McKINLEY
ENVIRONMENTAL
SOLUTIONS

Combined Environmental Impact Statement & Tree Conservation Report (Revised) 1053/1075/1145 March Road

November 2019
Prepared for CU Developments Inc.

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LIST OF FIGURES

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EXECUTIVE SUMMARY

McKinley Environmental Solutions (MES) was retained by CU Developments Inc. to prepare a Combined Environmental Impact Statement (EIS) and Tree Conservation Report (TCR) to support the development of CU Developments Inc.'s Kanata North property. The Study Area addressed by this Combined EIS and TCR encompasses the northwest quadrant of the designated Kanata North Urban Expansion Area (KNUEA). In order to remain consistent with previous studies completed as part of the KNUEA process, the entirety of the KNUEA northwest quadrant is included in the Study Area for this Combined EIS and TCR. However, the current development proposal does not include the entirety of the KNUEA northwest quadrant. The KNUEA northwest quadrant as a whole is approximately 64 ha in size (the Study Area), whereas the current development proposal only includes approximately 48.05 ha (the Site).

The development lands owned by CU Developments Inc. includes several properties under the municipal addresses 1053, 1075 and 1145 March Road (Part of Lots 13 and 14, Concession 3, Township of March). The Study Area is within the urban area of the City of Ottawa and is zoned Rural Countryside. Within the Study Area, several developed residential properties with single detached houses exist along March Road, and existing institutional uses include the St. Isidore Church and the St. Isidore Public School. The majority of the Study Area is undeveloped and consists of open habitats including Cultivated Fields and recently Fallow Fields (Graminoid Meadows). Treed habitats within the Study Area include several Coniferous Hedgerows and Deciduous Hedgerows, two (2) small Cultural Woodlots, areas of regenerating Cultural Thicket/Cultural Woodlot, and a Dry-Fresh White Cedar Coniferous Forest (the Southwest Wooded Area) (which is no longer connected to Woodlot S-12).

The North Tributary of Shirley's Brook (referred to as Tributary #2 in the KNUEA Environmental Management Plan (EMP)) runs in an approximately northwest to southeast direction through the Study Area. A small pond is located along Shirley's Brook, adjacent to 1035 March Road. The KNUEA is intended to include an integrated open space system, which will include riparian corridors around the existing tributaries of Shirley's Brook. The Community Design Plan (CDP) and the associated Environmental Management Plan (EMP) for the KNUEA were approved by Ottawa City Council in 2016 through an Official Plan Amendment. Notably, the KNUEA EMP establishes a minimum 40 m wide corridor of vegetated habitat, which is to be retained and/or enhanced surrounding the tributaries of Shirley's Brook.

A Natural Environment Existing Conditions Report was prepared to support the KNUEA EMP. The Natural Environment Existing Conditions Report identified Woodlot S-12 as a significant natural

heritage feature. Woodlot S-12 was previously contiguous with the southwest corner of the Study Area. However, a portion of Woodlot S-12 was recently cleared on the property adjacent to the southwest corner of the Study Area. At the current time, the southwest corner of the Study Area is bordered by the recently cleared area, and the Dry-Fresh White Cedar Coniferous Forest (the Southwest Wooded Area) is no longer connected to Woodlot S-12. As such, the Dry-Fresh White Cedar Coniferous Forest within the Study Area no longer qualifies as part of the Significant Woodlot.

The Natural Environment Existing Conditions Report also documented occurrences of Barn Swallow (threatened), Bobolink (threatened) and Blanding's Turtle (threatened) within the Study Area. The barns and other agricultural buildings that were previously found within the development limits have been removed in compliance with the rules and regulations of the Ontario Endangered Species Act (ESA). Barn Swallow habitat compensation has been completed, and a monitoring program was underway at the time of report preparation. Due to the presence of Blanding's Turtle habitat, an Overall Benefit Permit under Section 17(2)(C) of the Ontario ESA will be required to support the development. The presence of Bobolink habitat will be addressed in future through the Ministry of Environment, Conservation, and Parks (MECP) Online Registration Process.

As noted above, the KNUEA northwest quadrant as a whole is approximately 64 ha in size (the Study Area), whereas the current development proposal only includes approximately 48.05 ha (the Site). The Site will be developed in multiple phases, each of which will include a mixture of single detached homes, townhomes, and multi-unit residential dwellings, as well as institutional uses. The development will also include three (3) institutional blocks including a Park and Ride (Block 297) and Fire Hall (Block 296) to be located at March Road, and a third institutional block (Block 291), which provides a portion of a future school site. An approximately 2.23 ha municipal park block (Block 278) is included along the western Site boundary. The Site will receive municipal services. Stormwater runoff will be addressed through construction of a new Stormwater Management (SWM) Pond (Block 295) adjacent to March Road. The new SWM Pond will outlet clean water to the realigned North Tributary of Shirley's Brook.

The KNUEA EMP establishes a minimum 40 m wide corridor of retained and/or enhanced habitat around the tributaries of Shirley's Brook. Within the Site, this corridor is provided by several connected Open Space blocks (Blocks 272, 273, and 293) that total approximately 4.1 ha in size and which run in a northwest to southeast direction through the Site. As part of the Site development, the North Tributary of Shirley's Brook will be realigned into the Open Space Blocks. The realignment of the North Tributary will include habitat restoration and enhancement activities, which will be intended to improve the quality of the aquatic habitat and riparian areas for Blanding's Turtles (as well as other wildlife). As part of the realignment, the small pond that is currently located along the

North Tributary (adjacent to 1035 March Road) will be decommissioned. Per the recommendations of the KNUEA EMP, the western reach of the North Tributary (Referred to in the KNUEA EMP as Drainage Channel F) will be intercepted at the KNUEA property boundary and piped to the realigned North Tributary. The western reach (Channel F) is an overland stormwater flow channel which receives stormwater from the Panandrick View Drive subdivision (located to the west). A 6 m wide recreational pathway will be included adjacent to the North Tributary watercourse corridor. An authorization under Ontario Regulation 153/06 and a development review by the Department of Fisheries and Oceans (DFO) are anticipated to be required to support the realignment of the North Tributary of Shirley's Brook.

An additional 0.6 ha Open Space Block (Block 285) is located within the southwest corner of the Site. This Open Space Block is intended to preserve a portion of the Southwest Wooded Area, in order to provide a riparian buffer for the North Branch of Shirley's Brook (Referred to as Tributary #3 in the KNUEA EMP), which is located to the south (beyond the Site). Although the North Branch is not located within either the Site or the current Study Area, it is close enough to the Site that a portion of the minimum 40 m wide corridor for that watercourse overlaps the southwest corner of the Site. The intention of the Open Space Block in the southwest corner of the Site is to preserve the riparian habitat of the adjacent North Branch. The KNUEA EMP also previously recommended preservation of an additional 0.3 ha of the Southwest Wooded Area along the western boundary of the Site. The purpose of this recommendation was to preserve a stand of older forest growth within the Site that previously connected to the adjacent Woodlot S-12. However, the portion of Woodlot S-12 that previously occurred adjacent to the Site has been cleared by the adjacent landowner, and there is no longer any connection between the remaining portion of Woodlot S-12 and the Southwest Wooded Area. As such, there is no longer any significant ecological value in preserving the 0.3 ha along the western boundary of the Site, and so this area has been included in the development limits.

Pending that the regulatory, mitigation, and avoidance measures outlined in this report are implemented appropriately, the development is not anticipated to have a significant negative effect on the natural features and functions.

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1.0 INTRODUCTION

1.1 Reading the Integrated Tree Conservation Report (TCR)

This report is presented as a Combined Environmental Impact Statement (EIS) and Tree Conservation Report (TCR). Readers who are principally interested in the TCR may choose to read only those portions of the report where the section headings are marked **(TCR)**. This includes Sections 1.3, 1.4, 2.0.1, 3.2, 3.3.2, 3.3.3, 3.7.2, 4.1, 4.2.4, and 4.4.2. Readers who are interested in the EIS should read the entire report, as information included in the TCR sections is not reiterated.

1.2 Scoping the Environmental Impact Statement

This Combined Environmental Impact Statement (EIS) and Tree Conservation Report (TCR) was undertaken following the City of Ottawa's Environmental Impact Statement Guidelines. Following the City guidelines, the Environmental Impact Statement (EIS) includes the following:

- Documentation of existing natural features on and around the Site;
- Identification of potential environmental impacts of the project;
- Recommendations for ways to avoid and reduce any negative impacts; and
- Proposal of ways to enhance natural features and functions.

This Combined EIS and TCR was prepared with guidance from the *Natural Heritage Reference Manual* (OMNRF 2010). The major objective of this Combined EIS and TCR is to assess whether the proposed project will negatively affect the significant features and functions of the Site, and to ensure that impacts will be minimized through mitigation measures.

1.3 Site Overview and Background (TCR)

The Study Area addressed by this Combined EIS and TCR encompasses the northwest quadrant of the designated Kanata North Urban Expansion Area (KNUEA) (Figure 1). In order to remain consistent with previous studies completed as part of the KNUEA process (MEP 2016, Novatech 2016a; 2016b), the entirety of the KNUEA northwest quadrant is included in the Study Area for this Combined EIS and TCR.

The majority of the KNUEA northwest quadrant consists of agricultural lands which CU Developments Inc. proposes to develop as a residential subdivision. However, the current development proposal does not include the entirety of the KNUEA northwest quadrant. Several developed residential and institutional properties are present along the west side of March Road, and the existing developed areas are not part of the current development proposal. There is also a block of land in the southeast corner of the Study Area which is not owned by CU Developments Inc., and is therefore outside of the scope of the current development proposal. The CU Developments Inc. development limits are shown in Figure 1 (the Site). The KNUEA northwest quadrant as a whole is approximately 64 ha in size (the Study Area), whereas the current development proposal only includes approximately 48.05 ha (the Site).

The development lands owned by CU Developments Inc. includes several properties under the municipal addresses 1053, 1075 and 1145 March Road (Part of Lots 13 and 14, Concession 3, Township of March). The Study Area is within the urban area of the City of Ottawa and is zoned Rural Countryside. Within the Study Area, several developed residential properties with single detached houses exist along March Road, and existing institutional uses include the St. Isidore Church and the St. Isidore Public School. The majority of the Study Area consists of undeveloped open habitats including Cultivated Fields and recently Fallow Fields (Graminoid Meadows). Treed habitats within the Study Area include several Coniferous Hedgerows and Deciduous Hedgerows, two (2) small Cultural Woodlots, areas of regenerating Cultural Thicket/Cultural Woodlot, and a Dry-Fresh White Cedar Coniferous Forest (the Southwest Wooded Area) (which is no longer connected to Woodlot S-12). The barns and other agricultural buildings that were previously found within the development limits have been removed. As discussed below in Section 3.7.4, removal of structures with Barn Swallow nests was completed in compliance with the rules and regulations of the Ontario Endangered Species Act (ESA). Barn Swallow habitat compensation has been completed, and a monitoring program was underway at the time of report preparation.

The Study Area is part of the KNUEA, which is a designated urban expansion area located northwest of the developed portion of Kanata. The KNUEA includes approximately 181 hectares on either side

of March Road, which will be developed in future to accommodate approximately 3,000 residential dwellings, a mixed-use core, schools, and various parks and trails (Novatech 2016a). During the urban expansion process, the KNUEA was divided into four (4) quadrants, each of which corresponded to the major landowners for that portion of the KNUEA. The current Study Area is the northwest quadrant of the KNUEA, which was previously owned by Junic/Multivesco (now owned by CU Developments Inc.). The Study Area is located along the west side of March Road, with the KNUEA southwest quadrant located directly to the southeast, and the KNUEA northeast quadrant located on the opposite side of March Road (Figure 1). Both of the adjacent KNUEA quadrants are intended to be developed in future as residential subdivisions, although they remain predominantly undeveloped agricultural lands at the current time. Existing rural subdivisions are located south (Marchbrook Circle), west (Panandrick View Drive), and northeast (Houston Crescent) of the Study Area. The western and northern boundaries of the Study Area are contiguous with the limits of the City of Ottawa urban area. Beyond the urban area, there are cultivated agricultural fields located northwest of the Study Area and regenerating agricultural lands to the north.

The KNUEA Environmental Management Plan (EMP) identified Woodlot S-12 as a significant natural heritage feature. Woodlot S-12 was previously contiguous with the southwest corner of the Study Area. However, a portion of Woodlot S-12 was recently cleared on the property adjacent to the southwest corner of the Study Area. At the current time, the Dry-Fresh White Cedar Coniferous Forest (the Southwest Wooded Area) is no longer connected to Woodlot S-12. As such, the Dry-Fresh White Cedar Coniferous Forest within the Study Area no longer qualifies as part of Woodlot S-12.

The North Tributary of Shirley's Brook (referred to as Tributary #2 in the KNUEA EMP) runs in an approximately northwest to southeast direction through the Study Area. A small pond is located along Shirley's Brook, adjacent to 1035 March Road. The KNUEA is intended to include an integrated open space system, which will include riparian corridors around the existing tributaries of Shirley's Brook. The Community Design Plan (CDP) and the associated Environmental Management Plan (EMP) for the KNUEA were approved by Ottawa City Council in 2016 through an Official Plan Amendment (Novatech 2016a; 2016b). Notably, the KNUEA EMP establishes a minimum 40 m wide corridor of vegetated habitat, which is to be retained and/or enhanced surrounding the tributaries of Shirley's Brook (Novatech 2016b).

Lastly, several Species at Risk (SAR) were documented within the Study Area as part of the Natural Environment Existing Conditions Report (MEP 2016), which was prepared to support the KNUEA EMP. The Natural Environment Existing Conditions Report (MEP 2016) documented occurrences of Barn Swallow (threatened), Bobolink (threatened) and Blanding's Turtle (threatened) within the Study Area. These natural heritage features are discussed in greater detail below.

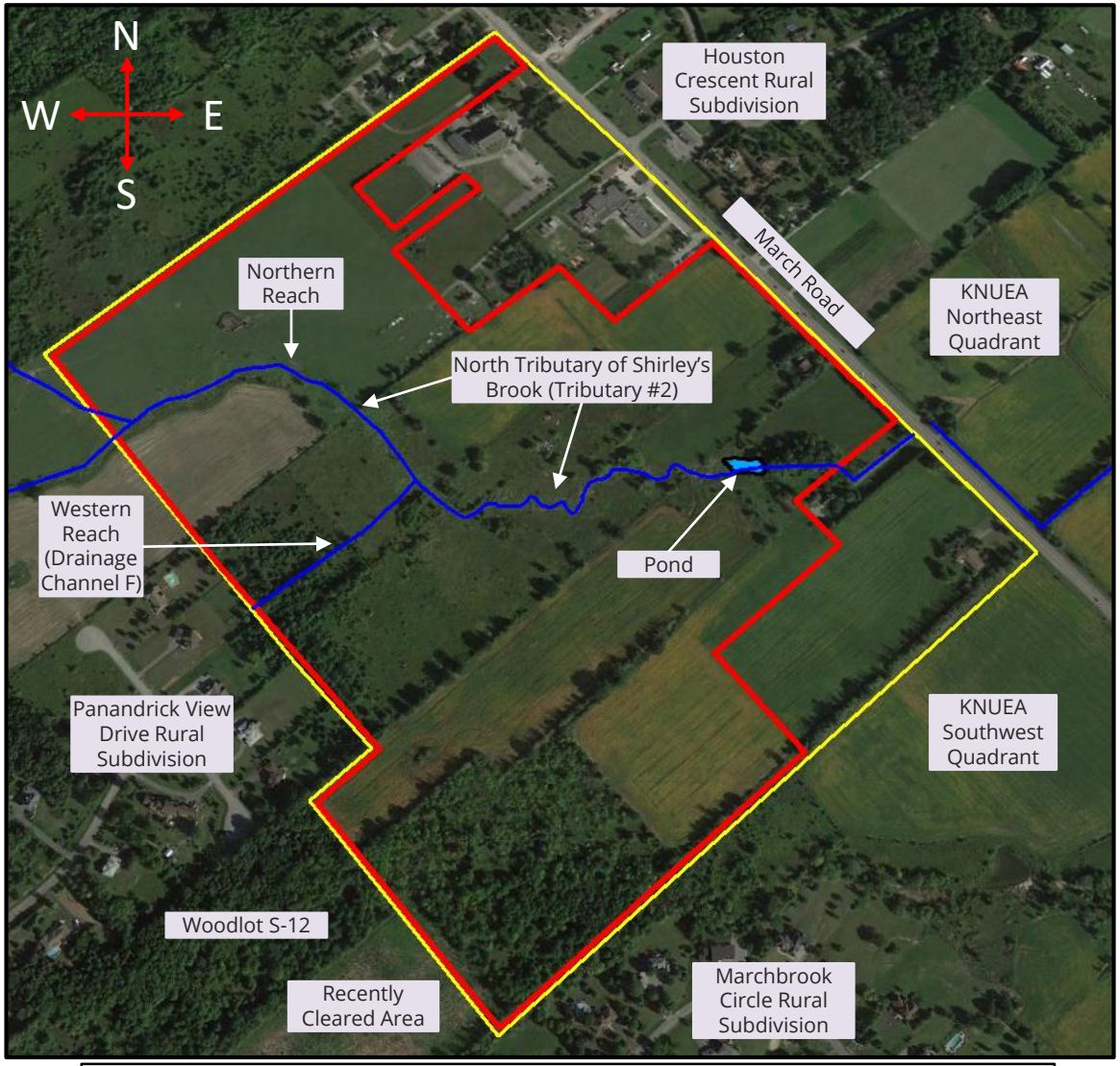
McKINLEY ENVIRONMENTAL SOLUTIONS

November 2019

FIGURE 1: SITE OVERVIEW

1053/1075/1145 March Road - CU Developments Inc.

Combined Environmental Impact Statement and Tree Conservation Report (Revised)



- Study Area (Northwest Quadrant)
- Development Limits

Please Note: This is not a legal land survey. All dimensions and locations are shown as approximate.

1.4 Description of Undertaking (TCR)

The Draft Plan of Subdivision is included below. As noted above, the Study Area as a whole is approximately 64 ha in size, however, the current development proposal only includes approximately 48.05 ha (the Site). The Site will be developed in multiple phases, each of which will include a mixture of single detached homes, townhomes, and multi-unit residential dwellings, as well as institutional uses. The development will also include three (3) institutional blocks including a Park and Ride (Block 297) and Fire Hall (Block 296) to be located at March Road, and a third institutional block (Block 291), which provides a portion of a future school site. An approximately 2.23 ha municipal park block (Block 278) is included along the western Site boundary. The Site will receive municipal services. Stormwater runoff will be addressed through construction of a new Stormwater Management (SWM) Pond (Block 295) adjacent to March Road. The new SWM Pond will outlet clean water to the realigned North Tributary of Shirley's Brook.

The Kanata North Urban Expansion Area (KNUEA) Environmental Management Plan (EMP) (Novatech 2016b), which was approved through a City of Ottawa Official Plan Amendment, establishes a minimum 40 m wide corridor of retained and/or enhanced habitat around the tributaries of Shirley's Brook. Within the Site, this corridor is provided by several connected Open Space blocks (Blocks 272, 273, and 293) that total approximately 4.1 ha in size and which run in a northwest to southeast direction through the Site. As part of the Site development, the North Tributary of Shirley's Brook (referred to as Tributary #2 in the KNUEA EMP) will be realigned into the Open Space Blocks. Portions of the existing channel of the North Tributary are already within the Open Space Blocks, although much of the existing channel will require decommissioning, with a new channel to be built within the minimum 40 m wide corridor. As part of the realignment, the small pond that is currently located along the North Tributary (adjacent to 1035 March Road) will also be decommissioned. As discussed below, the realignment of the North Tributary will include habitat restoration and enhancement activities, which will be intended to improve the quality of the aquatic habitat and riparian areas for Blanding's Turtles (as well as other wildlife). Per the recommendations of the KNUEA EMP, the western reach of the North Tributary (Referred to in the KNUEA EMP as Drainage Channel F) will be intercepted at the KNUEA property boundary and piped to the realigned North Tributary. Channel F is an overland stormwater flow channel which receives stormwater from the Panandrick View Drive subdivision (located to the west). Two (2) new roads will cross the realigned North Tributary. The future road crossings will include suitable wildlife passage culverts that will allow Blanding's Turtles (and other wildlife) to pass beneath the new roads. As discussed below, the minimum 40 m wide corridor surrounding the North Tributary will also include fencing that will be designed to prevent Blanding's Turtles and other wildlife from leaving the Open Space Blocks to

enter the subdivision/roads. A 6 m wide recreational pathway will be included adjacent to the North Tributary watercourse corridor.

An additional 0.6 ha Open Space Block (Block 285) is located within the southwest corner of the Site. This Open Space Block is intended to preserve a portion of the Southwest Wooded Area, in order to provide a riparian buffer for the North Branch of Shirley's Brook (Referred to as Tributary #3 in the KNUEA EMP), which is located to the south (beyond the Site). Although the North Branch is not located within either the Site or the current Study Area, it is close enough to the Site that a portion of the minimum 40 m wide corridor for that watercourse overlaps the southwest corner of the Site. The intention of the Open Space Block in the southwest corner of the Site is to preserve the riparian habitat of the adjacent North Branch. The KNUEA EMP also previously recommended preservation of an additional 0.3 ha of the Southwest Wooded Area along the western boundary of the Site. The purpose of this recommendation was to preserve a stand of older forest growth within the Site that previously connected to the adjacent Woodlot S-12. However, the portion of Woodlot S-12 that previously occurred adjacent to the Site has been cleared by the neighboring landowner, and there is no longer any connection between the remaining portion of Woodlot S-12 and the Southwest Wooded Area. As such, there is no longer any significant ecological value in preserving the 0.3 ha along the western boundary of the Site, and so this area has been included within the development limits.

Lastly, it should be noted that while houses may be constructed in phases (as outlined above), the realignment of the North Tributary, Site servicing, and the construction of the SWM Pond will need to be undertaken as part of the initial phase of development, as those aspects of the development cannot be effectively implemented in phases. As such, opportunities for phased tree removal may be limited in areas affected by the North Tributary realignment, servicing, and the construction of the SWM Pond.

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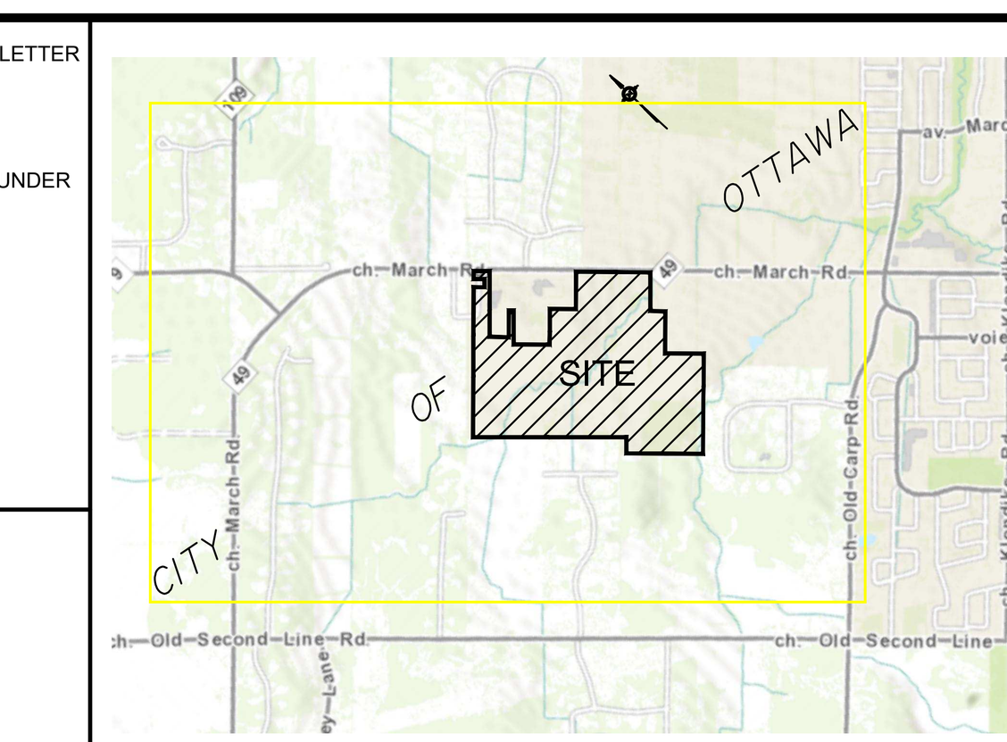
SUBJECT TO THE CONDITIONS, IF ANY, SET FORTH IN OUR LETTER DATED

_______________________.

THIS DRAFT PLAN IS APPROVED BY THE CITY OF OTTAWA UNDER SECTION 51 OF THE PLANNING ACT.
THIS ____ DAY OF ____________, 20__ .

____
DERRICK MOODIE, MANAGER
DEVELOPMENT REVIEW-WEST
PLANNING, INFRASTRUCTURE AND ECONOMIC DEVELOPMENT DEPARTMENT, CITY OF OTTAWA



KEY MAP
NOT TO SCALE

DRAFT PLAN OF SUBDIVISION OF

PART OF LOTS 13 And **14**

CONCESSION 3

Geographic Township of March

CITY OF OTTAWA

Prepared by Annis , O'Sullivan , Vollebekk Ltd.

Scale 1 : 1000

Metric

DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

Surveyor's Certificate

I CERTIFY THAT :

The boundaries of the lands to be subdivided and their relationship to adjoining lands have been accurately and correctly shown.

___________ Date

___________________ Andre Roy
Ontario Land Surveyor

OWNER'S CERTIFICATE

This is to certify that we are the owners of the lands to be subdivided and that this plan was prepared in accordance with our instructions.

___________ Date

___________________ Jim Burghout
CU DEVELOPMENTS INC.
I have the authority to bind the corporation.

ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51-17 OF THE PLANNING ACT

(a) see plan
(b) see plan
(c) see plan
(d) residential housing, institutional, storm water management, open space
(e) see plan
(f) see plan
(g) see plan
(h) City of Ottawa
(i) see soils report
(j) see plan
(k) sanitary, storm sewers, municipal water, bell, hydro, cable and gas to be available
(l) see plan

REVISION SCHEDULE

NO.	REVISION	DATE	BY
9	REVISIONS	SEPT. 24, 2019	N
8	REVISIONS	JULY 11, 2019	N
7	REVISIONS PER CITY	APR 29, 2019	N
6	Add lands from PIN 0219	June 20, 2018	AR
5	Remove lands from PIN 0124	June 20, 2018	AR
4	REVISIONS	MAY 25, 2018	N
3	REVISIONS	MAY 16, 2018	N
2	REVISIONS	MAY 3, 2018	N
1	PLAN PREPARED	2017	N

Ontario Land Surveyors

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Job No. 18628-18 Claridge Pt Lts 13 14 C3 MA DPS D9 N

1.5 Agency Consultation

Ottawa City Council has previously approved the Kanata North Urban Expansion Area (KNUEA) Community Design Plan (CDP) and Environmental Management Plan (EMP) through an Official Plan Amendment. The recommendations of the KNUEA CDP and EMP are referred to throughout this report. The Mississippi Valley Conservation Authority (MVCA) was consulted as part of the KNUEA CDP and EMP process. The proponent has discussed the current development proposal with the City, and the MVCA has also been circulated as part of the development application review. The Ontario Ministry of Natural Resources and Forestry (OMNRF) was extensively consulted as part of the urban expansion process, particularly with regards to the *Kanata North Community Design Plan – Blanding's Turtle Habitat Compensation Plan* (DST 2015). As discussed in detail in Section 3.7.3, the extent of Blanding's Turtle habitat and the intended habitat retention within the KNUEA has previously been determined in consultation with the OMNRF. It is anticipated that an Overall Benefit Permit under Clause 17(2)(C) of the Ontario Endangered Species Act (ESA) will be required to support the undertaking (discussed below). It should be noted that in early 2019, responsibility for the implementation of the Ontario ESA was transitioned from the OMNRF to the Ministry of Environment, Conservation, and Parks (MECP). The Overall Benefit Permit application and review process was in progress during the transition of the ESA administration from the OMNRF to the MECP. As such, both agencies have been involved in the review process for the proposed development. Discussions which took place with the OMNRF prior to the transition of the ESA implementation to the MECP, continue to be attributed to the OMNRF throughout this report. Extensive consultation and review will be undertaken with the MECP as part of the ESA permitting process.

1.6 Regulatory Requirements

As discussed in greater detail in the following sections, the following natural heritage related approvals are anticipated to be required:

- **Ontario Endangered Species Act (ESA) – Blanding's Turtle:** An Overall Benefit Permit under Clause 17(2)(C) of the Ontario Endangered Species Act (ESA) will be required to support development within Blanding's Turtle habitat. The ESA permitting process was formally initiated in July 2018 by submitting the Information Gathering Form (IGF) to the Ontario Ministry of Natural Resources and Forestry (OMNRF) / the Ministry of Environment, Conservation, and Parks (MECP). Since that time, the OMNRF/MECP have reviewed the IGF and accepted it as final. In December 2018, the Alternatives Assessment Form (AAF) was also submitted to the OMNRF/MECP, and it has also been reviewed and accepted as final. Copies of the finalized IGF and AAF were provided to the City of Ottawa on June 26th, 2019. The third part of the Overall Benefit Permit Application (the CPAF form) was submitted to the MECP in April 2019. At the time of report preparation, the CPAF form was under review by the MECP. Once the review process is complete, a copy of the finalized CPAF form will be provided to the City of Ottawa.
- **Ontario Endangered Species Act (ESA) – Bobolink:** The rules and regulations of the Ontario ESA allow development of up to 30 hectares of Bobolink habitat to be authorized by completing the Ministry of Environment, Conservation, and Parks (MECP) Online Registration Process. As discussed in Section 3.7.1, Bobolink are found in the Fallow Agricultural Fields within the Site, however, they are not found within fields that are actively cultivated with soybeans and corn. The extent of Bobolink habitat found within the Site varies from year to year, depending on which fields are under cultivation and which have been left fallow. As such, the extent of Bobolink habitat found within the Site should be reevaluated in the growing season prior to the commencement of development, in order to document the extent of Bobolink habitat at the time of development. This information can then be used to complete the MECP Online Registration Process. At any given time, less than 30 hectares of the Site is left fallow, and therefore the Site is anticipated to qualify under the MECP Online Registration Process. This approach to addressing the regulatory requirements for Bobolink was outlined in the Information Gathering Form (IGF) that was submitted to the OMNRF/MECP in July 2018 as part of the Ontario ESA review process. The IGF has been reviewed and accepted by the OMNRF/MECP.
- **Ontario Endangered Species Act (ESA) – Barn Swallow:** The presence of nesting Barn Swallows has previously been addressed by completing the MECP Online Registration Process for that species, which included submitting the *Notice of Activity under the Endangered Species Act (2007): Barn Swallow – Activities in Built Structures that are Habitat*. All structures with Barn Swallow nests were demolished in two (2) phases, with demolition occurring in the winter of 2015-2016 and the winter of 2017-2018, following obtainment of the confirmation of impact registration

(Confirmation # M-102-9977528356 and # M-102-2197304807). Habitat compensation requirements have been fulfilled for both Barn Swallow impact registrations, and long term monitoring will be complete by the end of 2020.

- **Ontario Regulation 153/06:** Ontario Regulation 153/06 regulates activities that would alter shorelines, watercourses, and wetlands. The planned realignment of the North Tributary of Shirley's Brook (referred to as Tributary #2 in the Kanata North Urban Expansion Area (KNUEA) Environmental Management Plan (EMP)) will require obtainment of a permit from the Mississippi Valley Conservation Authority (MVCA) under O.Reg 153/06. A Headwaters Drainage Assessment (HDA) was completed between April and July 2018 in order to support the design and review process for the planned realignment of the North Tributary (MES 2019a).
- **Fisheries Act:** The realignment of the North Tributary will require alteration to fish habitat. As described below in Section 3.4, the North Tributary does not appear to provide significant habitat for recreational or commercial fisheries. As discussed in Section 4.2.2, the realignment process is anticipated to result in a net improvement in the quality of fish habitat. Therefore, it is anticipated that an authorization under the Fisheries Act is unlikely to be required. However, Department of Fisheries and Oceans (DFO) guidelines are such that the realignment of the North Tributary will require submission of a review request to DFO. The DFO review request will be submitted following completion of the technical review of the Ontario Endangered Species Act (ESA) Overall Benefit Permit application (e.g. after acceptance of the CPAF form by the MECP). It is necessary to wait to submit the proposed Shirley's Brook realignment plan to DFO until after completion of the Overall Benefit Permit technical review, in order to avoid unnecessary revisions/resubmission.
- **Tree Removal Permit:** The City of Ottawa will require obtainment of a Tree Removal Permit under the Urban Tree Conservation By-law No. 2009-200 prior to the commencement of tree clearing. The Tree Removal Permit is typically issued following acceptance of the Tree Conservation Report.

2.0 METHODOLOGY

2.0.1 Vegetation Survey and Tree Inventory Methodology (TCR)

Site visits to inventory plants and measure tree sizes were completed by Dr. McKinley on May 24th, June 3rd, and June 12th, 2017. Weather conditions during the May 24th site visit included partially cloudy skies and a temperature of 17 ºC. Weather conditions during the June 3rd site visit included sunny conditions and a temperature of 18 ºC. Weather conditions during the June 12th site visit included sunny conditions and a temperature of 24 ºC.

The following terms are used throughout this report:

- Diameter at Breast Height (dbh) means the measurement of the trunk of a tree at a height of 120 cm above grade for trees 15 cm diameter or greater, and at a height of 30 cm above grade for trees less than 15 cm diameter.
- The Critical Root Zone (CRZ) is 10 centimeters from the trunk of the tree for every centimeter of trunk dbh. The CRZ is calculated as dbh x 10 cm.

Vegetation communities within the Study Area were classified following the plant communities described in the Ecological Land Classification (ELC) manual (OMNRF 1998; Lee 2008). This included a three (3) season plant inventory to document the occurrence of plants, create a master plant list, and to identify and delineate plant communities. Tree measurements were completed in areas of continuous tree cover by undertaking tree sampling plots, whereas linear transects were employed to inventory the Coniferous Hedgerows and Deciduous Hedgerows. Plots were measured 5 m by 10 m to give a total survey area of 50 m^2 (for each plot). Plots were distributed evenly within the treed portion of the Study Area to achieve the desired density of 1 plot per hectare. Hedgerows are too narrow to allow sampling using plots. Instead, transects were employed to sample the hedgerows. Each transect was 20 m long and every tree that was 10 cm dbh or greater in size along each transect was measured. The number of plots and transects undertaken in each vegetation community is listed below in Tables A to D (Section 3.3). Trees within each plot/transect that were 10 cm dbh or greater in size were measured with the use of a D-tape, which is a calibrated dbh tape.

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2.0.2 Environmental Impact Statement Methodology

The presence of natural heritage features was assessed by completing the following:

- Site surveys to describe vegetation communities and inventory trees (see above);
- Site surveys to assess the potential for the habitat of Species at Risk (SAR), wetlands, fish habitat, significant wildlife habitat features, and other significant habitat features to be present;
- Review of the Kanata North Urban Expansion Area (KNUEA) Community Design Plan (CDP) (Novatech 2016a), the Environmental Management Plan (EMP) (Novatech 2016b), and the associated background Natural Environment Existing Conditions Report (MEP 2016);
- Review of existing Blanding's Turtle habitat mapping for the Study Area (DST 2015);
- Completion of a Headwaters Drainage Assessment under separate cover (see below) (MES 2019a);
- Examination of aerial imagery to evaluate landscape features;
- Natural Heritage Information Center (NHIC) database review (OMNRF 2018);
- Obtainment of an Information and Records Request Response from the Ontario Ministry of Natural Resources and Forestry (OMNRF) (Appendix D);
- Review of Official Plan designations; and
- Review of the background geotechnical report (Paterson 2013).

Detailed assessments of natural heritage features were completed as follows:

- **Plant Inventory and Ecological Land Classification:** See description above.
- **Bird Point Counts (Barn Swallow, Bobolink, Eastern Meadowlark):** Breeding bird surveys were completed in 2013 and 2015 as part of the Natural Environment Existing Conditions Report, during which Bobolink and Barn Swallows were noted within the KNUEA northwest quadrant (MEP 2016). As noted above, all structures containing Barn Swallow nests were demolished in the winter of 2015-2016 and the winter of 2017-2018. As such, additional surveying for Barn Swallows was not required. Updated surveying to delineate the extent of Bobolink habitat, and to confirm the presence/absence of Eastern Meadowlark, was completed on May 24th, June 3rd, and June 12th, 2017. Surveys were completed following the OMNRF *Wildlife Monitoring Programs and Inventory Techniques - Technical Manual* (Konze & McLaren 1998) Breeding Bird Survey (BBS) method. The survey timing followed the requirements outlined in the OMNRF *Survey Methodology under the Endangered Species Act: Dolichonyx oryzivorus (Bobolink)* (OMNRF 2011a). Bird survey points are shown in Figure 5 (below).
- **Butternut Trees:** Vegetation surveys were completed in 2013 as part of the Natural Environment Existing Conditions Report, and no Butternut Trees were documented within the Study Area (MEP 2016). During the 2017 plant inventory, the Study Area was again searched for Butternut

Trees, and none were found throughout the treed habitats within the development limits. However, in June 2017 a cultivated Butternut Tree was discovered within the front yard of the previously developed residential property at 1035 March Road. The resident living at 1035 March Road stated that the tree had been planted intentionally by her father, and hence is a cultivated tree. The area surrounding the tree was searched, and a single Butternut seedling was found nearby. A Butternut Health Assessment (BHA) addressing both trees was completed by a Certified Butternut Health Assessor (Appendix C). Both trees were judged to be Category 1 trees (non-retainable) and no further requirements for Butternut Trees were noted. No other Butternut Trees were found throughout the remainder of the Study Area.

- **Blanding's Turtle:** Detailed Blanding's Turtle surveying was completed in 2014 as part of the Natural Environment Existing Conditions Report (MEP 2016). The results of the Blanding's Turtle surveys were reviewed in consultation with the OMNRF, and the extent of Blanding's Turtle habitat within the KNUEA was extensively studied. Consultation with the OMNRF culminated in acceptance of Blanding's Turtle habitat mapping which shows the extent of habitat throughout the KNUEA (DST 2015). There have been no significant changes to the Blanding's Turtle habitat since completion of the habitat mapping exercise, and therefore additional Blanding's Turtle surveys and habitat mapping is not required. For the purposes of this Combined Environmental Impact Statement (EIS) and Tree Conservation Report (TCR), as well as the ongoing Overall Benefit Permit application, the Blanding's Turtle habitat mapping that was previously reviewed and approved by the OMNRF will be utilized (DST 2015). The previously completed habitat mapping is included below in Section 3.7.3.
- **Chimney Swift:** The residential homes within the developed portions of the Study Area were assessed to determine if any of them possessed chimneys that may be suitable for Chimney Swift nesting. As discussed in Section 3.7.6, the chimneys at 1015, 1035, 1053, 1113, and 1145 March Road were examined, and all were found to be capped and/or to have liners that would prevent Chimney Swift nesting. Due to the absence of potentially suitable chimneys within the Study Area, a survey for Chimney Swifts was not required.
- **Bat Maternity Roost Assessment (Little Brown Bat, Northern Long Eared Bat):** No caves, bedrock fissures, mining shafts, abandoned buildings, or other features which may function as bat hibernacula habitat were noted within the Study Area. The OMNRF (2011b) guidelines for bat surveying are outlined in the *Bats and Bat Habitats: Guidelines for Wind Power Projects*. These guidelines state that deciduous and mixed forest habitats have the potential to provide maternity roosting sites. As described below in Section 3.3, the only portion of the Study Area which meets the definition of a 'forest' is the Dry-Fresh White Cedar Coniferous Forest (The Southwest Wooded Area/Feature M). However, this forest is a coniferous forest, and the OMNRF guidelines state that surveying is only required in deciduous and mixed forests (OMNRF 2011b). Furthermore, the OMNRF guidelines state that potential cavity/snag trees must be at least 25 cm

dbh in size to potentially provide maternity roosting habitat. As shown in Table D (below), the average tree size for all species other than White Pine within the Dry-Fresh White Cedar Coniferous Forest is well below 25 cm dbh, and therefore relatively few trees of a suitable size are present. Given that the Dry-Fresh White Cedar Coniferous Forest is only approximately 1.7 ha in size and is dominated by conifers, it is unlikely that bat maternal roosting habitat would be present. As such, a cavity/snag count was not required. All other treed areas within the Study Area are either Deciduous Hedgerows, Coniferous Hedgerows, or recent regrowth Cultural Woodlots/Cultural Thickets that are too young to be likely to provide bat maternity roosting habitat (OMNRF 2011b).

- **Eastern Whip Poor Will Call Surveys:** The KNUEA Natural Environment Existing Conditions Report (MEP 2016) included surveying for Eastern Whip Poor Will, and none were found in the Study Area. However, surveying was completed in 2014, and the OMNRF has since identified Eastern Whip Poor Will as a potential concern. As such, updated Eastern Whip Poor Will surveys were undertaken following the OMNRF *Draft Survey Protocol for Eastern Whip Poor Will* (OMNRF 2014f). This protocol necessitates that three (3) Eastern Whip Poor Will call surveys must be undertaken after dusk (one week before or after the full moon), from mid-May until end of June. Eastern Whip Poor Will call surveys were completed on May 22nd, May 29th, and June 22nd, 2018. Survey conditions are summarized below in Table F. The Eastern Whip Poor Will survey points are shown in Figure 7 (below).

2.0.3 Headwaters Drainage Assessment Methodology

The Headwaters Drainage Assessment (HDA) was completed under separate cover (MES 2019a). The HDA survey results are summarized throughout this Combined Environmental Impact Statement (EIS) and Tree Conservation Report (TCR), however, full detail is provided in MES (2019a). The field component of the Headwater Drainage Assessment (HDA) was undertaken following the *Evaluation, Classification and Management of Headwater Drainage Features Guideline* (TRCA 2014). Two (2) constrictions and two (2) confluences were identified within the Study Area, requiring four (4) HDA Survey Sites. Refer to MES (2019a) for figures depicting the HDA Survey Sites. Each upstream and downstream drainage feature segment was measured at each of the four (4) HDA Survey Sites. The roadside ditches along March Road were observed to be dry throughout the survey period, even in late March during the spring freshet. As such, it was determined that the roadside ditches contribute negligible flow to the North Tributary, and hence they were not investigated in detail as part of the HDA field surveying. Site surveys included the following:

- **OSAP Module S4.M10 – Assessing Headwater Drainage Features (Stanfield et al. 2013):** This includes an assessment of hydrological and physical functions. Parameters measured included the watercourse type, flow conditions, bankfull width, channel depth, riparian corridor vegetation, and connectivity. Flow measurements were completed on March 30th (spring freshet), May 12th (early spring) and July 4th, 2018 (mid-summer). Channel measurements were completed during the March 30th, 2018 Site visit. Prior to the March 30th Site visit, significant spring snow melt was observed, and there was approximately 10 mm of rain the day before (March 29th). No rain was observed for several days prior to the May 12th Site visit. No rain occurred for approximately 72 hours prior to the July 4th Site visit.
- **Fish Survey:** Fish surveys were completed on June 12th, 2018 following the *OSAP Module S3.M1 – Single Pass Electrofishing Survey* method (Stanfield 2013). This includes a single pass electrofishing survey to identify fish species present within the Study Area. Electrofishing was completed in HDA Survey Site #1 (downstream), HDA Survey Site #2 (upstream), HDA Survey Site #3 (downstream) and HDA Survey Site #4 (downstream). In each sampling location, approximately 40 m of the watercourse was surveyed using the backpack electrofisher.
- **Marsh Monitoring Program – Amphibian Call Counts (Konze and McLaren 1998):** Amphibian breeding habitat was identified according to the *Marsh Monitoring Program – Amphibian Call Counts Method* (Konze and McLaren 1998). This method includes three (3) night time surveys in April, May, and June to survey for amphibian breeding activity by listening for frog calls. Surveys were conducted on April 23rd, May 22nd, and June 22nd, 2018. Conditions on April 23rd included clear skies and temperatures of 13 ºC. Conditions on May 22nd included 11 ºC and clear skies. Conditions on June 22nd, 2018 included clear skies and temperatures of 19 ºC. Amphibian call counts were conducted in the upstream and downstream portions of each HDA Survey Site.

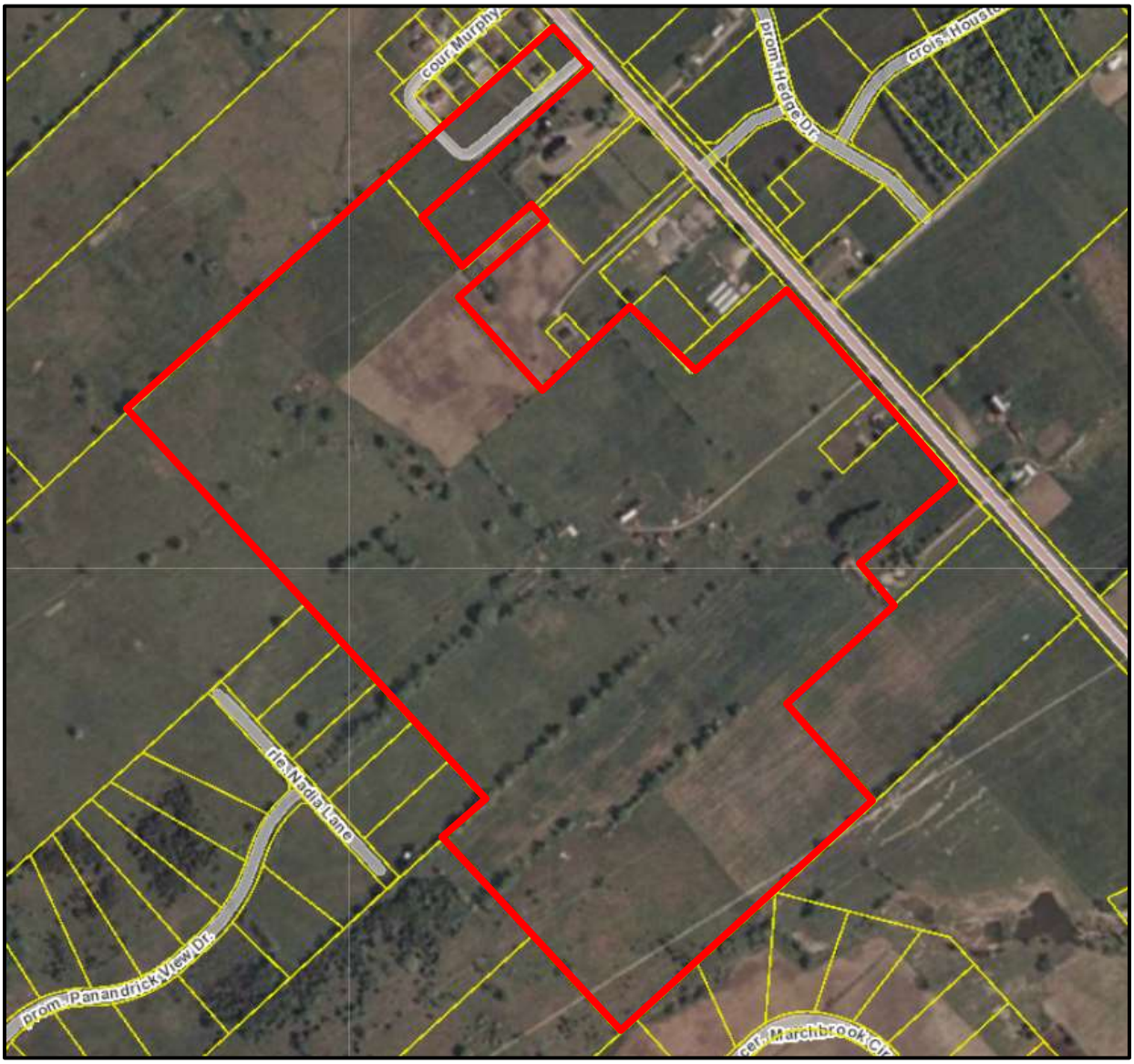
3.0 EXISTING CONDITIONS

3.1 Geological Conditions

The Study Area has a gradual slope from approximately 90 m Above Sea Level (ASL) in the northwest corner (1075 March Road) down to approximately 80 m ASL in the southeast corner (1015 March Road). The majority of the Study Area is well drained, with the exception of the small pond found along Shirley's Brook near 1035 March Road. Paterson Group (2013) note that within the 1053 and 1075 March Road properties, subsurface conditions included topsoil underlain with very stiff brown silty clay, glacial till and/or bedrock. 1053 and 1075 March Road include the majority of the Site. The 1145 March Road property subsurface conditions included topsoil underlain by very stiff brown silty clay, silty sand/sandy silt, glacial till and/or bedrock. Paterson Group (2013) note that based on available geological mapping, the bedrock conditions below the majority of the Study Area consists of interbedded sandstone and dolomite of the March formation. The overburden thickness varies from 0 m to 10 m depth through the majority of the Study Area.

3.2 Site History (TCR)

Air photos from 1976, 1991 and 2005 are included below (Photos from City of Ottawa 2018). Recent air photos are included in the report figures. The oldest available historic air photo (from 1976), shows that the Study Area was intensively farmed and tree cover was limited to the hedgerows in 1976. Regeneration of trees and shrubs in the southwestern part of the Study Area was not yet underway by 1976. The majority of the Study Area continued to be farmed in 1991, and mature tree cover continued to predominantly be confined to the hedgerows. However, regeneration of trees and shrubs in the southwestern corner of the Study Area and surrounding areas was underway by 1991. Based on their size in the 1991 air photo, it is likely that the largest trees in the southwest corner of the Study Area were approximately 10 years old at that time, which suggests that some stems may be up to approximately 40 years old in 2019. In 2005, the majority of the Study Area continued to be farmed, with mature tree cover limited to the hedgerows and Cultural Woodlots F and G. However, regeneration of trees and shrubs in the southwestern corner of the Study Area and surrounding areas had advanced significantly by 2005.



Historic Air Photograph 1: Historic Air Photo from 1976 (Site development limits shown in red). Note that the Study Area was intensively farmed and tree cover was limited to the hedgerows in 1976. Regeneration of trees and shrubs in the southwestern part of the Study Area was not yet underway in 1976 (Photos from City of Ottawa 2018).

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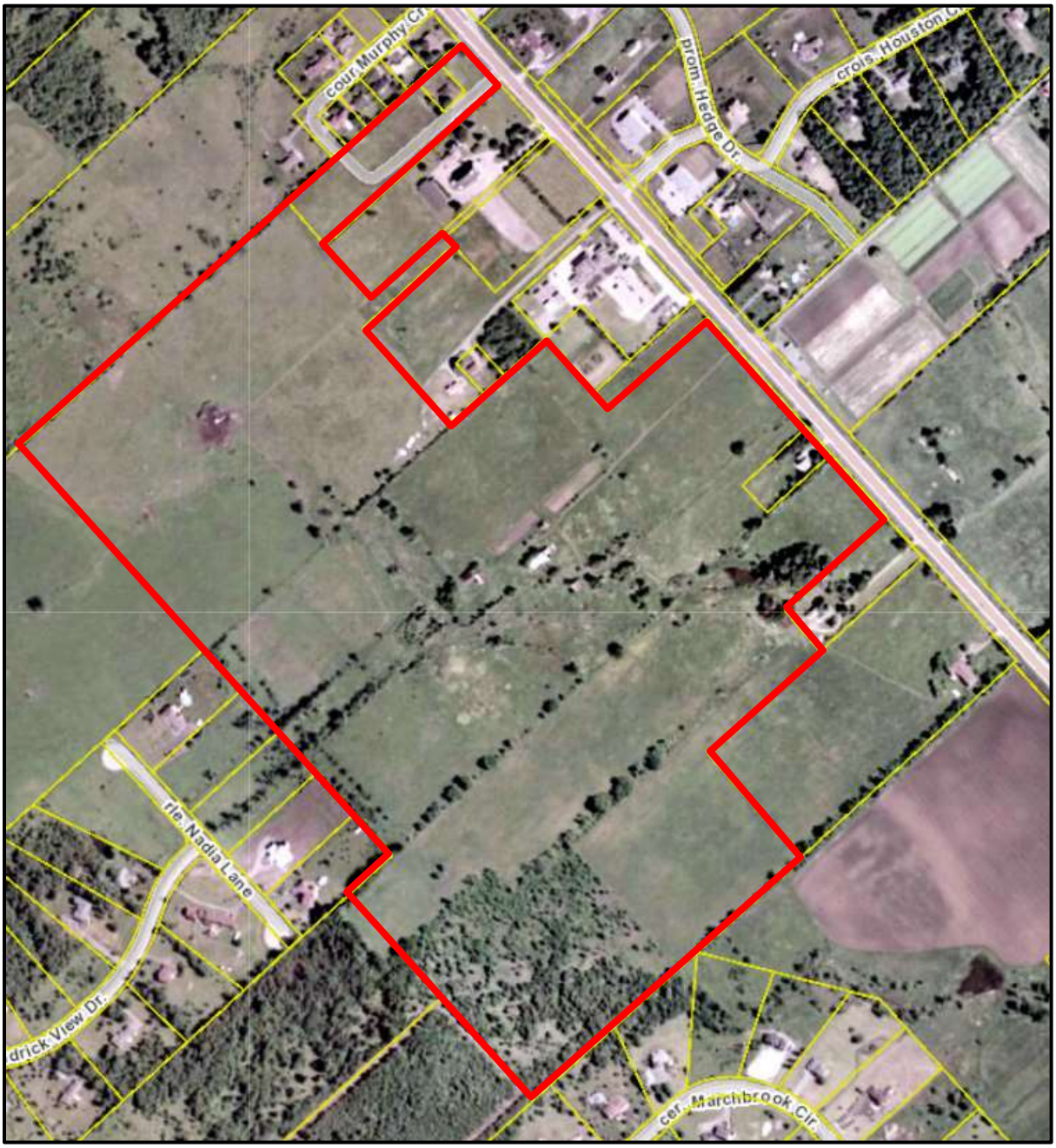
Historic Air Photograph 2: Historic Air Photo from 1991 (Site development limits shown in red). Note that the majority of the Study Area continued to be intensively farmed in 1991, and tree cover was predominantly limited to the hedgerows. However, regeneration of trees and shrubs in the southwestern corner of the Study Area and surrounding areas was underway by 1991 (Photos from City of Ottawa 2018).



Historic Air Photograph 3: Historic Air Photo from 2005 (Site development limits shown in red). Note that the majority of the Study Area continued to be intensively farmed. Tree cover was limited to the hedgerows and Cultural Woodlots F and G in 2005. However, regeneration of trees and shrubs in the southwestern corner of the Study Area and surrounding areas had advanced significantly by 2005 (Photos from City of Ottawa 2018).

3.3 Vegetation Communities (TCR)

The Study Area is an agricultural landscape dominated by Cultivated Fields planted with soybeans or corn, and fallow areas consisting of recently Fallow Fields (Graminoid Meadows). Treed areas include several Deciduous and Coniferous Hedgerows, recent regrowth Cultural Thicket/Cultural Woodlots in the western part of the Study Area, a Dry-Fresh White Cedar Coniferous Forest (the Southwest Wooded Area), and two small isolated Cultural Woodlots in the eastern part of the Study Area. Vegetation communities found within the Study Area include the following:

- Previously Developed Areas;
- Coniferous Hedgerows (Features A to E);
- Cultural Woodlots (Features F and G);
- Deciduous Hedgerows (Features H to L);
- Dry-Fresh White Cedar Coniferous Forest (The Southwest Wooded Area/Feature M);
- Regenerating Cultural Woodlots/Thickets (Features N and O);
- Cultivated Fields; and
- Fallow Fields (Graminoid Meadows).

The extent of these vegetation communities is shown in Figures 1 to 4. Appendix A includes a list of plant species noted during the vegetation surveys. Each of the vegetation communities is described in greater detail below.

3.3.1 Previously Developed Areas

Several developed properties exist within/adjacent to the Study Area along March Road. This includes single detached residential homes at 1015, 1035, 1053, 1113 and 1145 March Road, the Saint Isidore Church, and the Saint Isidore Elementary School. Landscaping features planted around the existing developed properties were not investigated in detail. Previously developed areas are shown in Figure 2.

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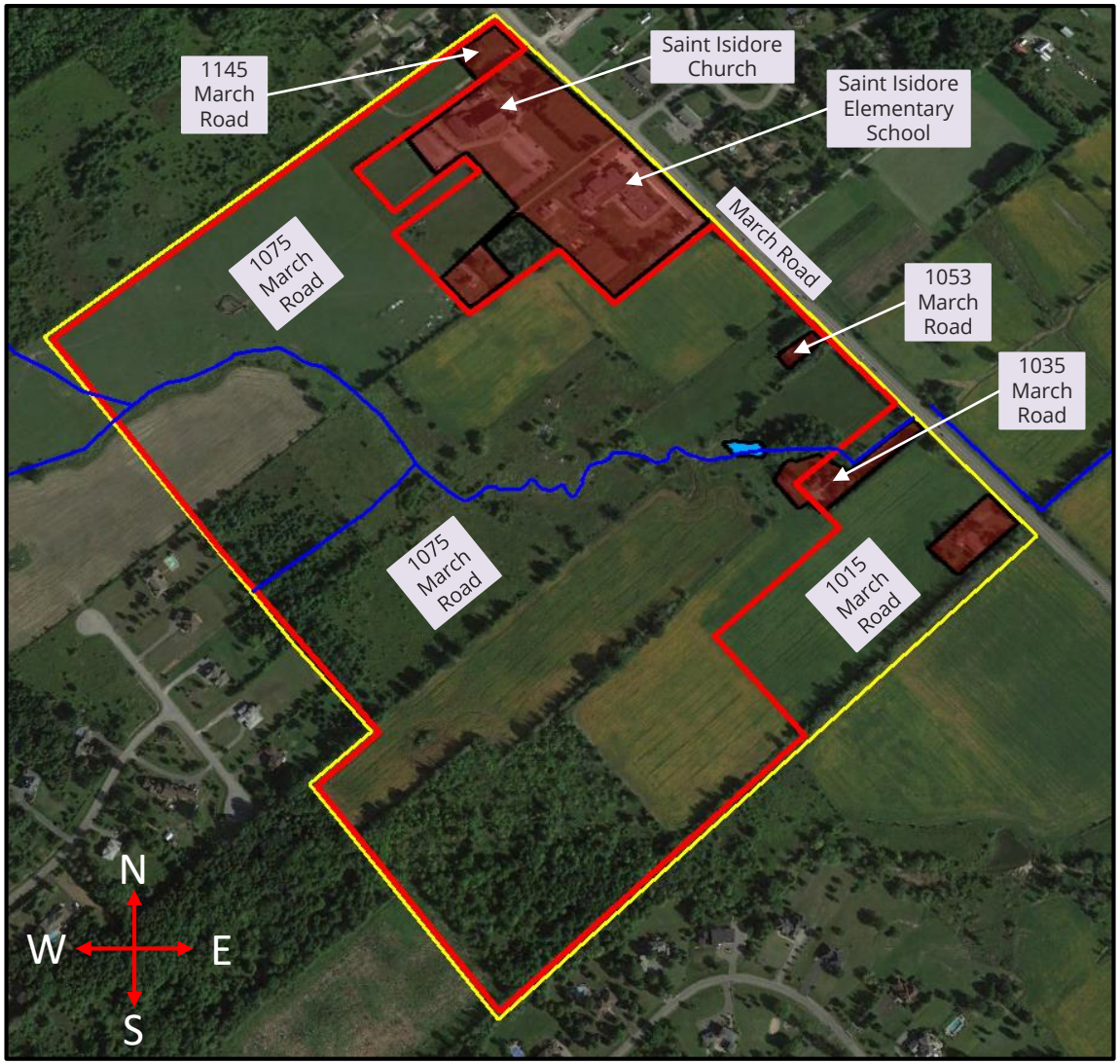
FIGURE 2: PREVIOUSLY DEVELOPED AREAS

1053/1075/1145 March Road - CU Developments Inc.

Combined Environmental Impact Statement and Tree Conservation Report (Revised)



- Study Area (Northwest Quadrant)
- Development Limits

Please Note: This is not a legal land survey. All dimensions and locations are shown as approximate.

3.3.2 Treed Habitats and Tree Inventory (TCR)

The following is a summary of the treed habitats found within the Study Area. A tree inventory was completed in all treed areas. Treed habitats are shown in Figure 3.

Coniferous Hedgerows (Features A to E)

There were five (5) Coniferous Hedgerows identified within the Study Area. Coniferous Hedgerows are shown in Figure 3 and tree sizes are shown in Table A. These include the following:

- **Coniferous Hedgerow A:** Feature A is a planted White Cedar hedge located west of the Saint Isidore Church within the 1113 March Road parcel. White Cedar stems are shrub sized. The White Cedar hedge is surrounded by Fallow Fields (See below for description).
- **Coniferous Hedgerow B:** Feature B includes a line of Red Pine planted behind the Saint Isidore Elementary School. The Red Pine are overgrown with groundcover, deciduous trees, and shrubs from the adjacent Cultural Woodlot (Feature G – see below for description). The Red Pine have an average size of 23 cm dbh and vary between approximately 15 cm and 30 cm dbh.
- **Coniferous Hedgerow C:** Feature C includes a planted White Pine and White Spruce hedgerow along the eastern part of the 1035/1053 March Road parcel. White Spruce average 14 cm dbh in size and vary between approximately 10 cm and 20 cm dbh. White Pine average 23 cm dbh and vary between approximately 10 cm and 30 cm dbh. Groundcover is the same as the adjacent Fallow Fields located to the west (See below for description).
- **Coniferous Hedgerow D:** Feature D includes a dense planting of White Spruce along the south side of the 1035 March Road parcel. The average stem size is 16 cm dbh and trees vary between approximately 10 cm and 20 cm dbh. The hedgerow is present between a Cultivated Field (to the south) and manicured lawn around the residential property to the north, and so there is little natural groundcover.
- **Coniferous Hedgerow E:** Feature E includes a line of maturing White Pine planted to provide a visual buffer for the backyards in the adjacent subdivision located to the west. The White Pine average 30 cm dbh in size and vary between approximately 25 cm and 35 cm dbh. The hedgerow is partially overgrown and also includes younger regrowth White/Green Ash stems averaging 20 cm dbh in size. The White Pine have contributed seed to the adjacent Regrowth Cultural Thicket/Cultural Woodlot located to the east (Feature O – see below for description).

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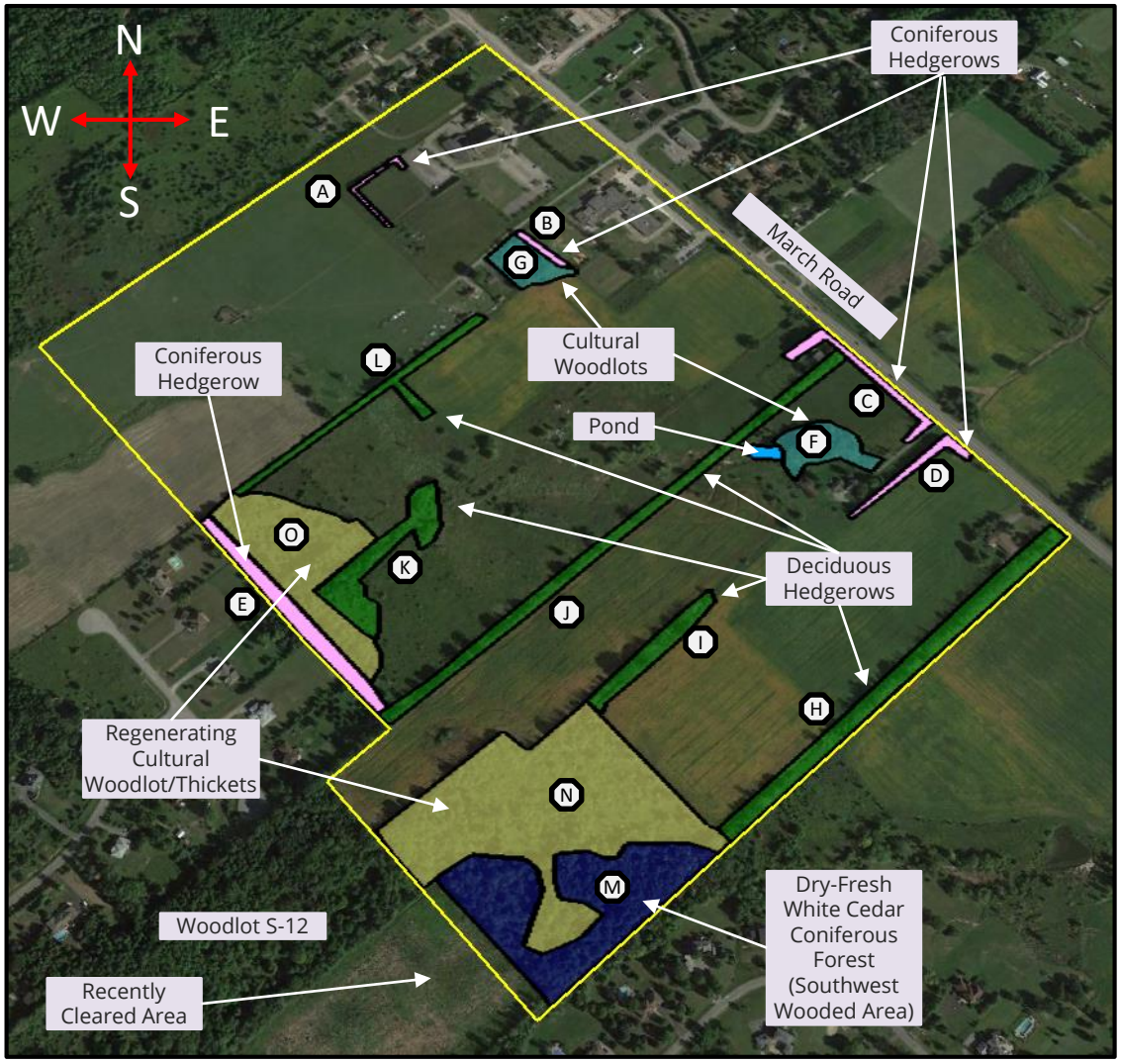
FIGURE 3: TREED HABITATS

1053/1075/1145 March Road - CU Developments Inc.

Combined Environmental Impact Statement and Tree Conservation Report (Revised)



Please Note: This is not a legal land survey. All dimensions and locations are shown as approximate. Development Limits are not shown to make the figure more readable – many of the hedgerows fall at the limit of development and hence are obscured by the development limit line.

Table A: Coniferous Hedgerows					
Common Name	**Scientific Name**	**Average DBH**	**DBH Standard Deviation**	**% Occupancy**	**Estimated Stems Per Hectare***
Coniferous Hedgerow A (1 Transect)					
White Cedar	*Thuja occidentalis*	White Cedar Hedge			
Coniferous Hedgerow B (1 Transect)					
Red Pine	*Pinus resinosa*	23	7	100%	600
Coniferous Hedgerow C (1 Transect)					
White Spruce	*Picea glauca*	14	4	71%	2000
White Pine	*Pinus strobus*	23	10	29%	800
Coniferous Hedgerow D (1 Transect)					
White Spruce	*Picea glauca*	16	4	100%	3400
Coniferous Hedgerow E (1 Transect)					
White Pine	*Pinus strobus*	30	6	83%	800
White Ash	*Fraxinus americana*	20	N/A	17%	200

N/A Values in the DBH Standard Deviation are due to only one tree of that species being observed within the sample plot.
*Note: Hedgerow tree density measured using 20 m x 2.5 m long transects, other areas measured using 5 m x 10 m plots.

Photograph 1: The White Cedar hedge (Feature A) is shown, looking northwest from the Fallow Fields (June 3rd, 2017).

Photograph 2: White Pines forming the Coniferous Hedgerow (Feature B) are shown in the background, the Cultural Woodlot (Feature G) is on the right. Looking northeast (June 3rd, 2017).

Photograph 3: White Pines and White Spruce (Feature C) are shown, looking north along March Road (June 12th, 2017).

Photograph 4: White Spruce forming the Coniferous Hedgerow (Feature D) are shown, looking northeast towards March Road (June 3rd, 2017).

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Photograph 5: White Pines forming the Coniferous Hedgerow (Feature E) are shown in the background, the Regrowth Cultural Thicket/Cultural Woodlot (Feature O) dominated by White Pine is shown in the foreground. Looking west (June 3rd, 2017).

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Cultural Woodlots (Features F and G)

There are two (2) small Cultural Woodlots located in the eastern part of the Study Area. Cultural Woodlots are shown in Figure 3 and tree sizes are shown in Table B. These include the following:

- **Southern Cultural Woodlot (Feature F):** The Southern Cultural Woodlot includes an area of Riparian Forest and recent regrowth, which is found surrounding Shirley's Brook and the pond located west of 1035 March Road. Several large Black Willow (60 cm to 80 cm dbh in size) are planted along the edge of Shirley's Brook. These older trees were likely planted as landscaping features. In recent years, the surrounding treed area around the older willows has expanded, so that the woodlot is currently approximately 0.45 ha in size. The recent regrowth areas around the Black Willow are dominated by young White/Green Ash, Manitoba Maple, and American Elm, varying in size between approximately 10 cm and 15 cm dbh. Groundcover includes species that prefer wet areas including Sensitive Fern, Poison Ivy, Skunk Currant, and Common Stinging Nettle.
- **Northern Cultural Woodlot (Feature G):** The Northern Cultural Woodlot is present west of the Saint Isidore Elementary School and is approximately 0.38 ha in size. Feature G is dominated by White/Green Ash, American Elm and Basswood. Bur Oak, White Birch, White Pine, Manitoba Maple, and Trembling Aspen are also represented. All stems are relatively young, with the White/Green Ash varying between approximately 15 cm and 25 cm dbh. As is the case throughout the Study Area, most large Ash trees are either dead or severely stressed by the effects of the invasive Emerald Ash Borer. Shrub cover is thick throughout the Cultural Woodlot and includes Common Buckthorn, Common Apple, Tartarian Honeysuckle, Choke Cherry, Wild Red Raspberry, Prickly Ash, and Riverbank Grape. Groundcover includes Poison Ivy, Virginia Creeper, Common Strawberry, Canada Goldenrod, and Tufted Vetch.

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Table B: Cultural Woodlots					
Common Name	**Scientific Name**	**Average DBH**	**DBH Standard Deviation**	**% Occupancy**	**Estimated Stems Per Hectare***
Southern Cultural Woodlot F (1 Plot)					
White/Green Ash	*Fraxinus americana/pennsylvanica*	14	4	50%	1000
Manitoba Maple	*Acer negundo*	10	0	20%	400
American Elm	*Ulmus americana*	11	1	20%	400
Black Willow	*Salix nigra*	74	N/A	10%	N/A
Northern Cultural Woodlot G (1 Plot)					
White/Green Ash	*Fraxinus americana/pennsylvanica*	20	4	56%	1000
American Elm	*Ulmus americana*	9	2	22%	400
Basswood	*Tilia americana*	12	4	22%	400

N/A Values in the DBH Standard Deviation are due to only one tree of that species being observed within the sample plot.
*Note: Hedgerow tree density measured using 20 m x 2.5 m long transects, other areas measured using 5 m x 10 m plots.

Photograph 6: The Southern Cultural Woodlot (Feature F), facing southwest from the adjacent Fallow Field. Note that the emergent trees are Black Willow, surrounded by recent regrowth (June 3rd, 2017).

Photograph 7: Interior of the Southern Cultural Woodlot (Feature F). A larger Black Willow is shown on the right (June 3rd, 2017).

Photograph 8: The Northern Cultural Woodlot (Feature G) facing south (June 3rd, 2017).

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Deciduous Hedgerows (Features H to L)

There are five (5) Deciduous Hedgerows within the Study Area. Deciduous Hedgerows are shown in Figure 3 and tree sizes are shown in Table C. The Deciduous Hedgerows throughout the Study Area all have similar species composition. Throughout the Study Area White/Green Ash are the dominant tree within the Deciduous Hedgerows. Virtually all White/Green Ash over 20 cm dbh in size are either dead or severely stressed as a result of the effects of the invasive Emerald Ash Borer. This die-off of large Ash trees has significantly degraded the hedgerows. Other trees that are common throughout the Deciduous Hedgerows include Bur Oak, Manitoba Maple, American Elm, American Basswood, Domestic Apple and Black Cherry. Trembling Aspen, White Cedar, White Birch, Sugar Maple, and White Pine are also present but are less common. All of the Deciduous Hedgerows include thick shrub cover including regenerating Ash stems, Common Buckthorn, Common Apple, Prickly Ash, Tartarian Honeysuckle, Choke Cherry, Hawthorn, Wild Red Raspberry, and Riverbank Grape. Groundcover is reflective of disturbed conditions and includes various grasses, Dandelion, Poison Ivy, Virginia Creeper, Common Milkweed, Canada Goldenrod, Common Strawberry, Common Ragweed, and Red and White Clover. Tree sizes vary within the hedgerows as follows:

- **Deciduous Hedgerow H:** White/Green Ash vary between 10 cm and 40 cm dbh in size. Several large Bur Oak up to 63 cm dbh are present.
- **Deciduous Hedgerow I:** A 70 cm dbh White Ash is present in the eastern part of the hedgerow and several Bur Oak up to 70 cm dbh are present in the central part of the hedgerow. Typical tree sizes are 10 cm to 30 cm dbh.
- **Deciduous Hedgerow J:** A 66 cm dbh Bur Oak and a 60 cm dbh White Ash are present in the hedgerow.
- **Deciduous Hedgerow K:** Deciduous Hedgerow K includes a section of recent regrowth woodlot at its west side. Older stressed American Elm are present, varying in size between 10 cm and 35 cm dbh, and there is a higher concentration of White Birch than elsewhere within the Study Area. White Birch vary between 10 cm and 36 cm dbh in size. Feature K is dominated by recent regrowth White/Green Ash stems varying in size between approximately 10 cm and 20 cm dbh.
- **Deciduous Hedgerow L:** Deciduous Hedgerow L has a higher proportion of Basswood than elsewhere in the Study Area, with specimens ranging in size between 10 cm and 30 cm dbh. White/Green Ash vary between approximately 15 cm and 25 cm dbh.

Table C: Deciduous Hedgerows					
Common Name	**Scientific Name**	**Average DBH**	**DBH Standard Deviation**	**% Occupancy**	**Estimated Stems Per Hectare***
Deciduous Hedgerow H (1 Transect)					
White/Green Ash	*Fraxinus americana/pennsylvanica*	22	13	64%	1800
Bur Oak	*Quercus macrocarpa*	18	15	21%	600
Manitoba Maple	*Acer negundo*	14	N/A	7%	200
American Elm	*Ulmus americana*	13	N/A	7%	200
Deciduous Hedgerow I (1 Transect)					
White/Green Ash	*Fraxinus americana/pennsylvanica*	25	25	33%	1000
Domestic Apple	*Malus sylvestris*	11	2	33%	1000
American Elm	*Ulmus americana*	24	7	27%	800
Bur Oak	*Quercus macrocarpa*	19	N/A	7%	200
Deciduous Hedgerow J (1 Transect)					
White/Green Ash	*Fraxinus americana/pennsylvanica*	41	23	60%	600
White Pine	*Pinus strobus*	10	N/A	20%	200
Black Cherry	*Prunus serotina*	35	N/A	20%	200
Deciduous Hedgerow K (2 Transects)					
White/Green Ash	*Fraxinus americana/pennsylvanica*	12	3	50%	800
American Elm	*Ulmus americana*	19	11	25%	400
White Birch	*Betula papyrifera*	24	13	25%	400
Deciduous Hedgerow L (1 Transect)					
Basswood	*Tilia americana*	21	8	57%	1600
White/Green Ash	*Fraxinus americana/pennsylvanica*	20	3	36%	1000
American Elm	*Ulmus americana*	21	N/A	7%	200

N/A Values in the DBH Standard Deviation are due to only one tree of that species being observed within the sample plot.
*Note: Hedgerow tree density measured using 20 m x 2.5 m long transects, other areas measured using 5 m x 10 m plots.

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Photograph 9: Looking northwest at Deciduous Hedgerow H with a large Bur Oak (63 cm dbh) shown on the right. Dead/stressed Ash stems are visible in the center of the photo (June 3rd, 2017).

Photograph 10: Looking north at Deciduous Hedgerow I with a large Bur Oak (70 cm dbh) shown on the right (June 3rd, 2017).

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Photograph 11: Looking north at Deciduous Hedgerow J with a large approximately 66 cm dbh Bur Oak shown in the center of the photo (June 3rd, 2017).

Photograph 12: Looking southwest at Deciduous Hedgerow K with a dead American Elm shown in the foreground (June 3rd, 2017).

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Photograph 13: Looking south at Deciduous Hedgerow L (June 3rd, 2017).

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Dry-Fresh White Cedar Coniferous Forest (Southwest Wooded Area/Feature M)

There is a relatively small area of mature Dry-Fresh White Cedar Forest (the Southwest Wooded Area) present in the southwest corner of the Study Area. The forested area is approximately 1.7 ha in size. This feature is shown in Figure 3 and tree sizes are shown in Table D. The forested area is dominated by White Cedar varying in size between approximately 10 cm and 30 cm dbh, with some isolated trees up to 40 cm dbh. White Ash, American Elm, and Black Cherry of a similar size are also present. Larger White Pine between 25 cm and 45 cm dbh account for approximately 8% of stems. Shrub and groundcover is generally sparse due to a lack of light penetration, but includes regenerating Ash stems, Common Buckthorn, Prickly Ash, Hawthorn, Prickly Gooseberry, Ground Juniper, Virginia Creeper, Riverbank Grape, Common Blue Violet, Yellow Clintonia, and Canada Goldenrod. A Significant Woodlot assessment for the Southwest Wooded Area is included below.

Regenerating Cultural Woodlots/Cultural Thickets (Features N and O)

Features N and O are regenerating Cultural Woodlots/Cultural Thickets that represent recent regrowth environments. Both areas consist of patches of young tree growth, which form closed canopies in some areas, interspersed with extensive areas of shrub growth and/or disturbed openings. Patches of tree growth, shrubs, and openings are too intermingled to allow each community to be delineated separately. All areas within Features N and O can be considered to be in the early stages of forest regeneration. Shrub and groundcover is similar in both communities with dense stands of Common Buckthorn and Prickly Ash in some areas. Common Apple, Tartarian Honeysuckle, Hawthorn, Red Osier Dogwood, Wild Red Raspberry, and regenerating Ash stems are also found throughout the shrub layer. Groundcover reflects disturbed conditions and includes Reed Canary Grass, Meadow Grass, Blue Grass, Orchard Grass and Brome Grass. Herbaceous and forb species include Yellow Hawkweed, Goat's Beard, Queen Anne's Lace, Common Mullein, Common Milkweed, Bull Thistle, Ox-eye Daisy, Common Strawberry, White Avens, Common Buttercup, Self-Heal, Tufted Vetch, New England Aster, Bladder Campion, Common Burdock, Virginia Creeper, Riverbank Grape, Black Eyed Susan, Canada Goldenrod, Common Ragweed, Red and White Clover, and Dandelion. Tree size and composition varies as follows:

- **Cultural Woodlot/Cultural Thicket N:** Feature N is dominated by regenerating White/Green Ash stems between 10 cm and 25 cm dbh in size. American Elm, White Pine, and White Cedar are also well represented. Regenerating Bur Oak and Common Apple were present but less common.
- **Cultural Woodlot/Cultural Thicket O:** Feature O represents a recent regrowth area dominated by young White Pine averaging approximately 12 cm dbh in size. The White Pine appear to represent seedlings arising from Coniferous Hedgerow E, which is located directly to the west.

Table D: Forest and Thickets					
Common Name	**Scientific Name**	**Average DBH**	**DBH Standard Deviation**	**% Occupancy**	**Estimated Stems Per Hectare***
Dry-Fresh White Cedar Forest M (3 Plots)					
White Cedar	*Thuja occidentalis*	16	6	69%	2400
White/Green Ash	*Fraxinus americana/pennsylvanica*	14	5	10%	333
American Elm	*Ulmus americana*	12	4	10%	333
White Pine	*Pinus strobus*	34	8	8%	267
Black Cherry	*Prunus serotina*	11	N/A	2%	67
Domestic Apple	*Malus sylvestris*	13	N/A	2%	67
Regenerating Cultural Woodlot/Cultural Thicket N (3 Plots)					
White/Green Ash	*Fraxinus americana/pennsylvanica*	17	7	56%	1000
American Elm	*Ulmus americana*	12	4	19%	333
White Pine	*Pinus strobus*	29	12	19%	333
White Cedar	*Thuja occidentalis*	15	1	7%	133
Regenerating Cultural Woodlot/Cultural Thicket O (1 Plot)					
White Pine	*Pinus strobus*	12	2	100%	1200

N/A Values in the DBH Standard Deviation are due to only one tree of that species being observed within the sample plot.
*Note: Hedgerow tree density measured using 20 m x 2.5 m long transects, other areas measured using 5 m x 10 m plots.

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Photograph 14: Interior of the Dry-Fresh White Cedar Forest (Southwest Wooded Area/Feature M) (June 3rd, 2017).

Photograph 15: Regenerating Cultural Woodlot stand within Feature N (June 3rd, 2017).

Photograph 16: Cultural Thicket stand within Feature N (June 3rd, 2017).

Photograph 17: Cultural Woodlot stand within Feature N (June 3rd, 2017).

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Photograph 18: Regenerating White Pines within Feature O (June 3rd, 2017).

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3.3.3 Southwest Wooded Area - Significant Woodlot Assessment (TCR)

Portions of the Dry-Fresh White Cedar Coniferous Forest (the Southwest Wooded Area/Feature M) are shown as part of the Natural Heritage System on Schedule L3 of the Official Plan (City of Ottawa 2014). This is due to the fact that the Southwest Wooded Area was previously connected to Woodlot S-12 (which is shown by the City as a Significant Woodlot). Woodlot S-12 was previously contiguous with the southwest corner of the Study Area, such that no separation existed between the Southwest Wooded Area and the adjacent forested area. However, a portion of Woodlot S-12 was recently cleared on the property adjacent to the southwest corner of the Study Area (by the adjacent landowner). At the current time, the southwest corner of the Study Area is bordered by the recently cleared area, and the Southwest Wooded Area is no longer connected to Woodlot S-12. As such, the Southwest Wooded Area no longer qualifies as part of Woodlot S-12, and hence the Southwest Wooded Area should be evaluated as a potential Significant Woodlot independently.

The City of Ottawa Official Plan (Section 2.4.2), as amended by Official Plan Amendment 179, defines Significant Woodlots in the urban area as any forested area ≥0.8 ha in size supporting woodland 40 years of age or older at the time of evaluation. However, the age criteria has recently been revised to include woodlots 60 years of age or older, as a result of a recent Local Planning Appeal Tribunal (LPAT) decision. The Study Area occurs within the urban area of the City of Ottawa, and therefore the recently amended urban area criteria apply. As described above in Section 3.2, historic air photos from 1976 show that the Southwest Wooded Area was predominantly devoid of tree cover at that time. Regeneration of trees and shrubs in the southwestern part of the Study Area was not yet underway by 1976. Historic Air photos show that regeneration of trees and shrubs in the southwestern corner of the Study Area and surrounding areas was underway by 1991. This suggests that trees within the Southwest Wooded Area are approximately 40 years old in 2019. As such, the Southwest Wooded Area does not qualify as a Significant Woodlot under the City of Ottawa criteria for the urban area.

In addition to the City of Ottawa criteria for the urban area, potential Significant Woodlots may also be evaluated according to the *Natural Heritage Reference Manual* (NHRM) criteria (OMNRF 2010). The following is a summary of the NHRM criteria for the Southwest Wooded Area:

- **Woodland Size Criteria** – The Study Area is within the Ottawa West Minor Watershed, which has approximately 38% forest cover (City of Ottawa 2011). In planning areas with 30-60% forest cover, woodlots 60 ha or larger would qualify under the size criteria. The total size of the Southwest Wooded Area is approximately 1.7 ha. The Southwest Wooded Area is hence too small to qualify under the woodland size criteria.

- **Interior Forest Habitat** – Forested areas 100 m from an opening that is 20 m or greater in size are considered interior forest habitat. The Southwest Wooded Area is surrounded by openings on all sides, and there is no area within the woodlot that is more than 100 m from an opening. As such, there is no interior forest habitat provided by the Southwest Wooded Area.
- **Proximity to Other Woodlands/Habitats** – Woodlots within 30 m of another significant feature meet this criteria. As discussed below, the only significant feature within 30 m of the Southwest Wooded Area is the North Branch of Shirley's Brook (Referred to as Tributary #3 in the Kanata North Urban Expansion Area (KNUEA) Environmental Management Plan (EMP)), which is located to the south. As shown in the Draft Plan of Subdivision, a 0.6 ha Open Space Block (Block 285) is included along the southern property line. The Open Space Block is intended to preserve a portion of the existing tree cover within the Southwest Wooded Area, in order to provide a riparian buffer for the North Branch of Shirley's Brook (located to the south). Although the North Branch is not located within either the Site or the current Study Area, it is close enough to the Site that a portion of the minimum 40 m wide corridor for that watercourse overlaps the southwest corner of the Site. The intention of the Southwest Wooded Area Open Space Block is to preserve a sufficient portion of the Southwest Wooded Area so that a minimum 40 m wide corridor surrounding the North Branch can be achieved (with the other half of the corridor to be provided within the KNUEA southwest quadrant).
- **Water Protection** – The only water feature within close proximity to the Southwest Wooded Area is the North Branch of Shirley's Brook. As noted above, a 0.6 ha Open Space Block (Block 285) has been designated to ensure that a minimum 40 m wide corridor can be achieved surrounding the North Branch. The KNUEA Community Design Plan (CDP) and the associated KNUEA EMP were approved by Ottawa City Council in 2016 through an Official Plan Amendment. Notably, the KNUEA EMP establishes a minimum 40 m wide corridor of vegetated habitat, which is to be retained and/or enhanced surrounding the tributaries of Shirley's Brook. The arrangement of the Open Space Block within the Southwest Wooded Area is such that a minimum 20 m setback from the North Branch will be preserved within the Site. The remainder of the minimum 40 m wide corridor will be provided within the adjacent KNUEA southwest quadrant.
- **Linkages** – The Southwest Wooded Area is bordered to the east and northeast by Feature N (Cultural Thicket/Cultural Woodlot), beyond which are cultivated agricultural fields. It is bordered to the west and northwest by the recently cleared area, beyond which is the remnant portion of Woodlot S-12, and it is bordered to the south by the North Branch of Shirley's Brook, beyond which is the Marchbrook Circle rural subdivision. The main wildlife movement corridor in the area surrounding the Southwest Wooded Area is likely to be provided by the North Branch of Shirley's Brook, which may provide a movement function for Blanding's Turtles and other species. The potential for the North Branch to provide a movement function will be preserved by the minimum 40 m wide watercourse corridor.

- **Woodlot Diversity** – As described above, the plant diversity within the Southwest Wooded Area is low, and the feature is dominated by White Cedar. Regrowth coniferous forests dominated by White Cedar are common throughout the region in degraded regenerating agricultural lands. The Southwest Wooded Area does not contain exceptional plant diversity, and no regionally rare forest plant species were noted.
- **Uncommon Characteristics** – Uncommon forest types, environmental features, or plant communities may contribute to woodlot significance. Also, forest stands older than 100 years would be considered significant. As discussed above in Section 3.2, historic air photos indicate that the oldest trees within the Southwest Wooded Area are approximately 40 years old. The Southwest Wooded Area is comprised of a common forest type (Dry-Fresh White Cedar Coniferous Forest) that is abundant throughout the region in areas of degraded regenerating agricultural lands. As such, the Southwest Wooded Area does not qualify under the Uncommon Characteristics criteria.
- **Economic and Social** – Woodlots which contribute special economic or social functions can qualify under this criteria. The Southwest Wooded Area is located within a predominantly rural landscape, and there are relatively few residences within close proximity. No evidence of recreational usage has been noted. The Southwest Wooded Area is not visible from adjacent roads, and hence does not provide significant aesthetic value. As such, the Southwest Wooded Area does not qualify under the Economic and Social criteria.

In summary, available evidence suggests that the Southwest Wooded Area does not qualify as a Significant Woodlot under any of the NHRM assessment criteria and/or the City of Ottawa criteria for the urban area. While the Southwest Wooded Area was previously connected to Woodlot S-12, forest clearing on the adjacent property has removed this connection. At the current time, the only notable function provided by the Southwest Wooded Area is water protection. As noted above, the water protection function is preserved by the arrangement of the Open Space Block (Block 285), which is intended to preserve a sufficient portion of the Southwest Wooded Area to achieve a minimum 40 m wide corridor surrounding the North Branch of Shirley's Brook.

3.3.4 Open Habitats

The majority of the Study Area is dominated by open habitats including Cultivated Fields planted with soybeans or corn and regenerating Fallow Fields. Open habitats are shown in Figure 4 and are described below:

- **Cultivated Fields:** Areas under cultivation in 2017 are shown in Figure 4. Fields were observed to be newly tilled in the spring and planted with soybeans or corn in the summer. Until early June 2017, a Cattle Pasture was present in the northwestern part of 1075 March Road. The Cattle Pasture was planted with soybeans in the summer of 2017 and was observed to be fully occupied by growing soybeans in September 2017.
- **Fallow Fields (Graminoid Meadows):** The fallow agricultural fields are dominated by Reed Canary Grass, Meadow Grass, Blue Grass, Orchard Grass and Brome Grass. Herbaceous and forb plants include Yellow Hawkweed, Canada Anemone, Timothy, White Bedstraw, Bird's Foot Trefoil, Goat's Beard, Queen Anne's Lace, Common Mullein, Common Milkweed, Bull Thistle, Ox-eye Daisy, Common Strawberry, White Avens, Common Buttercup, Self-Heal, Tufted Vetch, New England Aster, Bladder Campion, Common Burdock, Virginia Creeper, Black Medic, Black Eyed Susan, Canada Goldenrod, Common Ragweed, Wild Parsnip, Philadelphia Fleabane, Baby's Breath, Sow Thistle, Red and White Clover, and Dandelion. Tree and shrub cover is generally sparse, but includes isolated White Ash, White Elm, Bur Oak, White Pine, and White Cedar stems, as well as Common Buckthorn, Hawthorn, Riverbank Grape, Red Osier Dogwood, Prickly Ash, Domestic Apple, and Tartarian Honeysuckle.

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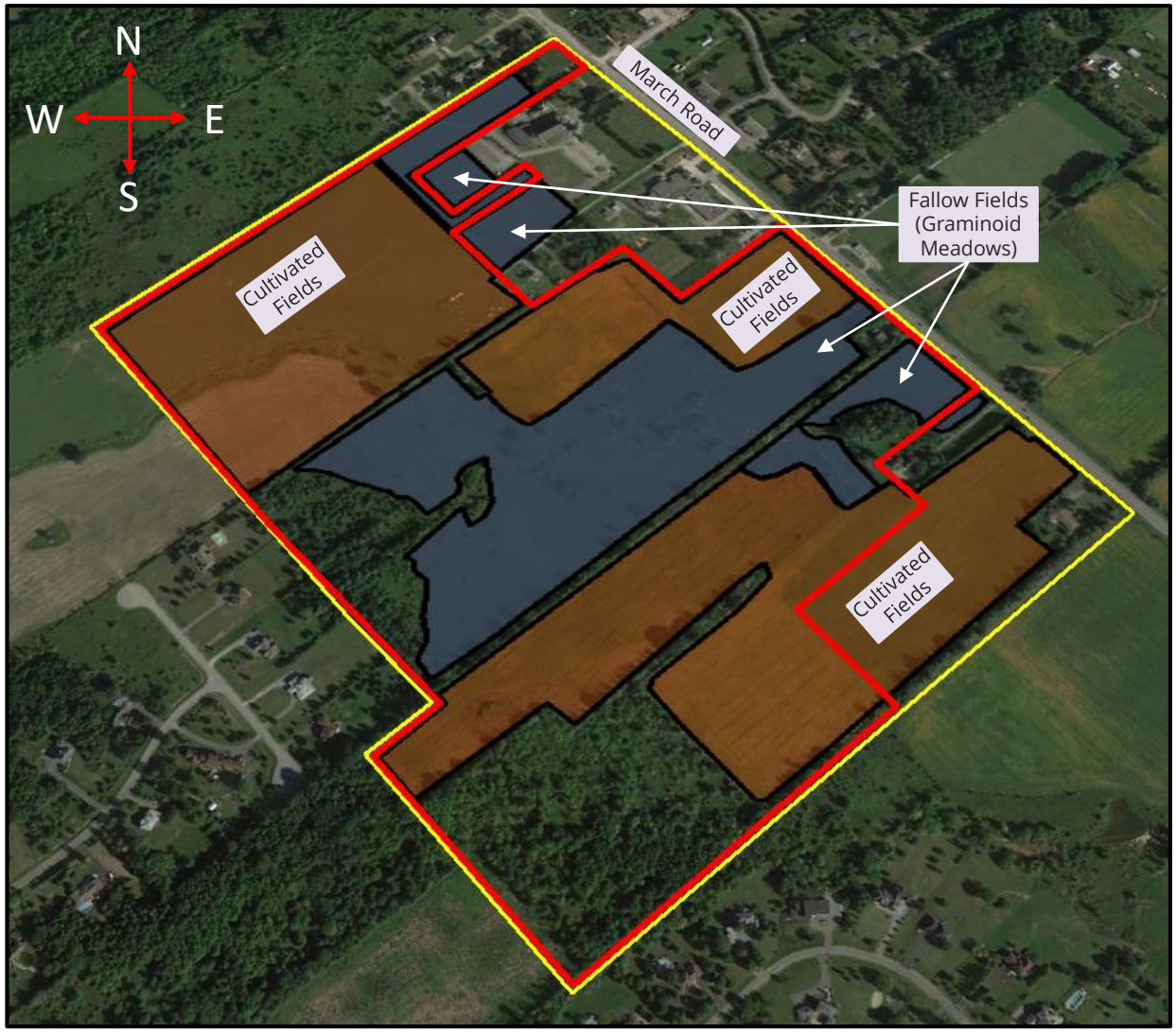
FIGURE 4: OPEN HABITATS

1053/1075/1145 March Road - CU Developments Inc.

Combined Environmental Impact Statement and Tree Conservation Report (Revised)



Please Note: This is not a legal land survey. All dimensions and locations are shown as approximate.

Photograph 19: The Cultivated Field within 1015 March Road, looking northeast (June 3rd, 2017).

Photograph 20: The former Cattle Pasture within 1075 March Road, facing east (June 3rd, 2017).

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Photograph 21: The former Cattle Pasture within 1075 March Road, facing east. The Cattle Pasture is shown after planting with soybeans (September 3rd, 2017).

Photograph 22: A regenerating Fallow Field with sparse shrub growth (western part of 1075 March Road) (June 3rd, 2017).

Photograph 23: A recently Fallow Field with almost no shrub growth (eastern part of 1075 March Road) (June 3rd, 2017).

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3.4 Wetlands and Watercourses

The majority of the Study Area is well drained, and there are no wetlands within the Study Area or within the immediately surrounding area. Aquatic habitats within the Study Area include the North Tributary of Shirley's Brook (Referred to as Tributary #2 in the Kanata North Urban Expansion Area (KNUEA) Environmental Management Plan (EMP)) and a 0.08 ha inline pond located along the course of Shirley's Brook, west of 1035 March Road (Figure 1). A detailed Headwaters Drainage Assessment (HDA) addressing the North Tributary was completed between April and July 2018 (MES 2019a). The results of the HDA are summarized below. Refer to MES (2019a) for additional detail.

The North Tributary of Shirley's Brook runs through the Study Area from northwest to southeast. West of 1035 March Road, water flow is held back by a crushed stone weir, which creates the 0.08 ha inline pond. The pond includes a deep pool that reaches standing water depths of greater than 1 m (MEP 2016). The substrate of the pond consists primarily of muck. Aquatic plant species grow around the margins of the pond, however, the majority of the feature remains as open water throughout the summer. Beyond the pond, the North Tributary flows through a small Cultural Woodlot (Vegetation Feature F), before running parallel to the driveway of 1035 March Road. Once the watercourse reaches March Road, it crosses the road through a culvert north of the 1035 March Road driveway.

As a whole, the North Tributary can be characterized as a highly degraded agricultural watercourse that has a hydro-period that is typically confined to the spring freshet and late spring in most years. Although water depths and flow volumes are substantial in the early to late spring, water depths decline significantly by mid-summer, such that portions of the system are likely to dry out in drought years (MES 2019a). In 2018, the system remained hydrated in July. However, 2018 was a relatively wet year, and survey results from previous years have shown that portions of the system were dry by mid-summer (MEP 2016). Although some areas of cobble, bedrock, and woody debris substrate occur in various places throughout the North Tributary, the dominant substrate condition is silt overgrown with terrestrial grasses (MES 2019a). By mid-summer, the majority of the system is heavily overgrown and the channel is difficult to see. Terrestrial vegetation found growing within the channel includes Spotted Joe-Pye-Weed, Purple Loosestrife, and Reed Canary Grass. Historic plowing and agricultural land usage has resulted in a very broad channel with poorly defined banks throughout the majority of the Study Area. Throughout the majority of the Study Area, the watercourse has very little shade and low quality riparian habitat. The dominant riparian vegetation consists of cultivated crops and/or fallow agricultural fields (Graminoid Meadow). The small Cultural Woodlot found northwest of 1035 March Road (Vegetation Feature F) provides the only area of continuous tree cover along the North Tributary (MES 2019a).

In the western part of the Study Area, a side branch (the western reach, referred to as Drainage Channel F in the Kanata North Urban Expansion Area (KNUEA) Environmental Management Plan (EMP)) extends towards the Panandrick View Drive rural subdivision. Channel F is an overland stormwater flow channel which receives stormwater from the Panandrick View Drive subdivision (located to the west). The western reach (Channel F) provides intermittent surface water input to the North Tributary, although it is an ephemeral feature with no upstream connection. MES (2019a) notes that Drainage Channel F is a stormwater swale that receives intermittent flow and is dry throughout the majority of the growing season. No evidence of amphibian breeding or direct fish habitat was documented for Drainage Channel F.

During the 2018 fish sampling, five (5) fish species were observed within the Study Area. These included Brook Stickleback, Creek Chub, Blacknose Dace, Finescale Dace, and Longnose Dace. Each of these are common fish species typically found in degraded systems and areas of low quality fish habitat. These results suggest that the North Tributary provides low quality, primarily intermittent fish habitat (MES 2019a). The North Tributary appears to add to the overall productivity of the Shirley's Brook system, especially during the spring period. However, water depths are very low by mid-summer and portions of the North Tributary are prone to drying out in some years (MEP 2016). As such, fish communities may migrate downstream in the summer in some years. No fish were observed within Drainage Channel F, suggesting that the feature is too shallow and ephemeral to provide direct fish habitat.

Although amphibian calling activity was observed for three (3) amphibian species (Spring Peeper, American Toad and Green Frog), the density of calling was very low, and was not sufficient for the Study Area to be considered Significant Wildlife Habitat (SWH) for amphibian breeding (OMNRF 2014b). Refer to Section 3.6 for additional detail regarding amphibian breeding.

Select photographs of the North Tributary are included below. A complete photographic record of the Headwaters Drainage Assessment survey conditions is included in MES (2019a). Refer to MES (2019a) for additional photographs of the North Tributary.

Photograph 24: HDA Survey Site #4 upstream – north fork, facing upstream. Note that the channel is narrow and relatively shallow, even in the spring. The area shown is typical of the North Tributary throughout the Study Area (May 12th, 2018).

Photograph 25: HDA Survey Site #3 (Channel F), facing upstream. Note that Channel F does not convey substantial water flow, even in the spring (May 12th, 2018).

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Photograph 26: HDA Survey Site #3 (Channel F) downstream, facing upstream. Note that Channel F is completely overgrown and dry in the summer (July 4th, 2018).

Photograph 27: Looking west at the pond. Note that the majority of the pond's surface area remains as open water, even in mid-summer (June 3rd, 2017).

Photograph 28: Looking east at the North Tributary as it flows through Vegetation Feature F (the Cultural Woodlot) (June 3rd, 2017).

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3.5 Adjacent Lands and Significant Features

The Study Area is the northwest quadrant of the Kanata North Urban Expansion Area (KNUEA). The Study Area is located along the west side of March Road, with the KNUEA southwest quadrant located directly to the southeast, and the KNUEA northeast quadrant located on the opposite side of March Road (Figure 1). The adjacent KNUEA quadrants are intended to be developed in future as residential subdivisions, although they remain predominantly undeveloped agricultural lands at the current time. Existing rural subdivisions are located south (Marchbrook Circle), west (Panandrick View Drive), and northeast (Houston Crescent) of the Study Area. The western and northern boundaries of the Study Area are contiguous with the limits of the City of Ottawa urban area. Beyond the urban area, there are cultivated agricultural fields located northwest of the Study Area and regenerating agricultural lands to the north.

Tree cover is present on several adjacent properties located south, west, and north of the Study Area. Appropriate tree preservation measures must be implemented to minimize the risk of impacting trees on adjacent lands during Site development. As noted above, Woodlot S-12 is located southwest of the Study Area. However, Woodlot S-12 is separated from the future development by the recently cleared property located southwest of the Study Area. Due to the separation between the remnant portion of Woodlot S-12 and the Site, it is unlikely that the development of the Site will negatively impact Woodlot S-12 in the future.

The only other significant feature located on adjacent lands in the vicinity of the Study Area is the North Branch of Shirley's Brook (Referred to as Tributary #3 in the KNUEA Environmental Management Plan (EMP)), which is located to the south. As noted previously, although the North Branch is not located within either the Site or the current Study Area, it is close enough to the Site that a portion of the minimum 40 m wide corridor for that watercourse overlaps the southwest corner of the Site. A 0.6 ha Open Space Block (Block 285) is included along the southern property line in the vicinity of the North Branch. This Open Space Block is intended to preserve a portion of the existing tree cover within the Southwest Wooded Area, in order to provide a riparian buffer for the North Branch of Shirley's Brook (located to the south). The intention of the Southwest Wooded Area Open Space Block is to preserve a sufficient portion of the Southwest Wooded Area so that a minimum 40 m wide corridor surrounding the North Branch can be achieved (with the other half of the corridor to be provided within the KNUEA southwest quadrant).

3.6 Wildlife and Significant Wildlife Habitat

Wildlife and bird species noted during surveys of the Study Area are listed in Appendix B. As discussed below in Section 3.7, the habitat of threatened Barn Swallow, threatened Blanding's Turtle, and threatened Bobolink was confirmed within the Study Area. The habitat of Species at Risk (SAR) is considered Significant Wildlife Habitat (SWH) (Refer to Section 3.7).

Amphibian breeding activity throughout the Study Area was assessed as part of the Headwaters Drainage Assessment (HDA) (MES 2019a). Although calling activity was observed for three (3) amphibian species (Spring Peeper, American Toad and Green Frog), the density of calling was very low, and was not sufficient for the Study Area to be considered Significant Wildlife Habitat (SWH) for amphibian breeding (OMNRF 2014b). No amphibian calling activity was observed within Drainage Channel F throughout the survey. Refer to MES (2019a) for additional detail.

Other than the features listed above, no stick nests, migratory bird stopover points, heron rookeries, caves, bedrock fissures, wetlands, or any other features which may qualify as SWH were noted within the Study Area (OMNRF 2014b).

Breeding bird survey points are shown below in Figure 5. A total of sixty one (61) bird species were noted within the Study Area. This included several common species of migratory birds typically found in suburban and rural areas (including Barn Swallow and Bobolink). Other wildlife observed within the Study Area included Eastern Grey Squirrel, Red Squirrel, Eastern Chipmunk, White Tailed Deer, Common Raccoon, Groundhog, Green Frog, American Toad, Spring Peeper, Painted Turtle, Garter Snake and Blanding's Turtle (threatened).

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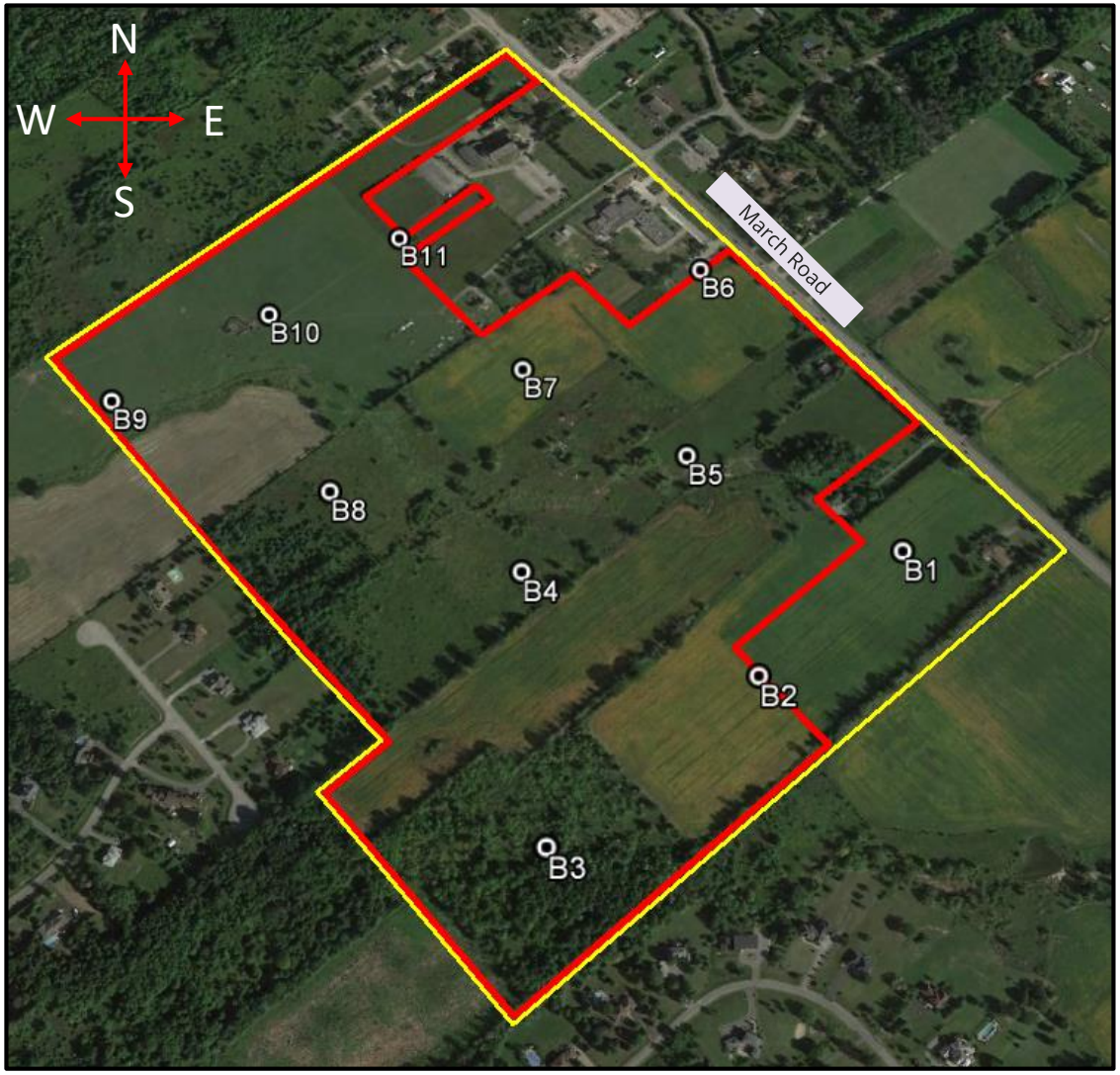
FIGURE 5: BIRD SURVEY POINTS

1053/1075/1145 March Road - CU Developments Inc.

Combined Environmental Impact Statement and Tree Conservation Report (Revised)



- Study Area (Northwest Quadrant)
- Development Limits
- B2 - Bird Survey Points

Please Note: This is not a legal land survey. All dimensions and locations are shown as approximate.

3.7 Species at Risk

3.7.1 Bobolink and Eastern Meadowlark

During the 2017 breeding bird surveys, Bobolink were found to be abundant in suitable habitat throughout the Study Area. Bobolink sightings are summarized in Table E. During each breeding bird survey, between ten (10) and thirteen (13) individual Bobolink were heard and seen across the Study Area. Bobolink were found regularly around Bird Survey Points #4 and #5 (central and western part of the Study Area) and around Bird Survey Points #8 to #11 (northern part of the Study Area). Within the Site, Bobolink were noted within all of the Fallow Fields, but were absent from fields that were actively cultivated with soybeans and corn. Cultivated Fields that are planted with soybeans or corn do not provide suitable habitat for Bobolink. Similarly, the Cultural Thickets and treed habitats do not provide suitable habitat for Bobolink. It should be noted that in the early part of 2017, the northwest portion of the Study Area was a Cattle Pasture. However, the Cattle Pasture was planted with soybeans in mid-2017, and the area was grown in with a soybean crop by September 2017. As such, the former Cattle Pasture did not qualify as Bobolink habitat at the end of 2017. Despite the presence of potentially suitable habitat, no Eastern Meadowlark were seen or heard during the surveys.

The *General Habitat Description for Bobolink* (OMNRF 2014c) describes suitable breeding habitat for Bobolink as natural tallgrass prairies, open meadows, pastures, fallow fields, and hayfields. Category 1 habitat includes nests and the area within 10 m of a nest. Category 2 habitat includes the area between 10 m and 60 m from a nest or the center of a defended territory. Category 3 habitat includes the area between 60 m and 300 m from a nest or the center of a defended territory. Bobolink were observed regularly close to all potentially suitable habitat within the Study Area, suggesting that the population within the Study Area is sufficiently dense that all suitable breeding habitat was being utilized in 2017. The density of Bobolink was too high for territories to be accurately mapped, but it can be assumed that the breeding territories of Bobolink in 2017 were sufficiently dense that all suitable habitat areas within the Study Area fell within a defended territory (e.g. within 300 m of a nest). The habitat compensation requirements for Bobolink (discussed below in Section 4.4.1) are such that it is not necessary to distinguish between the different categories of habitat in order to meet regulatory requirements. Instead, compensation is based on the total amount of Bobolink habitat removed, regardless of the category of the habitat.

The rules and regulations of the Ontario Endangered Species Act (ESA) allow development of up to 30 hectares of Bobolink habitat to be authorized by completing the Ministry of Environment, Conservation, and Parks (MECP) Online Registration Process. The extent of Bobolink habitat found within the Site varies from year to year, depending on which fields are under cultivation and which

have been left fallow. As such, the extent of Bobolink habitat found within the Site should be reevaluated in the growing season prior to the commencement of development, in order to document the extent of Bobolink habitat at the time of development. This information can then be used to complete the MECP Online Registration Process. At any given time, less than 30 hectares of the Site is left fallow, and therefore the Site is anticipated to qualify under the MECP Online Registration Process. This approach to addressing the regulatory requirements for Bobolink was outlined in the Information Gathering Form (IGF) that was submitted to the MECP in July 2018 as part of the Ontario ESA review process. The IGF has been reviewed and accepted by the MECP. Regulatory, mitigation, and habitat compensation requirements for Bobolink are discussed in detail in Section 4.4.1.

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Photograph 29: Two (2) Bobolink near Breeding Bird Survey Point #11 (June 12th, 2017).

Photograph 30: Bobolink observed calling near Breeding Bird Survey Point #5 (June 12th, 2017).

Table E: Bobolink, Eastern Meadowlark and Barn Swallow Survey Results

Survey Point	Habitat Type	Survey Dates		
		May 24	June 3	June 12
B1	Cultivated Agricultural Field	None	Barn Swallow Foraging x2	None
B2	Cultivated Agricultural Field	None	None	None
B3	Woodlot	None	None	None
B4	Fallow Field	Bobolink x2	Bobolink x2	Barn Swallow Foraging x1
B5	Fallow Field	Bobolink x2	Bobolink x2	Bobolink x1
B6	Cultivated Agricultural Field	None	None	Barn Swallow Foraging x1
B7	Cultivated Agricultural Field	None	None	None
B8	Fallow Field	Bobolink x1	Bobolink x4	Bobolink x1
B9	Cattle Pasture*	Bobolink x3	Bobolink x2	Bobolink x2
B10	Cattle Pasture*	Bobolink x2	Bobolink x2 Barn Swallow Foraging x6	Bobolink x3
B11	Fallow Field	Bobolink x3	Bobolink x1	Bobolink x3

*The Cattle Pasture was planted with soybeans in June of 2017 and no longer provides Bobolink habitat.

3.7.2 Butternut Trees (TCR)

Vegetation surveys were completed in 2013 as part of the Natural Environment Existing Conditions Report, and no Butternut Trees were documented within the Study Area (MEP 2016). During the 2017 plant inventory, the Study Area was again searched for Butternut Trees, and none were found throughout the treed habitats within the development limits. However, in June 2017 a cultivated Butternut was discovered within the front yard of the previously developed residential property at 1035 March Road. The resident living at 1035 March Road stated that the tree had been planted intentionally by her father, and hence is a cultivated tree. The area surrounding the tree was searched, and a single Butternut seedling was found nearby. The tree locations are shown in Figure 6. A Butternut Health Assessment (BHA) addressing both trees was completed by a Certified Butternut Health Assessor (Appendix C). Both trees were judged to be Category 1 trees (non-retainable) and no further requirements for Butternut Trees were noted. No other Butternut Trees were found throughout the remainder of the Study Area. With respect to Butternut Trees, there are no additional regulatory requirements under the Ontario Endangered Species Act (ESA) anticipated, as both Butternut Trees were found to be cultivated Category 1 trees. Category 1 trees and cultivated trees are exempt from Ontario ESA requirements.

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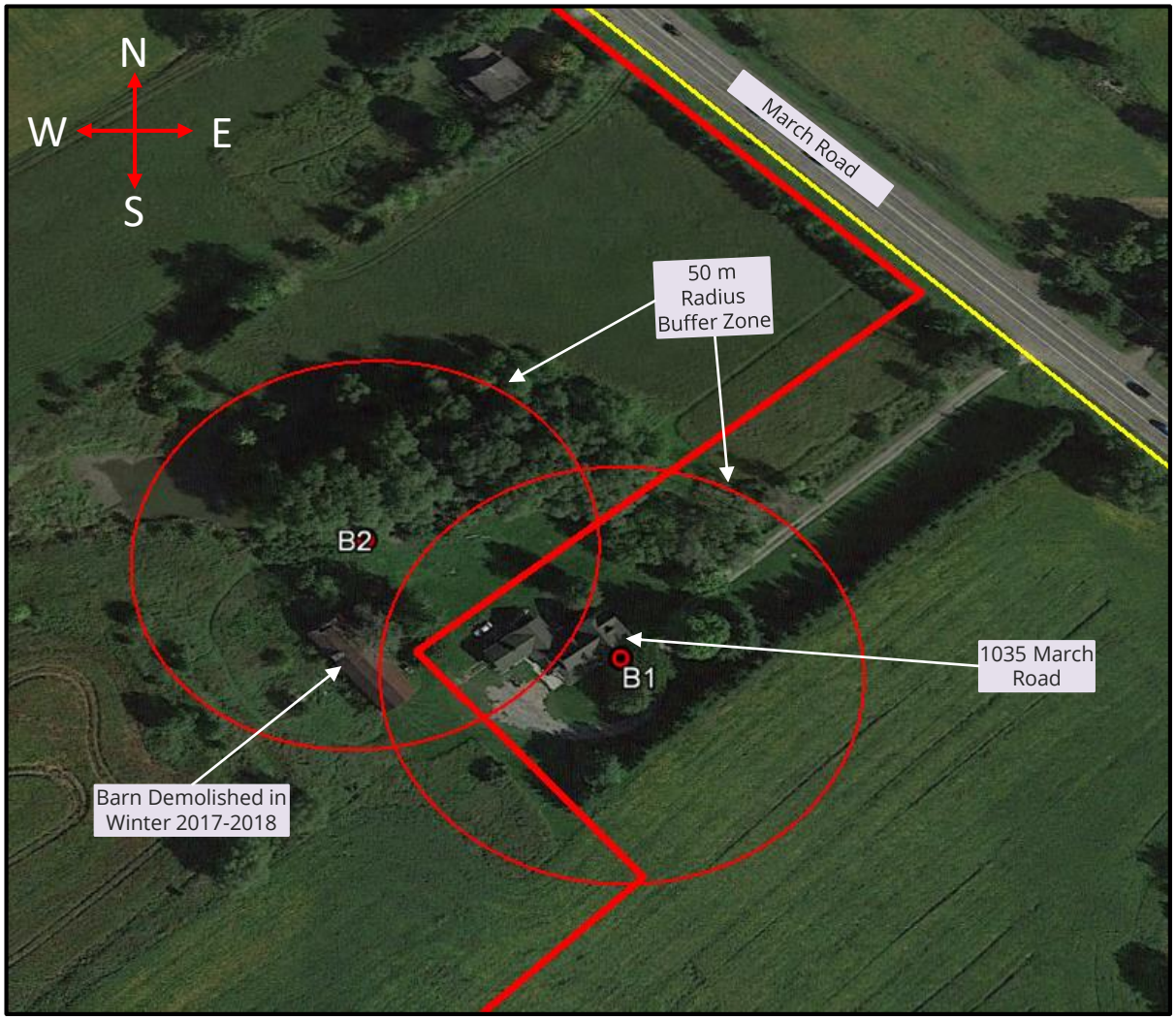
FIGURE 6: BUTTERNUT LOCATIONS

1053/1075/1145 March Road - CU Developments Inc.

Combined Environmental Impact Statement and Tree Conservation Report (Revised)



- Study Area (Northwest Quadrant) - Development Limits B1 - Butternut Trees

Please Note: This is not a legal land survey. All dimensions and locations are shown as approximate.

3.7.3 Blanding's Turtle

Detailed Blanding's Turtle surveying was completed in 2014 as part of the Natural Environment Existing Conditions Report (MEP 2016). During the targeted turtle surveying, the only confirmed occurrence of Blanding's Turtles within the Study Area was a single sighting of a turtle within the inline pond found west of 1035 March Road. More recently, in August 2017 a dead Blanding's Turtle (likely killed by road mortality) was found along March Road, approximately 400 m southeast of the Study Area limits (adjacent to 936 March Road). The August 2017 road mortality sighting was reported to the Ontario Ministry of Natural Resources and Forestry (OMNRF). The occurrence of confirmed Blanding's Turtle sightings within 2 km of the Study Area automatically designates suitable areas as habitat for the species (OMNRF 2014a). However, the fact that only two (2) individuals have been sighted in the area, despite extensive surveying over several years by several qualified biologists, suggests that the size of the Blanding's Turtle population is very small.

The results of the Blanding's Turtle surveys were reviewed in consultation with the OMNRF, and the extent of Blanding's Turtle habitat within the Kanata North Urban Expansion Area (KNUEA) was extensively studied. Consultation with the OMNRF culminated in acceptance of Blanding's Turtle habitat mapping which shows the extent of habitat throughout the KNUEA (DST 2015). There have been no significant changes to the Blanding's Turtle habitat since completion of the habitat mapping exercise, and therefore additional Blanding's Turtle surveys and habitat mapping is not required. For the purposes of this Combined Environmental Impact Statement (EIS) and Tree Conservation Report (TCR), as well as the ongoing Overall Benefit Permit application, the Blanding's Turtle habitat mapping that was previously reviewed and approved by the OMNRF will be utilized (DST 2015) (see below).

The General Habitat Description for Blanding's Turtle (OMNRF 2014a) recognizes three (3) types of habitat. All three (3) types of habitat were documented within the development limits of the Site:

- **Category 1 Habitat:** Category 1 habitat includes areas where Blanding's Turtles overwinter and nesting areas. Blanding's Turtles typically overwinter in wetlands (as opposed to flowing watercourses) (OMNRF 2014a). The inline pond found west of 1035 March Road was identified by the OMNRF as a potential overwintering location, and was designated Category 1 habitat. There are no other pools/wetlands within the Study Area which have the potential to be large enough for Blanding's Turtles to overwinter. Nesting habitat includes areas of loose sandy fill or gravel where turtles can dig into the substrate to lay their eggs (OMNRF 2014a). There are no natural sand or gravel areas and no artificial stockpiles within the Study Area. ***The total extent of Category 1 habitat shown within the Study Area is 0.08 ha (the inline pond). All of this habitat falls within the development limits of the Site.***

- **Category 2 Habitat:** Category 2 habitat includes wetlands and watercourses within 2 km of known Blanding's Turtle occurrences. Category 2 habitat includes the watercourse/wetlands themselves, as well as adjacent terrestrial areas up to 30 m from the water's edge (OMNRF 2014a). The main function of Category 2 habitat is to provide core foraging, basking and living areas that are utilized throughout the majority of the active season (OMNRF 2014a). As shown below, the North Tributary of Shirley's Brook (referred to as Tributary #2 in the KNUEA Environmental Management Plan (EMP)) and the surrounding 30 m provides Category 2 habitat. In consultation with the OMNRF, it was determined that a portion of the western reach of the North Tributary (Referred to as Drainage Channel F in the KNUEA EMP) does not qualify as Category 2 habitat, hence only a portion of the western reach is shown as Category 2 habitat below. As discussed above in Section 3.4, the majority of the North Tributary can be considered poor quality aquatic habitat due to its limited hydro-period and limited water depth, as well as the general low quality of surrounding riparian vegetation. The majority of Category 2 habitat that is found within the Study Area is considered low quality habitat (DST 2015). ***The total amount of Category 2 habitat shown within the Study Area is 7.36 ha (DST 2015). However, as shown below, 1.03 ha of the Category 2 habitat is within the 1015 March Road parcel and hence is beyond the development limits of the Site. The total amount of Category 2 habitat that is within the development limits is hence 7.36 ha – 1.03 ha = 6.33 ha.***
- **Category 3 Habitat:** Category 3 habitat includes terrestrial areas extending up to 250 m from the edge of wetlands and watercourses (e.g. an additional 220 m from the edge of the Category 2 habitat, which includes a 30 m buffer from the high-water mark). The main function of Category 3 habitat is to provide corridors that allow Blanding's Turtles to move overland between adjacent Category 1 and 2 habitat features (OMNRF 2014a). ***The total size of the Site (the development area) is approximately 48.05 ha. All of this area is considered Category 3 habitat, with the exception of areas that are shown as Category 1 or 2 habitat. In addition, there is a small area (0.44 ha) at the west side of 1075 March Road which is not Blanding's Turtle habitat, as it is more than 250 m from adjacent Category 1 and 2 features (DST 2015). The total size of Category 3 habitat is calculated as 48.05 ha (total development size) – 0.08 ha (Category 1) – 6.33 ha (Category 2) – 0.44 ha (area beyond 250 m) = 41.2 ha of Category 3 habitat within the development limits.***

Regulatory, mitigation, and habitat compensation requirements for Blanding's Turtle are discussed in detail in Section 4.4.3.

425000 425500 426000 426500 427000 427500 428000

5024500 5024000 5023500 5023000

Portions of the Previously Developed Properties are beyond the limit of Category 3 Habitat. These areas are also beyond the current Development Limits.

Quadrant B - Valecraft

Quadrant D - Metcalfe Realty Company Limited

March Valley Road

March Road

10,291 m2

10,291 m2 of Category 2 habitat is beyond the current Development Limits.

Quadrant A - Junic/Multivesco

4,368 m2

4,368 m2 is beyond the limit of Category 3 habitat. This area is within the current Development Limits.

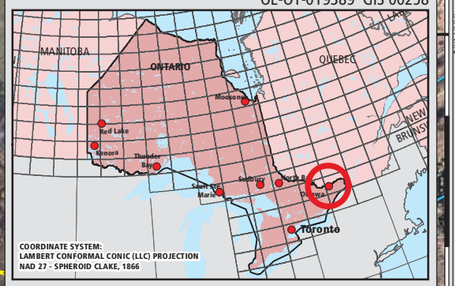
Quadrant C - Brigil

Note:
1. Category 3 habitat not shown outside of study area.

Figure 3
Estimated Extent of Functional Habitat (Existing Conditions)

Kanata North Community Design Plan
Blanding's Turtle Habitat Compensation Plan
Ottawa, ON

OE-OT-019389 GIS 00258



COORDINATE SYSTEM:
LAMBERT CONFORMAL CONIC (LLC) PROJECTION
NAD 27 - SPHEROID CLAKE, 1866

- Blanding's Turtle
- Painted Turtle
- Turtle (Species Unconfirmed)
- Watercourse
- Waterbody
- Land Owner
- Category 1 Habitat
- Category 2 Habitat
- Category 3 Habitat

0 100 200 300 400 500
Meters

Coordinate System:
North American Datum (NAD) 1983
Universal Transverse Mercator (UTM) Zone 18N

DST consulting engineers

A:\GIS\OE-OT-019389 KANATA NORTH\MAP DOCUMENTS\20150206_FIGURE3_ESTIMATED EXTENT OF FUNCTIONAL HABITAT_UPDATE.MXD

3.7.4 Barn Swallow

Barn Swallows were previously found nesting in several barns and other agricultural buildings within the Study Area. The presence of nesting Barn Swallows has previously been addressed by completing the online registration process for that species, which included submitting the *Notice of Activity under the Endangered Species Act (2007): Barn Swallow – Activities in Built Structures that are Habitat*. All structures with Barn Swallow nests were demolished in two (2) phases, with demolition occurring in the winter of 2015-2016 and the winter of 2017-2018, following obtainment of the confirmation of impact registration (Confirmation # M-102-9977528356 and # M-102-2197304807). At the current time, there are no longer any agricultural buildings that could be suitable for Barn Swallow nesting within the development limits of the Site.

Habitat compensation requirements have been fulfilled for both Barn Swallow impact registrations, and long term monitoring will be complete by the end of 2020. Habitat compensation was completed in two (2) phases, and included the construction of three (3) artificial nesting structures. The three (3) artificial nesting structures were designed and built to accommodate a total of thirty (30) nesting cups. The impact registration process, habitat compensation, and monitoring results are documented in more detail in the *Mitigation and Monitoring Record for Altering a Structure (Habitat for Barn Swallow)* (MES 2019b). Refer to MES (2019b) for additional detail.

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3.7.5 Eastern Whip Poor Will

Eastern Whip Poor Will call surveys were completed throughout the Kanata North Urban Expansion Area (KNUEA) in 2014 to support the KNUEA Environmental Management Plan (EMP), and no evidence of Eastern Whip Poor Will was noted (MEP 2016). Figure 7 shows the 2018 Eastern Whip Poor Will survey points. The 2018 Eastern Whip Poor Will survey results are summarized below in Table F. As noted in Table F, no evidence of Eastern Whip Poor Will was noted within the Site in 2018. Other species heard calling during the Eastern Whip Poor Will surveys included Killdeer, American Woodcock, Spring Peeper, Green Frog, American Toad, and Grey Treefrog.

The *General Habitat Description for the Eastern Whip Poor Will* (OMNRF 2014e) describes Eastern Whip Poor Will breeding habitat as "…open and half treed areas (which) often exhibit a scattered distribution of treed and open space…" Suitable breeding habitats generally consist of a 'mosaic' of open, half treed, and closed conditions (Garlapow 2007). The Study Area generally does not provide the mosaic of half treed conditions preferred by Eastern Whip Poor Will. Therefore, Eastern Whip Poor Will are unlikely to be a concern for the proposed development.

TABLE F: WHIP POOR WILL SURVEY RESULTS						
Survey Date	**Temperature**	**Conditions**	**Wind Speed**	**Start Time**	**Whip Poor Will Calls**	**Other Species**
May 22nd, 2018	11ºC	Clear Skies	1 kph	11:51 PM	None	WPW 1 - Spring Peepers and American Toads Heard East in Tributary #2 (East of Study Area) WPW 2 - Spring Peepers in Site WPW 3 - American Toad, Spring Peepers, American Woodcock and Killdeer in Site WPW 4 - Spring Peepers and Grey Treefrog Heard West Beyond the Study Area WPW 5 - None WPW 6 - Spring Peepers Heard Northwest Along Tributary #3 (Beyond Study Area)
May 29th, 2018	15ºC	Clear Skies	5 kph	11:59 PM	None	WPW 1 - Spring Peepers and Grey Treefrogs Heard East in Tributary #2 (East of Study Area) WPW 2 - Green Frogs in Pond within Site WPW 3 - American Woodcock and Killdeer in Site WPW 4 - Killdeer in Site WPW 5 - None WPW 6 - Grey Treefrogs South Beyond Study Area
June 22nd, 2018	19ºC	60% Clear	6 kph	11:30 PM	None	WPW 1 - None WPW 2 - Green Frogs in Pond within Site WPW 3 - Green Frogs and Killdeer in Site WPW 4 - Green Frogs and Killdeer in Site WPW 5 - Killdeer in Site WPW 6 - None

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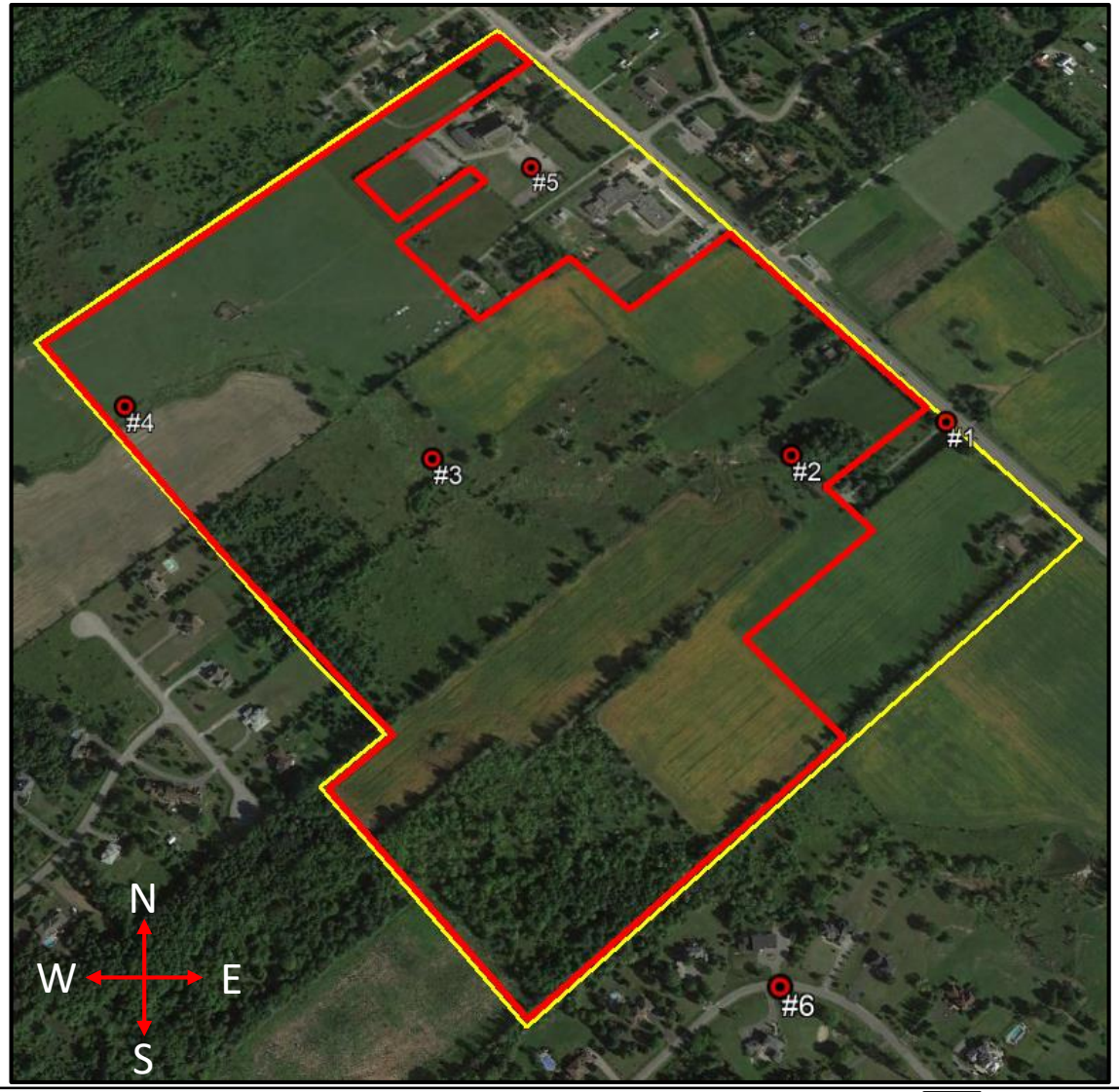
FIGURE 7: WPWI SURVEY SITES

1053/1075/1145 March Road - CU Developments Inc.

Combined Environmental Impact Statement and Tree Conservation Report (Revised)



- Study Area (Northwest Quadrant)
- Development Limits
- Survey Sites

Please Note: This is not a legal land survey. All dimensions and locations are shown as approximate.

3.7.6 Additional Species at Risk

The Natural History Information Center (NHIC) records for the nine (9) grids that include and surround the Study Area were reviewed (OMNRF 2018). This included an area 3 km x 3 km in size and all published Species at Risk (SAR) records were noted. An updated Information and Records Request Response was also obtained from the Ontario Ministry of Natural Resources and Forestry (OMNRF) (Appendix D). In addition to Bobolink, Eastern Meadowlark, Barn Swallow, Blanding's Turtle, Butternut, and Eastern Whip Poor Will (discussed above), the following SAR were identified as potentially occurring within the vicinity:

- Little Brown Bat – Endangered
- Northern Long Eared Bat – Endangered
- Chimney Swift – Threatened

The potential for these species to occur within the Study Area is discussed below:

- **Little Brown Bat and Northern Long Eared Bat:** No caves, bedrock fissures, mining shafts, abandoned buildings, or other features which may function as bat hibernacula habitat were noted within the Study Area. The OMNRF (2011b) guidelines for bat surveying are outlined in the *Bats and Bat Habitats: Guidelines for Wind Power Projects*. These guidelines state that deciduous and mixed forest habitats have the potential to provide maternity roosting sites. As described above in Section 3.3, the only portion of the Study Area which meets the definition of a 'forest' is the Dry-Fresh White Cedar Coniferous Forest (the Southwest Wooded Area/Feature M). However, the forest is a coniferous forest, and OMNRF guidelines state that surveying is only required in deciduous and mixed forests (OMNRF 2011b). Furthermore, the OMNRF guidelines state that potential cavity/snag trees must be at least 25 cm dbh in size to potentially provide maternity roosting habitat. As shown in Table D (above), the average tree size for all species other than White Pine within the Dry-Fresh White Cedar Coniferous Forest is well below 25 cm dbh, and therefore relatively few trees of a suitable size are present. Given that the Dry-Fresh White Cedar Coniferous Forest is only approximately 1.7 ha in size and is dominated by conifers, it is unlikely that bat maternal roosting habitat would present. As such, a cavity/snag count was not required. All other treed habitats within the Study Area are either Deciduous Hedgerows, Coniferous Hedgerows, or recent regrowth Cultural Woodlots/Cultural Thickets that are too young and too small to be likely to provide bat maternity roosting habitat (OMNRF 2011b). As such, Little Brown Bat and Northern Long Eared Bat are unlikely to be a significant concern for the proposed development.
- **Chimney Swift:** The residential homes within the developed portions of the Study Area were assessed to determine if any of them possessed chimneys that may be suitable for Chimney

Swift nesting. A total of five (5) chimneys were found within the Study Area. These included the following:

- 1015 March Road – The chimney has a ceramic liner with a metal cap.
- 1035 March Road – The chimney has a metal liner.
- 1053 March Road – The chimney has a ceramic chimney liner with a metal cap.
- 1113 March Road – The chimney has a metal cap with wire mesh.
- 1145 March Road – The chimney has a ceramic liner with a metal cap.

Photographs of the chimneys are included below. Chimney Swift typically will not nest in chimneys with ceramic liners, as they are unable to affix their nests to the smooth interior surface. Chimney Swift are unable to enter chimneys with wire mesh or metal caps. There are therefore no chimneys within the Study Area which may be suitable for Chimney Swift nesting. Due to the absence of potentially suitable chimneys within the Study Area, a survey for Chimney Swifts was not required.

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Photograph 31: Chimney at 1015 March Road. Note the metal cap and ceramic liner (May 24th, 2017).

Photograph 32: Chimney at 1035 March Road. Note the metal liner (May 24th, 2017).

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Photograph 33: Chimney at 1053 March Road. Note the ceramic liner and metal cap (May 24th, 2017).

Photograph 34: Chimney at 1113 March Road. Note the metal liner and wire mesh cap (May 24th, 2017).

Photograph 35: Chimney at 1145 March Road. Note the ceramic liner and metal cap (May 24th, 2017).

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3.8 Linkages

As discussed previously, the Study Area is the northwest quadrant of the Kanata North Urban Expansion Area (KNUEA). The Study Area is located along the west side of March Road, with the KNUEA southwest quadrant located directly to the southeast, and the KNUEA northeast quadrant located on the opposite side of March Road (Figure 1). Both of the adjacent KNUEA quadrants are intended to be developed in future as residential subdivisions, although they remain predominantly undeveloped agricultural lands at the current time. Existing rural subdivisions are located south (Marchbrook Circle), west (Panandrick View Drive), and northeast (Houston Crescent) of the Study Area.

Under existing conditions, March Road and the existing developed institutional and residential properties within the Study Area are likely to present a barrier to wildlife movement. However, the region surrounding the Study Area remains predominantly an agricultural landscape, and wildlife may be able to traverse the Study Area in multiple directions. In particular, species that are able to cross Cultivated Fields (e.g. White Tailed Deer, Coyote, Wild Turkeys, etc.) are more likely to utilize the Study Area as a movement corridor. Wildlife movement within the Study Area, including the movement of Blanding's Turtles, is likely to be concentrated around the North Tributary of Shirley's Brook (Referred to as Tributary #2 in the KNUEA Environmental Management Plan (EMP)). Blanding's Turtles, as well as many other species, are more likely to follow the natural corridor created by the watercourse, as opposed to moving overland through the surrounding developed areas and Cultivated Fields. Therefore, the North Tributary likely provides the primary linkage function within the Study Area under current conditions.

Following the future development of the Site and the adjacent quadrants of the KNUEA, wildlife movement through the Study Area will be confined to the Open Space Blocks (Blocks 272, 273, and 293) that will provide the minimum 40 m wide corridor surrounding the North Tributary. Wildlife may continue to move around the future development by traversing the properties located north and west of the Study Area, as those properties are beyond the current urban boundary of the City of Ottawa, and hence are likely to remain predominantly undeveloped for the foreseeable future.

4.0 DESCRIPTION OF ENVIRONMENTAL IMPACTS AND MITIGATION

4.1 Terrestrial Habitat and Tree Removal (TCR)

4.1.1 Tree Retention and the Southwest Wooded Area (TCR)

As described above, the majority of the development area consists of open habitats with relatively few trees. Tree cover that does occur within the development area is generally young, and many treed areas are degraded and/or heavily impacted by invasive species (including the Emerald Ash Borer). Trees cannot be preserved within the majority of the development area due to the density of proposed development, and the practical requirements for site servicing, grading, excavation, etc. However, as outlined below, trees may be retained within the Open Space Blocks and at the development edges.

The Kanata North Urban Expansion Area (KNUEA) Environmental Management Plan (EMP) (Novatech 2016b) lists the following tree preservation recommendations (note that only recommendations which are relevant to the northwest quadrant are listed here):

- *Where feasible, the preservation of individual healthy trees and clusters of woody vegetation should be considered on a case-by-case basis along edge conditions, in neighborhood parks, and school sites*;
- *Where feasible, retain and/or enhance the existing perimeter hedgerows with active management and new native plantings to provide more tree cover between the old and new neighborhoods*;
- *It is recommended that a portion of the Southwest Wooded Area be retained as part of the stream corridor for Shirley's Brook North Branch (Tributary #3)*;
- *A portion of the Southwest Wooded Area (approximately 0.3 ha), located along the western border of the KNUEA, is to be retained as part of the Natural Heritage System (NHS) and will be retained as a part of the proposed development, and conveyed to the City for conservation.*

The KNUEA EMP tree planting recommendations related to the realignment/restoration of the North Tributary (Referred to as Tributary #2 in the KNUEA EMP) are discussed below in Section 4.2.4.

The tree retention recommendations of the KNUEA EMP will be implemented as follows:

- Where feasible, trees will be preserved within the Open Space Blocks (Blocks 272, 273, and 293) that will form the minimum 40 m wide corridor surrounding the realigned North Tributary of Shirley's Brook. Trees that already occur within the watercourse corridor will be preserved during the realignment/habitat restoration process, wherever possible.

- Where compatible with the park design, trees will also be preserved within the 2.23 ha Municipal Park Block (Block 278). The Municipal Park Block is intended, in part, to preserve Vegetation Feature E, which is the line of maturing White Pine along the western Site boundary. The White Pines average 30 cm dbh in size and vary between approximately 25 cm and 35 cm dbh.
- As recommended by the KNUEA EMP, a 0.6 ha Open Space Block (Block 285) is located within the southwest corner of the Site. Existing tree cover will be preserved within the Open Space Block. This Open Space Block is intended to preserve a portion of the Southwest Wooded Area, in order to provide a riparian buffer for the North Branch of Shirley's Brook (Referred to as Tributary #3 in the KNUEA EMP), which is located to the south (beyond the Site). Although the North Branch is not located within either the Site or the current Study Area, it is close enough to the Site that a portion of the minimum 40 m wide corridor for that watercourse overlaps the southwest corner of the Site. The intention of the Open Space Block in the southwest corner of the Site is to preserve the riparian habitat of the adjacent North Branch.
- As noted above, the KNUEA EMP also recommended preservation of an additional 0.3 ha of the Southwest Wooded Area along the western boundary of the Site. The purpose of this recommendation was to preserve a stand of older forest growth within the Site that previously connected to the adjacent Woodlot S-12. However, the portion of Woodlot S-12 that previously occurred adjacent to the Site has been cleared by the neighboring landowner, and there is no longer any connection between the remaining portion of Woodlot S-12 and the Southwest Wooded Area. As such, there is no longer any significant ecological value in preserving the 0.3 ha along the western boundary of the Site, and so this area has been included within the development limits.
- Tree removal should proceed only when required to allow development of each of the development phases. Trees that do not need to be removed to allow servicing, grading, or development of earlier phases, should be retained until development of the later phases necessitating tree removal. However, it should be noted that while houses may be constructed in phases (as outlined above), the realignment of the North Tributary, site servicing, and the construction of the Stormwater Management (SWM) Pond will need to be undertaken as part of the initial phase of development, as those aspects of the development cannot be effectively implemented in phases. As such, opportunities for phased tree removal may be limited in areas affected by the North Tributary realignment, servicing, and the construction of the SWM Pond.

As noted above, Woodlot S-12 is located southwest of the Study Area. However, Woodlot S-12 is separated from the future development by the recently cleared property located southwest of the Study Area. Due to the separation between the remnant portion of Woodlot S-12 and the development limits of the Site, it is unlikely that the development of the Site will negatively impact Woodlot S-12 in the future.

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4.1.2 Tree Preservation Mitigation Measures (TCR)

Tree cover is present on several adjacent properties located south, west, and north of the development limits of the Site. Appropriate tree preservation measures must be implemented to minimize the risk of impacting retained trees and trees on adjacent lands during Site development. The following tree mitigation measures should be implemented to help protect and preserve retained trees:

- Mark the edge of the tree clearing area to ensure only designated trees are removed. Natural areas that are to be retained are to be isolated by sturdy construction fencing or similar barriers at least 1 m in height. The temporary Blanding's Turtle exclusion fencing described in Section 4.4.5 can also function as tree protection fencing;
- Protect the critical root zone (CRZ) of retained trees, where the CRZ is established as being 10 cm from the trunk of a tree for every centimeter of trunk dbh. The CRZ is calculated as dbh x 10 cm;
- When trees to be removed overlap with the CRZ of trees to be retained, cut roots at the edge of the CRZ and grind down stumps after tree removal. Do not pull out stumps. Ensure there is not root pulling or disturbance of the ground within the CRZ;
- If roots must be cut, roots 20 mm or larger should be cut at right angles with clean, sharp horticultural tools without tearing, crushing, or pulling;
- Do not place any material or equipment within the CRZ of any tree;
- Do not attach any signs, notices, or posters to any tree;
- Do not damage the root system, trunk, or branches of any tree;
- Ensure that exhaust fumes from all equipment are directed away from any tree canopy; and
- Disturbed areas of retained natural features should be replanted with locally grown native species.

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4.1.3 Transplanting and Replanting (TCR)

Vegetation Feature E consists of a row of maturing White Pines that can be preserved within the 2.23 ha Municipal Park Block (Block 278). The maturing White Pines present in Feature E have contributed seed to the adjacent Regenerating Cultural Thicket/Cultural Woodlot (Feature O), such that Feature O is dominated by young White Pines averaging approximately 12 cm dbh in size. The young White Pines are an ideal size for transplanting. Where feasible, it is recommended that the young White Pines should be transplanted from Feature O and retained in an on-site nursery for future planting within the realigned watercourse corridor, the municipal park, and/or the stormwater management pond.

In order to mitigate the loss of woody vegetation from Site clearing, trees and shrubs will be replanted selectively between lots, at the back and front of lots, and along roadways. Plantings should emphasize the use of native trees and shrubs, which may include those identified in Appendix A. Examples of some native shrubs which could be planted include Nannyberry, Red Osier Dogwood, Meadow Sweet, and Red Elderberry. Examples of some native trees which could be planted include Sugar Maple, Red Maple, White Cedar, Black Cherry, Bur Oak, White Pine, White Spruce and Basswood. Planting of Ash trees should be avoided due to the high likelihood that any planted Ash trees will become infested with Emerald Ash Borer. The planting locations and specific planting requirements will be confirmed by a detailed Landscaping Plan. The detailed Landscaping Plan will identify requirements for street trees and other landscaping areas. Planting of Ash trees should be avoided due to the high likelihood that any planted Ash trees will become infested with Emerald Ash Borer. Tree planting recommendations related to the realignment/restoration of the North Tributary (Tributary #2) of Shirley's Brook are discussed below in Section 4.2.4.

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4.2 Watercourses and Aquatic Habitats

4.2.1 Tributary Setbacks

The Kanata North Urban Expansion Area (KNUEA) Environmental Management Plan (EMP), which was approved through a City of Ottawa Official Plan Amendment, establishes a minimum 40 m wide corridor of retained and/or enhanced habitat around the tributaries of Shirley's Brook (Novatech 2016b). Within the Site, this corridor is provided by several connected Open Space blocks (Blocks 272, 273, and 293) that total approximately 4.1 ha in size and which run in a northwest to southeast direction through the Site. As part of the Site development, the North Tributary of Shirley's Brook (Referred to as Tributary #2 in the KNUEA EMP) will be realigned into the Open Space Blocks. As discussed below, the realignment of the North Tributary will include habitat restoration and enhancement activities, which will be intended to improve the quality of the aquatic habitat and riparian areas for Blanding's Turtles (as well as other wildlife). As part of the realignment, the small pond that is currently located along the North Tributary (adjacent to 1035 March Road) will be decommissioned. Per the recommendations of the KNUEA EMP, the western reach of the North Tributary (Referred to in the KNUEA EMP as Drainage Channel F) will be intercepted at the KNUEA property boundary and piped to the realigned North Tributary (Novatech 2016b). The western reach (Channel F) is an overland stormwater flow channel which receives stormwater from the Panandrick View Drive subdivision (located to the west). A 6 m wide recreational pathway will be included adjacent to the North Tributary watercourse corridor.

The purpose of the minimum 40 m wide corridor surrounding the North Tributary of Shirley's Brook is to provide a buffer which will help to slow, filter and absorb overland stormwater flow, while also providing habitat for wildlife and wildlife movement. Trees growing within the setback area help to protect the watercourse from edge effects including noise, pollution, and other forms of human disturbance. Trees also provide shade which helps to cool surface water temperatures, while they also help to prevent erosion, stabilize banks, and enhance absorption and filtration of overland stormwater flow.

As specified in Section 4.7.3 of the City of Ottawa Official Plan, current policy recommends that the setback from watercourses should be the greater of either 15 m from the top of slope or 30 m from the normal high-water mark of the watercourse. The minimum 40 m wide corridor surrounding the tributaries of Shirley's Brook established by the KNUEA EMP effectively requires implementation of a 20 m setback from the watercourses. The City of Ottawa Official Plan Policy 4.7.3 identifies four (4) items that are to be addressed in cases where watercourse setbacks are less than 30 m from the normal high-water mark. These include:

A. **Slope and Bank Stability:** The realigned North Tributary of Shirley's Brook will be designed to minimize erosion potential. Tree planting within the setbacks (discussed below in Section 4.2.4), will help to stabilize the slope and prevent future erosion. No significant slope and bank stability issues have been identified.
B. **Natural Vegetation and Ecological Functions in the Setback Area:** As discussed above, under existing conditions the majority of the North Tributary lacks riparian tree cover. During the realignment process, vegetation cover within the watercourse corridor will be enhanced, thereby improving the quality of the habitat above existing conditions.
C. **The Nature of the Abutting Waterbody and the Presence of the Floodplain:** The floodplain of the North Tributary will be confined within the minimum 40 m wide watercourse corridor following development of the Site (Novatech 2016b).
D. **No Negative Impacts on Fish Habitat:** As discussed above, the North Tributary currently provides low quality, intermittent fish habitat for a tolerant warm-water fish community (MES 2019a). As described below, the realignment process will include habitat restoration works, which will improve the quality of fish habitat above existing conditions.

In summary, the minimum 40 m wide corridor surrounding the realigned North Tributary is anticipated to be sufficient to protect the ecological functions of the watercourse. As part of the realignment process, habitat restoration and habitat enhancement works will be undertaken, which will improve the quality of the aquatic habitat above existing conditions.

4.2.2 Shirley's Brook Realignment – Aquatic Habitat Enhancement Features

Habitat enhancement measures for the northwest quadrant of the Kanata North Urban Expansion Area (KNUEA) were designed primarily to improve the quality of the North Tributary (Referred to as Tributary #2 in the Environmental Management Plan (EMP)) as habitat for Blanding's Turtle (DST 2015). However, the habitat enhancement measures will also improve the quality of aquatic habitat for other organisms, including amphibians and fish. As discussed above in Section 3.4, the North Tributary can be characterized as a highly degraded agricultural drain that has limited water depths and a hydro-period that is typically confined to the spring in most years. Throughout the majority of the Study Area, the watercourse has very little shade and low quality riparian habitat. Much of the North Tributary becomes overgrown with terrestrial vegetation by mid-summer each year, limiting its ability to provide fish habitat throughout much of the growing season. The North Tributary provides intermittent, low quality fish habitat, which supports a low diversity, tolerant warm-water fish community. As described above in Section 3.7.3, the North Tributary also provides low quality Category 2 habitat for Blanding's Turtle.

The *Kanata North Community Design Plan – Blanding's Turtle Habitat Compensation Plan* (DST 2015) and the KNUEA EMP (Novatech 2016b) outline in detail the proposed habitat enhancement works that are to be undertaken during the realignment of the North Tributary. For the purposes of this Combined Environmental Impact Statement (EIS) and Tree Conservation Report (TCR), and the Overall Benefit Permit application for Blanding's Turtle, typically a conceptual design for the watercourse realignment would be deemed sufficient. The conceptual design for the realignment is included below (the Creek Realignment Layout Plan). The arrangement of Open Space Blocks to accommodate the realigned watercourse corridor are shown above in the Draft Plan of Subdivision.

Typically the Overall Benefit Permit is obtained prior to initiating the detailed design process for a watercourse realignment, as the Overall Benefit Permit may contain provisions that need to be reflected in the final design. Following obtainment of the Overall Benefit Permit, a detailed design for the North Tributary realignment will be developed and submitted to the Mississippi Valley Conservation Authority (MVCA) and the Ministry of Environment, Conservation, and Parks (MECP) for review and approval.

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NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

No.	REVISION	DATE	BY
1.	ISSUED WITH THE COMBINED ENVIRONMENTAL IMPACT STATEMENT AND TREE CONSERVATION REPORT	OCT 2019	MSP

SCALE 1:1250

DESIGN MSP
CHECKED MSP
DRAWN RBG
CHECKED MSP
APPROVED MSP

FOR REVIEW ONLY

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LOCATION
CU DEVELOPMENTS INC.
1053, 1075 AND 1145 MARCH ROAD

DRAWING NAME
CREEK RE-ALIGNMENT
LAYOUT PLAN

PROJECT No. 116132
REV # 1
DRAWING No. 116132-CRK-FIG

The conceptual design for the North Tributary realignment (the Creek Realignment Layout Plan) includes the following (Refer to DST (2015) and Novatech (2016b) for additional detail):

1. **Stream Corridor:** Areas where the existing channel will be realigned should be designed using natural channel design techniques to ensure long-term stability and enhance ecological functions of the corridor. This should include the following:
    a. Areas where the realigned channel bed is situated directly on bedrock will require geotechnical evaluation and measures to prevent excessive diversion of baseflows into rock fractures.
    b. The low flow channel should have a bottom width of between 1 m and 4 m.
    c. The maximum bank angle within the wetted channel should be approximately 25 degrees (2:1) and the bank beyond the wetted channel should be approximately 10 to 15 degrees maximum (4:1 to 6:1) and should be nearly flat to 6 degrees (10% slope).
    d. Limited portions of the stream may have a steeper bank angle where final grades would require extensive excavation to create a shallow angle, but the majority of the watercourse will feature a shallow bank.
    e. The water depth profile will be similar to the existing channel, with bankfull depths ranging from 30 cm to 75 cm during periods of high water.
    f. Water depths will be less than 30 cm during low flow periods.

2. **Blanding's Turtle Category 1 Habitat Creation:** As discussed above in Section 3.7.3, Category 1 Blanding's Turtle habitat includes overwintering and nesting sites. A total of 0.27 ha of Category 1 habitat will be created within the watercourse corridor. The KNUEA EMP (Novatech 2016b) and DST (2015) originally identified that the Category 1 habitat creation should include two (2) Deep Pools and two (2) Artificial Nesting Areas, which collectively would create approximately 0.2 ha of Category 1 habitat. However, during the Overall Benefit Permit review process, the MECP requested that the two (2) Artificial Nesting Areas be eliminated from the design. The MECP requested that the Artificial Nesting Areas be replaced with two (2) additional Deep Pools (four (4) Deep Pools in total). This change increases the amount of Category 1 habitat creation from the 0.2 ha outlined by Novatech (2016b) and DST (2015) to approximately 0.27 ha. The design for these features is as follows:
    a. **Deep Pools** will function as potential hibernacula sites for Blanding's Turtles, while also providing general foraging habitat and refuge areas for other aquatic wildlife (including fish). Each deep pool will measure approximately 15 m x 45 m (675 m^2) and may be designed as either inline or offline ponds. The Creek Realignment Layout Plan (above) shows all four (4) deep pools as inline ponds. Each will include the following:

- Each pool should have a maximum depth of approximately 2 m and an average depth of approximately 1 m.
- Approximately 2/3^{rds} of each pool area will be graded to maintain 1 m water depth or greater, and graded so that the remaining 1/3rd of the area transitions to an approximate average depth of 30 m.
- Deep pools will include similar substrate and vegetation characteristics as the typical channel sections, including seeding with a native wetland restoration mix/riparian vegetation mix.

3. **Blanding's Turtle Category 2 Habitat Creation:** As discussed above in Section 3.7.3, Category 2 Blanding's Turtle habitat includes watercourses and wetlands, and the surrounding terrestrial areas up to 30 m from the water's edge. The total size of the Open Space Blocks (Blocks 272, 273, and 293) surrounding the realigned North Tributary is approximately 4.1 ha. All of the 4.1 ha will count as Category 2 habitat following completion of the realignment, with the exception of the 0.27 ha that will feature Category 1 habitat features (see above). In total, the realigned watercourse corridor will contain 0.27 ha of Category 1 habitat and approximately 3.83 ha of Category 2 habitat (4.1 ha total size). The Category 2 habitat within the watercourse corridor will be enhanced by including two (2) Shallow Pans/Shallow Pools, five (5) Deep Channel Pockets, and hard substrate habitat features within the watercourse corridor. It should be noted that the KNUEA EMP (Novatech 2016b) and DST (2015) originally proposed the inclusion of three (3) Shallow Pans/Shallow Pools within the realigned North Tributary watercourse corridor. However, the density of Shallow Pans/Shallow Pools was determined by DST (2015) based on the assumption that the entire length of the North Tributary through the Northwest Quadrant of the KNUEA would be addressed collectively during the realignment process. However, as noted above, the 1035 March Road and 1015 March Road properties are not included within the currently proposed development (e.g. the Site). A portion of the North Tributary's length through the KNUEA Northwest Quadrant flows through the 1035 March Road property. The exclusion of the 1035 March Road property from the current Site leaves insufficient space to include all three (3) Shallow Pans/Shallow Pools. It is recommended that the inclusion of the third Shallow Pan/Shallow Pool could be considered as a habitat enhancement feature within the 1035 March Road property, if the 1035 March Road property is developed in the future. The design for these features is as follows:
    a. **Shallow Pans/Shallow Pools** excavated around the channel will expand the wetted area and provide areas where aquatic and semi-aquatic vegetation can grow to create habitat for amphibians, turtles and other aquatic wildlife. Each shallow pan / shallow pool should measure approximately 10 m wide (5 m on either side of the channel) and approximately 60 m long (600 m^2).

- Shallow pans / shallow pools will be dug to an average of approximately 30 cm below the channel grade, so that they maintain an average water depth of approximately 30 cm.

b. **Deep Channel Pockets** will be dug approximately 30 cm to 45 cm below the main channel grade. These features will be constructed along the length of the channel and will create deeper refuge pools within the channel for turtles, fish and other aquatic wildlife.
    - Deep channel pockets will be relatively small (approximately 5 m diameter) and should be semi-randomly placed along the channel length.

c. **Hard Substrate Features** including woody debris, logs, root wads, and cut trees will be placed within wider sections of the channel (>2 m low flow bottom width). Woody debris, grubbed stumps, logs, flat rocks, rock piles and other cover materials should be interspersed along the banks of the realigned channel to create habitat within (or adjacent) to the main channel.

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4.2.3 Shirley's Brook Realignment – Wildlife Passage Culverts

As shown in the Creek Realignment Layout Plan (above), two (2) new roads will cross the realigned North Tributary. The future road crossings will include suitable wildlife passage culverts that will allow Blanding's Turtles (and other wildlife) to pass beneath the new roads. Per the Kanata North Urban Expansion Area (KNUEA) Environmental Management Plan (EMP) (Novatech 2016b), the wildlife passage culverts will include box culverts that are a minimum of 1.8 m wide x 1.2 m high. As discussed below in Section 4.4.5, the minimum 40 m wide watercourse corridor will include fencing designed to prevent Blanding's Turtles from leaving the watercourse corridor to enter the development area. The fencing will be required to connect to the wildlife passage culverts, to ensure there are no gaps in the system.

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4.2.4 Shirley's Brook Realignment - Riparian Planting (TCR)

The Kanata North Urban Expansion Area (KNUEA) Environmental Management Plan (EMP) makes the following recommendations regarding planting requirements within the minimum 40 m wide watercourse corridor (Novatech 2016b):

- *Realigned channel sections should be seeded with a native wetland/riparian seed mix to encourage re-establishment of native vegetation and improve habitat quality*;
- *Where possible, the realigned channel sections should be designed to take advantage of existing shade trees and surrounding woody vegetation in hedgerows;*
- *Shade tree planting should be selective, as the goal is not to create a fully shaded riparian corridor. Landscaping and grading features will be identified at the detailed design stage to ensure that critical habitat areas are well separated from the adjacent recreational trails.*

The riparian planting recommendations of the KNUEA EMP (Novatech 2016b) will be implemented as follows:

- Following completion of excavation and other earthworks, bare areas of the watercourse corridor will be seeded with a native wetland/riparian seed mix. Seeds will be broadcast over any bare areas in the early part of the growing season, in order to encourage the establishment of native wetland vegetation.
- Where feasible, existing trees will be preserved within the Open Space Blocks that will form the minimum 40 m wide corridor surrounding the realigned North Tributary of Shirley's Brook.
- It is not desirable to completely reforest the watercourse corridor, as Blanding's Turtles require open areas with full sun for basking and thermal regulation. Complete reforestation of the watercourse corridor would make the habitat less suitable for Blanding's Turtles. However, trees growing within the watercourse corridor will help to protect the watercourse from edge effects including noise, pollution, and other forms of human disturbance. Trees also provide shade which helps to cool surface water temperatures, while they also help to prevent erosion, stabilize banks, and enhance absorption and filtration of overland stormwater flow. As such, tree planting within the watercourse corridor is desirable, but should be undertaken selectively, with relatively few dense stands. As noted above in Section 4.1.3, where feasible it is recommended that the young White Pines should be transplanted from Feature O and retained in an on-site nursery. The White Pines could be replanted in low densities within the watercourse corridor.
- During detailed design, landscaping and grading features will be identified to ensure that critical habitat areas are well separated from the adjacent 6 m wide recreational trail. Tree/shrub planting can be utilized as a visual barrier to ensure that some portions of the watercourse corridor remain undisturbed by recreational usage.

4.2.5 Servicing and Stormwater Management

Stormwater runoff will be addressed through construction of a new Stormwater Management (SWM) Pond adjacent to March Road. The new SWM Pond will outlet clean water to the North Tributary of Shirley's Brook. The Kanata North Urban Expansion Area (KNUEA) Environmental Management Plan (EMP) (Novatech 2016b) states that the recommended SWM facility designs will incorporate baseflow enhancement, water quality control (80% long-term TSS removal), erosion control, and peak flow control.

4.2.6 Sediment and Erosion Controls

As discussed below in Section 4.4.5, Blanding's Turtle temporary exclusion fencing (wire re-enforced silt fencing) will be required surrounding the watercourse corridor Open Space Blocks (Blocks 272, 273, and 293) during the construction phase. Temporary exclusion fencing is also recommended to be installed along the northern and eastern edges of the 0.6 ha Open Space Block (Block 285) that is included in the southwest corner of the Site (adjacent to the North Branch of Shirley's Brook). In addition to preventing Blanding's Turtles from entering the development area, this fencing will also serve to mitigate potential sediment and erosion impacts on the North Tributary (Referred to as Tributary #2 in the KNUEA EMP) and the North Branch (Referred to as Tributary #3 in the KNUEA EMP) of Shirley's Brook.

During construction, existing conveyance systems along March Road and in the existing developed properties could be exposed to significant sediment loading. Although construction is only a temporary situation, a sediment and erosion control plan will be required to ensure the existing conveyance systems are not negatively impacted by sediment and erosion.

The sediment and erosion control plan will include the following:

- Groundwater in trenches (if present) will be pumped into a filter mechanism, such as a trap made up of geotextile filters and straw, prior to release to the environment;
- Bulkhead barriers will be installed at the nearest downstream manhole in each sewer which connects to an existing downstream sewer (e.g. existing sewers along March Road, if required). These bulkheads will trap any sediment carrying flows, thus preventing any construction-related contamination of existing sewers;
- Seepage barriers will be constructed in any temporary drainage ditches;
- Construction vehicles will leave the Site at designated locations. Exits will consist of a bed of granular material, in order to minimize the tracking of mud off-site;
- Any stockpiled material will be properly managed to prevent those materials from entering the sewer systems; and

- Until landscaped areas are sodded or until streets are asphalted and curbed, all catch basins and manholes will be constructed with a geotextile filter sock located between the structure frame and cover.

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4.3 Adjacent Lands and Significant Features

As noted above in Section 3.5, the only significant feature located on adjacent lands in the vicinity of the Study Area is the North Branch of Shirley's Brook (Referred to as Tributary #3 in the Kanata North Urban Expansion Area (KNUEA) Environmental Management Plan (EMP)), which is located to the south. As noted previously, although the North Branch is not located within either the Site or the current Study Area, it is close enough to the Site that a portion of the minimum 40 m wide corridor for that watercourse overlaps the southwest corner of the Site. A 0.6 ha Open Space Block (Block 285) is included along the southern property line in the vicinity of the North Branch. This Open Space Block is intended to preserve a portion of the existing tree cover within the Southwest Wooded Area, in order to provide a riparian buffer for the North Branch of Shirley's Brook (located to the south). The intention of the Southwest Wooded Area Open Space Block is to preserve a sufficient portion of the Southwest Wooded Area so that a minimum 40 m wide corridor surrounding the North Branch can be achieved (with the other half of the corridor to be provided within the KNUEA southwest quadrant).

Tree cover is present on several adjacent properties located south, west, and north of the Study Area. The tree preservation measures described above in Section 4.1.2 will protect trees on lands adjacent to the Site.

As noted above, Woodlot S-12 is located southwest of the Study Area. However, Woodlot S-12 is separated from the future development by the recently cleared property located southwest of the Study Area. Due to the separation between the remnant portion of Woodlot S-12 and the Site, it is unlikely that the development of the Site will negatively impact Woodlot S-12 in the future.

4.4 Wildlife and Species at Risk

4.4.1 Bobolink Habitat Impacts and Habitat Compensation Requirements

As discussed above in Section 3.7.1, the rules and regulations of the Ontario Endangered Species Act (ESA) allow development of up to 30 hectares of Bobolink habitat to be authorized by completing the Ministry of Environment, Conservation, and Parks (MECP) Online Registration Process. The extent of Bobolink habitat found within the Site varies from year to year, depending on which fields are under cultivation and which have been left fallow. As such, the extent of Bobolink habitat found within the Site should be reevaluated in the growing season prior to the commencement of development, in order to document the extent of Bobolink habitat at the time of development. This information can then be used to complete the MECP Online Registration Process. At any given time, less than 30 hectares of the Site is left fallow, and therefore the Site is anticipated to qualify under the MECP Online Registration Process. This approach to addressing the regulatory requirements for Bobolink was outlined in the Information Gathering Form (IGF) that was submitted to the MECP in July 2018 as part of the Ontario ESA review process. The IGF has been reviewed and accepted by the MECP.

The habitat compensation requirements for developments removing less than 30 ha of Bobolink habitat are standardized by the rules and regulations of the Ontario ESA. The standard approach to provide habitat compensation for Bobolink is to create a new nesting site that is greater in size than the area of Bobolink habitat that will be removed by the development. The new nesting site is typically created at an offsite location within the same eco-region. Compensation habitat is created by converting existing cultivated agricultural fields, thickets, or other habitats which are not currently suitable for Bobolink nesting, into hayfields, grasslands, and/or pasture which are suitable for Bobolink nesting. The location and configuration of the compensation habitat for Bobolink will be determined as part of the MECP Online Registration Process. The requirements for creating Bobolink habitat are as follows:

- The new habitat must be located outside of the development area;
- The new habitat must be in the same or adjacent ecoregion;
- The new habitat must occur in parcels at least 4 ha in size;
- The new habitat must be at least 200 m wide; and
- The new habitat must be greater in size than what was removed.

Typical guidelines for Bobolink habitat creation include the following:

- A qualified farmer is typically retained to undertake the habitat creation and maintenance of the habitat;

- Habitat is typically created by converting land used for other purposes into hayfields, open grasslands, or pasture;
- Preparation of the new habitat prior to seeding (e.g. tilling or clearing) must be undertaken to remove shrub growth and/or any cultivated crops;
- The new habitat is then to be seeded/maintained so that 60% to 80% of the habitat is covered with at least three (3) grass species, with at least one species growing to 50 cm or higher; and
- The remainder of the new habitat must be planted with forbs or legumes.

Once the new Bobolink habitat is established, maintenance is to be undertaken as outlined by the rules and regulations of the Ontario ESA. This includes the measures recommended in *Managing Hay and Pasture to Benefit Grassland Birds: A Preliminary Guide for Carden Landowners* (Couchiching Conservancy 2013). This includes the following:

- The rules and regulations of the Ontario ESA require the new habitat to be kept in place for 20 years after the date when the habitat is first created;
- This typically includes five (5) years of active management followed by fifteen (15) years of passive management (e.g. retaining the habitat in an undeveloped condition);
- During the five (5) years of active management, the farmer should maintain the habitat to ensure that 60% to 80% of groundcover is occupied by grasses. Re-seeding may be required if the monitoring program results indicate that grasses are insufficiently represented;
- Woody vegetation growth (e.g. trees and shrubs) and invasive species must be kept to a minimum;
- Growth of woody vegetation, herbaceous species, and forbs should be controlled by annually harvesting or mowing the fields in the late summer (after July 31st). Harvesting must not be conducted during the breeding bird season (April 1st to July 31st) when nests may be present. Harvesting helps to control woody vegetation and prevent dominance of forbs such as Canada Goldenrod; and
- Annual over-seeding with grass seed following late summer mowing may be necessary if grass coverage is too low.

Monitoring is typically required by the MECP annually during the five (5) year maintenance period. The monitoring requirements are discussed in greater detail below in Section 6.0. Mitigation measures to protect individual Bobolink during Site development are discussed below in Section 4.4.6.

4.4.2 Butternut Tree Regulatory Requirements (TCR)

As discussed above in Section 3.7.2, a Butternut Health Assessment (BHA) was completed for the two (2) trees found adjacent to 1035 March Road, and both trees were judged to be cultivated Category 1 trees (non-retainable). No other Butternut Trees were found throughout the remainder of the Study Area. With respect to Butternut Trees, there are no additional regulatory requirements under the Ontario Endangered Species Act (ESA) anticipated, as both Butternut Trees were found to be cultivated Category 1 trees. Category 1 trees and cultivated trees are exempt from Ontario ESA requirements.

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4.4.3 Blanding's Turtle Habitat Impacts and Habitat Compensation Requirements

The occurrence of Blanding's Turtle habitat within the development limits is described above in Section 3.7.3. Approximately 0.08 ha of Category 1 habitat, 6.33 ha of Category 2 habitat, and 41.2 ha of Category 3 habitat is found within the development limits (refer to Section 3.7.3 for detailed calculation methods). The realignment of the North Tributary of Shirley's Brook (referred to as Tributary #2 in the Kanata North Urban Expansion Area (KNUEA) Environmental Management Plan (EMP)) is described above in Section 4.2.2. As noted above, the realignment will create approximately 0.27 ha of Category 1 habitat and approximately 3.83 ha of Category 2 habitat. This is equivalent to the total size (4.1 ha) of the Open Space Blocks (Blocks 272, 273, and 293) that will form the minimum 40 m wide watercourse corridor. In addition, the preservation of the 0.6 ha Open Space Block (Block 285) in the southwest corner of the Site will preserve additional Category 2 habitat, which is designated due to its proximity to the North Branch (referred to as Tributary #3 in the KNUEA EMP). In total, the extent of Blanding's Turtle habitat (post development) will be approximately 0.27 ha of Category 1 habitat and approximately 4.43 ha of Category 2 habitat. There are no other areas of preserved natural habitat identified within the Site, and therefore no areas of Category 3 habitat are designated to be preserved within the development limits.

The net loss of habitat associated with the development is calculated by taking the post-development habitat and subtracting from it the pre-development habitat. This comes out as follows:

- **Category 1 Habitat:** 0.27 ha (post-development) – 0.08 ha (pre-development) = +0.19 ha
- **Category 2 Habitat:** 4.43 ha (post-development) – 6.33 ha (pre-development) = -1.9 ha
- **Category 3 Habitat:** 0 ha (post-development) – 41.2 ha (pre-development) = -41.2 ha

Following completion of the watercourse realignment and the associated habitat enhancement work, there will be a net gain of Category 1 habitat, but a net loss of Category 2 and 3 habitat. However, as described above in Section 4.2.2, the quality of Category 2 habitat within the watercourse corridor will be significantly improved compared to existing conditions. In addition, although there is a large amount of Category 3 habitat lost (41.2 ha), much of this is currently Cultivated Fields and Fallow Fields. Although Blanding's Turtles may be capable of traversing these areas, they are relatively inhospitable and hazardous. Blanding's Turtles traversing the KNUEA are likely to follow the tributaries of Shirley's Brook, rather than moving overland, and hence most of the Category 3 habitat is unlikely to provide any significant habitat function.

DST (2015) discusses in detail how the potential loss of habitat may impact the regional population of Blanding's Turtles. As noted above, comparatively few Blanding's Turtles have been found within

the Study Area and the remainder of the KNUEA. The existing Category 1 and 2 habitat within the Site is comparatively small and degraded, and the Site provides comparatively little core wetland habitat compared to the nearby South March Highlands and Shirley's Bay, where larger regional sub-populations of Blanding's Turtles are found. DST (2015) conclude that the main ecological significance of the Site is afforded by its position approximately halfway between the comparatively large sub-populations of Blanding's Turtles found to the west (in the South March Highlands) and to the east (around Shirley's Bay). The KNUEA, and in particular the tributaries of Shirley's Brook, may provide a linkage between the major adjacent sub-populations, even though travelling from Shirley's Bay to the South March Highlands (or vice versa) would require a Blanding's Turtle to traverse large expanses of poor quality habitat, while exposing itself to a significant risk of road mortality as it crosses Old Second Line Road, Carp Road, March Road, March Valley Road, and other roadways.

It is likely that the tributaries of Shirley's Brook provide the main viable movement corridor through the KNUEA for Blanding's Turtles under current conditions. It is also likely that adjacent upland areas shown as Category 3 habitat offer only a hazardous movement corridor with little functional benefit. As such, DST (2015) recommended that mitigation and/or habitat compensation within the KNUEA should focus on: A) Enhancing the quality of habitat within the riparian corridors surrounding the tributaries of Shirley's Brook; and B) Reducing road mortality, both within the KNUEA and in adjacent areas. Within the Site itself, these management priorities are addressed by enhancing the quality of habitat during the realignment of the North Tributary, and by fencing the minimum 40 m wide watercourse corridor (described below).

The net loss of Blanding's Turtle habitat will require offsite habitat compensation measures. Several options for offsite habitat compensation have previously been discussed with the Ontario Ministry of Natural Resources and Forestry (OMNRF) and the Ministry of Environment, Conservation, and Parks (MECP). These could include any combination of the following:

- Measures to reduce road mortality in adjacent areas with high rates of Blanding's Turtle road deaths. In particular, the possibility of installing a wildlife passage culvert and an associated fencing system on March Valley Road (east of the Site) has been discussed. This may help to reduce road mortality and to direct turtles to move north of the KNUEA, through undeveloped lands beyond the urban boundary;
- Creation of new Category 1 or 2 habitat in offsite areas; and
- Funding of research programs to study and advance the conservation of Blanding's Turtle.

One or more of the options listed above may be pursued to provide the required habitat compensation. The location and configuration of offsite habitat compensation measures for

Blanding's Turtle will be determined in consultation with the MECP, through the Overall Benefit Permit application and review process. Mitigation measures to protect individual Blanding's Turtles during Site development are discussed below in Section 4.4.6.

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4.4.4 Barn Swallow Habitat Impacts and Habitat Compensation Requirements

As described above in Section 3.7.4, the presence of nesting Barn Swallows has previously been addressed by completing the online registration process for that species, which included submitting the *Notice of Activity under the Endangered Species Act (2007): Barn Swallow – Activities in Built Structures that are Habitat*. All structures with Barn Swallow nests were demolished in two (2) phases, with demolition occurring in the winter of 2015-2016 and the winter of 2017-2018, following obtainment of the confirmation of impact registration (Confirmation # M-102-9977528356 and # M-102-2197304807). At the current time, there are no longer any agricultural buildings that could be suitable for Barn Swallow nesting within the development limits of the Site.

Habitat compensation requirements have been fulfilled for both Barn Swallow impact registrations, and long term monitoring requirements will be complete by the end of 2020. Habitat compensation was completed in two (2) phases, and included the construction of three (3) artificial nesting structures. The three (3) artificial nesting structures were designed and built to accommodate a total of thirty (30) nesting cups. The impact registration process, habitat compensation, and monitoring results are documented in more detail in the *Mitigation and Monitoring Record for Altering a Structure (Habitat for Barn Swallow)* (MES 2019b). Refer to MES (2019b) for additional detail.

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4.4.5 Blanding's Turtle Temporary and Permanent Exclusion Fencing

Per the Kanata North Urban Expansion Area (KNUEA) Environmental Management Plan (EMP) (Novatech 2016b), Blanding's Turtle exclusion fencing will be required surrounding the Open Space Blocks (Blocks 272, 273, and 293) that form the minimum 40 m wide watercourse corridor, in order to mitigate the risk that Blanding's Turtles may leave the corridor to enter the subdivision and/or roads. The KNUEA EMP states that the 6 m wide recreational pathway should be contained within the fencing, such that the fencing will enclose both the recreational pathway and the watercourse corridor (Novatech 2016b). Fencing is also recommended to be installed along the north and east sides of the 0.6 ha Open Space Block (Block 285) found in the southwest corner of the Site, in order to address the possibility that turtles may travel from the North Branch (Referred to as Tributary #3 in the KNUEA EMP) to the southwest part of the Site. The fencing will be required to tie into the two (2) new Wildlife Passage Culverts (road crossings) that will be installed within the subdivision (discussed above in Section 4.2.3).

A sketch showing the approximate position of fencing within the subdivision is included below. The sketch has been reviewed by the Ministry of Environment, Conservation, and Parks (MECP) as part of the Overall Benefit Permit review process. At the detailed design stage and following obtainment of the Overall Benefit Permit, the fence materials and a more detailed layout will be identified, taking into account grading, drainage, pathway connections, and elevation requirements.

Temporary fencing will be required at the construction stage. The temporary fencing should be maintained and remain in place until the permanent fencing can be installed. Temporary fencing installed at the construction stage typically consists of wire re-enforced silt fencing that is buried at the bottom. Permanent fencing may consist of several different configurations, as described by Ontario Ministry of Natural Resources and Forestry (OMNRF) guidance documents (Gunson et al. 2016). Generally, permanent Blanding's Turtle exclusion fencing must consist of a barrier a minimum of 60 cm tall that is buried into the ground and which is impassable to Blanding's Turtles of all sizes. The fencing material is typically required to be durable with little maintenance for a minimum of fifteen (15) years. Products typically used may include some combination of: A) Stone retaining walls or gabion baskets 60 cm tall; B) Chain link fencing with plastic inserts; or C) Purpose built Blanding's Turtle exclusion fencing constructed from plastic sheeting or wire mesh. The specific requirements for permanent fencing will be outlined by the Overall Benefit Permit and at the detailed design stage.

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Permanent Fencing along the northern property line up to the edge of the existing residential properties

Existing residential properties

Sketch of Blanding's Turtle Exclusion Fencing Locations Including Permanent Fence (Red Lines) and Temporary Fence (Green Lines)

The permanent fence must tie into the wildlife passage culverts where the fence meets the two (2) new road crossings (Blue Boxes). Per the EMP, each road crossing will include a minimum 1.8 m wide x 1.2 m high box culvert.

Temporary fence (Green Line) to close the gap in the fencing until completion of the permanent fence on the adjacent properties (Permanent fence on the adjacent properties may include the fence along the Street #10 Right of Way between 1015/1035 March Road and the fence within the KNUEA Southwest Quadrant).

1035 March Road (Different Owner)

1015 March Road (Different Owner)

Potential permanent fence location on the adjacent properties (Blue Lines). 1015 and 1035 March Road are owned by others. There is no ability to enforce a fence on the adjacent owners, although they would be subject to the requirements of the Endangered Species Act and the approved Community Design Plan, should they develop their properties in the future. Should development proceed on the adjacent properties, fencing options may include a permanent fence along the north side of Street 10 and/or additional fencing along the west side of the Right of Way of March Road that should be tied into the March Road culvert. Fencing adjacent to 1015/1035 March Road is shown for discussion purposes, however, installation will be at the discretion of the adjacent owners. Conceptually, an opening is shown in the fence at 1035 March Road to reflect the existing driveway location.

Tie permanent fence into the adjacent Blanding's Turtle exclusion fencing that is anticipated to be required surrounding the 40 m wide corridor around the North Branch of Shirley's Brook (within the KNUEA Southwest Quadrant).

KEY MAP NOT TO SCALE

ANNIS, O'SULLIVAN, VOLLEBEKK LTD.

4.4.6 Species at Risk and Wildlife Construction Stage Mitigation - Terrestrial

Potential impacts to Blanding's Turtle, Bobolink and other wildlife at the construction stage may include the following:

- Removal of habitat features and displacement of wildlife from existing habitat areas;
- Potential injury or mortality of adults in terrestrial habitats due to vehicle impacts, during excavations, or during land clearing; and
- Interruption of movement to essential foraging, breeding, or overwintering areas due to site hoarding or sediment and erosion control fencing.

Mitigation for Species at Risk (SAR) and wildlife during construction is summarized here. These recommendations include provisions from the City of Ottawa (2015) *Protocol for Wildlife Protection During Construction*, as well as requirements specific to Blanding's Turtle and Bobolink:

- **Pre-Stressing:** Prior to vegetation removal, the area should be pre-stressed by traversing the Site with a loud noise such as an excavator horn. This will encourage wildlife to leave the area;
- **Tree Clearing Direction:** Trees should be cleared towards the Open Space Blocks and/or adjacent areas of retained habitat, in order to provide an opportunity for wildlife to leave the area;
- **Temporary Exclusion Fencing:** As described above, temporary Blanding's Turtle exclusion fencing (wire re-enforced silt fencing) will be required to mitigate the risk of Blanding's Turtles entering the construction Site. The fencing requirements are described above. The fencing will also mitigate risks for other wildlife including frogs, snakes, and other species of turtles;
- **Inspections:** Construction stage monitoring will include, at a minimum, weekly inspections by a Qualified Biologist during initial Site clearing, the installation of mitigation measures, the realignment of the North Tributary of Shirley's Brook, and other critical/high risk work phases. As noted below, full time monitoring by a Qualified Biologist during dewatering is required;
- **Sweeps:** Prior to vegetation clearing, preconstruction sweeps of vegetated areas will be undertaken by a Qualified Biologist to ensure Blanding's Turtle, Bobolink, and other wildlife are not present. A designated staff member will be required to conduct daily sweeps each morning prior to commencement of work to ensure wildlife have not entered the work area. The designated staff member will also periodically inspect the temporary exclusion fencing to ensure there are no gaps or holes in the fence;
- **Awareness Training:** A *Contractor Mitigation and Awareness Training Package* will be prepared and utilized to complete contractor mitigation and awareness training. Each contractor will be required to have at least one (1) staff member on Site at all times who has completed the training. The Awareness Training will include a summary of the required mitigation measures,

training on emergency procedures to relocate Blanding's Turtles, and training on the identification of Blanding's Turtles, Bobolink and other SAR;

- **Vehicle Operation:** Vehicles and equipment are to be operated on Construction Travelways (e.g. roads within the Site) at a speed at which drivers are able to identify SAR and stop safely to avoid species;
- **Equipment Washing:** All equipment shall be washed, refueled, and serviced to prevent fuel and other deleterious substances from entering wetlands and watercourses. Any machinery operated within the high water mark of a wetland or waterbody must arrive on Site in a clean condition and shall be maintained free of fluid leaks, invasive species, and noxious weeds;
- **Spills:** A spill response plan should be developed. The spill response plan is to be implemented in the event of a sediment release or spill of a deleterious substance. An emergency kit should be kept on Site any time development activities are taking place;
- **SAR Encounters:** If SAR are encountered in the work area, construction in the vicinity must be stopped immediately and measures must be taken to ensure the SAR is not harmed. The project biologist and the Ministry of Environment, Conservation, and Parks (MECP) must be contacted to discuss how to proceed prior to the recommencement of work;
- **General Provisions:** General provisions for Site management include the following:
    - Do not harm, feed, or unnecessarily harass wildlife;
    - Drive slowly and avoid hitting wildlife;
    - Keep the Site tidy and free of garbage and food wastes. Secure all garbage in appropriate sealed containers;
    - Ensure proper Site drainage so that standing water does not accumulate on Site. This will reduce the likelihood that turtles and other wildlife may enter the Site;
    - Any stockpiles should be properly secured with silt fencing to prevent wildlife from accessing areas of loose fill; and
- **Timing Windows:**
    - The Blanding's Turtle active season is defined by the MECP as April 15th to October 15th each year. The Temporary Exclusion Fencing must be installed prior to work that would occur during the Blanding's Turtle active season;
    - The core nesting season of Bobolink is defined by the MECP as May 1st to July 31st each year;
    - The core migratory bird nesting season is defined as April 15th to August 15th each year; and
    - Therefore, initial vegetation clearing, stripping, and installation of temporary exclusion fencing must be undertaken between October 16th and April 15th.

4.4.7 Species at Risk and Wildlife Construction Stage Mitigation - Aquatic

In addition to the mitigation measures outlined above, the following requirements apply to any in-water work:

- **Dewatering:** All dewatering operations must be supervised by a Qualified Biologist, who must be present during dewatering to relocate fish, turtles and other wildlife. Full time supervision by a Qualified Biologist is necessary during initial water draw down;
- **Permits:** Prior to the decommissioning of the old alignment of the North Tributary and the pond found west of 1035 March Road, a *Wildlife Scientific Collector's Authorization* and *License to Collect Fish for Scientific Purposes* must be obtained from the Ontario Ministry of Natural Resources and Forestry (OMNRF). Relocation sites and detailed fish and wildlife salvage procedures will be identified during the fish and wildlife relocation permit application process;
- **Fish and Wildlife Salvage:** A salvage plan must be in place that will allow for relocation of any fish, reptiles, and amphibians found within dewatering work areas. In accordance with the dewatering arrangement, the water level in any dewatering work areas must be drawn down to permit safe removal of fish and wildlife. All removal activities will be undertaken before the area is completely dry, in order to avoid aquatic animals being exposed to dry conditions. During water draw down, a mesh net will be in place around any dewatering pumps to ensure that fish will not become entangled in the pumps;
- **Inspections:** Once dewatering is complete, weekly construction stage inspections by a Qualified Biologist must be undertaken throughout the duration of the realignment of the North Tributary of Shirley's Brook, and during the installation of all habitat enhancement measures;
- **Shirley's Brook Decommissioning:** Decommissioning of portions of the current alignment of the North Tributary of Shirley's Brook must occur during the Blanding's Turtle overwintering season, which is between October 16th and April 15th; and
- **Pond Decommissioning:** The pond located west of 1035 March Road is considered a potential Blanding's Turtle hibernation site. As such, the pond cannot be decommissioned during the Blanding's Turtle overwintering season. OMNRF guidance indicates that the pond must be fenced off before August 1st to prevent Blanding's Turtles from accessing the feature. Between August 1st and August 15th, removal of the hibernacula and dewatering of the pond must be undertaken. As with other dewatering, the pond decommissioning must be supervised by a Qualified Biologist.

5.0 CUMULATIVE EFFECTS

Cumulative effects were considered in the design of the mitigation measures outlined in Section 4.0, particularly in the creation of Species at Risk (SAR) mitigation measures. The Endangered Species Act (ESA) process requires that proponents either mitigate all impacts to a species, or that they provide an overall benefit to the species, both of which imply no net loss of habitat functionality. Mitigation and compensation measures to provide an overall benefit to Blanding's Turtle will be determined in consultation with the Ministry of Environment, Conservation, and Parks (MECP) through the Overall Benefit Permit process. Impacts to Bobolink habitat will be addressed based on the extent of habitat that is present at the time of development. The MECP Online Registration Process and habitat compensation requirements for Bobolink implies no net loss of habitat. The MECP Online Registration Process and habitat compensation requirements for Barn Swallows, which has been completed, also requires habitat compensation. The Barn Swallow habitat compensation process also implies no net loss of habitat. As discussed above, the majority of the Site lacks forest cover, and hence the development will not significantly contribute to the cumulative loss of forest. The development of the Site will also not contribute significantly to the cumulative loss of wetland habitat.

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6.0 MONITORING

Construction stage monitoring requirements are outlined in Sections 4.4.6 and 4.4.7 (above). Construction stage monitoring will include pre-construction sweeps to inspect the fencing and vegetation prior to clearing, daily sweeps by construction staff, and full time supervision by a biologist during dewatering.

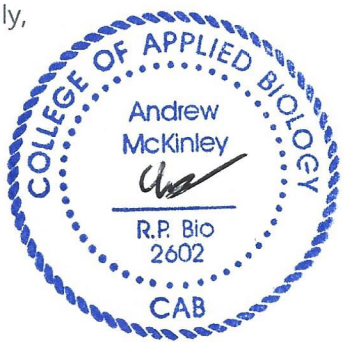
As discussed above, habitat compensation requirements have been fulfilled for both Barn Swallow impact registrations, and the long term monitoring program will be complete by the end of 2020. The rules and regulations of the Ontario Endangered Species Act (ESA) establish a five (5) year monitoring period for Bobolink habitat compensation projects that are authorized through the Ministry of Environment, Conservation, and Parks (MECP) Online Registration Process. During the five (5) year period, monitoring typically requires completion of annual breeding bird surveys within the compensation habitat, and vegetation monitoring. It is anticipated that the Overall Benefit Permit for Blanding's Turtle will require completion of a five (5) year post construction monitoring program. The post construction monitoring program is anticipated to include mitigation, population, exclusion fencing, and compensation habitat monitoring. The specific monitoring requirements related to the Overall Benefit Permit will be determined in consultation with the MECP through the permit review process. It is anticipated that the monitoring program will require submission of annual monitoring reports at the end of each monitoring year. The construction stage monitoring results will be included in the first annual report.

7.0 CLOSURE

Provided that the regulatory, mitigation, and avoidance measures outlined in this report are implemented appropriately, the redevelopment of the Site is not anticipated to have a significant negative effect on the natural features and functions.

We trust that the above information is sufficient; should you have any questions or require further information, please do not hesitate to contact the undersigned, at your convenience.

Sincerely,



Dr. Andrew McKinley, EP, RP Bio.
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APPENDIX A

Master Plant List

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TABLE A: VEGETATION

Common Name	Scientific Name	Provincial S rank	Brunton Significance Ranking for the City of Ottawa (Brunton, 2005)	Vegetation Type
Sensitive Fern	Onoclea sensibilis	S5	Common	Fern
Awnless Brome	Bromus inermis	SNA	Common	Grass
Brome Grass	Bromus sp.		n/a	Grass
Orchard Grass	Dactylis glomerata	SNA	Common	Grass
Reed Canary Grass	Phalaris arundinacea	SE5	Common (locally abundant introduction)	Grass
Timothy	Phleum pratense	SNA	Common	Grass
Meadow grass sp.	Poa sp.		Common	Grass
Common Ragweed	Ambrosia artemisiifolia	S5	Common	Herbaceous
Canada Anemone	Anemone canadensis	S5	Common	Herbaceous
Common Burdock	Arctium minus	SNA	Common	Herbaceous
Common Milkweed	Asclepias syriaca	S5	Common	Herbaceous
Yellow Rocket	Barbarea vulgaris	SNA	Common	Herbaceous
Canada Thistle	Cirsium arvense	S5	Common	Herbaceous
Bull Thistle	Cirsium vulgare	SNA	Common	Herbaceous
Yellow Clintonia	Clintonia borealis	S5	Common	Herbaceous
Queen Anne's Lace	Daucus carota	SNA	Common	Herbaceous
Daisy Fleabane	Erigeron annuus	S5	Common	Herbaceous
Philadelphia Fleabane	Erigeron philadelphicus	S5	Common	Herbaceous
Spotted Joe Pye Weed	Eutrochium maculatum	S5	Common	Herbaceous
Common Strawberry	Fragaria virginiana	S5	Common	Herbaceous
White Bedstraw	Galium mollugo	SNA	Common	Herbaceous
Yellow Avens	Geum aleppicum	S5	Common	Herbaceous
White Avens	Geum canadense	S5	Common	Herbaceous
Baby's Breath	Gypsophila paniculata	S5	Common	Herbaceous
Yellow Hawkweed	Hieracium caespitosum	SNA	Uncommon	Herbaceous
Prickly Lettuce	Lactuca scariola	SNA	Common	Herbaceous
Ox-eye Daisy	Leucanthemum vulgare	SNA	Common	Herbaceous
Bird's-foot Trefoil	Lotus corniculatus	SNA	Common	Herbaceous

Purple Loosestrife	Lythrum salicaria	SNA	Common (invasive)	Herbaceous
Black Medic	Medicago lupulina	SNA	Common	Herbaceous
White Sweet Clover	Melilotus albus	SNA	Common	Herbaceous
Wild Parsnip	Pastinaca sativa	SNA	Common	Herbaceous
Common Plantain	Plantago major	S5	Common	Herbaceous
Sulphur Cinquefoil	Potentilla recta	SNA	Common	Herbaceous
Self Heal	Prunella vulgaris	S5	Common	Herbaceous
Common Buttercup	Ranunculus acris	SNA	Common	Herbaceous
Black Eyed Susan	Rudbeckia hirta	SU	Common	Herbaceous
Bladder Campion	Silene vulgaris	SNA	Common	Herbaceous
Wild Mustard	Sinapis arvensis	SNA	Common	Herbaceous
Canada Goldenrod	Solidago canadensis	S5	Common	Herbaceous
Sow Thistle	Sonchus arvensis	SNA	Common	Herbaceous
New England Aster	Symphyotrichum novae-angliae	S5	Common	Herbaceous
Small White Aster	Symphyotrichum sp.	S5	n/a	Herbaceous
Dandelion	Taraxacum officinale	SNA	Common	Herbaceous
Poison Ivy	Toxicodendron rydbergii	S5	Common	Herbaceous
Goat's-beard	Tragopogon dubius	SNA	Common	Herbaceous
Red Clover	Trifolium pratense	SNA	Common	Herbaceous
White Clover	Trifolium repens	SNA	Common	Herbaceous
Common Stinging Nettle	Urtica dioica	SNA	Common	Herbaceous
Common Mullein	Verbascum thapsus	SNA	Common	Herbaceous
Common Speedwell	Veronica officinalis	SNA	Common	Herbaceous
Tufted Vetch	Vicia Cracca	SNA	Common	Herbaceous
Canada Violet	Viola canadensis	S5	Common	Herbaceous
Common Blue Violet	Viola sororia	S5	Common	Herbaceous
Red Osier Dogwood	Cornus sericea (stolonifesa)	S5	Common	Shrub
Hawthorn	Crataegus chrysocarpa	S5	Common	Shrub
Glossy Buckthorn	Frangula alnus	SNA	Common (aggressive invasive)	Shrub
Ground Juniper	Juniperus communis	S5	Common	Shrub
Tartarian Honeysuckle	Lonicera tatarica	SNA	Common (aggressive invasive)	Shrub
Choke Cherry	Prunus virginiana	S5	Common	Shrub

Common Buckthorn	Rhamnus cathartica	SNA	Common (aggressive invasive)	Shrub
Prickly Gooseberry	Ribes cynosbati	S5	Common	Shrub
Skunk Currant	Ribes glandulosum	S5	Common	Shrub
Wild Red Raspberry	Rubus idaeus	S5	Common	Shrub
Purple Flowering Raspberry	Rubus odoratus	S5	Common	Shrub
Bebb's Willow	Salix bebbiana	S5	Common	Shrub
Slender Willow	Salix petiolaris	S5	Common	Shrub
Red Elder	Sambucus racemosa	S5	Common	Shrub
Lilac	Syringa vulgaris	SNA	Common	Shrub
Prickly Ash	Zanthoxylum americanum	S5	Common	Shrub
Manitoba Maple	Acer negundo	S5	Common	Tree
Red Maple	Acer rubrum	S5	Common	Tree
Sugar Maple	Acer saccharum	S5	Common	Tree
White Birch	Betula papyrifera	S5	Common	Tree
White Ash	Fraxinus americana	S5	Common	Tree
Green Ash	Fraxinus pennsylvanica	S5	Common	Tree
Butternut	Juglans cinerea	S3	*Endangered*	Tree
Domestic Apple	Malus sylvestris	n/a	Common	Tree
White Spruce	Picea glauca	S5	Common	Tree
Red Pine	Pinus resinosa	S5	Common	Tree
Eastern White Pine	Pinus strobus	S5	Common	Tree
Trembling Aspen	Populus tremuloides	S5	Common	Tree
Black Cherry	Prunus serotina	S5	Common	Tree
Bur Oak	Quercus macrocarpa	S5	Common	Tree
Staghorn Sumac	Rhus hirta	S5	Common	Tree
Pussy Willow	Salix discolor	S5	Common	Tree
Crack Willow	Salix fragilis	SNA	Common (invasive)	Tree
Black Willow	Salix nigra	S4	Uncommon	Tree
White Cedar	Thuja occidentalis	S5	Common	Tree
American Basswood	Tilia americana	S5	Common	Tree
American or White Elm	Ulmus americana	S5	Common	Tree
Virginia Creeper	Parthenocissus vitacea	S5	Common	Vine
Riverbank Grape	Vitis riparia	S5	Common	Vine

Provincial ranks (assigned by NHIC)

S5 = Very common within the province with > 1000 occurences, populations or records
S4 = Common within the province with 21 - 1000 occurences, populations or records
S3 = Rare within the province with 6 - 20 occurences, populations or records
SNA = Ranking not available
SE5 = Very common exotic with > 1000 occurences, populations or records within the province
S? = Unranked, or if followed by a ranking, temporarily assigned (eg. S4?)

APPENDIX B

Bird and Wildlife Sightings

McKINLEY ENVIRONMENTAL SOLUTIONS
613-620-2255
mckinleyenvironmental@gmail.com
www.mckinleyenvironmental.com

TABLE B: BIRDS	
Common Name	**Scientific Name**
Sharp-shinned Hawk	Accipiter striatus
Red-winged Blackbird	Agelaius phoeniceus
Mallard	Anas fulvigula
Cedar Waxwing	Bombycilla cedrorum
Ruffed Grouse	Bonasa umbellus
Canada Goose	Branta canadensis
Red-tailed Hawk	Buteo jamaicensis
Green Heron	Butorides virescens
Semipalmated Sandpiper	Calidris pusilla
Northern Cardinal	Cardinalis cardinalis
Turkey Vulture	Cathartes aura
Killdeer	Charadrius vociferus
Northern Harrier	Circus cyaneus
Northern Flicker	Colaptes auratus
Rock Dove	Columba livia
American Crow	Corvus brachyrhynchos
Blue Jay	Cyanocitta cristata
Bobolink - Threatened	***Dolichonyx oryzivorus***
Pileated Woodpecker	Dryocopus pileatus
Gray Catbird	Dumetella carolinensis
Alder Flycatcher	Empidonax alnorum
American Kestrel	Falco sparverius
Common Yellowthroat	Geothlypis trichas
House Finch	Haemorhous mexicanus
Barn Swallow - Threatened	***Hirundo rustica***
Baltimore Oriole	Icterus galbula
Dark-eyed Junco	Junco hyemalis

Ring-billed Gull	Larus delawarensis
Wild Turkey	Meleagris gallopavo
Song Sparrow	Melospiza melodia
Black-and-white Warbler	Mniotilta varia
Brown-headed Cowbird	Molothrus ater
Great Crested Flycatcher	Myiarchus crinitus
Tennessee Warbler	Oreothlypis peregrina
House Sparrow	Passer domesticus
Savannah Sparrow	Passerculus sandwichensis
Indigo Bunting	Passerina cyanea
Downy Woodpecker	Picoides pubescens
Hairy Woodpecker	Picoides villosus
Black-capped Chickadee	Poecile atricapilla
Common Grackle	Quiscalus quiscula
Ruby-Crowned Kinglet	Regulus calendula
Eastern Phoebe	Sayornis phoebe
American Woodcock	Scolopax minor
Yellow-rumped Warbler	Setophaga coronata
Magnolia Warbler	Setophaga magnolia
Chestnut-sided Warbler	Setophaga pensylvanica
Yellow Warbler	Setophaga petechia
American Redstart	Setophaga ruticilla
White-breasted Nuthatch	Sitta carolinensis
American Goldfinch	Spinus tristis
Chipping Sparrow	Spizella passerina
Field Sparrow	Spizella pusilla
European Starling	Sturnus vulgaris
Tree Swallow	Tachycineta bicolor
Brown Thrasher	Toxostoma rufum

House Wren	Troglodytes aedon
American Robin	Turdus migratorius
Eastern Kingbird	Tyrannus tyrannus
Red-eyed Vireo	Vireo olivaceus
Mourning Dove	Zenaida macroura

TABLE C: OTHER WILDLIFE	
Common Name	**Scientific Name**
Groundhog	Marmota monax
White Tailed Deer	Odocoileus virginianus
Common Raccoon	Procyon lotor
Eastern Grey Squirrel	Sciurus carolinensis
Red Squirrel	Sciurus vulgaris
Eastern Chipmunk	Tamias striatus
American Toad	Anaxyrus americanus
Green Frog	Lithobates clamitans
Spring Peeper	Pseudacris crucifer
Painted Turtle	Chrysemys picta
Blanding's Turtle - Threatened	***Emydoidea blandingii***
Common Garter Snake	Thamnophis sirtalis

APPENDIX C

Butternut Health Assessment – 1035 March Road

Andrew McKinley (BHA #625)
McKinley Environmental Solutions
PO Box 45505, 3151 Strandherd Drive
Ottawa, Ontario, K2J 0P9
(613) 620-2255
mckinleyenvironmental@gmail.com

Charles Beaudoin
708912 Canada Inc.

June 12, 2017

RE: Butternut Health Assessment, 1035 March Road
BHA Report Number: 625-005
Date of Butternut Health Assessment: June 12, 2017

Dear Mr. Beaudoin,

Please find enclosed the assessment of the Butternut trees on your property. Important information regarding the Endangered Species Act (2007) is included.

Sincerely,

Andrew McKinley

Enclosures:

1. Information from the Ministry of Natural Resources and Forestry about Butternut and the Endangered Species Act, 2007
2. Butternut Health Assessor's Report
3. Original data forms
4. Electronic and printed copies of the Excel data spreadsheet (BHA Tree Analysis)

Ministry of Natural Resources and Forestry

Species At Risk
P.O. Box 7000, 300 Water Street
Peterborough ON K9J 8M5

Ministère des Richesses naturelles et des Forêts

Espèces en péril
C.P. 7000, 300, rue Water
Peterborough ON K9J 8M5

The enclosed Butternut Health Assessor's Report documents the results of the Butternut health assessment that was conducted by the designated Butternut Health Assessor (BHA) identified in the top section of the report. If there are other Butternut trees (of any size or age) at the site that may be affected by the activity and they are not identified in the enclosed BHA Report, they too must be assessed by a designated BHA.

Butternut is listed as an endangered species on the Species at Risk in Ontario List, and as such, it is protected under the *Endangered Species Act, 2007* (ESA) from being killed, harmed, or removed. If you are planning to undertake an activity that may affect Butternut, you may be eligible to follow the requirements set out in section 23.7 of Ontario Regulation 242/08 under the ESA, or you may need to seek an authorization under the ESA (e.g., a permit).

Please visit e-laws at the link provided below for the legal requirements of eligible activities under section 23.7 of Ontario Regulation 242/08 and conditions that must be fulfilled. Information about Butternut is also available at: http://www.ontario.ca/environment-and-energy/butternut-trees-your-property.

If you are eligible to kill, harm or take Butternut under section 23.7 of the regulation, your first step is to submit the BHA Report and the original data forms enclosed in this package to the local Ministry of Natural Resources and Forestry (MNRF) District Manager. Note that MNRF cannot accept photocopies or scanned electronic copies of the data forms.

Note regarding changes:

If the enclosed BHA Report does not identify which Butternut tree(s) are proposed to be killed, harmed, or taken in Table 1 (i.e., if "unknown" is indicated in the second last column of Table 1), or, if the information in the last two columns of Table 1 has changed since the date this BHA Report was produced, **do not make any edits to the BHA Report**. Instead, please attach a cover letter that identifies which Butternut tree(s) are proposed to be killed, harmed, or taken (by referencing the tree identification numbers) when you submit the enclosed BHA Report to the local MNRF District Manager.

The BHA Report must be submitted at least 30 days prior to registering an eligible activity to kill, harm, or remove a Butternut tree. During this 30 day period, no Butternut trees (of any category) may be killed, harmed, or removed, and MNRF may contact you for an opportunity to examine the trees. If MNRF chooses to examine the trees, a representative of MNRF will contact you using the information you supplied when you submitted the BHA Report.

If you are eligible to follow the rules in regulation under section 23.7, you may register your activity using the "Notice of Butternut Impact" form on the MNRF Registry **after the 30 day period has elapsed**.

If you are **not** eligible to follow the rules in regulation under section 23.7, please contact the local MNRF district office to determine whether you will need to seek an authorization (e.g., a permit). A link to the directory of MNRF offices is provided below.

Note that municipal by-laws and legislation other than the ESA may also be applicable to the removal or harming of trees.

Please retain this information and a copy of the BHA Report (including copies of all data forms) for your records, along with any other documentation you may receive from MNRF should an examination of the trees occur. If you have any questions, please contact your local MNRF district office.

Links:

Endangered Species Act, 2007:
http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_07e06_e.htm

Ontario Regulation 242/08 (refer to section 23.7):
http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_080242_e.htm

MNRF Office Locations:
https://www.ontario.ca/government/ministry-natural-resources-and-forestry-regional-and-district-offices

Butternut Health Assessor's Report Number: 625-005

Andrew McKinley (BHA #625)
McKinley Environmental Solutions
PO Box 45505, 3151 Strandherd Drive
Ottawa, Ontario, K2J 0P9
(613) 620-2255
mckinleyenvironmental@gmail.com

Charles Beaudoin
708912 Canada Inc.

Site location: 1035 March Road, Ottawa, Ontario

Date(s) of Butternut health assessment: June 12, 2017

Date BHA Report prepared: June 12, 2017

Map datum used: ☒ NAD83 ☐ WGS84

Total number of trees assessed in this BHA Report: 2

The assessed trees were numbered on site using *White flagging tape*. The numbers at the site correspond to the tree numbers referenced in this report.

This BHA Report includes the following tables:

- Table 1: Butternut Trees Assessed
- Table 2: Trees Determined by BHA to be Butternut Hybrids
- Table 3: Summary of Assessment Results

Table 1: Butternut Trees Assessed

Tree #	UTM coordinates	Category[1] *(1, 2, or 3[2])*	dbh[3] (cm)	Cultivated? *(Y/N)*	Proposed to be: *(enter one: unknown[4], killed, harmed or taken)*	If tree is proposed to be killed, harmed, or taken, indicate reason tree is proposed to be killed, harmed or taken:

[1] The extent to which the tree is affected by Butternut Canker is presented in the Excel document titled, "BHA Tree Analysis" that accompanies this BHA Report.
[2] Category 3 trees are not eligible to be killed, harmed or taken under section 23.7 of Ontario Regulation 242/08.
[3] dbh: diameter at breast height, rounded to nearest cm (if tree is shorter than breast height, enter zero)
[4] In this column, "unknown" indicates that at the time of assessment, there are no proposals to kill, harm or take this tree that are known to the BHA.

Tree #	UTM coordinates	Category[1] *(1, 2, or 3[2])*	dbh[3] (cm)	Cultivated? *(Y/N)*	Proposed to be: *(enter one: unknown[4], killed, harmed or taken)*	If tree is proposed to be killed, harmed, or taken, indicate reason tree is proposed to be killed, harmed or taken:
1	425932E 5023790N	1	41	Y	Retained	
2	425878E 5023822N	1	2	N	Killed	Residential Development
3						
4						
5						
6						
7						
8						

Table 2: Trees Determined by BHA to be Butternut Hybrids

Tree #	UTM coordinates	Method used (genetic testing or field identification):

Table 3: Summary of Assessment Results

Result:	**Total #:**	**Important information for persons planning activities that may affect Butternut:**
Category 1	1	• A Category 1 tree is one that is affected by butternut canker to such an advanced degree that retaining the tree would not support the protection or recovery of butternut in the area in which the tree is located; and is considered “non-retainable”. • During the 30 day period that follows your submission of this BHA Report to the MNRF District Manager, no Butternut trees (of Category 1, 2, or 3) may be killed, harmed, or taken, and MNRF may contact you for an opportunity to examine the trees. • Category 1 trees may be killed, harmed or taken **after** the 30 day period that follows submission of this BHA Report to the MNRF District Manager, unless the results of an MNRF examination indicate that the assessment has not been conducted in accordance with the document entitled “Butternut Assessment Guidelines: Assessment of Butternut Tree Health for the Purposes of the *Endangered Species Act, 2007*”.
Category 2	0	• A Category 2 tree is one that is not affected by Butternut Canker, or is affected by Butternut Canker but the degree to which it is affected is not too advanced and retaining the tree could support the protection or recovery of butternut in the area in which the tree is located, and is considered “retainable”. • During the 30 day period that follows your submission of this BHA Report to the MNRF District Manager, no Butternut trees (of Category 1, 2, or 3) may be killed, harmed, or taken,

Result:	Total #:	Important information for persons planning activities that may affect Butternut:
		and MNRF may contact you for an opportunity to examine the trees. • Activities that may kill, harm or take up to a **maximum of ten (10)** Category 2 trees may be eligible to follow the rules in section 23.7 of Ontario Regulation 242/08, in accordance with the conditions and requirements set out in the regulation. • Refer to e-Laws for the legal requirements of eligible activities under section 23.7 of Ontario Regulation 242/08 and conditions that must be fulfilled: http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_080242_e.htm • Activities that may kill, harm or take more than ten (10) Category 2 trees are not eligible to follow the rules in section 23.7 of Ontario Regulation 242/08. Contact the local MNRF district office for information on how to seek an ESA authorization (e.g., a permit) or consider an alternative that would be eligible for the regulation.
Category 3	0	• A Category 3 tree is one that may be useful in determining sources of resistance to Butternut Canker, and is considered "archivable". • Category 3 trees are not eligible to be killed, harmed or taken under section 23.7 of Ontario Regulation 242/08. • Contact the local MNRF district office for information on how to seek an ESA authorization, or consider an alternative that will avoid killing, harming or taking any Category 3 trees.
Cultivated	1	• An activity that involves killing, harming, or taking a cultivated Butternut tree that was not required to be planted to fulfill a condition of an ESA permit or a condition of a regulation, may be eligible for the exemption provided by subsection 23.7 (11) of O. Reg. 242/08. • Prior to undertaking the activity, the owner or occupier of the land on which the Butternut is located (or person acting on their behalf) will need to determine whether the exemption for cultivated trees is applicable by determining whether or not the tree was cultivated as a result of the requirements for an exemption under O. Reg. 242/08 or a condition of a permit issued under the ESA. This information can be accessed by contacting the local MNRF district office. • The owner or occupier of the land on which the Butternut is located (or person acting on their behalf) is encouraged to append the details regarding whether the tree was planted to satisfy a requirement (e.g., the permit number or registration number) to this BHA Report for their records.
Hybrid	0	• Hybrid Butternut trees are not protected under the ESA, but their removal may be subject to municipal by-laws and other legislation.

Butternut Health Assessor's Comments:

The landowner confirmed that her father planted Tree #1, which is growing in the front yard of a residential home. Tree #1 had a healthy crown but extensive cankering of the trunk and limbs. Tree #2 is a small seedling growing nearby at the edge of the lawn, presumably a seedling from the larger tree. No other Butternuts were found within the surrounding area. The landowner stated that Tree #1 almost never produces nuts, which may be due to a lack of pollination due to no Butternuts occurring in the surrounding farmland.

This concludes the summary of the BHA Report. A complete BHA Report must also include:

1. All original (hard copy) data forms (i.e., all completed sets of Form 1 and Form 2), and
2. Electronic and printed copies of the Excel data analysis spreadsheet.

BHA Tree Analysis (version: December 2013)

This table is to be completed by a designated Butternut Health Assessor (BHA).

BHA Report #	625-005	Assessment Date(s)	12-Jun-17	Total # Butternut Trees in BHA Report	2
BHA ID #	625	BHA Name	Andrew McKinley		
Landowner / Client Name			708912 Canada Inc.		
Property Location			1035 March Road, Kanata (Ottawa)		

input field data										automatic calculations from field data						Categories: 1: non-retainable, 2: retainable, 3: archivable				
			# bole cankers				# root flare (RF) cankers													
Tree #	Live Crown %	Tree dbh (cm)	sooty (S) (will be assigned 2.5 cm per canker)		open (O) (will be assigned 5 cm per canker)				<40 m from cankered tree? (Y or N)	Circ. (cm) = Pi x dbh	total bole canker width (sooty x 2.5 + open x 5)	total RF canker width (sooty x 2.5 + open x 5)	bole canker % of circ.	RF canker % of circ.	total bole & root canker % of 2xCirc	LC% >/= 50 & BC% = 0	LC% >70 & BRC % <20	LC% >70 & BC % <20	Preliminary tree call	FINAL TREE CALL a Cat 2, dbh>20cm <40m from a Cat 1
			S <2 m	S >2 m	O <2 m	O >2 m	RF S	RF O		Circ (cm)	BC (cm)	RC (cm)	BC%	RC%	BRC%					
1	100	41	9	8	1	1	0	1	n	128.7	52.5	5.0	**40.8**	**3.9**	**22.3**	1	1	1	**1**	**1**
2	100	2	0	0	1	0	0	0	n	6.28	5.0	0.0	**79.6**	**0.0**	**39.8**	1	1	1	**1**	**1**
3										0	0.0	0.0	#####	#####	#####	####	###	###	##	#DIV/0!
4										0	0.0	0.0	#####	#####	#####	####	###	###	##	#DIV/0!
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6										0	0.0	0.0	#####	#####	#####	####	###	###	##	#DIV/0!
7										0	0.0	0.0	#####	#####	#####	####	###	###	##	#DIV/0!
8										0	0.0	0.0	#####	#####	#####	####	###	###	##	#DIV/0!
9										0	0.0	0.0	#####	#####	#####	####	###	###	##	#DIV/0!
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11										0	0.0	0.0	#####	#####	#####	####	###	###	##	#DIV/0!
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21										0	0.0	0.0	#####	#####	#####	####	###	###	##	#DIV/0!
22										0	0.0	0.0	#####	#####	#####	####	###	###	##	#DIV/0!
23										0	0.0	0.0	#####	#####	#####	####	###	###	##	#DIV/0!
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27										0	0.0	0.0	#####	#####	#####	####	###	###	##	#DIV/0!
28										0	0.0	0.0	#####	#####	#####	####	###	###	##	#DIV/0!
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30										0	0.0	0.0	#####	#####	#####	####	###	###	##	#DIV/0!
31										0	0.0	0.0	#####	#####	#####	####	###	###	##	#DIV/0!

Butternut Data Collection Form 1 - 2010 Edition

(PLEASE USE BLOCK LETTERS)

Surveyor ID or BHA #: 625

Date (dd/mm/yyyy): 12 - 06 - 2017

Shaded fields are mandatory for Butternut Health Assessments

Surveyor Contact

First: Andrew Last: Mckinley

Email: mckinleyenvironmental@gmail.com

Telephone: (613) 620-2255 Telephone Other: ( ) - x

Property Owner (check if same as surveyor) ☐

First: Charles Last: Beaudoin

or Company: 7089122 Canada Inc.

Email: c.beaudoin@multivesco.com

Telephone: (819) 778-5001 Telephone Other: ( ) - x

Property Owner's Mailing address

Address: 2020 Montcalm Street Suite 400 Postal Code: J8Y3B5 Prov.: QC

City: Gatineau

Tree Location (if different from mailing address)

Address/(911#): 1035 March Road

Township: Lot: Con:

City: Kanata

Directions

1035 March Road, Kanata (Ottawa). K2K 1X7

☐ Yes ☒ No Can Share Location Information with other Butternut Recovery Organizations?

☐ Yes ☒ No Site visits OK? (prior arrangments will always be made for a site vist)

> (Greater than)
< (Less than)

Butternut Trees Tally by Diameter Class

(Do a dot tally in blank space; write total# in box for each)

Tree Condition	< 3 cm	3-15 cm	16-30cm	>30 cm
Vigorous: > 50% Live Crown Minor or no cankers	1			
Poor Vigor: <50% Live Crown or >50% Live Crown + heavily cankered stem				1
Dead				

Historically, do some trees produce seeds? ☒ Y ☐ N ☐ Unkown

Estimated area containing butternut for properties > 1 acre (0.4 hectares): 0.25 ☐ Acres ☒ Hectares

1 tree growing in front yard on house. 1 seedling growing nearby.

Overall Property Description (area(s) containing Butternut)

☐ Rolling Upland ☐ Bottomland
☐ Valley Slope ☐ Variable
☒ Tableland ☐ Unknown

Vegetation Community/ies

☐ Open ☐ Fencerow
☐ Shrubland ☐ Roadside
☐ DeciduousForest ☐ Quary
☐ ConiferForest ☒ UrbanYard
☐ MixedForest ☐ UrbanPark

Other

Soil Drainage

☐ Well Drained
☒ Moderately Drained
☐ Poorly Drained
☐ Unknown

Soil Texture

☐ Clay ☐ Sand
☐ Clay Loam ☐ Variable
☐ Loam ☒ Unknown
☐ Loamy Sand

Soil Depth

☐ > 1metre
☐ 30 - 99cm
☐ < 30cm
☐ Variable
☒ Unknown

Please enter matching numerical page link code on forms 1 and 2

Page Link: MAR1

(Contact Information follows all applicable privacy policies and guidelines)

Please return forms to:
Forest Gene Conservation Association
Suite 233, 266 Charlotte St.
Peterborough, ON, K9J 2V4
www.fgca.net

49731

Butternut Data Collection FORM 2 (2010 Edition)

(PLEASE USE BLOCK LETTERS)

Shaded fields are mandatory for Butternut Health Assessments

Fill when Form 1 indicates canker is well established. The information opn Form 2 must be filled out for all trees when doing a Butternut Health Assessment.

Site Code(A,B,...Z, AA...): MAR

Surveyor ID or BHA #: 625

Surveyor Last Name: McKinley

Date (dd/mm/yyyy): 12-06-2017

Tree ID Numbering: 1,2,3,...Starting from 1 for each site

Tree #: 1 | **Zone**: 18 | **Easting**: 425932 | **Northing**: 5023790

- Crown Class: 1
- Live Crown %: 100
- Main Stem Length(m) Below crown: 3
- [x] Twig Dieback
- [ ] Branch Dieback
- [ ] Defoliation
- [ ] Discolouration
- #Stems: 1
- DBH(cm): 41
- Butternut Origin: [ ] Natural [x] Planted [ ] Unknown
- Seed Signs: [ ] Male Flowers [ ] Female Flowers [ ] Seed Set [x] None

Assess below live crown

- #Epic-Live: 0
- #Epic-Dead: 0
- Bark Type: S
- # Callused Wounds: 14

	#Open	#Sooty
Root	1	0
=<2m	1	9
>2m	1	8

Metres from badly cankered tree: [ ] < 40 [ ] > 40 [x] None Found

Competing Species: None

Landowner confirmed her father planted the tree.

Tree #: 2 | **Zone**: 18 | **Easting**: 425878 | **Northing**: 5023822

- Crown Class: 1
- Live Crown %: 100
- Main Stem Length(m) Below crown: 1
- [ ] Twig Dieback
- [ ] Branch Dieback
- [ ] Defoliation
- [ ] Discolouration
- #Stems: 1
- DBH(cm): 2
- Butternut Origin: [x] Natural [ ] Planted [ ] Unknown
- Seed Signs: [ ] Male Flowers [ ] Female Flowers [ ] Seed Set [x] None

Assess below live crown

- #Epic-Live: 0
- #Epic-Dead: 0
- Bark Type: S
- # Callused Wounds: 8

	#Open	#Sooty
Root	0	0
=<2m	1	0
>2m	0	0

Metres from badly cankered tree: [ ] < 40 [ ] > 40 [x] None Found

Competing Species: None

seedling from planted tree

Tree #: | **Zone**: 1 | **Easting**: | **Northing**:

Crown Class | Live Crown % | Main Stem Length(m) Below crown | Seed Signs

[ ] Twig Dieback [ ] Branch Dieback [ ] Defoliation [ ] Discolouration | #Stems | DBH(cm)

Butternut Origin: [ ] Natural [ ] Planted [ ] Unknown | [ ] Male Flowers [ ] Female Flowers [ ] Seed Set [ ] None

Assess below live crown: #Epic-Live | #Epic-Dead | Bark Type | # Callused Wounds | #Open #Sooty: Root, =<2m, >2m

Metres from badly cankered tree: [ ] < 40 [ ] > 40 [ ] None Found | Competing Species

---

Tree #: | **Zone**: 1 | **Easting**: | **Northing**:

Crown Class | Live Crown % | Main Stem Length(m) Below crown | Seed Signs

[ ] Twig Dieback [ ] Branch Dieback [ ] Defoliation [ ] Discolouration | #Stems | DBH(cm)

Butternut Origin: [ ] Natural [ ] Planted [ ] Unknown | [ ] Male Flowers [ ] Female Flowers [ ] Seed Set [ ] None

Assess below live crown: #Epic-Live | #Epic-Dead | Bark Type | # Callused Wounds | #Open #Sooty: Root, =<2m, >2m

Metres from badly cankered tree: [ ] < 40 [ ] > 40 [ ] None Found | Competing Species

---

Tree #: | **Zone**: 1 | **Easting**: | **Northing**:

Crown Class | Live Crown % | Main Stem Length(m) Below crown | Seed Signs

[ ] Twig Dieback [ ] Branch Dieback [ ] Defoliation [ ] Discolouration | #Stems | DBH(cm)

Butternut Origin: [ ] Natural [ ] Planted [ ] Unknown | [ ] Male Flowers [ ] Female Flowers [ ] Seed Set [ ] None

Assess below live crown: #Epic-Live | #Epic-Dead | Bark Type | # Callused Wounds | #Open #Sooty: Root, =<2m, >2m

Metres from badly cankered tree: [ ] < 40 [ ] > 40 [ ] None Found | Competing Species

---

Please enter matching page link code on forms 1 and 2

Page Link: MAR2

(Contact Information follows all applicable privacy policies and guidelines)

Please return forms to:
Forest Gene Conservation Association
Suite 233, 266 Charlotte St.
Peterborough, ON, K9J 2V4
www.fgca.net

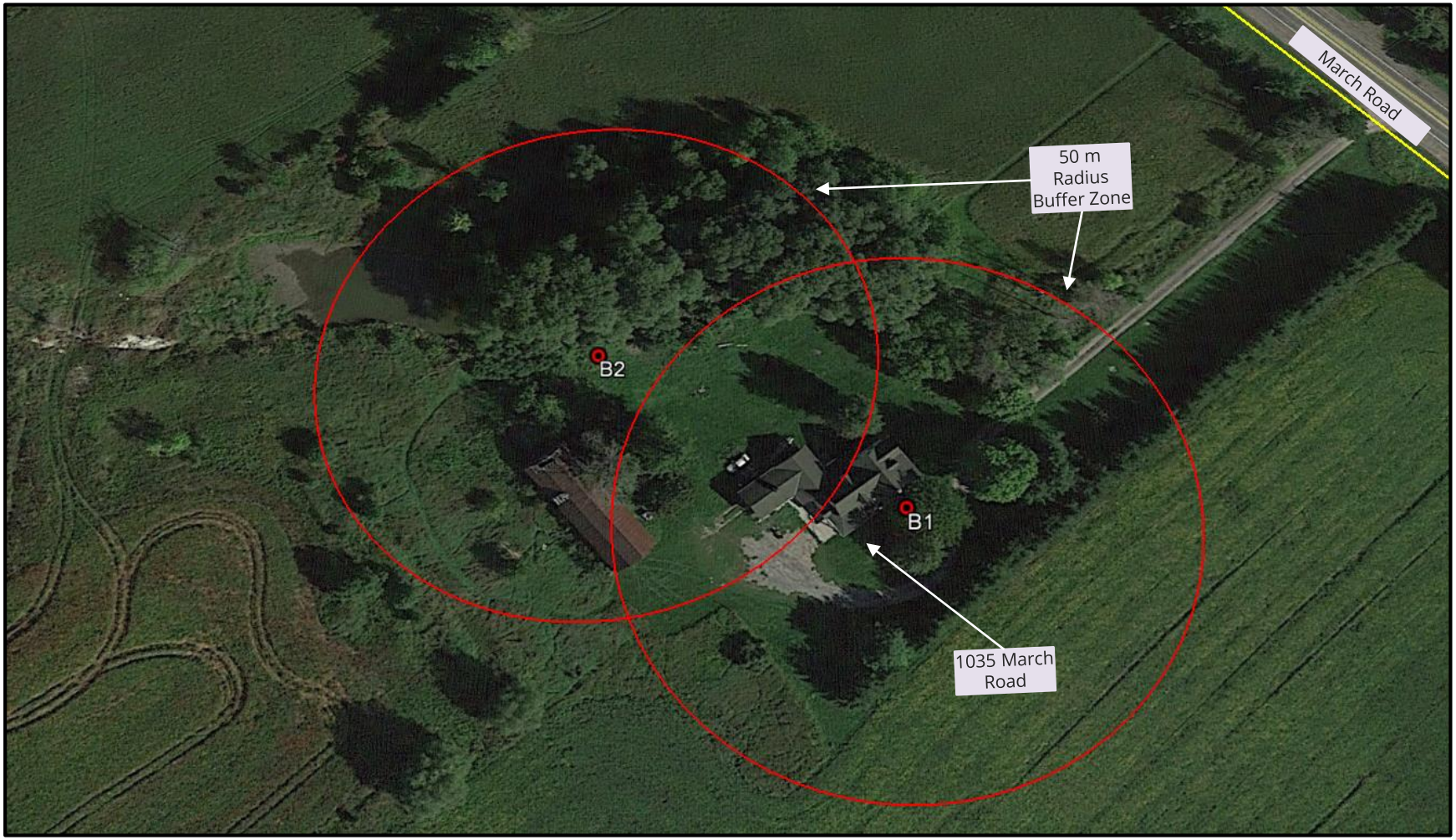
49731

McKINLEY ENVIRONMENTAL SOLUTIONS

June 2017

FIGURE 1: BUTTERNUT LOCATIONS

708912 Canada Inc. March Road Property, Ottawa, Ontario
Butternut Health Assessment (BHA)



- Study Area
B1 - Butternut Trees

Please Note: This is not a legal land survey. All dimensions and locations are shown as approximate.

APPENDIX A

Site Photographs

McKINLEY ENVIRONMENTAL SOLUTIONS
613-620-2255
mckinleyenvironmental@gmail.com
www.mckinleyenvironmental.com

Photograph 1: Butternut Tree #1 (41 cm dbh) (June 12th, 2017).

Photograph 2: Butternut Tree #2 (2 cm dbh) (June 12th, 2017).

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APPENDIX D

Ontario Ministry of Natural Resources and Forestry (OMNRF) Information Request Response

McKINLEY ENVIRONMENTAL SOLUTIONS
613-620-2255
mckinleyenvironmental@gmail.com
www.mckinleyenvironmental.com

Ministry of Natural Resources and Forestry

Kemptville District

10 Campus Drive
Postal Box 2002
Kemptville ON K0G 1J0
Tel.: 613 258-8204
Fax: 613 258-3920

Ministère des Richesses naturelles et des Forêts

District de Kemptville

10, promenade Campus
Case postale, 2002
Kemptville ON K0G 1J0
Tél.: 613 258-8204
Téléc.: 613 258-3920

Ontario

Thu. Oct 19, 2017

Andrew McKinley
McKinley Environmental Solutions
PO Box 45505, 3151 Strandherd Dr.
Ottawa, Ontario
K2J 5N1
(613) 620-2255
mckinleyenvironmental@gmail.com

Attention: Andrew McKinley

Subject: Information Request - Developments
Project Name: 1015, 1035, 1075, 1113 March Road EIS
Site Address: 1015, 1035, 1075, 1113 March Rd, Kanata, Ontario
Our File No. 2017_MAR-4246

Natural Heritage Values

The Ministry of Natural Resources and Forestry (MNRF) Kemptville District has carried out a preliminary review of the above mentioned area in order to identify any potential natural resource and natural heritage values.

The following Natural Heritage values were identified for the general subject area:

- Fish Nursery, White Sucker Nursery Area (Non-Sensitive)
- Lake (Non-Sensitive)
- Unevaluated Wetland (Not evaluated per OWES)
- Wintering Area, Deer Yard (Stratum 1) (Non-Sensitive)

Municipal Official Plans contain information related to natural heritage features. Please see the local municipal Official Plan for more information, such as specific policies and direction pertaining to activities which may impact natural heritage features. For planning advice or Official Plan interpretation, please contact the local municipality. Many municipalities require environmental impact studies and other supporting studies be carried out as part of the development application process to allow the municipality to make planning decisions which are consistent with the Provincial Policy Statement (PPS, 2014).

The MNRF strongly encourages all proponents to contact partner agencies and appropriate municipalities early on in the planning process. This provides the proponent with early knowledge regarding agency requirements, authorizations and approval timelines; Ministry of the Environment

and Climate Change (MOECC) and the local Conservation Authority may require approvals and permitting where natural values and natural hazards (e.g., floodplains) exist.

As per the Natural Heritage Reference Manual (NHRM, 2010) the MNRF strongly recommends that an ecological site assessment be carried out to determine the presence of natural heritage features and species at risk and their habitat on site. The MNRF can provide survey methodology for particular species at risk and their habitats.

The NHRM also recommends that cumulative effects of development projects on the integrity of natural heritage features and areas be given due consideration. This includes the evaluation of the past, present and possible future impacts of development in the surrounding area that may occur as a result of demand created by the presently proposed project.

In Addition, the following Fish species were identified: blacknose shiner, brook stickleback, central mudminnow, creek chub, fathead minnow, finescale dace, northern redbelly dace, pearl dace, white sucker.

Wildland Fire

MNRF woodland data shows that the site contains woodlands. The lands should be assessed for the risk of wildland fire as per PPS 2014, Section 3.1.8 "*Development shall generally be directed to areas outside of lands that are unsafe for development due to the presence of hazardous forest types for wildland fire. Development may however be permitted in lands with hazardous forest types for wildland fire where the risk is mitigated in accordance with wildland fire assessment and mitigation standards".* Further discussion with the local municipality should be carried out to address how the risks associated with wildland fire will be covered for such a development proposal. Please see the Wildland Fire Risk Assessment and Mitigation Guidebook (2016) for more information.

Significant Woodlands

Section 2.1.5 b) of the PPS states: *Development and site alteration shall not be permitted in significant woodlands unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.* The 2014 PPS directs that significant woodlands must be identified following criteria established by the Ontario Ministry of Natural Resources and Forestry, i.e. the Natural Heritage Reference Manual (NHRM), 2010. Where the local or County Official Plan has not yet updated significant woodland mapping to reflect the 2014 PPS, all wooded areas should be reviewed on a site specific basis for significance. The MNRF Kemptville District modelled locations of significant woodlands in 2011 based on NHRM criteria. The presence of significant woodland on site or within 120 metres should trigger an assessment of the impacts to the feature and its function from the proposed development.

Significant Wildlife Habitat

Section 2.1.5 d) of the PPS states: *Development and site alteration shall not be permitted in significant wildlife habitat unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.* It is the responsibility of the approval authority to identify significant wildlife habitat or require its identification. The MNRF has several guiding

documents which may be useful in identification of significant wildlife habitat and characterization of impacts and mitigation options:

- Significant Wildlife Habitat Technical Guide, 2000
- The Natural Heritage Reference Manual, 2010
- Significant Wildlife Habitat Mitigation Support Tool, 2014
- Significant Wildlife Habitat Criteria Schedule for Ecoregion 5E and 6E, 2015

The habitat of special concern species (as identified by the Species at Risk in Ontario list) and Natural Heritage Information Centre tracked species with a conservation status rank of S1, S2 and S3 may be significant wildlife habitat and should be assessed accordingly.

Species at Risk

A review of the Natural Heritage Information Centre (NHIC) and internal records indicate that there is a potential for the following threatened (THR) and/or endangered (END) species on the site or in proximity to it:

- Sensitive Species (END)
- Barn Swallow (THR)
- Blanding's Turtle (THR)
- Bobolink (THR)
- Butternut (END)
- Chimney Swift (THR)
- Eastern Meadowlark (THR)
- Little Brown Bat (END)
- Northern Long-eared Bat (END)
- Whip poor will (THR)

All endangered and threatened species receive individual protection under section 9 of the ESA and receive general habitat protection under Section 10 of the ESA, 2007. Thus any potential works should consider disturbance to the individuals as well as their habitat (e.g. nesting sites). General habitat protection applies to all threatened and endangered species. Note some species in Kemptville District receive regulated habitat protection. The habitat of these listed species is protected from damage and destruction and certain activities may require authorization(s) under the ESA. For more on how species at risk and their habitat is protected, please see: https://www.ontario.ca/page/how-species-risk-are-protected.

If the proposed activity is known to have an impact on any endangered or threatened species at risk (SAR), or their habitat, an authorization under the ESA may be required. It is recommended that MNRF Kemptville be contacted prior to any activities being carried out to discuss potential survey protocols to follow during the early planning stages of a project, as well as mitigation measures to avoid contravention of the ESA. Where there is potential for species at risk or their habitat on the property, an Information Gathering Form should be submitted to Kemptville MNRF at sar.kemptville@ontario.ca.

The Information Gathering Form may be found here:
http://www.forms.ssb.gov.on.ca/mbs/ssb/forms/ssbforms.nsf/FormDetail?OpenForm&ACT=RDR&TAB=PROFILE&ENV=WWE&NO=018-0180E

For more information on the ESA authorization process, please see:
https://www.ontario.ca/page/how-get-endangered-species-act-permit-or-authorization

One or more special concern species has been documented to occur either on the site or nearby. Species listed as special concern are not protected under the ESA, 2007. However, please note that some of these species may be protected under the Fish and Wildlife Conservation Act and/or Migratory Birds Convention Act. Again, the habitat of special concern species may be significant wildlife habitat and should be assessed accordingly. Species of special concern for consideration:

- Bald Eagle (SC)
- Common Nighthawk (SC)
- Snapping Turtle (SC)

If any of these or any other species at risk are discovered throughout the course of the work, and/or should any species at risk or their habitat be potentially impacted by on site activities, MNRF should be contacted and operations be modified to avoid any negative impacts to species at risk or their habitat until further direction is provided by MNRF.

Please note that information regarding species at risk is based largely on documented occurrences and does not necessarily include an interpretation of potential habitat within or in proximity to the site in question. Although this data represents the MNRF's best current available information, it is important to note that a lack of information for a site does not mean that additional features and values are not present. It is the responsibility of the proponent to ensure that species at risk are not killed, harmed, or harassed, and that their habitat is not damaged or destroyed through the activities carried out on the site.

The MNRF continues to strongly encourage ecological site assessments to determine the potential for SAR habitat and occurrences. When a SAR or potential habitat for a SAR does occur on a site, it is recommended that the proponent contact the MNRF for technical advice and to discuss what activities can occur without contravention of the Act. For specific questions regarding the Endangered Species Act (2007) or SAR, please contact MNRF Kemptville District at sar.kemptville@ontario.ca.

The approvals processes for a number of activities that have the potential to impact SAR or their habitat have recently changed. For information regarding regulatory exemptions and associated online registration of certain activities, please refer to the following website: https://www.ontario.ca/page/how-get-endangered-species-act-permit-or-authorization.

Please note: The advice in this letter may become invalid if:

- The Committee on the Status of Species at Risk in Ontario (COSSARO) re-assesses the status of the above-named species OR adds a species to the SARO List such that the section 9 and/or 10 protection provisions apply to those species; or
- Additional occurrences of species are discovered on or in proximity to the site.

This letter is valid until: Fri. Oct 19, 2018

The MNRF would like to request that we continue to be circulated on information with regards to this project. If you have any questions or require clarification please do not hesitate to contact me.

Sincerely,

Jane Devlin
Management Biologist
jane.devlin@ontario.ca

Encl.\
-ESA Infosheet
-NHIC/LIO Infosheet