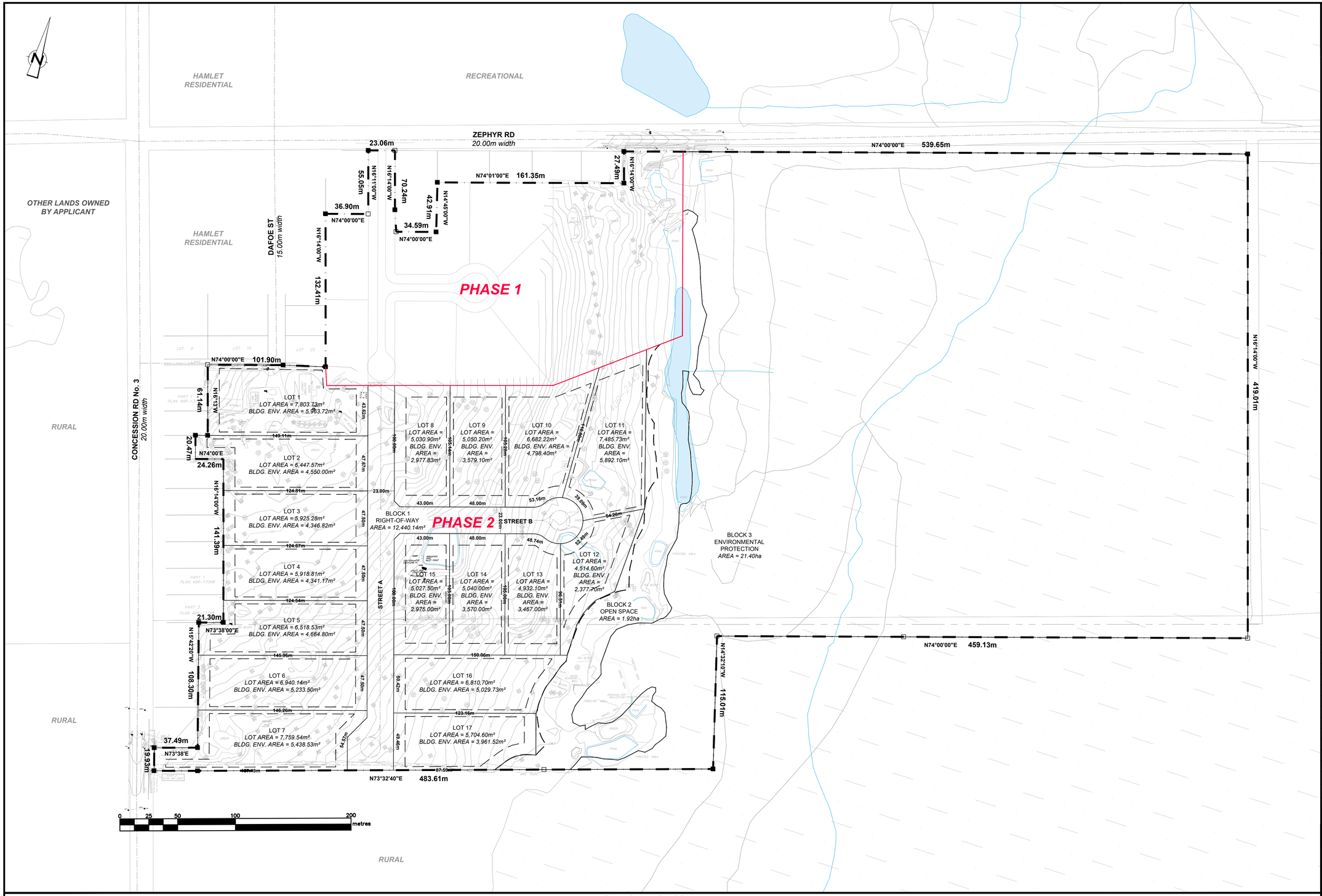
Appendix G Table 1.1 Fish Species List for the Zephyr Creek

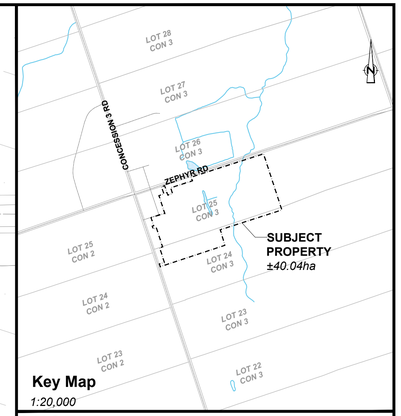
Family	Common Name	Scientific Name	Thermal Regime	Spawning Season
Centrarchidae	Pumkpinseed	*Lepomis gibbosus*	Warmwater	Spring-summer (May-August)
	Rock Bass	*Ambloplites rupestris*	Coolwater	Spring (May-June)
Cyprinidae	Blacknose Dace	*Rhinichthys atratulus*	Warmwater	Spring-summer (May-August)
	Creek Chub	*Semotilus atromaculatus*	Coolwater	Spring (May-June)
	Northern Redbelly Dace	*Chrosomus eos*	Coolwater	Spring-summer (May-July)
Gasterosteidae	Brook Stickleback	*Culaea inconstans*	Coolwater	Spring-summer (May-July)
Ictaluridae	Brown Bullhead	*Ameiurus nebulosus*	Warmwater	Spring (May-June)
Umbridae	Central Mudminnow	*Umbra limi*	Coolwater	Spring (April-May)

Note: Fish species listed under OMNR 2012 obtained from the Aquatic Resource Area Survey (OMNR, 2019) .Fish species spawning season obtained from the *Ontario Freshwater Fishes Life History Database* (Eakins, 2019).

Appendix H

(Ecovue Consultation Services Inc., Hidden Ridge Golf Course, Draft Plan of Subdivision DP1, dated July 28, 2021)





Key Map
1:20,000

LEGEND

- SUBJECT BOUNDARY
- EXISTING PARCEL
- PROPOSED LOT LINE
- EXISTING BUILDING
- WATERBODY / WATERCOURSE
- EXISTING ENVIRONMENTAL PROTECTION AREA
- EP BUFFER *(30m)*
- BUILDING ENVELOPE *as per Hamlet Residential (HR) Zone*
  Front Yard: 10m, Ext. Side Yard: 10m, Int. Side Yard: 3m, Rear Yard: 10m

Submission Requirements

ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51-17 (a-l) THE PLANNING ACT

a) As shown on this Draft Plan
b) As shown on this Draft Plan
c) As shown on this Draft Plan
d) As shown on this Draft Plan
e) As shown on this Draft Plan
f) As shown on this Draft Plan
g) As shown on this Draft Plan
h)
i)
j) As shown on this Draft Plan
k)
l)

OWNER'S CERTIFICATE
I hereby authorize EcoVue Consulting Services Inc.
to prepare and submit this plan to the Region of Durham

Date

SURVEYOR'S CERTIFICATE
This Draft Plan accurately shows the boundaries of all lands proposed to be subdivided.
Certified by:

Date
Ontario Land Surveyor

REVISIONS

DATE	DESCRIPTION

NOTES:

1. Property boundaries are approximate and based on Plan of Survey 40R-24457.
2. Survey monuments shown on this plan have not been verified.
3. Topographic survey was done by EcoVue Consulting Services Inc. on April 18th, 2017.
4. Temporary benchmarks
   - 4.1. TBM 1: Set survey spike on southerly face of hydro pole on north side of Zephyr Rd, first pole west of driveway into No. 322. Elevation = 238.74
   - 4.2. TBM 2: Top of standard iron bar at the south westerly corner of plan part 2 plan 40R-3497. Elevation = 250.59.
5. Elevations shown here are referenced to G.P.S. observations on the power net GPS Real Time Network, U.T.M. Zone 17, NAD83.

SITE STATISTICS

LOT/BLOCK No.	PROPOSED USE	PROPOSED USE AREA (sq. m)	PROPOSED USE AREA (ha)	PROPOSED USE FRONTAGE (m)	PROPOSED USE PERCENTAGE (%)	PROPOSED UNITS	UNITS/NET ha
	PHASE 1 LANDS	51,197.12	5.12		12.79%		
LOT 1-17	RESIDENTIAL (SINGLE DETACHED)	103,532.25	10.35	811.22	25.87%	17	0.91
BLOCK 1	RIGHT-OF-WAY	12,440.14	1.24		3.11%	0	
BLOCK 2	OPEN SPACE	19,186.55	1.92		4.79%	0	
BLOCK 3	ENVIRONMENTAL PROTECTION	213,841.92	21.38		53.43%	0	
	GROSS SITE AREA	400,197.99	40.02				
	NET SITE AREA (GSA - BLOCK 3)	186,356.06	18.64				
	TOTAL			811.22	100.00%	17	0.91

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DRAWN BY: TB	PROJECT No.: 17-1672
APPROVED BY:	HORIZ. SCALE: 1:1,500
REVISION DATE: JULY 28, 2021	PLOT DATE: JULY 28, 2021

HIDDEN RIDGE GOLF COURSE
CHINA CANADA JING BEI XIN MIN INTERNATIONAL CO. LTD.
309 ZEPHYR RD
PART OF LOT 24 & 25, CONCESSION 3
GEOG. TWP. OF SCOTT
TOWNSHIP OF UXBRIDGE | REGION OF DURHAM

DRAFT PLAN OF SUBDIVISION

DP1

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