Environmental Impact Study

Plan of Subdivision
787 Fallis Line, Part of Lot 11
Concession 4
Township of Cavan-Monaghan
County of Peterborough

CSU Developments Inc.
May 28, 2021

→ **The Power of Commitment**

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Executive summary

GHD Limited was retained by the applicant to prepare an Environmental Impact Study for a proposed subdivision at 787 Fallis Line in Millbrook. Beacon Environmental completed an EIS for the neighboring parcel to the east (825 Fallis Line). GHD was then asked to complete an EIS for both 825 and 787 Fallis Line as a combined site area.

An EIS is required where development is proposed within 120 metres of a natural heritage feature as defined in the Township of Cavan-Monaghan and County of Peterborough Official Plans. Additionally, the site is within 120 meters of a Natural Linkage Area and Natural Core Area.

GHD completed detailed biological inventories of the site to delineate the current boundaries of the natural heritage features and what, if any, SAR species may be present on the property.

The majority of the property was agricultural fields, while the south part of the property was woodland that was designated as Significant Woodlands. The south limit of the property contained a tributary to Baxter Creek.

To meet the policies of the County and Township, a 30 m buffer was recommended from the dripline of the woodland was identified as the greatest of the natural heritage constraints.

Our conclusion was that construction within the proposed area will result in no negative impacts on the functions of identified natural heritage features provided the recommendations outlined in Sections 5 and 7 of this EIS are implemented. GHD's recommendations have been made to address potential impacts to natural heritage features and/or their ecological functions during the site preparation, construction and post-construction period.

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1. Introduction

1.1 Background

GHD Limited was retained by Vargas Properties Inc. to complete an Environmental Impact Study (EIS) to fulfil the requirements of the Township of Cavan-Monaghan Official Plan (consolidated to January 2018), the County of Peterborough Official Plan (consolidated to March 2020) and Otonabee Conservation (ORCA) with regard to an expansion of an existing subdivision plan on their property in Millbrook, Ontario. Previously, Beacon Environmental Ltd. conducted an EIS on the original subdivision plan. GHD was then asked to conduct an EIS on the neighboring parcel to the west, the focus of this EIS. Proximity to significant woodlands, an identified Natural Heritage System (Natural Core Area and Natural Linkage Area), a watercourse, and potential Species at Risk (SAR) habitat have been identified as possible ecological constraints to the proposed severance. The report must meet the requirements of the Provincial Policy Statement (2020), The Growth Plan for the Greater Horseshoe (2020) and County and Township Official Plan policies.

1.2 Location and Study Area

The property is located at 787 and 825 Fallis Line, also known as Part Lot 11, Concession 5 in the Village of Millbrook, Township of Cavan Monaghan, County of Peterborough Ontario. The study area includes agricultural fields, hedgerows, woodlands and a tributary to Baxter Creek. Refer to Figure 1.

1.3 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 study area 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 study.

1.3.1 Federal Legislation

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.

Fisheries Act

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 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 are likely to result from a project, an authorization is required from the Minister of Fisheries, Oceans and the Canadian Coast Guard as per Paragraph 34.4(2)(b) or 35(2)(b) of the Fisheries Act Regulations.

1.3.2 Provincial Legislation

Endangered Species Act, 2007

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

To identify species at risk based on the best available scientific information, including information obtained from community knowledge and aboriginal traditional knowledge.

To protect species that are at risk and their habitats, and to promote the recovery of species that are at risk.

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, 2018). 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 2020). 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.

Provincial Policy Statement (2020)

The Provincial Policy Statement, 2020 (herein referred to as PPS 2020) was issued under Section 3 of the Planning Act and came into effect May 1, 2020. It replaces the Provincial Policy Statement that was issued April 30, 2014. The PPS 2020 provides overall policy direction on matters of provincial interest related to land use planning and development (Government of Ontario, 2020). It applies province-wide, except in those cases where the PPS 2020 or another provincial plan state otherwise (Government of Ontario, 2020).

Provincial plans, such as the Greenbelt Plan (2017) and A Place to Grow: Growth Plan for the Greater Golden Horseshoe (2019) build upon the policy foundation provided by the PPS 2020 (Government of Ontario, 2020). These provincial plans provide additional policies to address issues in certain geographic areas of Ontario (Government of Ontario, 2020). Where the policy of a provincial plan addresses the same, similar, related or overlapping matters as the PPS 2020, the specific policies of the provincial plan may be used to satisfy the PPS 2020. However, where matters in the PPS 2020 and the provincial plan policies are not overlapping, the PPS 2020 must be independently satisfied (Government of Ontario, 2020).

Portions of Section 2.1.5 – 2.1.8 of the Provincial Policy Statement 2020 may apply to this project and thus acted as triggers for the preparation of this EIS.

2.1.5 Development and site alteration shall not be permitted in:

b) significant woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River);

d) significant wildlife habitat; unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.

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

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 in August 2020 replacing the Growth Plan for the Greater Golden Horseshoe 2017 (Government of Ontario 2020). 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 (Government of Ontario 2020).

The subject property is located outside of the Millbrook Settlement Area as depicted on Schedule A-1 of the Township of Cavan-Monaghan Official Plan (Amendments to January 3, 2018)

The Natural Heritage System (NHS) for the GPGGH 2020 includes lands outside settlement area boundaries that were approved and in effect as of July 1, 2017. As a result, the NHS-related policies of the GPGGH 2019 apply to the subject property.

1.3.3 Local and Other Regulatory Bodies

County of Peterborough Official Plan (Consolidated to March 2020)

The County natural heritage system policies and the requirements for an EIS were reviewed. The County schedules were also checked for key natural heritage features. The planning justification report provides more details on the current designations and the proposed amendments.

Township of Cavan-Monaghan Official Plan (Amendments to January 2018)

Schedule 'A-1' (Land Use and Transportation) shows that the extreme south portion of the property includes areas designated as Natural Core Area and Natural Linkage Area (both of which are part of the Township's Natural Heritage System). Schedule 'B-1' (Natural Heritage System and Environmental Constraints) indicates the property contains significant woodlands.

Section 6.3.3a) of the Official Plan indicates, "on lands within the Natural Core designations, every Planning Act application or site alteration shall be supported by an Environmental impact Study (EIS) that identifies planning, design and construction practices that ensure that no buildings or other site alterations will impede the movement of plants and animals among Key Natural Heritage Features, Hydrologically Sensitive Features and adjacent lands". Similarly, Section 6.4.3 states, "development in [the natural linkage] designation shall only be permitted where the vegetative buffer and connectivity for which the area has been designated is preserved."

1.4 Other Resources Referenced

Prior to field surveys, background information for the study area 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:

1.4.1 Data Sources

- County of Peterborough's online Public Geographic Information System – Let Me Map Mobile and recent aerial photography (County of Peterborough, 2018)
- MNRF Land Information Ontario (LIO) database mapping and Natural Heritage Information Centre (NHIC) Make-a-map tool (2020)
- Ontario Breeding Bird Atlas data (Bird Studies Canada (BSC) 2001-2005 field data)
- Aerial imagery
- MNRF Land Information Ontario (LIO) database mapping and Natural Heritage Information Centre (NHIC) Make a Map tool (2019)
- Ontario Ministry of Natural Resources Aquatic Resource Area, Fish Species List (OMNR, 2012)
- Department of Fisheries and Oceans (DFO) Aquatic Species at Risk Mapping (DFO, 2019)

1.4.2 Literature and Resources

- Natural Heritage Reference Manual (MNRF, 2010)
- Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E. Peterborough, 38pp. (OMNRF, 2015)
- Environmental Impact Study for 825 Fallis Line (Beacon Environmental Limited, 2017)

1.5 Description of Development

The proposal is for a draft plan of subdivision to allow the development of a 719-unit subdivision) with associated streets and 2 stormwater management ponds. The total area of the development is 49.22 hectares. The report focuses on the natural heritage constraints that exist on the property, that were key to defining the developable area and the final subdivision layout and road system. See Appendix H for the site plan.

1.6 Scope of Report

Section 6.7.1(g) of the Township of Cavan-Monaghan Official Plan requires the competition of an EIS where lot creation is proposed within the 120-metre area of influence of key hydrologic and natural heritage features. The main goals of this EIS report are:

- to confirm the boundary of natural features (e.g., significant woodlands) identified in the study area;
- to identify the ecological functions of any natural features found;
- to determine whether any Species at Risk and/or their habitats are found on the subject property and;
- to identify aquatic habitat form and function within the study area;
- to recommend appropriate buffers and/or mitigation measures to prevent impacts on natural features and their functions.

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 natural heritage system policies. Any other approvals or constraints due to zoning, flood and fill regulations, hazard lands, archaeology, health regulations, minimum distance separation, other approvals for the municipality and other agencies are the responsibility of the owner.

2. Study Methods

2.1 General Approach

Our approach to preparation of the EIS consisted of three distinct phases. In the first phase, GHD collected and reviewed available information about the study area. Information sources included the EIS previously completed by Beacon Environmental for the eastern half of this application, pre-consultation minutes from the County of Peterborough, key natural heritage features and wetland mapping, Official Plan schedules for Peterborough County and the Township of Cavan-Monaghan and other information from provincial agencies (e.g., the Ontario Ministry of Natural Resources and Forestry and MECP).

The second phase consisted of site visits by GHD biologists to collect new site-specific data, verify the information that was collected during the literature review and delineate the boundaries of natural features in the study area. Surveys included:

- Botanical inventory and vegetation community mapping (according to the Ecological Land Classification System for Southern Ontario);
- Breeding bird surveys;
- General surveys for wildlife (including amphibians, reptiles and mammals);
- Habitat assessments for wildlife including wildlife linkages;
- Assessments of the ecological function of natural features on site;
- Surveys for presence of significant species or their habitat (including Species at Risk).
- Detailed aquatic habitat surveys and surface water quality

The third phase was the completion of a Terms of Reference (ToR) document that was circulated to Otonabee Region Conservation Authority and the Township for comments (Appendix G). The ToR serves as a framework for this EIS.

The third phase was the preparation of the EIS that includes specific mitigation measures for protecting any sensitive species and other natural features on or adjacent to the study site and recommendations regarding the creek and woodlands, including buffers and setbacks. It has been written to meet the requirements of both the County and Township Official Plans. This report includes a figure that shows the location of all of the natural features in the study area as well as recommended setbacks/buffers.

The final phase will be a review of our draft EIS report by the Township and Otonabee Region Conservation Authority (ORCA). Changes to the report will be completed prior to finalizing the report.

2.2 Site Study Methodology

2.2.1 Physical Site Characteristics

Site characteristics were assessed during visits to the study area. Documented characteristics included existing disturbances, current use of the site, age of vegetation cover, trails, general topography and soils.

2.2.2 Biophysical Inventory

2.2.2.1 Vegetation

ELC Survey Method

All vegetation in the study area was inventoried during the site visit. Delineation and classification of the vegetation community types was based on the Ecological land Classification for Southern Ontario (Lee et al., 1998). Rare,

significant or unusual species were searched for. Species significance or status on a national, provincial, regional and local level was based on published literature and standard status lists. These included SARA (2019), COSEWIC (2019), COSSARO (2018) and Oldham (1999).

2.2.2.2 Birds

Breeding Bird Survey BBS Survey

Two breeding bird surveys was conducted during the breeding season. It was conducted following the protocols of the Ontario Breeding Bird Atlas point count (Cadman and Kopysh, 2001) in the early morning under acceptable weather parameters. All birds seen or heard within the five-minute station period were documented. Searches for stick nests and cavity trees were also conducted.

Area Searches

Following the breeding bird point count, an area search was conducted to better allow GHD biologists to detect the birds using the study site. All birds detected were recorded along with a breeding evidence code if known. The search area for these surveys included all of the vegetation communities within the study area.

2.2.2.3 Other Wildlife

While surveyors were on site conducting vegetation community surveys, searches for mammals, reptiles and amphibians were made. Logs and rocks were turned over to check for salamanders and snakes. Observations included direct sightings and indirect evidence such as calls, tracks, scat, shed skins (snakes), burrows, dens and browse.

2.2.2.4 Wetlands

Wetland boundaries were determined by GHD biologists certified to conduct wetland evaluations under the Ontario Wetland Evaluation System for Southern Ontario, Third Edition, version 3.3 (OMNR, 2014). Biologists first reviewed recent aerial photographs and available wetland mapping, including MNRF GIS database layers. Subsequently, they walked the entire property, checking plant species, soil type and soil moisture. The boundary of any wetlands found were then delineated in the field using a handheld GPS unit.

2.2.2.5 Significant Woodland

The boundary of the significant woodland as depicted in Schedule ‘B’ (Natural Heritage System and Environmental Constraints) of the Cavan-Monaghan Official Plan (Amendments to January 3, 2018) was also reviewed prior to GHD biologists conducting the site visit. The dripline of this woodland was delineated in the field using a handheld GPS unit. The ecological functions of this woodland were also recorded.

2.2.2.6 Significant Wildlife Habitat (SWH)

SWH Site Assessment

The identification of Significant Wildlife Habitat in completed in several stages. As part of the background review, aerial photography was used to examine natural areas on and adjacent to the subject property. A candidate list of SWH features was then developed based on the Significant Wildlife Criteria Schedules for Ecoregion 6E (Ontario Ministry of Natural Resources and Forestry, January 2015) and the natural areas that appeared to be present.

During the field visit, searches were made for evidence of the candidate features (i.e., presence/absence) and, where present, the features were assessed (e.g., notes are made of their geographic location, size and function). For this particular property, GHD biologists looked for rock piles, stone fences and other evidence of reptile hibernacula, large stick nests and other evidence of woodland raptors, seeps and springs, vernal pools, ponds and other potential amphibian habitat that might be present. After the field inventories had been completed, GHD biologists analyzed the

information collected and determined which SWH features could be confirmed based on the habitats on site and any additional surveys (e.g., area sensitive bird breeding).

2.2.2.7 Fish and Aquatic Habitat

2.2.2.7.1 Aquatic Habitat

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.

Surface water quality was collected by GHD biologists during assessments. Measured parameters included dissolved oxygen (mg/L), conductivity (us/cm), total dissolved solids (mg/L) and water temperature (°C) using a handled YSI Pro2030 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).

2.2.2.7.2 Fish Community

Due to the presence of existing fish community data within the subject property, GHD did not conduct fish community sampling. A fish species list was obtained from the Ontario Ministry of Natural Resources and Forestry (OMNR, 2012).

3. Survey Results

3.1 Physical Site Characteristics

The subject property is located just north of the village of Millbrook at 787 Fallis Line. The site itself was relatively flat, with slight increase in elevation as one travelled south, before decreasing in elevation again. There is a valley in the south extent leading to a Baxter Creek tributary. The majority of the property consisted of agricultural fields. The east and west boundaries are hedgerows.

3.2 Biological Inventories

3.2.1 Vegetation

3.2.1.1 Level of Effort

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

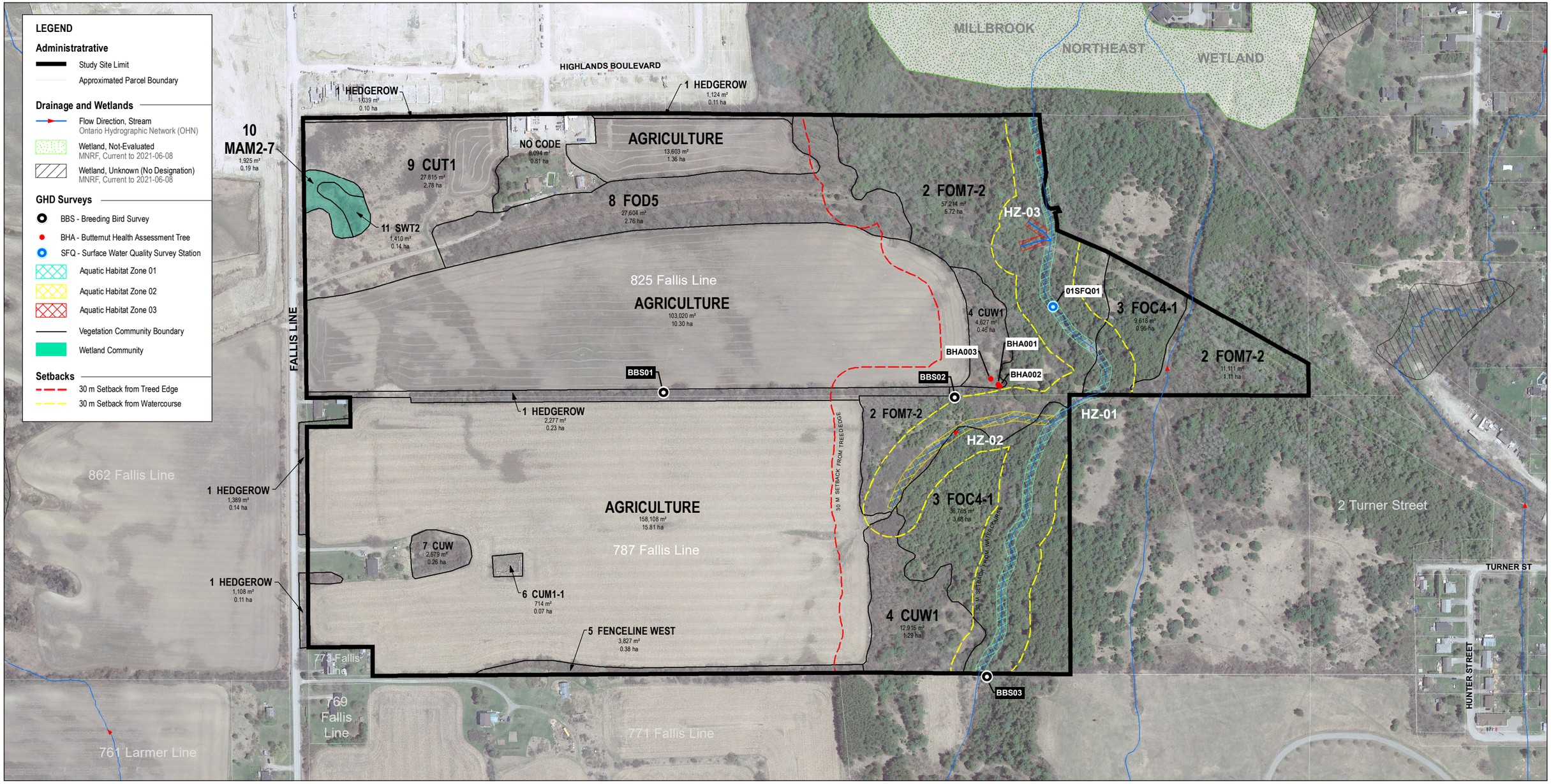
Table 1 Vegetation Surveys – Level of Effort

Survey Date	Survey Type	Weather	Start Time	Effort (person hrs.)
October 4, 2018	Ecological Land Classification	13°C, Cloud cover 0%, Beaufort Wind Scale 3, no precipitation	12:45pm	0.75
June 12, 2020	Ecological Land Classification	13°C, Cloud cover 0%, Beaufort Wind Scale 3, no precipitation	7:15am	0.75
June 24, 2020	Ecological Land Classification	16°C, Cloud cover 90%, Beaufort Wind Scale 2, no precipitation	6:00am	0.5

3.2.1.2 ELC Code Descriptions

A total of 11 vegetation communities were identified within the study area. Each community is described below and illustrated on Figure 1.

A total of 84 plant species were identified during field surveys. The dominant species in each community are described below and a complete plant list is found in Appendix A.



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
CUT1	Mineral Cultural Thicket
CUW	Cultural Woodland
CUW1	Mineral Cultural Woodland
FOC4-1	Fresh-Moist White Cedar Coniferous Forest
FOD5	Dry-Fresh Sugar Maple Deciduous Forest
FOM7-2	Fresh-Moist White Cedar-Hardwood Mixed Forest
MAM2-7	Horsetail Mineral Meadow Marsh
SWT2	Mineral Thicket Swamp

CITATIONS

- 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 obtained via Google, 2021. (Imagery Data: 2018-05-06).

REVISION & WORK HISTORY

REV	BY	DATE	DESCRIPTION	REQUEST
0	W.P.	2021-05-07	Initial map creation.	C.D.T.
1	W.P.	2021-05-12	Aquatic survey info added. Watercourses changed.	S.Z.
2	W.P.	2021-05-28	Changes to watercourse naming.	S.Z.
3	W.P.	2021-06-11	Vegetation communities extended to 825 Fallis Line.	C.D.T.

DATA DISCLAIMERS

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

SCALE
1 cm : 40 meters
0 25 50 75 100
Meters

CSU DEVELOPMENTS INC.
787 & 825 Fallis Line
Pt Lot 11, Con 5 Geographic Township of Cavan Municipality of the Township of Cavan Monaghan Otonabee Region Conservation Authority (ORCA)

ENVIRONMENTAL IMPACT STUDY RESPONSE

NATURAL FEATURES, VEGETATION COMMUNITIES, SURVEYS & CONSTRAINTS

Project No.	11214481
Revision No.	03
Date	6/11/2021

FIGURE 1

Document Path: Q:\gis2\GIS\PROJECTS\11214000s\11214481\Layouts\202105_RPT001\11214481_202105_RPT001_GIS001 - Natural Features, Vegetation Communities, Surveys and Constraints.mxd
Date Saved: 6/11/2021 9:15:09 AM

Community 1 - Fencelines (ELC Code: Not applicable)

Community 1 is the fenceline communities bordering the north and east and center of the property. This community was dominated by American basswood (*Tilia americana*) and Manitoba Maple (*Acer negundo)*. The understory layer was dominated by European buckthorn (*Rhamnus cathartica*) and hawthorn species (*Crataegus spp*), while the groundcover was dominated by swallow-wort (*Cynanchum rossicum*). Other species observed included: awnless brome grass (*Bromus inermi*), common dandelion (*Taraxacum officinale*), common burdock (*Arctium minus*), lilac (*Syringa vulgaris*), and Russian olive (*Elaeagnus angustifolia*)

Photo 1: Fencerow (Photo date: June 12, 2020)

Community 2 - Moist White Cedar – Hardwood Mixed Forest (ELC Code: FOM7-2)

This community is located in the south-east corner of the lot and contains a portion of the tributary of Baxter Creek. This mixed forest was dominated by American basswood and eastern white cedar (*Thuja occidentalis)*. Bitternut hickory (*Carya cordiformis)*, European mountain ash (*Sorbus aucuparia)*, American elm (*Ulmus americana)*, black cherry (*Prunus serotina)* and white ash (*Fraxinus americana)* were other tree species noted in this community. Shrubs and herbaceous plants included: alternate-leaved dogwood (*Cornus alternifolia)*), wild grape (*Vitis riparia)*, swallow-wort, and false Solomon's seal (*Smilacina racemosa*).

Photo 2: Community 2 (FOM7-2) (Photo date: June 12, 2020)

Community 3 - Moist White Cedar Coniferous Forest (ELC Code: FOC4-1)

Community 3 is located in the southern extent of the study area and primarily associated with the valley edge adjacent to the tributary to Baxter Creek. This community was dominated by eastern white cedar, however it contained other sparsely distributed tree species such as eastern white pine (*Pinus strobus)*, black cherry and green ash (*Fraxinus pennsylvanica)*. Several shrub species were identified, such as European buckthorn, Virginia creeper (*Parthenocissus inserta)*, and wild red raspberry (*Rubus idaeus)*. Several small seep habitats are found within this community and contained a few plant species associated with wetlands. Some of these plants included: spotted jewelweed (*Impatiens capensis)*, sensitive fern (*Onoclea sensibilis)*, and spotted joe-pye weed (*Eupatorium maculatum).*

Photo 3: Community 3 (FOC4-1) (Photo date: June 12, 2020)

Community 4 - Mineral Cultural Woodland (ELC Code: CUW1)

Community 4 is a cultural woodland located in the southwest corner of the subject property. The community is dominated by black locust (*Robinia pseuco acacia)* and European buckthorn, both invasive species. Ground cover was dominated by swallow-wort. Other species of trees, shrubs and groundcover species included apple, eastern white cedar, eastern white pine, Virginia creeper, common dandelion, awnless brome grass and ox-eye daisy (*Chrysanthemum leucanthemum)*.

Photo 4: Cultural Woodland (ELC Code: CUW) (Photo date: June 12, 2020)

Community 5 - West Fencerow (ELC Code: No code applicable)

Community 5 comprised of the western fencerow and west boundary of the study area. The fencerow community was dominated by American basswood, black locust, Manitoba maple, European buckthorn. The groundcover composition contained a number of species, however swallow-wort dominated. Other species included choke cherry (*Prunus virginiana)*, staghorn sumac (*Rhus typhina),* western poison-ivy (*Rhus rydbergii)*, Canada goldenrod (*Solidago canadensis)*, butter-n-eggs (*Linaria vulgaris)*, motherwort (*Leonurus cardiaca)*, and black medick (*Medicago lupulina)*.

Photo 5: Community 5 (West Fencerow) (Photo date: June 12, 2020)

Community 6 - Mineral Old Field Cultural Meadow (ELC Code: CUM1-1)

Community 6 was a small cultural meadow that contained an old stone foundation. This community is located in the middle of the agricultural field, south of the existing house. This community contained a large number of plants typical of cultural meadow habitats. Species included swallow-wort, king devil hawkweed (*Hieracium x floribundum)*, common mullein (*Verbascum thapsus)*, cow vetch (*Viccia cracca)*, ox-eye daisy. Woody plants were very few, but included: staghorn sumac, red-berried elderberry (*Sambucus racemosa)*, and American elm.

Photo 6: Community 6 (West Fencerow) (Photo date: June 12, 2020)

Community 7 - Mineral Cultural Woodland (ELC Code: CUW)

Community 7 is a small cultural woodland that once contained a house. It is located directly south of the existing house. The community was dominated by Manitoba maple. Other species included staghorn sumac, American elm, lilac, swallow-wort, common burdock and orchard grass (*Dactylis glomerata)*.

Photo 7: Community 7 (West Fencerow) (Photo date: June 5, 2020)

Community 8 – Dry-Fresh Sugar Maple Forest (ELC Code: FOD5)

This community is located in the east portion of the study area. The community follows a historical railbed and presents as a long finger of woodland jutting into the agricultural fields on site. Sugar maple (*Acer saccharinum*), Ironwood (*Ostrya virginiana*), and basswood (*Tilia americana*) were main canopy elements identified. Shrubs identified included European buckthorn, lilac (*Syringa vulgaris*), blue beech (*Carpinus caroliniana*), and choke cherry (*Prunus virginiana*). The groundcover was dominated by swallow-wort, zig-zag goldenrod (*Solidago flexicaulis*), New England aster (*Symphyotrichum novae- angliae*) and Pennsylvania sedge (*Carex pensylvanica*).

Photo 7: Community 8 – Sugar Maple Forest (Photo date: October 1, 2020)

Community 9 – Mineral Cultural Thicket (ELC Code: CUT1)

The large thicket community was located in the far northeast corner of the property. This thicket was dominated by European buckthorn. Groundcover was dominated by Canada goldenrod (*Solidago canadensis)*, calico aster (*Symphyotrichum lateriflorum*), Virginia wild rye (*Elymus virginicus*) and awnless brome grass.

Photo 7: Community 19 (Photo date: October 4, 2018)

Community 10 – Horsetail Mineral Meadow Marsh (ELC Code: MAM2-7)

Community 10 is a small wetland community located in the northeast of the property fronting Fallis Line. This community was dominated by a ground cover of variegated scouring rush (*equisetum variegatum*) and scouring rush (*Equisetum hyemale*). It contained several other transitional species from the surrounding thicket communities, such as pussy willow (*Salix discolor*), calico aster, common milkweed and swallow-wort.

Photo 7: Community 10 (Photo date: October 4, 2018)

Community 11 – Mineral Thicket Swamp (ELC Code: SWT2)

This community is also located in the northeast corner of the property and is dominated by slender willow. Other shrub species identified included red-osier dogwood and narrow-leaved meadowsweet. Herbaceous plants included woolgrass (*Scirpus cyperinus*), spotted jewelweed (*Impatiens capensis)* and field horsetail.

No photo available.

3.2.2 Birds

3.2.2.1 Level of Effort

Surveys for breeding birds were conducted in the study area 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 Surveys – Level of Effort

Survey Date	Survey Type	Weather	Start Time	Effort (person hrs.)
June 12, 2020	Breeding Bird Survey	13°C, Cloud cover 0%, Beaufort Wind Scale 3, no precipitation	7:30am	1.0 hour
June 24, 2020	Breeding Bird Survey	16°C, Cloud cover 90%, Beaufort Wind Scale 2, no precipitation	6:00am	1.0 hour

3.2.2.2 Breeding Bird Surveys

Twenty-three (23) bird species were identified during breeding bird surveys conducted on June 12 and June 24, 2020(Appendix D). Survey stations were established throughout the study area to capture all habitat types, including hedgerows, open fields and the south woodlands. Overall the property is farmed, with woodland restricted to the southern boundary and parts of the northeast corner. Identified field and hedgerow associated species included: killdeer (*Charadrius vociferus*), mourning dove (*Zenaida macroura*), field sparrow (*Spizella pusilla*), song sparrow (*Melospiza melodia)* and American goldfinch (*Carduelis tristis)*. Forest birds detected included: ovenbird (*Seiurus aurocapillus)*, black-throated green warbler (*Dendroica virens)* and red-eyed vireo (*Vireo olivaceus)*.

3.2.2.3 Other Wildlife

Other wildlife species detected included coyote (*Canis latrans)*, white-tailed deer (*Odocoileus virginianus)*, red squirrel (*Tamiasciurus hudsonicus)* and eastern chipmunk (*Tamias striatus)*.

3.2.2.4 Wetlands

Two wetlands, Communities 10 and 11, were identified in the north portion of the property.

3.2.2.5 Significant Woodland

The boundary of the south woodland communities were delineated in the field by GHD biologists. The woodlands were identified as Communities 2, 3 and 4 and are described in Section 3.2.1.2 (above). The delineated boundary is similar to the one depicted on Schedule B-1 of the Township of Cavan-Monaghan Official Plan.

3.2.2.6 Significant Wildlife Habitat

During our review of candidate significant wildlife habitat, the following were identified as potentially present on site: seeps and springs, area-sensitive bird breeding habitat.

3.2.3 Fish and Aquatic Habitat

3.2.3.1 Level of Effort

The aquatic habitat was assessed on July 2nd, 2020 on the watercourses located within and adjacent to the subject property. Surveys were conducted following the methodologies outlined in Section 2.2.2.7. The level of effort and environmental conditions have been provided in Table 3.

Table 3 Fish and Aquatic Habitat Surveys – Level of Effort

Survey Date	Survey Type	Weather	Start Time	Effort (person hrs.)
July 2nd 2020	Aquatic Habitat Assessment and Surface Water Quality	0% cloud cover, BWS 0-1, no precipitation, air temperature 29.4 °C and water temperature 13.2 °C.	08:00am	4 (x 2 staff)
*Note: BWS Beaufort wind scale (Government of Canada, 2017).				

3.2.3.2 Aquatic Habitat Assessments

The study area was classified as three habitat zones. Habitat zones are determined and differentiated based on presence of barriers, substrate composition, channel morphology, riparian habitat, percent in-stream cover, hydrological connection and unique features. The habitat zones had differentiated characteristics with the exception of canopy cover, which covered 75-100% of the water's surface in all three habitat zones. The habitat zone locations have been illustrated in Figure 1 and attributes have been provided in Table 4.

The first habitat zone was located along unnamed tributary of Baxter Creek. The creek enters the subject property from the west, flows through the southern part of the property and eventually outlets into a wetland outside of the subject property to the east. The second and third habitat zone was located within a unnamed tributaries that flow south directly into habitat zone 1. The unnamed tributaries from here on will be referred to as "watercourses".

Habitat Zone Descriptions

Habitat Zone 1 was a 658 m section of the watercourse that was located within the southern extent of the subject property (Figure 1). During the time of assessments, the watercourse was a defined natural channel with substantial flow during baseflow conditions. There were signs of instream bank erosion throughout the habitat zone.

The in-water substrate was dominated by a mixture of sand, gravel, cobble and fine organics. The average water depth was 0.10 m and an average wetted width of 1.2 m. The in-water cover was dominated by undercut banks and woody debris. The overhead cover was comprised of trees, shrubs, woody debris, overhanging banks, non-woody debris and an old watercourse crossing (Table 4). The existing watercourse crossing appeared to be an old stone culvert under a rail bed. The crossing was not perched, therefore not acting as a barrier to non-jumping fish. Refer to Section 3.2.1 Vegetation Communities for full riparian vegetation details.

Photo 8: Habitat Zone 1, photo showing the watercourse and riparian habitat, photo facing downstream (east). (Photo Date: July 2nd, 2020).

Habitat Zone 2 was a 268 m section of the watercourse located within the eastern portion of the property and flowed south into Habitat Zone 1 (Figure 1). During the time of assessments, the watercourse appeared to be a mixture of a swale and natural defined channel. The watercourse was dry during baseflow conditions. The in-stream substrate was almost entirely composed of fine-organics with a small amount of sand. Although the watercourse was dry, it is estimated that the water depth would be 0.1 m with a width of 0.3 m. The in-water cover was comprised of small woody debris and the overhead cover was comprised of trees, shrubs, woody debris and non-woody vegetation (Table 4). Refer to Section 3.2.1 Vegetation Communities for full riparian vegetation details.

Photo 9: Habitat Zone 2, photo showing the dry conditions of watercourse and riparian habitat, photo facing upstream (northwest). (Photo Date: July 2nd, 2020).

Habitat Zone 3 was located east of Habitat Zone 2, it was comprised of two small watercourses that flowed directly into Habitat Zone 1. The form, function and habitat characteristics of these watercourses were identical, therefore considered one habitat zone. The total length of Habitat Zone 3 was approximately 53 m (Figure 1). During the of assessments the habitat zone had a defined natural channel with minimal flows during baseflow conditions. The average water depth was 0.2m with a wetted width of 0.05 m. The in-water cover was low and comprised of small woody debris, the overhead cover was moderate and consisted of trees, shrubs and woody debris (Table 3.4). Refer to Section 3.2.1 Vegetation Communities for full riparian vegetation details.

It should be noted that watercress (*Nasturtium officinale*) was present during the time of assessments. Watercress is a groundwater indicator.

Photo 10: Habitat Zone 3, photo showing watercourse riparian habitat, photo facing upstream (north). (Photo Date: July 2nd, 2020).

Table 4 Aquatic Habitat Zone Descriptions

Habitat Zone	Substrate Composition	In-Water Cover	Canopy Cover (Percent)	Overhead Cover	Average Water Depth (m)	Average Wetted Width (m)	Zone Length (m)
01	20% cobble 20% gravel 20% sand 10% boulder 10% silt 20% fine organics	30% undercut bank 15% small woody debris 15% large woody debris 5% boulder	75-100	20% woody debris 20% overhanging bank 20% non-woody vegetation 10% trees 10% shrubs 5% bridges/crossings	0.10	5	658
02	90% fine organics 10% sand	30% small woody debris	75-100	20% shrubs 20% non-woody vegetation 15% trees 10% woody debris	Dry (0.1)	3	268
03	65% fine organics 20% sand 10% gravel 5% cobble	5% small woody debris	75-100	10% trees 10% woody debris 5% shrubs	0.05	0.2	53

Surface water quality was collected in Habitat Zone 1 just west of the confluence habitat zone 2 (Figure 1) approximately 0.1 m below the surface of the water. A summary of results and information on the parameter specifics has been provided in Table 5.

Table 5 Surface Water Quality Results

Water Quality Parameters	Sample Number	Accepted Parameter Range
	01	
Date (dd/mm/yy)	20/07/02	N/A
Time (hh:mm)	10:23	
Weather Conditions	Clear (0% cloud cover), no precipitation and BWS 0-1.	
Sample Depth (m)	0.10	
Air Temperature (°C)	22.0	
Water Temperature	13.2	N/A
Dissolved Oxygen (mg/L)	9.92	6-8(Cold water)
Total Dissolved Solids (mg/L)	257.40	N/A
Conductivity (SPC us/cm)	396.6	N/A
Salinity (ppt)	0.19	N/A
pH	8.36	6.5-8.5**

Water Quality Parameters	Sample Number	Accepted Parameter Range
	01	
Turbidity (NTU)	1.01	Normal**
Phosphorus (ppb)	--	10-50ppb
Note: BWS=Beaufort wind scale (Government of Canada, 2017), N/A= not applicable and/or specific guidelines not available. *lowest acceptable range for cold water biota (Canadian Council of Ministers of the Environment, 2002). ** Provincial Water Quality Objectives (PWQO) (Energy, 1994).		

3.2.3.3 Fish Community

As previously stated, fish community surveys were not conducted by GHD. An existing fish species list was obtained by the Ministry of Natural Resources (MNRF) and has been discussed in 4.2.7.2.

4. Discussion and Analysis

4.1 Physical Site Characteristics

4.1.1 Soils

According to the Ontario Soils survey, the study area was underlain by Otonabee Loam, which is known to provide good drainage and has been used historically for agricultural purposes. In general, such soils have low natural fertility and low moisture holding capacity. As such, manure and plowing of old crops was used to maintain organic matter contents (Ontario Soil Survey).

4.2 Species and Communities

4.2.1 Vegetation

GHD biologists found one species, the butternut (*Juglans cinerea*) that is federally and provincially rare in the study area (SARA 2019; COSEWIC 2019; COSSARO 2018). This butternut was identified in Community 1 and had been previously assessed by GHD in 2018 for the neighboring parcel of land. The tree was found to be non-retainable.

No regionally rare plant species (Oldham, 1999) were detected on site.

None of the ecological communities (i.e., ELC ecosites or vegetation communities) found in the study are considered provincially rare (NHIC, 2019).

Three butternut trees were identified by Beacon in 2017 outside of our study area, are were all found to be Category 1 – non retainable, and are therefore not given protection (Figure 1).

4.2.2 Birds

None of the bird species detected during GHD's breeding bird survey are considered significant at the national and/or provincial level (SARA 2021; COSEWIC 2020; COSSARO 2021).

Two species detected during field inventories are area sensitive as per MNRF Significant Wildlife Habitat Technical Guide (2015) definitions. These species were the black-throated green warbler and the ovenbird. Both species were identified in the woodlands identified in the south portion of the property (Station 3 – 03BB). Area-sensitive species are those that require a minimum area of suitable habitat to successfully breed.

The Ontario Breeding Bird Atlas (OBBA – 2nd atlas) records for the 10 km by 10km square that overlaps the property (17QJ09) included twenty-two (22) bird species that listed nationally or provincially as species at risk (COSSARO 2021; SARA 2021; COSEWIC 2020). These records were of least bittern (*Ixobrychus exilis*), common nighthawk (*Chordeiles minor*), 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*), grasshopper sparrow (*Ammodramus savannarum*), bobolink (*Dolichonyx oryzivorus*), eastern meadowlark (*Sturnella magna*). Many of these records may be associated with the Baxter Creek valley and associated tributaries, as well as the large number of open fields and wetlands located within the 10km x 10km OBBA square. There was no suitable habitat for most of bird species with the possible exceptions of the eastern wood-pewee and wood thrush, which are associated with forest habitats. Another exception may before the red-headed woodpecker, which can be found in a multitude of habitats, including hedgerows. Ontario's Natural Heritage Information Centre also had records of these two species in the 1 x 1km squares that overlap the subject property. The proposed subdivision line will be 30-metres away from the boundary of the woodlands where these species may reside.

4.2.3 Other Wildlife

No other federal or provincial species at risk were recorded on the subject property during the site visit (SARA 2021; COSEWIC 2020; COSSARO, 2021).

4.2.4 Significant Woodland

The woodlands (Community 2, 3 and 4) found in the study area are considered significant because it is a part of a large contiguous woodland that is part of a defined natural heritage system. The woodland surrounds a stream (located south of the subject property) and serves as a linkage area between other woodland communities. The boundaries of the woodland on-site was delineated in the field by GHD biologists. Any proposed development must be setback from the dripline by a minimum of 30-metres.

4.2.5 Significant Wildlife Habitat

In the Township of Cavan-Monaghan Official Plan (Amendments to January 2018), wildlife habitat is defined as

"an area where plants, animals, and other organisms live or have the potential to live and find adequate amounts of food, water, shelter and space to sustain their populations including an area where a species concentrates at a vulnerable point in its annual or life cycle and an area that is important to a migratory or non-migratory species, and which has been further identified…. According to evaluation procedures established by the Ministry of Natural Resources, as amended from time to time."

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 two candidate SWH on the property, Seeps and Springs and Habitat for Area Sensitive Bird Species.

Seeps and springs were found throughout community 3 and appeared to drain towards the tributary of Baxter Creek. suitable habitat for bat maternity colonies (a type of specialized wildlife habitat) was not found to be present on the property. Suitable conditions to provide amphibian breeding habitat (another type of specialized wildlife habitat) did not appear to be present in Communities 2 and 3.

There were two area sensitive bird species found at station 3, the ovenbird and black-throated green warbler. Beacon Environmental had also documented additional area-sensitive species associated with the woodland in 2017 (winter wren). All area-sensitive bird breeding habitat is associated with the woodland communities identified on site.

4.2.6 Natural Heritage System

The Township of Cavan Monaghan Official Plan identifies their natural heritage system (both natural core and natural linkage area) along the south part of the subject property (Schedule A-1, Township of Cavan-Monaghan OP). GHD's fieldwork can be used to refine this mapping, with the boundaries of Communities 2, 3 and 4 being woodlands, which are key natural heritage features that is depicted as significant woodland on Schedule B-1 of the Township's Official Plan.

4.2.7 Fish and Aquatic Habitat

4.2.7.1 Aquatic Habitat

The watercourses within the subject property provide direct and indirect fish habitat within the subject study area and to the downstream to the fish community of Baxter Creek. Specifically, the habitat provides sources of hydrological and groundwater connections, cover and feeding habitat, nutrients, spawning and rearing habitat as well as food supply to fish. These attributes are important for the sustainability of the cold, cool and warmwater fish community of Baxter Creek.

Fish habitat in Ontario is managed federally by the Minister of Fisheries and Oceans Canada and therefore, the Fisheries Act applies to the subject lands. No critical habitat for Aquatic Species at Risk (DFO, 2019) or sensitive spawning habitat was identified within the study area (OMNR, 2012).

The surface water quality parameters collected within the subject lands were within the above acceptable range listed above. The data obtained can be used as baseline and compared to construction and post construction monitoring results to ensure all parameters are maintained within an acceptable range.

4.2.7.2 Fish Community

The fish community has been provided in Appendix F to provide context for fish habitat value and was obtained from the OMNRF (OMNR, 2012). Generally, Baxter Creek supports sport and bait fish species that prefer col, cool and warm water thermal regimes. Cumulatively, 11 fish species have been documented in the creek and are composed of the following families: Catostomidae, Cottidae, Cyprinidae, Gasterosteidae, and Salmonidae. The fish community found in Baxter Creek and its tributaries are common and widely distributed throughout southern Ontario (Appendix F).

5. Impact Assessment and Recommendations

The following section provides a description of the predicted impacts that may result from the proposed development. It also identifies mitigation measures to be implemented to avoid and/or minimize adverse effects to the natural environment features within or near the project.

5.1 Significant Woodland

An area of significant woodland was found on the subject property and followed the forest dripline of communities 2, 3 and 4 at the south end of the property. That dripline was delineated by NEA and confirmed in the field. A site walk with ORCA and the Township may be required to ensure the agencies in agreement with the line, as it sets the development envelope. The functions of these woodland communities include soil erosion prevention, source water protection, wildlife corridors and wildlife habitat. A 30-metre vegetation buffer -VPZ is required for this feature. The woodland is an edge community between the fields and the wetland communities at the lower elevations. Native species are to be used in the landscape plan for the buffer area.

Community 8, which is a forested path from a historical railway, will be largely left intact from the development so as to create a recreational walking path. Any tree removal that may need to occur to facilitate the creation of lots and the SWM facility will be done outside of the core breeding bird and bat maternity window (April 15 – October 31st).

5.2 Significant Wildlife Habitat

Seeps and springs were found in Community 4. A 30-metre vegetation protection zone will be measured from the outermost extent of these this community in which no development or site alteration is permitted. In addition, silt fencing will be installed at the outer limit of the development envelope to ensure that there is no negative impact on the seeps and springs while construction is occurring.

Area-sensitive Bird Breeding Habitat identified in the south woodlands will be protected by a 30-metre vegetation protection zone. As the woodland is already recommended for protection with a buffer, the area sensitive species are maintained by keeping that woodland. Any vegetation that must be cleared will be cleared outside of the core breeding bird window (April 15 – August 15)

5.3 Natural Heritage System

The Natural Heritage System was defined within the Cavan Monaghan Official Plan. Core and Natural Linkage Area were both identified on the subject property. The core area followed the significant woodland designation on Schedule B-1 of the Cavan Monaghan Official Plan. GHD's fieldwork demonstrates this area is a combination of woodland and watercourse. Communities 2, 3, and 4 would be all be considered Core Area. These communities will be protected in their entirety as well as the 30-meter buffer that will be implemented.

As well we have recommended that a silt fence be installed on the south extent of the development envelope during construction to prevent any sediment laden runoff from reaching the watercourse and woodland.

5.4 Fish and Aquatic Habitat

The watercourse within the subject property provide direct and indirect habitat within the watercourses and to the downstream fish community of Baxter Creek. The natural feature form and function will be protected by a 30 m naturally vegetative buffer from the high-water mark for any developments from the watercourse. Development includes houses, pools, or accessory buildings and stormwater management facilities and outlet channels. Septic systems must be located a minimum of 30 m from all waterbodies.

A detailed sediment and erosion control plan must be prepared for all construction activities to ensure disturbed soils are not transported off-site into the negatively impacting aquatic life, fish and fish habitat.

To protect the watercourse and to ensure the project complies with the PPS and Fisheries Act, recommendations have been provided in Section 7.0 for incorporation into the final site plan.

A low negative impact to fish or fish habitat are anticipated from the proposed development due to the impervious surface flows of the stormwater management facility, provided the 30 m setback from all fish habitat is respected and the mitigation measures and recommendations are implemented as outlined in this report. Any development of the site needs to respect a minimum 30 m setback from the normal high-water mark of the watercourse.

The final development plan and stormwater management design must be reviewed by a professional biologist to ensure infrastructure installation, the stormwater management outlet location and outlet structure will not impact fish habitat and will comply with the *Fisheries Act*. If the final site plan changes in any way to include near or in-water works the plan shall be reviewed professional biologist, agency (i.e CA, MNRF, DFO etc.) to ensure it is in compliance with the *Fisheries Act*.

5.5 Stormwater

There will be an increase in impervious surface flow through construction of the residential buildings and associated parking facilities. Stormwater will be discharged from the subject lands and provide contributing flows to watercourse. Stormwater contributing to the watercourse must be located outside of the 30 m buffer. To avoid point source erosion, the outfall to watercourse should be designed to minimize impacts, such a bioswale planted with native shrubs and non-woody vegetation.

The stormwater design must incorporate mitigation measures to minimize impacts of discharged waters into the watercourse to protect the habitat for the fish species present in the watercourse and downstream in Baxter Creek. The design must be designed to provide MOE “Enchanted” level of stormwater treatment as defined in the MOE SWM.

A multiple treatment approach should be used to manage stormwater onsite. A combination of lot level conveyance and end-of-pipe treatments should be incorporated where possible. Low impact development (LID) practices should be considered to manage run-off through runoff prevention by minimizing impervious cover, incorporating rainwater collection systems and stormwater infiltration practices, and maintain existing vegetation where possible.

A detailed erosion and sediment control (ESC) plan must be prepared and reviewed by a professional biologist to ensure disturbed soils from construction activities are not transported off-site and into the watercourses, negatively impacting downstream aquatic life and aquatic habitat. GHD has provided additional SEC mitigation measures to be incorporated into the plan in Section 7.0 of this report

The final stormwater management design must be reviewed by a professional biologist to ensure the outlet location and structure will not impact fish habitat and will comply with the *Fisheries Act*.

Table 6 Impact Assessment and Recommendations Summary

Feature or Function	Impact to Feature or Function	Mitigation	Residual Effect
Significant Woodland	No impact anticipated	30-meter buffer from the contiguous woodland (Community 3); allow buffer to naturally regenerate in native species, install silt fencing along the east side of the development envelope	None
Significant Wildlife Habitat – Seeps and Spring	No impact anticipated	30-meter buffer from communities where these features were found	None
Significant Wildlife Habitat – Area Sensitive Bird Breeding Habitat	No impact anticipated	30-meter buffer from communities where these species were identified and where potential breeding is occurring.	None
Natural Heritage System	No impact anticipated	30-meter buffer from Natural Heritage System (Core area) to be implemented.	None
Fish and Aquatic Habitat (Habitat Zones 1 to 3)	Potential of disturbance of fish habitat due to SWM facility and road crossing.	-30 m vegetated buffer from high water mark. No development within the buffer with the exception of the road crossing. -Construction sediment and erosion control measures to be incorporated into development (Section 7.0). Sediment and erosion control plan to be reviewed by professional biologist. -Development must comply with *DFO Measures to Protect Fish and Fish Habitat.* -Final design to be assessed by professional biologist.	Low
Stormwater Management Facilities	Stormwater management, change to water quality	-Stormwater ponds to remain outside of the 30 m buffer from the watercourses. -No in-water works -Stormwater management should have a multiple treatment approach and include low impact development features -Stormwater pond outlet should have finishing treatment though a bioswale feature -Features to minimize thermal pollution and reduce the temperature of discharged waters to the watercourses. -Final design to be assessed by a professional biologist and comply with the *Fisheries Act.*	Low

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 study area and the immediate vicinity.

6.1 Federal Legislation

Migratory Birds Convention Act

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 the trees and other vegetation for the development cannot occur during this timing window.

Fisheries Act

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. 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.

In the future if the site plans changes to include any work near or in-water or if the stormwater pond detail design plan changes to include any work within the 30 m buffer they shall comply with the Fisheries Act and be reviewed by a professional biologist, DFO and CA staff.

6.2 Provincial Legislation

Endangered Species Act

Category 1 butternut was located within the vicinity of GHD's study area. As these trees were non-retainable Category 1 specimens, no protection is warranted. As such, there is no constraint to development under the Endangered Species Act (2007).

Provincial Policy Statement (2020)

The subject property does not contain any Provincially Significant Wetlands (PSWs), significant coastal wetlands, significant valleylands, Significant Areas of Natural and Scientific Interest (ANSI) or fish habitat. As a result, Section 2.1.4, Section 2.1.5 1) c) e) f) and Section of 2.1.6 of the Provincial Policy Statement do not apply to the proposed development.

Section 2.1.5b) of the PPS prohibits development and site alteration in significant woodlands unless it has been demonstrated there will be no negative impacts on the feature or its ecological functions. Sections 5.2 and 7 of this report provide recommendations that allow the proposed development to proceed in a manner consistent with the Provincial Policy Statement. Section 2.1.5d) of the Provincial Policy Statement protects significant wildlife habitat from negative impacts. Sections 5.3 and 7 of this EIS report provide recommendations that allow the proposed development to proceed while remaining compliant with the PPS.

Growth Plan for the Greater Golden Horseshoe 2020

The Natural Heritage System (NHS) for the GPGGH 2020 includes lands outside settlement area boundaries that were approved and in effect as of July 1, 2017. As a result, the NHS-related policies of the GPGGH 2020 (i.e., Section 4.2.2) apply to the subject property.

The 30-metre buffer that has been recommended adjacent to Communities 2, 3, and 4 is consistence with the direction provided in Section 4.2.3 of the GPGGH 2020 (relating to Key Hydrologic Features) and Section 4.2.4 of the GPGGH 2020 (relating to Lands Adjacent to Key Hydrologic Features),

6.3 Local and Other Regulatory Bodies

County of Peterborough Official Plan (Consolidated to March 2020)

This EIS has been prepared in accordance with direction provided in the County of Peterborough Official Plan for such studies (i.e., Section 4.1.3.1 General). This EIS is in compliance with the Country of Peterborough Official Plan as it demonstrates: a) no development has been proposed in provincially significant woodlands and b) there will be no negative impacts on other natural features or ecological functions for which the area is identified.

Township of Cavan-Monaghan Official Plan (Amendments to January 2018)

This EIS has been prepared in accordance with direction provided in the Township of Cavan-Monaghan Official Plan for such studies (i.e., Section 3.7). Sections 5 and 7 of this EIS report provide recommendations and mitigation measures that would allow the development to proceed while maintaining compliance with the Township's Official Plan.

7. Summary of Recommendations

7.1 General

1. The development limit (construction envelope) must be clearly defined and delineated and a line be staked and clearly marked in the field prior to any development activities occurring on the site. Grading of the site and removal or addition of fill shall be restricted to the proposed work area.
2. Functioning erosion and sediment control measures shall be installed along the development limit prior to the commencement of any site preparation activities (e.g., grading, placement of fill). The silt fence should be inspected and maintained throughout the construction phase and remain in place until the soils are stabilized and re-vegetated. The silt fence also serves as a visual and physical barrier for construction crews.
3. The overall existing drainage patterns for the area will be maintained.
4. Removal of vegetation within the building envelope and/or along access routes shall be done outside of the peak breeding bird season (April 15th – August 15th) as per Environment and Climate Change Canada's guidelines.
5. Any areas outside of buildings and built infrastructure shall be vegetated as soon as possible after construction to stabilize the soils and re-establish vegetation cover.
6. Where feasible, native trees, shrubs, grasses and/or wildflower seed mixes shall be used.
7. Client to obtain relevant permits from the City of Peterborough, Township of Cavan-Monaghan and Otonabee Region Conservation Authority.

7.2 Significant Wildlife Habitat

1. A 30-meter buffer (VPZ) shall be staked in the field adjacent to the edge of wetlands identified on site. No development or site alterations are to occur within these areas (i.e., they are a "no touch" zone for construction).
2. This vegetation protection zone shall be enhanced with native species plantings/seeds in those areas where vegetation is currently absent.

7.3 Significant Woodland

1. A 30-meter buffer (VPZ) shall be staked in the field from the dripline of woodland Community 3 (FOD3). No development or site alteration is to occur within this area (i.e., it is a “no touch” zone for construction).

7.4 Groundwater Discharge and Recharge Functions

1. Proposed buildings shall be designed to ensure much of the precipitation captured by the roofs will be infiltrated back into the ground on-site to maintain the recharge and discharge functions of the area. For example, buildings could include downspouts that spill out onto grassed or gravel surfaces off the roofs. This would convey the rainfall captured by the roof away from hard surfaces and permit on-site infiltration.

7.5 Sediment and Erosion Control

2. The sediment and erosion control (SEC) plan will be review by a professional biologist.
3. Compost organic sock or equivalent will be installed and maintained along development envelope boundary as a perimeter control. Perimeter controls help prevent the transportation of sediments off-site into the watercourse and lake. This line should be surveyed and staked in the field prior to any site preparation activities.
4. Grading of the site and removal or addition of fill will be restricted to the area outside of shoreline buffers. Functioning sediment control measures must be in place prior to and during the construction phase, and remain in place until all bare or exposed soils have become stabilized.
5. Track pads, concrete wash stations, refueling stations, and stockpile locations should be identified on the SEC plan and isolated using sediment control materials.
6. All sediment and erosion control products will be selected for the site based on the manufacturer’s product specifications. Biodegradable products should be selected. Product installation and maintenance will follow the manufactures guidelines.
7. Sediment control measures shall be installed prior to the commencement of work, and shall be maintained throughout the project to prevent the entry/outward flow of sediment into a waterbody.
8. All sediment and erosion control measures shall be inspected daily during the construction phase and periodically thereafter to ensure they are functioning properly, maintained, and upgraded as required.
9. 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).
10. The Project Manager/Contractor shall not allow any deleterious substances as defined in the Canadian Fisheries Act (such as silt), caused by the work, to enter or re-enter the watercourse or lake.
11. Disturbed soils will be immediately stabilized and re-vegetation with native species suitable for the site.
12. All construction materials will be removed from site upon project completion.

7.6 Operation of Machinery

1. Check heavy equipment, machinery and tools prior to entering the work site to ensure they are clean, free of leaks, invasive species and noxious weeds.
2. All heavy equipment, machinery, and tools required for the work will be regularly inspected and maintained to avoid leakage of fuels and liquids, and will be stored in a manner that prevents any deleterious substance from entering the soil, or nearby any waterbody.
3. All heavy equipment, machinery, and tools used or maintained for the purpose of this project will be operated in a manner that prevents any deleterious substance from entering soil, or nearby any waterbody.

4. 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).
5. Machinery will not enter any waterbody.

7.7 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.

7.8 Fish Protection (DFO measures to protect fish and fish habitat)

1. No work in to avoid killing fish by means other than fishing. The road crossing shall occur upland and not in the water.
2. No development within a 30m buffer. 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 around wetland.
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. Prevent soil compaction using mats and pads.
10. The Project Manager/Contractor shall not allow any deleterious substances as defined in the Canadian Fisheries Act (such as silt), caused by the work, to enter or re-enter the watercourse or lake. See Sediment and Erosion Control.

7.9 Stormwater

1. Development including stormwater features will be located outside of the 30 m buffer from the watercourse.
2. To avoid point source erosion, the outfall to all watercourse shall be designed to minimize impacts, such as be a bioswale planted with native shrubs and non-woody vegetation.
3. A multiple treatment approach should be used to manage stormwater onsite.
4. Low impact development (LID) practices should be considered to manage run-off.
5. Stormwater management features to minimize thermal pollution and reduce the temperature of discharged waters to the watercourse to protect cool and warm water fish species.
6. Stormwater outfall to be designed in consultation with the Otonabee Region Conservation Authority and a fisheries biologist.

7.10 Contaminant and Spill Management

1. A spill management plan will be developed for future development. The plan will provide direction for implementation actions immediately in the event of a sediment release or spill of a deleterious substance.
2. 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.
3. Refueling and maintenance of equipment shall be conducted off slopes and away from water bodies on impermeable pads to allow full containment of spills at a recommended distance of a minimum of 30 m from the shoreline. If 30 m is not achievable a portable spill containment berm may be used.
4. Materials classified as potential contaminants (e.g. paint, primers, gas, oil, degreasers, grout, or other chemicals) will be used a minimum of 30 m from the watercourse. If 30 m is not achievable a portable spill containment berm should be used.

8. Conclusion

GHD has prepared this Environmental Impact Study report to address potential environmental issues associated with a plan of subdivision. The study area is located at 787 Fallis Line, also referred to as Part Lot 11, Concession 4, Township of Cavan-Monaghan in the County of Peterborough. Significant natural features identified in the study area included significant woodlands. A 30-meter buffer has been recommended adjacent to identified wetlands and significant woodlands (i.e., Communities 2, 3 and 4 as depicted on Figure 1). This buffer will also serve to protect the watercourse, seepage areas detected on site (which are considered significant wildlife habitat).

Construction within the proposed development envelope will result in no negative impacts on the functions of identified natural heritage features provided the recommendations outlined in Sections 5 and 7 are implemented. GHD's recommendations have been made to address potential impacts to natural heritage features and/or their functions during the site preparation, construction and post-construction period. Additional discussions with the County of Peterborough, Township of Cavan-Monaghan and Otonabee Region Conservation Authority will need to occur to ensure that appropriate permitting processes are followed.

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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
X : recorded

Common Name	*Scientific Name*	Total	COMMUNITY NUMBER										
			1	2	3	4	5	6	7	8	9	10	11
HORSETAIL FAMILY	*EQUISETACEAE*												
field horsetail	*Equisetum arvense*	2			X							X	
scouring rush	*Equisetum hyemale*	1											X
marsh horsetail	*Equisetum palustre*	1										X	
variegated horsetail	*Equisetum variegatum*	1											X
WOOD FERN FAMILY	*DRYOPTERIDACEAE*												
oak fern	*Gymnocarpium dryopteris*	1			X								
sensitive fern	*Onoclea sensibilis*	1			X								
PINE FAMILY	*PINACEAE*												
eastern white pine	*Pinus strobus*	2			X	X							
CYPRESS FAMILY	*CUPRESSACEAE*												
eastern red cedar	*Juniperus virginiana*	1								X			
eastern white cedar	*Thuja occidentalis*	4	X	X	X	X							

Common Name	*Scientific Name*	Total	COMMUNITY NUMBER										
			1	2	3	4	5	6	7	8	9	10	11
BUTTERCUP FAMILY	*RANUNCULACEAE*												
marsh marigold	*Caltha palustris*	1			X								
ELM FAMILY	*ULMACEAE*												
American elm	*Ulmus americana*	9	X	X	X		X	X	X	X	X	X	
NETTLE FAMILY	*URTICACEAE*												
false nettle	*Boehmeria cylindrica*	1											X
WALNUT FAMILY	*JUGLANDACEAE*												
bitternut hickory	*Carya cordiformis*	1		X									
butternut	*Juglans cinerea*	1	X										
BEECH FAMILY	*FAGACEAE*												
red oak	*Quercus rubra*	2					X			X			
BIRCH FAMILY	*BETULACEAE*												
blue beech	*Carpinus caroliniana*	1								X			
ironwood	*Ostrya virginiana*	1								X			
PINK FAMILY	*CARYOPHYLLACEAE*												
white campion	*Silene latifolia*	1					X						
bladder campion	*Silene vulgaris*	3	X					X	X				
LINDEN FAMILY	*TILIACEAE*												
American basswood	*Tilia americana*	4	X	X			X			X			
WILLOW FAMILY	*SALICACEAE*												
balsam poplar	*Populus balsamifera*	1										X	
trembling aspen	*Populus tremuloides*	3	X		X				X				
pussy willow	*Salix discolor*	2									X		X
slender willow	*Salix petiolaris*	1										X	
MUSTARD FAMILY	*BRASSICACEAE*												
watercress	*Nasturtium officinale*	1			X								
GOOSEBERRY FAMILY	*GROSSULARIACEAE*												
prickly gooseberry	*Ribes cynosbati*	2			X	X							

Common Name	*Scientific Name*	Total	COMMUNITY NUMBER										
			1	2	3	4	5	6	7	8	9	10	11
SAXIFRAGE FAMILY	*SAXIFRAGACEAE*												
foam flower	*Tiarella cordifolia*	1			X								
ROSE FAMILY	*ROSACEAE*												
hawthorn species	*Crataegus spp.*	2	X			X							
common strawberry	*Fragaria virginiana*	2				X				X			
apple	*Malus domestica*	4	X			X	X			X			
sulfur cinquefoil	*Potentilla recta*	1					X						
black cherry	*Prunus serotina*	4	X	X	X	X							
choke cherry	*Prunus virginiana*	6	X	X	X	X	X			X			
wild red raspberry	*Rubus idaeus*	5	X		X	X	X	X					
European mountain ash	*Sorbus aucuparia*	4	X	X	X		X						
narrow-leaved meadowsweet	*Spiraea alba*	1										X	
barren strawberry	*Waldsteinia fragarioides*	1			X								
PEA FAMILY	*FABACEAE*												
bird's-foot trefoil	*Lotus corniculatus*	1	X										
black medick	*Medicago lupulina*	1					X						
black locust	*Robinia pseudo acacia*	3	X			X	X						
red clover	*Trifolium pratense*	1	X										
white clover	*Trifolium repens*	1								X			
cow vetch	*Vicia cracca*	6	X					X	X	X	X		X
OLEASTER FAMILY	*ELAEAGNACEAE*												
russian olive	*Elaeagnus angustifolia*	1	X										
EVENING PRIMROSE FAMILY	*ONAGRACEAE*												
Canada enchanter's nightshade	*Circaea lutetiana L. ssp.canadensis*	1			X								
DOGWOOD FAMILY	*CORNACEAE*												
alternate-leaf dogwood	*Cornus alternifolia*	3		X			X			X			
red-osier dogwood	*Cornus stolonifera*	4			X						X	X	X
BUCKTHORN FAMILY	*RHAMNACEAE*												
European buckthorn	*Rhamnus cathartica*	8	X	X	X	X	X		X	X	X		

Common Name	*Scientific Name*	Total	COMMUNITY NUMBER										
			1	2	3	4	5	6	7	8	9	10	11
GRAPE FAMILY	*VITACEAE*												
Virginia creeper	*Parthenocissus inserta*	5	X	X	X	X		X					
wild grape	*Vitis riparia*	11	X	X	X	X	X	X	X	X	X	X	X
MAPLE FAMILY	*ACERACEAE*												
Manitoba maple	*Acer negundo*	4	X		X		X		X				
Norway maple	*Acer platanoides*	1					X						
sugar maple	*Acer saccharum ssp.saccharum*	5	X	X		X	X			X			
CASHEW FAMILY	*ANACARDIACEAE*												
western poison-ivy	*Rhus rydbergii*	4		X	X		X			X			
staghorn sumac	*Rhus typhina*	5	X			X	X	X	X				
RUE FAMILY	*RUTACEAE*												
prickly ash	*Zanthoxylum americanum*	1	X										
GERANIUM FAMILY	*GERANIACEAE*												
herb Robert	*Geranium robertianum*	1			X								
TOUCH-ME-NOT FAMILY	*BALSAMINACEAE*												
spotted jewelweed	*Impatiens capensis*	2			X							X	
CARROT FAMILY	*APIACEAE*												
Queen-Anne's lace	*Daucus carota*	3	X				X	X					
MILKWEED FAMILY	*ASCLEPIADACEAE*												
common milkweed	*Asclepias syriaca*	4	X					X			X		X
swallow-wort	*Cynanchum rossicum*	8	X	X		X	X	X	X	X			X
NIGHTSHADE FAMILY	*SOLANACEAE*												
bitter nightshade	*Solanum dulcamara*	1			X								
WATERLEAF FAMILY	*HYDROPHYLLACEAE*												
Virginia waterleaf	*Hydrophyllum virginianum*	1	X										
BORAGE FAMILY	*BORAGINACEAE*												
Virginia bluebells	*Mertensia virginica*	1					X						
MINT FAMILY	*LAMIACEAE*												
motherwort	*Leonurus cardiaca*	1					X						

Common Name	*Scientific Name*	Total	COMMUNITY NUMBER										
			1	2	3	4	5	6	7	8	9	10	11
OLIVE FAMILY	*OLEACEAE*												
white ash	*Fraxinus americana*	2		X						X			
green ash	*Fraxinus pennsylvanica var. subinte*	3			X	X				X			
lilac	*Syringa vulgaris*	4	X			X			X	X			
FIGWORT FAMILY	*SCROPHULARIACEAE*												
butter-and-eggs	*Linaria vulgaris*	1					X						
common mullein	*Verbascum thapsus*	2					X	X					
HONEYSUCKLE FAMILY	*CAPRIFOLIACEAE*												
tartarian honeysuckle	*Lonicera tatarica*	2		X			X						
red-berried elderberry	*Sambucus racemosa*	1						X					
maple-leaved viburnum	*Viburnum acerifolium*	1			X								
ASTER FAMILY	*ASTERACEAE*												
common burdock	*Arctium minus*	4	X			X	X		X				
ox-eye daisy	*Chrysanthemum leucanthemum*	4	X			X	X	X					
spotted joe-pyeweed	*Eupatorium maculatum*	2			X							X	
large-leaved aster	*Eurybia macrophylla*	1	X										
grass-leaved goldenrod	*Euthamia graminifolia*	3									X	X	X
field hawkweed	*Hieracium caepitosum ssp.caespitos*	1	X										
king devil hawkweed	*Hieracium x florbundum*	1						X					
tall goldenrod	*Solidago altissima*	2	X				X						
Canada goldenrod	*Solidago canadensis*	3	X				X				X		
zig-zag goldenrod	*Solidago flexicaulis*	2				X				X			
goldenrod species	*Solidago spp.*	3		X				X	X				
spiny-leaved sow thistle	*Sonchus asper*	2						X					X
panicled aster	*Symphyotrichum lanceolatum ssp.he*	1									X		
calico aster	*Symphyotrichum lateriflorum var.late*	3									X	X	X
New England aster	*Symphyotrichum novae- angliae*	4								X	X	X	X
common dandelion	*Taraxacum officinale*	7	X	X	X	X	X	X	X				

Common Name	*Scientific Name*	Total	COMMUNITY NUMBER										
			1	2	3	4	5	6	7	8	9	10	11
ARUM FAMILY	*ARACEAE*												
Jack-in-the-pulpit	*Arisaema triphyllum*	1			X								
DUCKWEED FAMILY	*LEMNACEAE*												
common duckweed	*Lemna minor*	1			X								
SEDGE FAMILY	*CYPERACEAE*												
drooping wood sedge	*Carex arctata Boott*	1			X								
Pennsylvania sedge	*Carex pensylvanica*	2			X					X			
wool-grass	*Scirpus cyperinus*	1										X	
GRASS FAMILY	*POACEAE*												
redtop	*Agrostis gigantea*	1											X
awnless brome grass	*Bromus inermis ssp.inermis*	6	X			X	X	X	X		X		
Canada bluejoint grass	*Calamagrostis canadensis*	1										X	
orchard grass	*Dactylis glomerata*	2	X						X				
Virginia wild rye	*Elymus virginicus*	1									X		
Kentucky blue grass	*Poa pratensis*	2	X	X									
LILY FAMILY	*LILIACEAE*												
asparagus	*Asparagus officinalis*	1	X										
Canada mayflower	*Maianthemum canadense*	1			X								
false Solomon's seal	*Smilacina racemosa*	2	X	X									
rose-twisted stalk	*Streptopus roseus*	1								X			
ORCHID FAMILY	*ORCHIDACEAE*												
helleborine	*Epipactis helleborine*	2			X					X			
Total Number of Plant Species	105		41	20	36	23	32	18	15	25	14	15	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 NEA 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

STATUS CODES

COSEWIC	**END ***	- Endangered Species
COSSARO	**THR ***	- Threatened Species
SARA	**SC ***	- Species of Concern
SRANK	**S1**	- Extremely Rare
	S2	- Very Rare
	S3	- Rare to Uncommon
Regional Lists	**R**	- Rare native species
	RS	-Regional significant
	EXP	- Extirpated native species

***Year of Status Publication included in Code**

Other national or provincial codes not listed

Other Regional codes not listed

			NATIONAL RANKINGS		PROVINCIAL RANKINGS		REGIONAL RANKINGS				
Common Name	**Scientific Name**		**COSEWIC**	**SARA**	**COSSARO**	**SRank**	**Riley PDVN**				
butternut	Juglans cinerea		END Apr/14	END Mar/13	END Jun/14	S3?					
Plants with Ranking	**Total:** 1	**Status List Totals**	1	1	1		0	0	0	0	0

Appendix C

Bird Status Report - Comprehensive

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, May 2018.
COSSARO	The Committee on the Status of Species at Risk in Ontario, June 2018.
SARA	Species At Risk Act, Schedule 1, Government of Canada, 2018.
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 NEA)

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 NEA)

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		
CAGO	Canada Goose	*Branta canadensis*	B	H				No			
MALL	Mallard	*Anas platyrhynchos*	B	None				No			
KILL	Killdeer	*Charadrius vociferus*	B	S				No			
RBGU	Ring-billed Gull	*Larus delawarensis*	B	H				No			
MODO	Mourning Dove	*Zenaida macroura*	B	H				No			
LEFL	Least Flycatcher	*Empidonax minimus*	B	S				No			
REVI	Red-eyed Vireo	*Vireo olivaceus*	B	S				No			
BLJA	Blue Jay	*Cyanocitta cristata*	B	None				No			
AMCR	American Crow	*Corvus brachyrhynchos*	B	S				No			
BCCH	Black-capped Chickadee	*Poecile atricapillus*	B	S				No			
HOWR	House Wren	*Troglodytes aedon*	B	S				No			
AMRO	American Robin	*Turdus migratorius*	B	CF				No			
CEWX	Cedar Waxwing	*Bombycilla cedrorum*	B	S				No			
YEWA	Yellow Warbler	*Dendroica petechia*	B	S				No			
BTGW	Black-throated Green War	*Dendroica virens*	B	S				Yes			
BWWA	Black-and-white Warbler	*Mniotilta varia*	B	S				No			
OVEN	Ovenbird	*Seiurus aurocapillus*	B	S				Yes			
COYE	Common Yellowthroat	*Geothlypis trichas*	B	S				No			
FISP	Field Sparrow	*Spizella pusilla*	B	S				No			
SOSP	Song Sparrow	*Melospiza melodia*	B	S				No			
NOCA	Northern Cardinal	*Cardinalis cardinalis*	B	S				No			
COGR	Common Grackle	*Quiscalus quiscula*	B	S				No			
AMGO	American Goldfinch	*Carduelis tristis*	B	P				No			
TOTAL SPECIES OBSERVED:	**23**	**BREEDING SPECIES OBSERVED:**	**23**		**0**	**0**	**0**	**2**	**0**	**0**	**0**

Appendix D

Bird Status Report by Station

APPENDIX D Bird Status Report by Station

Bird species observed by GHD within each survey station 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, May 2018.
	COSSARO	The Committee on the Status of Species at Risk in Ontario, June 2018.
	SARA	Species At Risk Act, Schedule 1, Government of Canada, 2018.
	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 NEA)

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 NEA)

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

Station No.: 01BB												
AOU Code	Common Name	Scientific Name	Observed Breeding Status	Breed Evidence Code	COSEWIC	COSSARO	SARA	Area Sensitive	Region 6			
CAGO	Canada Goose	*Branta canadensis*	B	H				No				
MALL	Mallard	*Anas platyrhynchos*	B	None				No				
RBGU	Ring-billed Gull	*Larus delawarensis*	B	H				No				
MODO	Mourning Dove	*Zenaida macroura*	B	H				No				
BLJA	Blue Jay	*Cyanocitta cristata*	B	S				No				
AMCR	American Crow	*Corvus brachyrhynchos*	B	S				No				
FISP	Field Sparrow	*Spizella pusilla*	B	S				No				
SOSP	Song Sparrow	*Melospiza melodia*	B	S				No				
No. of Species Observed in Station:	**8**	**No. of Breeding Species Observed in Station:**	**8**		**0**	**0**	**0**	**0**	**0**	**0**	**0**	

Station No.: 02BB												
AOU Code	Common Name	Scientific Name	Observed Breeding Status	Breed Evidence Code	COSEWIC	COSSARO	SARA	Area Sensitive	Region 6			
REVI	Red-eyed Vireo	*Vireo olivaceus*	B	S				No				
BLJA	Blue Jay	*Cyanocitta cristata*	B	S				No				
AMCR	American Crow	*Corvus brachyrhynchos*	B	None				No				
BCCH	Black-capped Chickadee	*Poecile atricapillus*	B	S				No				
CEWX	Cedar Waxwing	*Bombycilla cedrorum*	B	S				No				
COYE	Common Yellowthroat	*Geothlypis trichas*	B	S				No				
SOSP	Song Sparrow	*Melospiza melodia*	B	S				No				
AMGO	American Goldfinch	*Carduelis tristis*	B	P				No				
No. of Species Observed in Station:	**8**	**No. of Breeding Species Observed in Station:**	**8**		**0**	**0**	**0**	**0**	**0**	**0**	**0**	

Station No.: 03BB												
AOU Code	Common Name	Scientific Name	Observed Breeding Status	Breed Evidence Code	COSEWIC	COSSARO	SARA	Area Sensitive	Region 6			
LEFL	Least Flycatcher	*Empidonax minimus*	B	S				No				
BLJA	Blue Jay	*Cyanocitta cristata*	B	None				No				
HOWR	House Wren	*Troglodytes aedon*	B	S				No				
AMRO	American Robin	*Turdus migratorius*	B	CF				No				
YEWA	Yellow Warbler	*Dendroica petechia*	B	S				No				
BTGW	Black-throated Green War	*Dendroica virens*	B	S				Yes				
BWWA	Black-and-white Warbler	*Mniotilta varia*	B	S				No				
OVEN	Ovenbird	*Seiurus aurocapillus*	B	S				Yes				
COYE	Common Yellowthroat	*Geothlypis trichas*	B	S				No				
SOSP	Song Sparrow	*Melospiza melodia*	B	S				No				
NOCA	Northern Cardinal	*Cardinalis cardinalis*	B	S				No				
COGR	Common Grackle	*Quiscalus quiscula*	B	S				No				
No. of Species Observed in Station:	**12**	**No. of Breeding Species Observed in Station:**	**13**		**0**	**0**	**0**	**2**	**0**	**0**	**0**	

Station No.: 04BB												
AOU Code	Common Name	Scientific Name	Observed Breeding Status	Breed Evidence Code	COSEWIC	COSSARO	SARA	Area Sensitive	Region 6			
KILL	Killdeer	*Charadrius vociferus*	B	S				No				
AMCR	American Crow	*Corvus brachyrhynchos*	B	None				No				
AMRO	American Robin	*Turdus migratorius*	B	S				No				
SOSP	Song Sparrow	*Melospiza melodia*	B	S				No				
COGR	Common Grackle	*Quiscalus quiscula*	B	H				No				
AMGO	American Goldfinch	*Carduelis tristis*	B	S				No				
No. of Species Observed in Station:	**6**	**No. of Breeding Species Observed in Station:**	**6**		**0**	**0**	**0**	**0**	**0**	**0**	**0**	

TOTAL BIRD SPECIES OBSERVED DURING STATION SURVEYS: 23

Appendix E

Mammal Status Report

APPENDIX E 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, 2017.
	COSSARO	The Committee on the Status of Species at Risk in Ontario, 2017.
	SARA	Species At Risk Act, Schedule 1, Government of Canada, 2017.
	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
Red Squirrel	*Tamiasciurus hudsonicus*				No
Eastern Chipmunk	*Tamias striatus*				No
Coyote	*Canis latrans*				No
No. of Species Observed in Projec 4		**0**	**0**	**0**	**0**

Appendix F

Fish Species List for Baxter Creek

Appendix F Table 1.1 Fish Species List for Baxter Creek.

Family	Common Name	Scientific Name	Thermal Regime	Spawning Season
Catostomidae	White Sucker	*Catostomus commersonii*	Coolwater	Spring (April-June)
Cottidae	Mottled Sculpin	*Cottus bairdii*	Coolwater	Spring (April-May)
Cyprinidae	Western Blacknose Dace	*Rhinichthys obtusus*	Coolwater	Spring (May-June)
	Bluntnose Minnow	*Pimephales notatus*	Warmwater	Summer (June-August)
	Brassy Minnow	*Hybognathus hankinsoni*	Coolwater	Spring-Summer (May-July)
	Creek Chub	*Semotilus atromaculatus*	Coolwater	Spring (May-June)
	Common Shiner	*Luxilus cornutus*	Coolwater	Spring (May-June)
	Northern Redbelly Dace	*Chrosomus eos*	Coolwater	Spring-summer (May-July)
	Pearl Dace	*Margariscus nachtriebi*	Coolwater	Spring (May-June)
Gasterosteidae	Brook Stickleback	*Culaea inconstans*	Coolwater	Spring-summer (May-July)
Salmonidae	Brown Trout	*Salmo trutta*	Coldwater	Fall (October-November)

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

Appendix F Table 1.2 Salmonid Species Present and Preferred Spawning Habitat.

Family	Common Name	Scientific Name	Preferred Spawning Habitat
Salmonidae	Brown Trout	*Salmo trutta*	Pit nest or redd excavated in gravel over groundwater upwelling in rivers.

Fish species spawning season obtained from the *Ontario Freshwater Fishes Life History Database* (Eakins, 2019).

Appendix G

Terms of Reference

March 2, 2021

Vargas Properties Inc.
c/o Charter Properties
235-380 Armour Road
Peterborough, Ontario
K9H 7L7

RE: Plan of Subdivision – Expanded Area
825 Fallis Line,
Millbrook
Township of Cavan-Monaghan
Peterborough County

TERMS OF REFERENCE FOR ENVIRONMENTAL IMPACT STUDY

Dear Sir,

GHD Limited has been retained to complete an Environmental Impact Study, as required for the application to build on an expanded area of developable land at 825 Fallis Line. The enclosed Terms of Reference (ToR) includes a detailed outline of our proposed workplan. This is to the west of County Road 10 and immediately west of the Highlands development currently under construction by Bromont Homes.

The ToR has been developed based on our review of a previous EIS completed by Beacon (2017) on the eastern section of the property, pre-consultation minutes/comments, our knowledge of the site and surrounding area, applicable federal, provincial and municipal policies, and ORCA regulations.

Please review and circulate to ORCA and the Township. If there are any questions or additions, please contact me.

Yours very truly

Chris Ellingwood, B.E.S
Sr. Biologist
GHD

Plan of Subdivision – Expanded Area
825 Fallis Line,
Millbrook
Township of Cavan-Monaghan
Peterborough County

TERMS OF REFERENCE FOR ENVIRONMENTAL IMPACT STUDY

1.0 Introduction

GHD Limited has been retained Vargas Properties to complete an Environmental Impact Study (EIS) for a proposed draft plan of subdivision at 825 Fallis Line, Millbrook, Township of Cavan-Monaghan, Peterborough County. Access to the property is from Fallis Lane that extends across the northern frontage of this property. The site is currently agricultural fields with NHE at the south end and ORM to the west.

Natural Heritage Features on the property or within 120 m of the property include:

- Key natural heritage features (wetland and woodland)
- Habitat for threatened or endangered species (e.g. Butternut, woodland birds)
- Tributary of Baxter Creek and headwater drainage features
- Regionally rare plant species
- Seepage areas

There was an EIS completed by Beacon Environmental Limited in 2017, that outlined the constraints, included detailed in-season field surveys (birds, plants) and recommendations. The expanded study area, which is the focus for this EIS, was not included in Beacon's report.

As of February 2021, GHD has visited the site in the spring and summer of 2018 and 2020 to complete ELC vegetation mapping, SAR screening and butternut health assessments, 2 Breeding Bird surveys and aquatic habitat assessments. Pending a review of this ToR, additional field visits may be required.

2.0 Approach

2.1 General Approach

Our approach to preparation of the EIS will consist of four distinct phases.

The first phase has already begun, with collection and review of available information on the site including recent air photography, Township of Cavan-Monaghan Official Plan as well as Zoning by-laws and schedules, the EIS report prepared by Beacon (2017), correspondence from ORCA to the landowner, and key natural features GIS mapping, MNRFGIS database mapping and woodland layers and other correspondence or files.

This ToR comprises the second phase, with the approval of this required by the Township and ORCA. Once verified with the agencies, the ToR will be used as the framework to complete the EIS report.

The third phase has already been largely completed, and includes the completion of all required field surveys, including terrestrial and fisheries assessments and species inventories. Any potential unmapped wetland boundaries, and woodland driplines were verified in the field. Any SAR species encountered, were GPS located and catalogued.

We would also like to arrange a site walk with the Township and ORCA to confirm the dripline of the woodland and the boundary of the wetland, as well as an investigation of the old railway line feature on the east side of the site. Arrangements will be made for a summer visit. Any lines staked would be tied in by an OLS surveyor..

The final phase will be the preparation of an EIS report with specific mitigation measures for protecting the natural features and species present on site.

2.2 Field Inventories

2.2.1 Timing and Schedule

The EIS for the proposed project will be undertaken during the spring and summer of 2021. Field surveys have already been largely completed as of the summer of 2020. Surveys were conducted in the proper season and as per established protocols for the target species. The surveys covered all portions of the study area and adjacent areas to assess the boundary of natural features such as the woodland. A detailed description of our methodologies are found below.

2.2.2 Detailed Methodology

Vegetation

All vegetation communities on and adjacent to the study lands were visited in 2018 and 2020 and species composition of dominant species determined. Community type criteria will follow that of MNR's Ecological Land Classification for Southern Ontario (ELC) program (Lee et al., 1998) and will be done to the vegetation type level. The presence of rare species or significant communities, if any, were documented and locations mapped. Soil sampling was conducted in each community to describe the moisture, soil type and organic content of soils according to the ELC manual.

Photographs and/or specimens were taken of plants requiring verification of identification..

National, provincial and regional significance was determined from accepted status lists and published reference lists such as SARA (2019), COSEWIC (2020), SARO (2019), Ontario Endangered Species Act (2007), NHIC (2019), and Oldham (1999).

Birds

Two breeding bird surveys were conducted during the peak breeding season of 2020 (May 28-June 30th) using a combination of point counts and area searches. The point counts followed the Ontario Breeding Bird Atlas point count methodologies. Surveys targeted all species, though emphasis was on current listed species on the provincial SARO list and woodland birds. Surveys were conducted between dawn and 9 am on days with suitable weather conditions.

Wildlife

Incidental observations of mammals, amphibians, reptiles were made during all site visits. Observations included direct sightings and indirect evidence such as calls, scat, browse, burrows and nests. Any wildlife trees, those suitable for bats (Bat cavity trees), and raptor stick nests were

recorded. As there in no standing water on this hill top location, amphibian surveys using the Marsh Monitoring Program, were not conducted.
Three MMP amphibian surveys were completed by Beacon on the small low area near the road but not at the back of the property.

Wildlife Corridors

The occurrence of linkages and corridors was assessed based on fieldwork and existing literature. Observations of bird, mammal and herpetozoa movements were documented through the study period and air photos and GIS natural features mapping will be reviewed to determine the presence of linkages across the landscape and between core natural areas.

Species at Risk

The Ontario Endangered Species Act (ESA) places the onus on proponents and comply with the act. This is done by requiring surveys be conducted by a qualified biologist, typically as part of an Environmental Study, to determine whether Species at Risk are present through targeted in-season field surveys using species-specific protocols. GHD's site visits included an assessment of habitat for species identified by MECP as being potentially present in the area. We also determined if other species may find habitat on the site (e.g., bats), based on the conditions found during our field visits. Tree removal will only be in the fencerows. Searches for butternut trees (mature specimens, saplings and seedlings) were conducted. Any trees identified were assessed by our MNRF certified butternut health assessor and the trees flagged and GPS readings taken of each tree. These were previously identified by Beacon and tagged. We reconfirmed the health as it had been a few years.

As the property contains adjacent woodland, the presence of area sensitive and interior bird species was determined as part of our breeding bird point count surveys.

Woodland

The boundary of wooded area, species composition, including the age, diameter, species composition and dripline was examined during 2020 field surveys. The significance of the woodland based on MNRF criteria laid out in the Natural Heritage Reference Manual (MNRF, 2005). Township policies will be assessed from our field surveys, GIS mapping and the size of the treed area on site.

Seeps and Springs

Any seeps or springs identified during field surveys were GPS catalogued. Seeps and springs considered to be Significant Wildlife Habitat as per the MNRF criteria on candidate Significant Wildlife Habitat for Southern Ontario.

Aquatic Habitat Assessments

GHD biologists assessed the aquatic habitat of the watercourses found within the subject property, including the location of any headwater drainage features (HDF). A general aquatic assessment was conducted to verify the location of the watercourses and habitat type(s) present so that appropriate mitigation measures are implemented to protect fish and fish habitat. Any watercourses, including HDFs that are not identified during the background review/on aerial imagery were mapped during the site visit.

Aquatic habitat types were based on substrate, riparian habitat, percent in-stream cover and unique features. Habitat types will be identified on aerial imagery and site map providing the existing aquatic habitat characteristics will be provided. Assessments were conducted using standardized provincial aquatic protocols (OSAP, MTO).

Surface Water Quality: Water temperature, dissolved oxygen, total dissolved solids, conductivity, salinity, pH, and water colour were recorded to obtain a baseline for construction and post construction reference.

Fish Community

Due to the scope of the proposed project fish community surveys were not conducted by GHD biologist. A fish species list will be obtained by the Ministry of Natural Resources and Forestry (MNRF) and if available from ORCA documents.

2.3 Resource Significance

Following field surveys, the significance of all natural heritage features and species found on site will be assessed in light of the relevant policies and regulations. Species lists from our field work will be compared to the most current federal, provincial and regional plant and wildlife lists.

2.4 Impact Assessment

In this component of the EIS, the details of the proposed development plan will be considered in the context of the significance of the key natural heritage features and species at risk present in the area. All potential impacts to the Natural Heritage System will be identified on site will be outlined.

We will also work with the other study team members to ensure that all features that pose a constraint to the development envelope are identified and mapped. Those lines will be shown on the site plan to demonstrate that our buffers were included as part of the decision on the layout and developable area for the subdivision. This would include the mapping of key natural heritage features including the various forest types. In addition, the required setbacks/VPZ from all features as per the Official Plan policies.

2.5 Mitigation Recommendations

Based on the site conditions, buffers and the proposed development type, we will recommend mitigation measures for the site-preparation, construction and post-construction phases of the project. Mitigation measures may include such items as sediment and erosion control, timing windows, protection areas, fencing and other measures to maintain infiltration, limit impervious surfaces and minimize grading. We will work with the other study team members, including the engineers and planners on any measures we feel should be incorporated into the site plan and subdivision design.

2.6 Conclusions and Recommendations

Project conclusions will be summarized in a concise manner at the end of the EIS report to ensure readability of the document and clear transference of information to the project team. This will include compliance with Official Plan policies, ORCA regulations and policies.

3.0 Deliverables

GHD will provide .pdf files of the EIS to the proponent and the agencies unless otherwise stated. Hard copies may be requested at an extra charge. This report will be prepared as per the requirements in the Official Plans, standard EIS procedures, and the details outlined in this Terms of Reference (ToR). The EIS will act as supporting documentation for the development application. Our vegetation community layers and ELC boundary lines can be made available to the agencies to update their GIS mapping.

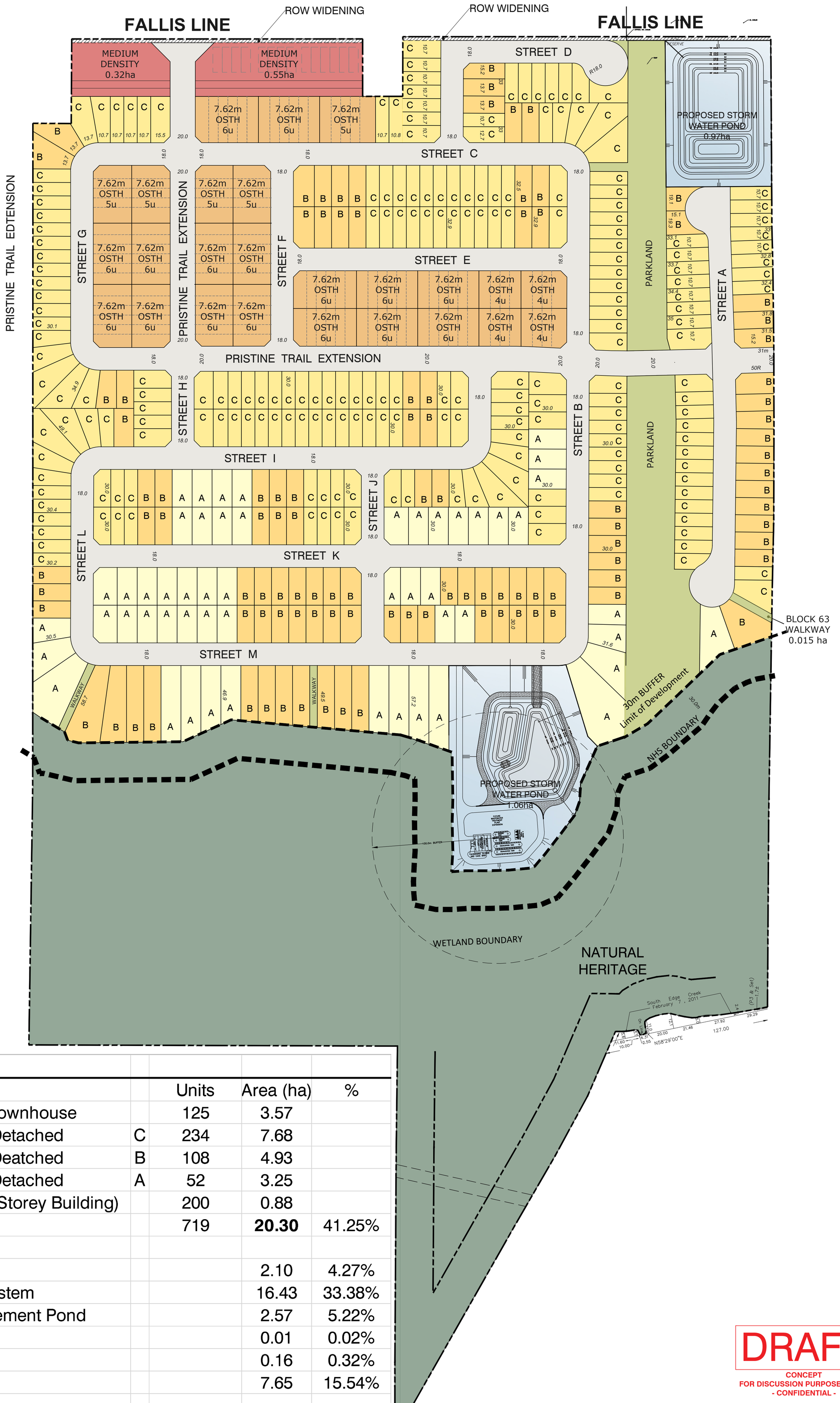
If you have any questions on this Terms of Reference, please contact me. A formal response on the acceptance of the ToR would be appreciated.

Sincerely,

Chris Ellingwood
Sr. Terrestrial and Wetland Biologist

Appendix H

Site Plan



Site Statistics

		Units	Area (ha)	%
7.62m (24') Street Townhouse		125	3.57	
10.7m (35') Single Detached	C	234	7.68	
13.7m (45') Single Deatched	B	108	4.93	
15.9m (52') Single Detached	A	52	3.25	
Medium Density (5-Storey Building)		200	0.88	
TOTAL		719	**20.30**	41.25%
Parkland & Trails			2.10	4.27%
Natural Heritage System			16.43	33.38%
Stormwater Management Pond			2.57	5.22%
Easement			0.01	0.02%
Road Widening			0.16	0.32%
R.O.W.			7.65	15.54%
TOTAL SUBJECT SITE			**49.22**	

DRAFT

CONCEPT
FOR DISCUSSION PURPOSES ONLY
- CONFIDENTIAL -

TITLE:

CONCEPTUAL DRAFT PLAN

LEGAL DESCRIPTION:

DRAFT PLAN OF PROPOSED SUBDIVISION
PART OF LOT 11, CONCESSION 5
(Geographic Village of Millbrook, Township of Cavan)
PART OF LOT 11, CONCESSION 5 (Geographic Township of Cavan)
TOWNSHIP OF CAVAN-MONAGHAN
NORTH MONAGAN
(COUNTY OF PETERBOROUGH)

KEY PLAN:

Fallis Line West
Township of Cavan Monaghan

NOTE:
DISTANCES AND/OR COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

LEGEND

REVISIONS

No.	Description	Date	Int.
3			
2			
1			

PROJECT No.:
DATE: February 20, 2020
SCALE:
DRAFTED BY: CHECKED BY:
DRAWING No.:

THE BIGLIERI GROUP LTD.
Planning | Development | Project Management | Urban Design
20 Leslie Street, Suite 121, Toronto, Ontario M4M 3L4
126 Catharine Street North, Hamilton, Ontario, L8R 1J4
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The Power of Commitment