McKINLEY
ENVIRONMENTAL
SOLUTIONS

Combined Environmental Impact Statement & Tree Conservation Report
Brigil Kanata North Development

September 2020
Prepared for Brigil

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

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

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

LIST OF FIGURES

EXECUTIVE SUMMARY

McKinley Environmental Solutions (MES) was retained by Brigil to prepare a Combined Environmental Impact Statement (EIS) and Tree Conservation Report (TCR) to support the development of their Kanata North property. The Site is part of the Southwest Quadrant of the approved Kanata North Urban Expansion Area (KNUEA), which is an urban expansion area located northwest of the developed portion of Kanata (Ottawa, Ontario). 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. The Site includes a portion of the 927 March Road property, which was previously severed into several parts. The Site is approximately 19.98 ha in size.

The Site is located along the west side of March Road, with the KNUEA Northwest Quadrant located directly to the north, and the KNUEA Southeast Quadrant located on the opposite side of March Road. 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. An existing rural estate subdivision (the Marchbrook Circle subdivision) is located west of the Site. The 1145 Old Carp Road property, which consists of a vacant field, is located south of the Site. March Road, as well as the existing developed portions of 927 March Road and 941 March Road, are located east of the Site. The Site is within the urban area of the City of Ottawa.

The majority of the Site consists of agricultural lands that are actively cultivated. This includes Cultivated Fields that were planted with soybeans in the summer of 2018, as well as recently Fallow Fields (Graminoid Meadow). A collapsing barn is found within the Site. Treed habitats within the Site include two (2) Deciduous Hedgerows, a Cultural Thicket, and three (3) small Tree Stands. There are no forested areas within the Site. The North Branch (Tributary #3) of Shirley's Brook currently flows through the Site in a northwest to southeast direction. A Stormwater Swale (Tributary #4) also flows through the Site in a southwest to northeast direction. The Stormwater Swale is not considered a significant ecological feature.

The Community Design Plan (CDP) and the associated Environmental Management Plan (EMP) for the KNUEA were approved by Ottawa City Council in 2016. Notably, the KNUEA EMP establishes a minimum 40 m wide corridor which is to be retained and/or enhanced surrounding the tributaries of Shirley's Brook. Within the Site, this corridor was identified to retain the North Branch (Tributary #3). The minimum 40 m wide North Branch corridor is approximately 1.58 ha in size. The North Branch is not proposed to be realigned within the Site, however, the existing inline pond that is found along the North Branch will be reshaped during the development of the Site, in order to fit the

inline pond within the minimum 40 m wide watercourse corridor. Habitat restoration and enhancement works will also be undertaken within the minimum 40 m wide corridor in order to improve the quality of the habitat for Blanding's Turtle (threatened), fish, and other wildlife. The minimum 40 m wide corridor surrounding the North Branch will include fencing that will be designed to prevent Blanding's Turtles and other wildlife from leaving the 40 m wide watercourse corridor to enter the development/roads. The Stormwater Swale (Tributary #4) is not considered a significant ecological feature. As such, the KNUEA EMP identified that the Stormwater Swale will be decommissioned, and flows that are currently conveyed by the feature will be rerouted to the North Branch via a new stormwater sewer.

The Site will be developed to accommodate several condo and residential mixed use blocks. The development will also include a mixture of single detached homes and townhomes, as well as a 1.00 ha School Block, a 4.26 ha Community Park, and a 1.60 ha Stormwater Management Pond. The Site development will also include construction of several roads. The main road through the Site will cross the North Branch (Tributary #3) and will require installation of a wildlife passage culvert. A 6 m wide recreational pathway will be included along the northern edge of the minimum 40 m wide North Branch watercourse corridor. The Site will receive municipal services. Stormwater runoff will be addressed by the new Stormwater Management (SWM) Pond. The new SWM Pond will outlet clean water to the North Branch.

The Site is anticipated to be developed in multiple phases over several years. However, it is anticipated that the Site will be cleared during the initial phase of development, as servicing and grading requirements are not anticipated to allow for phased tree removal. The collapsing barn that is currently found within the Site will be demolished prior to development. Wherever feasible, existing tree coverage will be retained within the minimum 40 m wide watercourse corridor. Limited tree cover exists under current conditions within the Community Park Block (Portions of Deciduous Hedgerow A). Existing trees should be retained within the Community Park Block, wherever feasible and compatible with the park design.

Several Species at Risk (SAR) and their habitats were documented within the Site. Notably, the habitat of Blanding's Turtle (threatened) is known to occur within the Site. In the spring of 2018, a Bobolink (threatened) was noted within the Site prior to the start of the breeding bird season (early May). However, no Bobolink were noted within the Site during the breeding bird season, and therefore no evidence of Bobolink breeding was documented within the Site in 2018. Barn Swallow (threatened) nests were documented within the collapsing barn within the Site in 2018. Snapping Turtles (special concern) have also been observed within the Site. Regulatory and mitigation requirements for these species are discussed in detail in this report. Due to the anticipated loss of

Blanding's Turtle habitat, an Overall Benefit Permit under Clause 17(2)(C) of the Ontario Endangered Species Act is anticipated to be required to support the development. Prior to the demolition of the collapsing barn, which contains Barn Swallow habitat, the demolition activity will be registered through the Ministry of Environment, Conservation, and Parks (MECP) Online Impact Registration Process.

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

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

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, 1.6, 2.0.1, 3.2, 3.3, 3.7.2, 4.1, and 4.2.3. 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 EIS and 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 within the Site and adjacent to 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 Site is part of the approved Kanata North Urban Expansion Area (KNUEA), which is an urban expansion area located northwest of the developed portion of Kanata (Ottawa, Ontario). 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 Southwest Quadrant of the KNUEA included the property owned by Brigil, as well as several adjacent developed and undeveloped properties located at 927 March Road, 941 March Road, and 1145 Old Carp Road. The portions of the KNUEA Southwest Quadrant which are owned by Brigil and which form part of the current undertaking are shown in Figure 1 (the Site). The Site includes a portion of the 927 March Road property, which was previously severed into several parts. The Site is approximately 19.98 ha in size.

The Site is located along the west side of March Road, with the KNUEA Northwest Quadrant located directly to the north, and the KNUEA Southeast Quadrant located on the opposite side of March Road. 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. An existing rural estate subdivision (the Marchbrook Circle subdivision) is located west of the Site. The 1145 Old Carp Road property, which consists of a vacant field, is located south of the Site. March Road, as well as the existing developed portions of 927 March Road and 941 March Road, are located east of the Site. The Site is within the urban area of the City of Ottawa.

The majority of the Site consists of agricultural lands that are actively cultivated. This includes Cultivated Fields that were planted with soybeans in the summer of 2018, as well as recently Fallow Fields (Graminoid Meadow). A collapsing barn is found within the Site. Treed habitats within the Site include two (2) Deciduous Hedgerows, a Cultural Thicket, and three (3) small Tree Stands. There are no forested areas within the Site. The North Branch (Tributary #3) of Shirley's Brook currently flows through the Site in a northwest to southeast direction. A Stormwater Swale (Tributary #4) also flows through the Site in a southwest to northeast direction. The Stormwater Swale is not considered a significant ecological feature (discussed in greater detail in Section 3.4.2). Several Species at Risk (SAR) and their habitats have been documented within the Site (discussed in greater detail in Section 3.7). Notably, the habitat of Blanding's Turtle (threatened) is known to occur within the Site. In the spring of 2018, a Bobolink (threatened) was noted within the Site prior to the start of the breeding bird season (early May). However, no Bobolink were noted within the Site during the breeding bird season, and therefore no evidence of Bobolink breeding was documented within the Site in 2018.

Barn Swallow (threatened) nests were documented within the collapsing barn in 2018. Snapping Turtles (special concern) have also been observed within the Site. These natural heritage features are discussed in greater detail below.

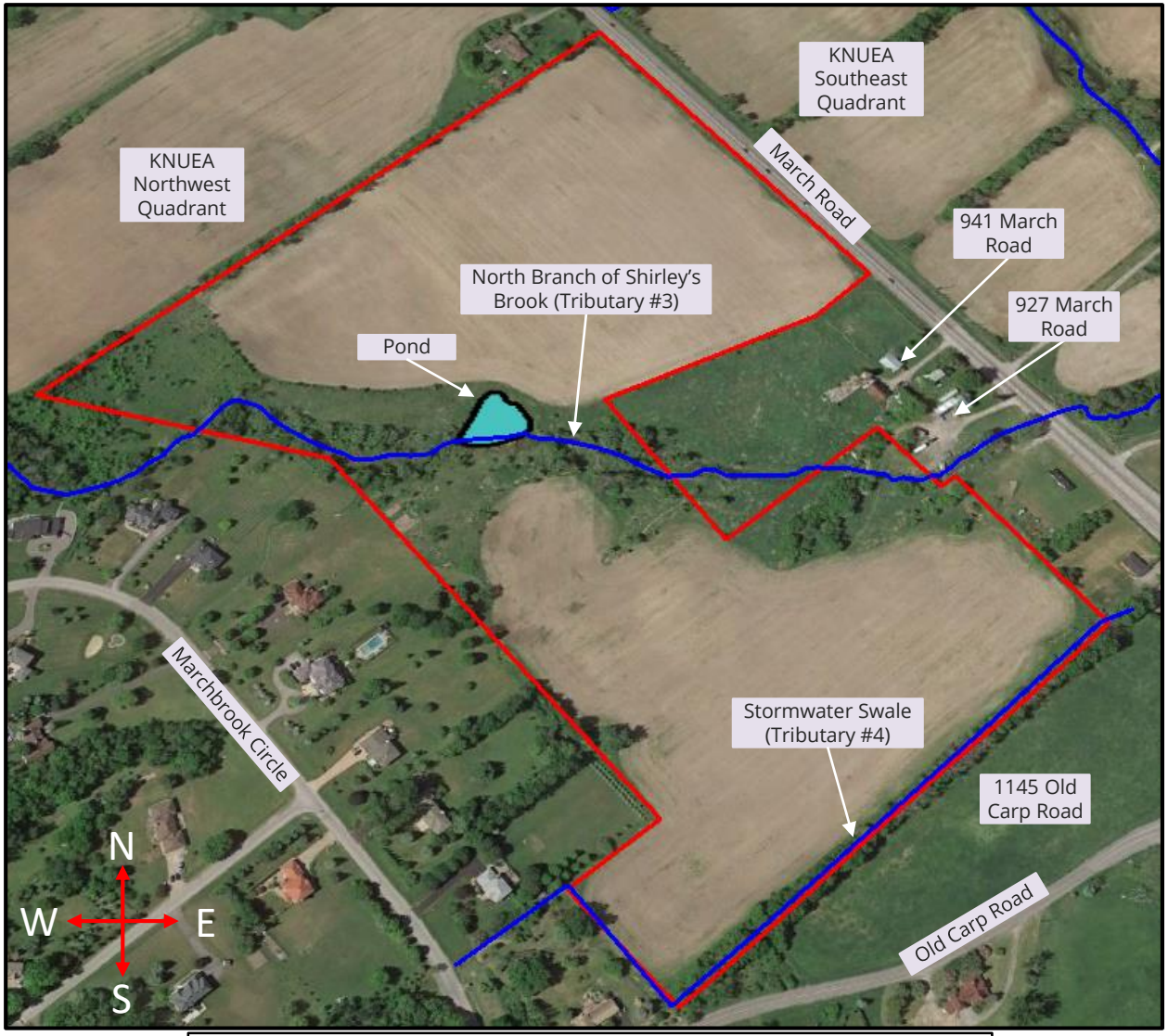
McKINLEY ENVIRONMENTAL SOLUTIONS

September 2020

FIGURE 1: SITE OVERVIEW

Brigil Kanata North Development

Combined Environmental Impact Statement and Tree Conservation Report



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

1.4 Description of Undertaking (TCR)

The Community Design Plan (CDP) and the associated Environmental Management Plan (EMP) for the Kanata North Urban Expansion Area (KNUEA) were approved by Ottawa City Council in 2016 (Novatech 2016a; 2016b). Notably, the KNUEA EMP establishes a minimum 40 m wide corridor which is to be retained and/or enhanced surrounding the tributaries of Shirley's Brook (Novatech 2016b). Within the Site, this corridor was identified to retain the North Branch (Tributary #3). As shown in the Concept Land Use Plan, the minimum 40 m wide corridor within the Site is approximately 1.58 ha in size. The North Branch is not proposed to be realigned within the Site, however, the existing inline pond that is found along the North Branch will be reshaped during the development of the Site, in order to fit the inline pond within the minimum 40 m wide watercourse corridor. Habitat restoration and enhancement works will also be undertaken within the minimum 40 m wide corridor in order to improve the quality of the habitat for Blanding's Turtles, fish, and other wildlife. Habitat improvements are anticipated to be required to meet the requirements of a future Overall Benefit Permit for Blanding's Turtle under Clause 17(2)(C) of the Ontario Endangered Species Act (discussed below). As discussed below in Section 4.4.2, the minimum 40 m wide corridor surrounding the North Branch will include fencing that will be designed to prevent Blanding's Turtles and other wildlife from leaving the 40 m wide watercourse corridor to enter the development/roads. The Stormwater Swale (Tributary #4) is not considered a significant ecological feature. As such, the KNUEA EMP identified that the Stormwater Swale will be decommissioned, and flows that are currently conveyed by the feature will be rerouted to the North Branch via a new stormwater sewer (Novatech 2016b).

The Concept Land Use Plan and Conceptual Draft Plan of Subdivision are included below. The Site will be developed to accommodate several condo and residential mixed use blocks. The development will also include a mixture of single detached homes and townhomes, as well as a 1.00 ha School Block, a 4.26 ha Community Park, and a 1.60 ha Stormwater Management Pond. The Site development will also include construction of several roads. The main road through the Site will cross the North Branch (Tributary #3) and will require installation of a wildlife passage culvert (discussed in Section 4.2.5). A 6 m wide recreational pathway will be included along the northern edge of the minimum 40 m wide North Branch watercourse corridor. The Site will receive municipal services. Stormwater runoff will be addressed by the new Stormwater Management (SWM) Pond. The new SWM Pond will outlet clean water to the North Branch.

The Site is anticipated to be developed in multiple phases over several years. However, it is anticipated that the Site will be cleared during the initial phase of development, as servicing and grading requirements are not anticipated to allow for phased tree removal. The collapsing barn that

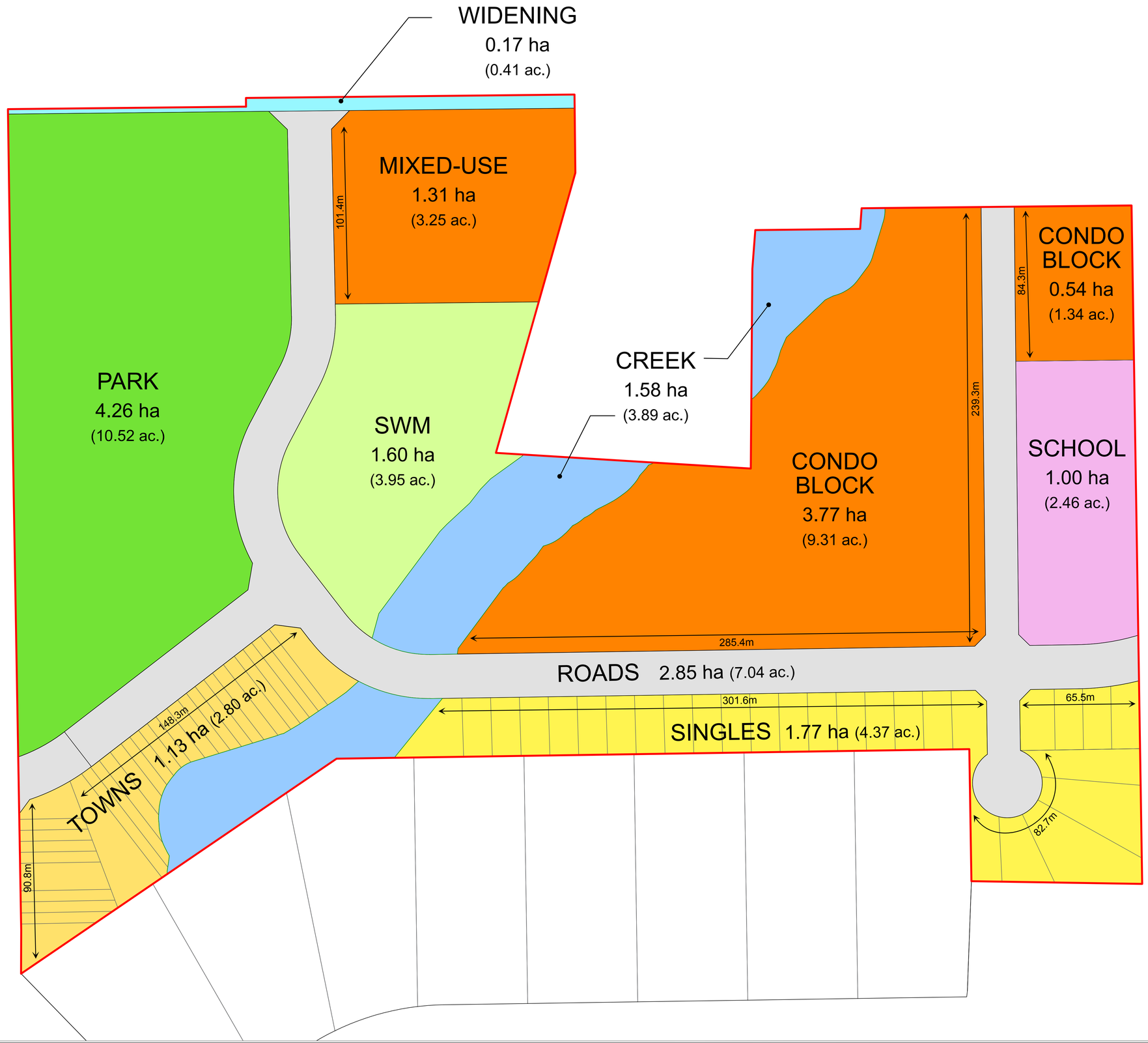
is currently found within the Site will be demolished prior to development. Wherever feasible, existing tree coverage will be retained within the minimum 40 m wide watercourse corridor. Limited tree cover exists under current conditions within the Community Park Block (Portions of Deciduous Hedgerow A). Existing trees should be retained within the Community Park Block, wherever feasible and compatible with the park design.

MARCH ROAD

PARK

SWM

KNUEA CONCEPT	
BRIGIL LANDS MARCH ROAD	
CONCEPT	BRIGIL
2020-09-10	*"Proud to build a better quality of life"*
1:1000	



KNUEA CONCEPT	
BRIGIL LANDS MARCH ROAD	
FIGURE	BRIGIL
2019-10-28	*"Proud to build a better quality of life"*
1:1000	

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) (Novatech 2016a; 2016b). 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 of Ottawa, and the MVCA will be 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 should be noted that in 2019, responsibility for the administration of the Ontario Endangered Species Act (ESA) was transitioned from the OMNRF to the Ministry of Environment, Conservation, and Parks (MECP). It is anticipated that an Overall Benefit Permit under Clause 17(2)(C) of the Ontario ESA will be required to support the undertaking. Extensive consultation and review will be undertaken with the MECP as part of the ESA permitting process.

1.6 Regulatory Requirements (TCR)

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):** The development of the Site is anticipated to result in the loss of Blanding's Turtle (threatened) habitat. As such, an Overall Benefit Permit under Clause 17(2)(C) of the Ontario ESA will be required to support the development. As described in Section 3.7.4, in 2018 Barn Swallow nests were documented within the collapsing barn within the Site. The rules and regulations of the Ontario ESA require that prior to the demolition of a building containing Barn Swallow nests, the demolition activity must be registered through the Ministry of Environment, Conservation, and Parks (MECP) Online Impact Registration Process. The mitigation and habitat compensation requirements for Blanding's Turtle and Barn Swallow are discussed below in Section 4.4.
- **Ontario Regulation 153/06:** The North Branch of Shirley's Brook will not be realigned as part of the proposed development. The entire length of the North Branch through the Site is intended to be retained. As discussed below in Section 4.2.2, habitat enhancement features will be installed within the 40 m wide watercourse corridor. The Site development will also include reshaping of the inline pond. However, it should be noted that the inline pond is an artificial feature that is maintained by a concrete weir. The portion of the inline pond that will be removed is seasonally dry, and hence it is anticipated that reshaping of the inline pond can be completed without significant disturbance to fish habitat (discussed below in Section 4.2.4). In addition, the construction of the main road through the Site will require installation of a new wildlife passage culvert. Ontario Regulation 153/06 regulates activities that alter shorelines, watercourses, and wetlands. O.Reg. 153/06 regulates the area up to 30 m from the normal high-water mark of a watercourse. The activities described above will occur within the 40 m wide North Branch watercourse corridor, thereby overlapping the area regulated under O. Reg. 153/06. As such, a permit from the Mississippi Valley Conservation Authority (MVCA) under O.Reg 153/06 is anticipated to be required.
- **Fisheries Act:** The rules and regulations of the Fisheries Act were revised in 2019. Under the updated rules and regulations, any activities that have the potential to significantly negatively impact fish habitat and/or result in the death of fish require review by Fisheries and Oceans Canada under the Fisheries Act. The pond reshaping, the installation of the habitat enhancement features, and the new wildlife passage culvert are described above. These activities have the potential to impact fish and/or fish habitat, and hence will require review by Fisheries and Oceans Canada. A review request will be submitted to Fisheries and Oceans Canada once further design details are available (the submission will be completed prior to the

obtainment of Draft Plan of Subdivision approval). Through the review process, Fisheries and Oceans Canada will determine whether an authorization under the Fisheries Act is required, or alternatively, whether the project can proceed through obtainment of a Letter of Advice.

- **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 12th, May 15th, and June 21st, 2018. Vegetation communities were also previously surveyed and classified by Muncaster Environmental Planning (MEP) as part of the Existing Conditions Natural Environment Features Report, which was prepared to support the Kanata North Urban Expansion Area (KNUEA) approval process (MEP 2016). Vegetation surveys completed by MEP were undertaken in 2013. The plant survey results, plant lists, tree sizes, and vegetation mapping completed by MEP (2016) have been reviewed and integrated throughout this report.

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 a tree for every centimeter of trunk dbh. The CRZ is calculated as dbh x 10 cm.

Plant communities within the Site were classified according to the vegetation community labels described in the Ecological Land Classification (ELC) manual (OMNRF 1998; Lee 2008). The vegetation survey 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. There are no areas of continuous forest cover within the Site, and therefore tree sampling plots were not required. Instead, transects were employed to sample the hedgerows and representative tree size measurements were taken for the three (3) small and highly fragmented Tree Stands. Each transect was 20 m long and every tree measuring 10 cm diameter at breast height (dbh) or greater in size along the transect was recorded. The number of transects undertaken in each Deciduous Hedgerow is listed below in Table A (Section 3.3.1). Trees within each 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.

2.0.2 Environmental Impact Statement Methodology

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

- Site surveys to describe the vegetation communities and inventory trees (see above);
- Site surveys to assess the potential presence of the habitat of Species at Risk (SAR), wetlands, fish habitat, Significant Wildlife Habitat features, and other significant habitat features;
- Review of the Kanata North Urban Expansion Area (KNUEA) Existing Conditions Natural Environment Features Report (MEP 2016), the KNUEA Community Design Plan (CDP) (Novatech 2016a), and the KNUEA Environmental Management Plan (EMP) (Novatech 2016b), as well as associated background environmental reports;
- Review of the existing Blanding's Turtle habitat mapping for the area (DST 2015);
- Examination of aerial imagery to evaluate landscape features;
- Natural Heritage Information Center (NHIC) database review (OMNRF 2020);
- Obtainment of the Ontario Ministry of Natural Resources and Forestry (OMNRF) Potential Species at Risk (SAR) List for the Geographic Township of March (Appendix C);
- 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 (ELC) Classification:** See description above.
- **Breeding Bird Surveys (Barn Swallow, Bobolink, Eastern Meadowlark):** Breeding bird surveys were previously completed in 2013 as part of the Existing Conditions Natural Environment Features Report (MEP 2016). Updated surveying to confirm the presence/absence of nesting Bobolink and Eastern Meadowlark (as well as other bird species) was completed on May 29th, June 8th, and June 21st, 2018. Weather conditions during the surveys included sunny skies and temperatures of 22 ºC, 19 ºC, and 13 ºC (respectively). 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). During the breeding bird surveys, Barn Swallow and Chimney Swift foraging activity was recorded. Bird survey points are shown in Figure 5 (below).
- **Butternut Trees:** Vegetation surveys were completed in 2013 as part of the Existing Conditions Natural Environment Features Report, and no Butternut Trees were noted within the KNUEA Southwest Quadrant (which includes the Site) (MEP 2016). During the 2018 vegetation surveys

and tree inventory, no Butternut Trees were noted within the Site. Therefore, a Butternut Health Assessment (BHA) was not required to support the proposed development.

- **Blanding's Turtle Basking Survey:** Detailed Blanding's Turtle surveying was completed in 2014 to support the KNUEA EMP (MEP 2016). The results of the Blanding's Turtle surveys were reviewed in consultation with the Ontario Ministry of Natural Resources and Forestry (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 future 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.
- **Barn Swallow and Chimney Swift Nest Survey:** The Site was searched for evidence of Barn Swallow nests on May 29th, 2018. One (1) existing building was found within the Site (the collapsing barn). The location of the collapsing barn is shown below in Figure 6 (Section 3.7.4). All interior and exterior surfaces of the collapsing barn were searched to confirm the presence/absence of Barn Swallow nests. The collapsing barn does not have a chimney, and therefore a survey for Chimney Swifts was not required. Barn Swallow and Chimney Swift foraging activity was documented as part of the breeding bird survey (described above).
- **Bat Maternity Roost Assessment (Little Brown Bat, Northern Long Eared Bat, Eastern Small Footed Myotis, Tricolored Bat):** No caves, bedrock fissures, mining shafts, abandoned buildings, or other features which may function as bat hibernacula habitat were noted within the Site. 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 3.3.1, there are no forested areas within the Site. The three (3) Tree Stands that are found within the Site are too small and fragmented to potentially provide bat maternity roosting habitat. Due to the absence of forest cover, a bat maternity roost assessment was not required.
- **Eastern Whip Poor Will Call Surveys:** Eastern Whip Poor Will call surveys were completed throughout the KNUEA in 2014 as part of the Existing Conditions Natural Environment Features Report, and no evidence of Eastern Whip Poor Will was noted (MEP 2016). The Eastern Whip Poor Will surveys were updated in 2018 by completing a survey following the OMNRF (2014d) *Draft Survey Protocol for Eastern Whip Poor Will*. 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 the end of June. Surveys were completed on May 22nd, May 29th, and

June 22nd, 2018. Survey locations are shown below in Figure 7 (Section 3.7.5). Survey weather conditions and results are summarized below in Table B.

- **Shirley's Brook and Fish Habitat:** In 2013, fish sampling was completed at four (4) locations along the North Branch (Tributary #3) and one (1) location along the Stormwater Swale (Tributary #4) (MEP 2016). Walkthroughs of the tributaries of Shirley's Brook within the Site were also completed by McKinley Environmental Solutions in the spring and summer of 2018. This information was utilized to assess the aquatic habitat features for the purposes of this Combined Environmental Impact Statement and Tree Conservation Report. Due to the fact that the development of the Site will not involve the realignment and/or removal of the North Branch, a Headwaters Drainage Assessment (HDA) for the North Branch is not anticipated to be required. As discussed below in Section 3.4.2, Muncaster Environmental Planning (MEP) previously assessed the Stormwater Swale and determined that the feature is not ecologically significant (MEP 2016). As such, a HDA assessing the Stormwater Swale is also not anticipated to be required.

3.0 EXISTING CONDITIONS

3.1 Geological Conditions

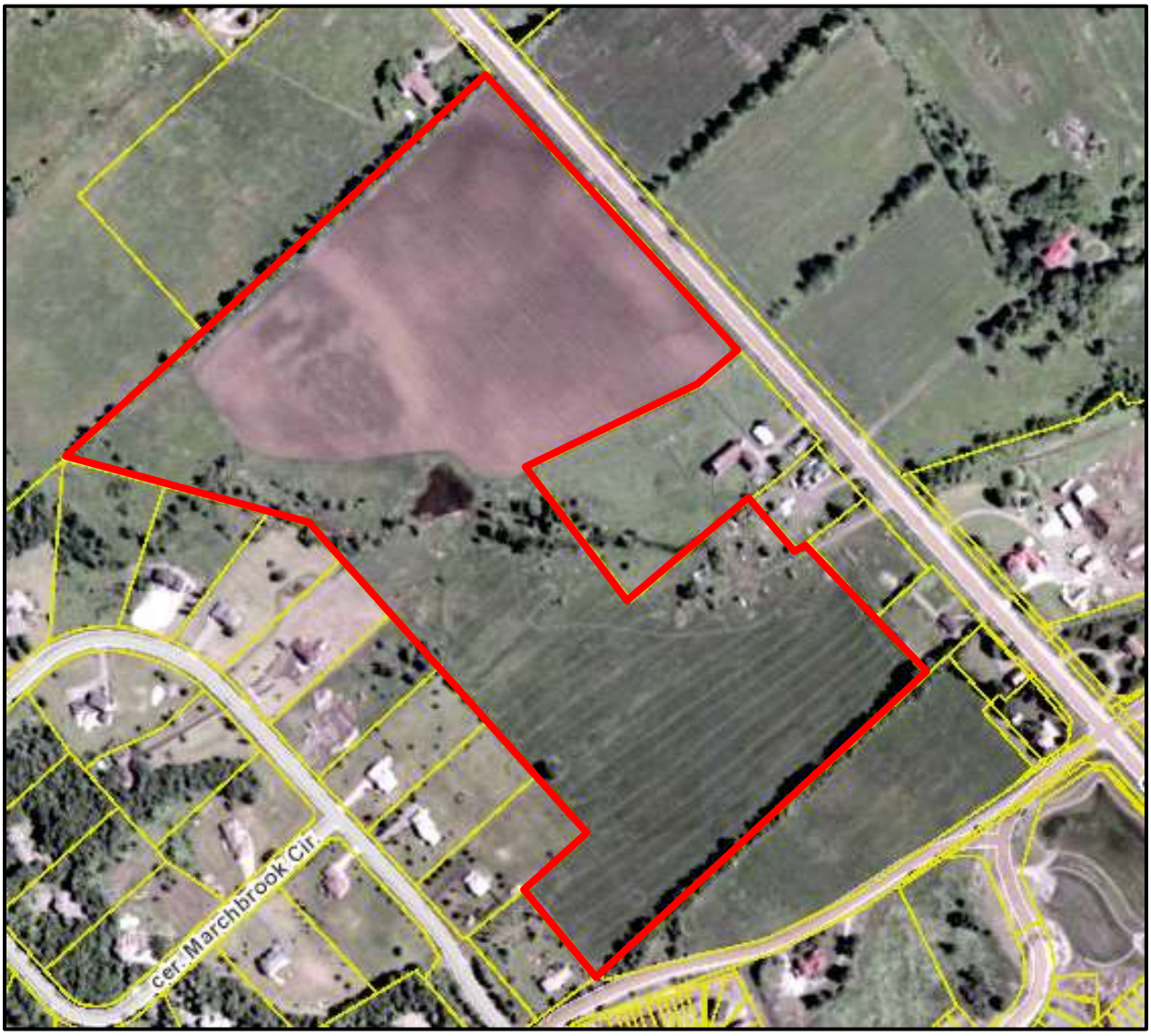
The Site includes a gradual downward slope from approximately 86 m Above Sea Level (ASL) in the northwest corner of the Site to approximately 80 m ASL at March Road. Surface drainage within the Site is hence primarily from the northwest to the southeast, although the Stormwater Swale (Tributary #4) flows from the southwest to the northeast. Paterson Group (2013) note that within the 927 March Road parcel, subsoil conditions consist of topsoil underlain by a very stiff silty clay deposit, followed by a glacial till layer and bedrock. Paterson Group (2013) note that based on available geological mapping, the bedrock conditions below the majority of the Site consist of interbedded sandstone and dolomite of the March formation. Areas of exposed bedrock were noted within the channel of the North Branch.

3.2 Site History (TCR)

Air photos from 1976, 1991 and 2005 are included below (Photos from City of Ottawa 2020). Recent air photos are included in the report figures. The oldest available air photo (from 1976) shows that the overall composition of the Site was similar in 1976, with most of the Site intensively farmed. Portions of two (2) of the Deciduous Hedgerows (Features A and B) and two (2) of the Tree Stands (Features D and E) are visible in 1976. The Site remains relatively unchanged in 1991 and 2005. One (1) Tree Stand (Feature F) and the Cultural Thicket (Feature C) are not visible in the historic air photos, which suggests that most trees and shrubs found in Features C and F represent recent regrowth (approximately 10 years of age). Some individual trees found within Features A, B, D, and E may be older than approximately 40 years of age.

Historic Air Photograph 1: Historic Air Photo from 1976 (Site development limits shown in red). Note that the Site was intensively farmed and tree cover was limited to the Deciduous Hedgerows and portions of the Tree Stands in 1976. Portions of two of the (2) Deciduous Hedgerows (Features A and B) and two (2) of the Tree Stands (Features D and E) are visible in 1976 (Photos from City of Ottawa 2020).

Historic Air Photograph 2: Historic Air Photo from 1991 (Site development limits shown in red). Note that the Site was intensively farmed and tree cover was limited to the Deciduous Hedgerows and portions of the Tree Stands in 1991. Portions of two (2) of the Deciduous Hedgerows (Features A and B) and two (2) of the Tree Stands (Features D and E) continue to be visible in 1991 (Photos from City of Ottawa 2020).



Historic Air Photograph 3: Historic Air Photo from 2005 (Site development limits shown in red). Note that the Site was intensively farmed and tree cover was limited to the Deciduous Hedgerows and portions of the Tree Stands in 2005. Portions of two (2) of the Deciduous Hedgerows (Features A and B) and two (2) of the Tree Stands (Features D and E) continue to be visible in 2005 (Photos from City of Ottawa 2020).

3.3 Vegetation Communities (TCR)

The majority of the Site consists of agricultural lands that are actively cultivated. This includes Cultivated Fields that were planted with soybeans in the summer of 2018, as well as recently Fallow Fields (Graminoid Meadow). A collapsing barn is also present within the Site (discussed below in Section 3.7.4). Treed habitats within the Site include two (2) Deciduous Hedgerows, a Cultural Thicket, and three (3) small Tree Stands. There are no forested areas within the Site. Vegetation communities found within the Site include the following:

- Deciduous Hedgerows (Features A & B);
- Cultural Thicket (Feature C);
- Tree Stands (Features D to F);
- Cultivated Fields; and
- Fallow Fields (Graminoid Meadow).

The extent of these vegetation communities is shown in Figures 2 & 3. Appendix A includes a list of plant species noted during the vegetation surveys. Each of the vegetation communities is described in greater detail below.

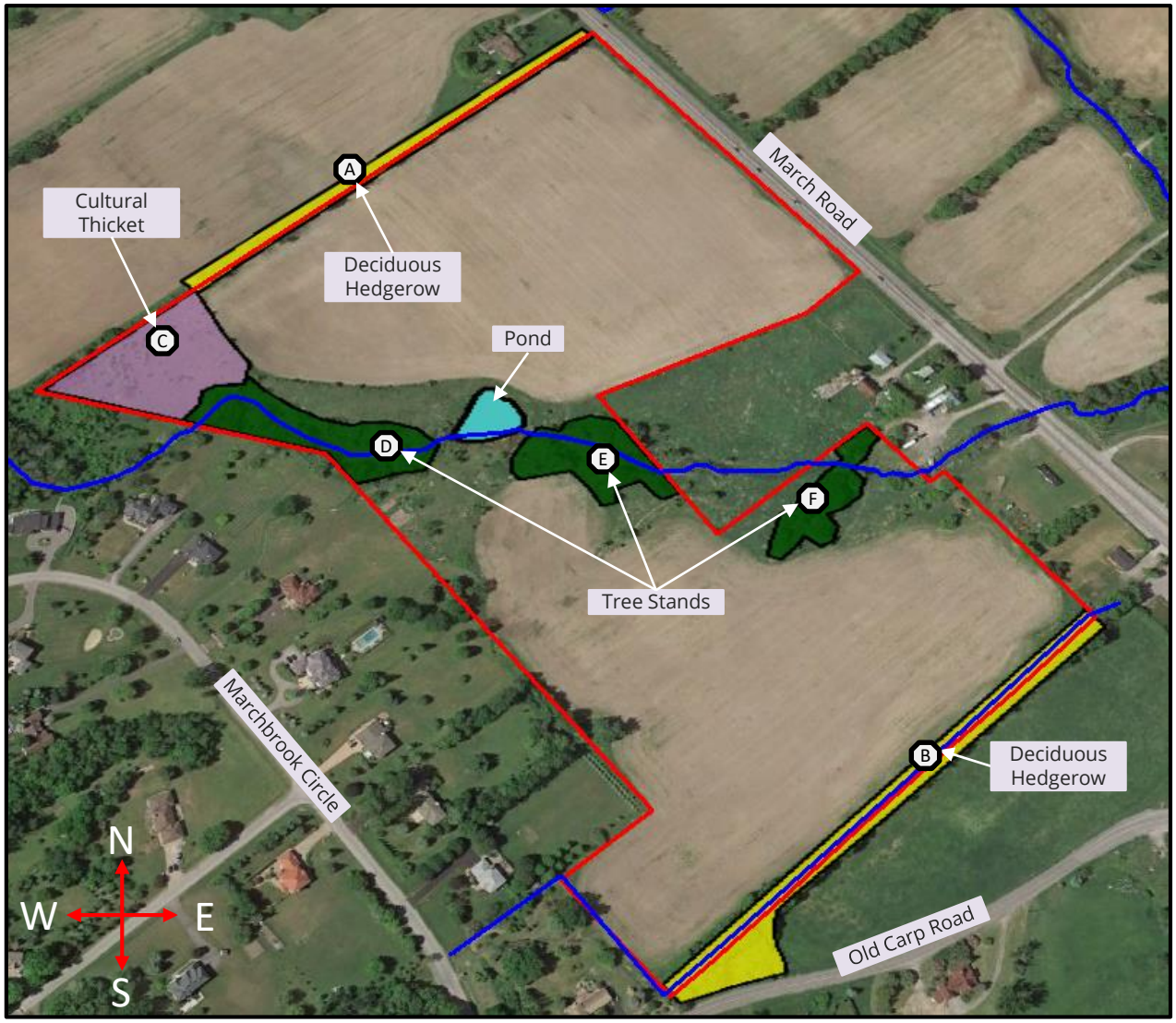
McKINLEY ENVIRONMENTAL SOLUTIONS

September 2020

FIGURE 2: TREED HABITATS

Brigil Kanata North Development

Combined Environmental Impact Statement and Tree Conservation Report



- Site Boundary
- Tributaries of Shirley's Brook
(A) - Vegetation Feature Number

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

3.3.1 Treed Habitats and Tree Inventory (TCR)

The following is a summary of the treed habitats found within the Site.

Deciduous Hedgerows (Features A & B)

There are two (2) Deciduous Hedgerows within the Site. The Deciduous Hedgerows are shown in Figure 2 and tree sizes are shown in Table A. The following is a description of the Deciduous Hedgerows:

- **Deciduous Hedgerow A:** Dead and dying White Ash are dominant within Deciduous Hedgerow A. American Elm between 10 cm and 25 cm diameter at breast height (dbh) in size and Bur Oak between 10 cm and 70 cm dbh are also well represented. Black Cherry and Sugar Maple are also present within Deciduous Hedgerow A. Shrub cover includes Choke Cherry, Domestic Apple, Hawthorn, Common Buckthorn, and Riverbank Grape.
- **Deciduous Hedgerow B:** The core of Deciduous Hedgerow B consists of mature Bur Oaks, around which younger trees have regenerated. The mature Bur Oaks are between approximately 60 cm and 70 cm dbh in size, although the eastern part of Deciduous Hedgerow B includes a 90 cm dbh Bur Oak, and the western part of the feature includes an 88 cm and a 102 cm dbh Bur Oak. Although the large Bur Oaks form the core of the feature, dead and dying White Ash are the dominant tree within Deciduous Hedgerow B, accounting for nearly half of the stems. Sugar Maple between approximately 15 cm and 25 cm dbh in size and young American Elm between approximately 10 cm and 15 cm dbh in size are also well represented. Manitoba Maple, Black Cherry, and Basswood also occur within Deciduous Hedgerow B. Shrub cover is similar as described above for Deciduous Hedgerow A. The groundcover includes Poison Ivy.

Table A: Deciduous Hedgerows					
Common Name	**Scientific Name**	**Average DBH (cm)**	**DBH Standard Deviation (cm)**	**% Occupancy**	**Estimated Stems Per Hectare***
Deciduous Hedgerow A (2 Transects)					
White Ash	*Fraxinus americana*	24	13	68%	1500
American Elm	*Ulmus americana*	16	7	18%	400
Bur Oak	*Quercus macrocarpa*	39	28	14%	300
Deciduous Hedgerow B (2 Transects)					
White Ash	*Fraxinus americana*	28	16	45%	1000
Bur Oak	*Quercus macrocarpa*	65	6	14%	300
Sugar Maple	*Acer saccharum*	18	4	14%	300
American Elm	*Ulmus americana*	12	2	14%	300
Manitoba Maple	*Acer negundo*	23	N/A	5%	100
Black Cherry	*Prunus serotina*	25	N/A	5%	100
Basswood	*Tilia americana*	23	N/A	5%	100

N/A Values in the DBH Standard Deviation are due to only one tree of that species being observed within the sample transect/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.

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

Photograph 1: Looking north at Deciduous Hedgerow A. Dead/dying White Ash stems are visible in the center of the photo (May 12th, 2018).

Photograph 2: Looking northwest at Deciduous Hedgerow B. The 90 cm dbh Bur Oak is visible in the center of the photo (May 12th, 2018).

Cultural Thicket (Feature C)

Feature C is a recent regrowth Cultural Thicket that is present at the northwest corner of the Site. The Cultural Thicket is dominated by young Trembling Aspen and White Ash stems (<10 cm diameter at breast height (dbh) in size). Shrub cover includes dense stands of Common Buckthorn and Prickly Ash in some areas. Domestic Apple, Tartarian Honeysuckle, Hawthorn, Red Osier Dogwood, and Wild Red Raspberry are also found throughout the shrub layer. Groundcover includes 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 Stands (Features D to F)

There are three (3) small and highly fragmented Tree Stands within the Site, each of which includes a mixture of planted trees and recent regrowth. The Tree Stands include the following:

- **Tree Stands D & E:** Tree Stands D & E are each approximately 0.5 ha in size. Trees include Crack Willow, Manitoba Maple, White Cedar, White Spruce, Trembling Aspen, White Ash, and American Elm up to approximately 60 cm diameter at breast height (dbh) in size. The Crack Willow, White Cedars, and White Spruce appear to have been planted as landscaping features along the banks of the North Branch (Tributary #3), whereas the remaining species likely represent regrowth. Shrub cover includes Hawthorn, Common Buckthorn, Slender Willow, and Wild Red Raspberry. Groundcover within the Tree Stands is similar as described below for the surrounding Fallow Fields (Graminoid Meadow).
- **Tree Stand F:** Tree Stand F is approximately 0.25 ha in size. Tree Stand F is dominated by Manitoba Maple up to 30 cm dbh in size. Shrub cover is sparse and includes a few Common Buckthorn and Wild Red Raspberry shrubs. Groundcover within Tree Stand F is similar as described below for the surrounding Fallow Fields (Graminoid Meadow).

Photograph 3: Looking north at Tree Stand D (May 12th, 2018).

Photograph 4: Looking east at Tree Stand E. Tributary #3 is shown at the left (May 12th, 2018).

Photograph 5: Looking north at Tree Stand F (grove of Manitoba Maple) (May 12th, 2018).

613-620-2255
mckinleyenvironmental@gmail.com
www.mckinleyenvironmental.com

3.3.2 Open Habitats

The majority of the Site is dominated by open habitats including Cultivated Fields planted with soybeans and Fallow Fields (Graminoid Meadow). The Fallow Fields (Graminoid Meadow) include areas that have been farmed recently (within the last several years), but which were left fallow in the summer of 2018. Open habitats are shown in Figure 3 and are described below:

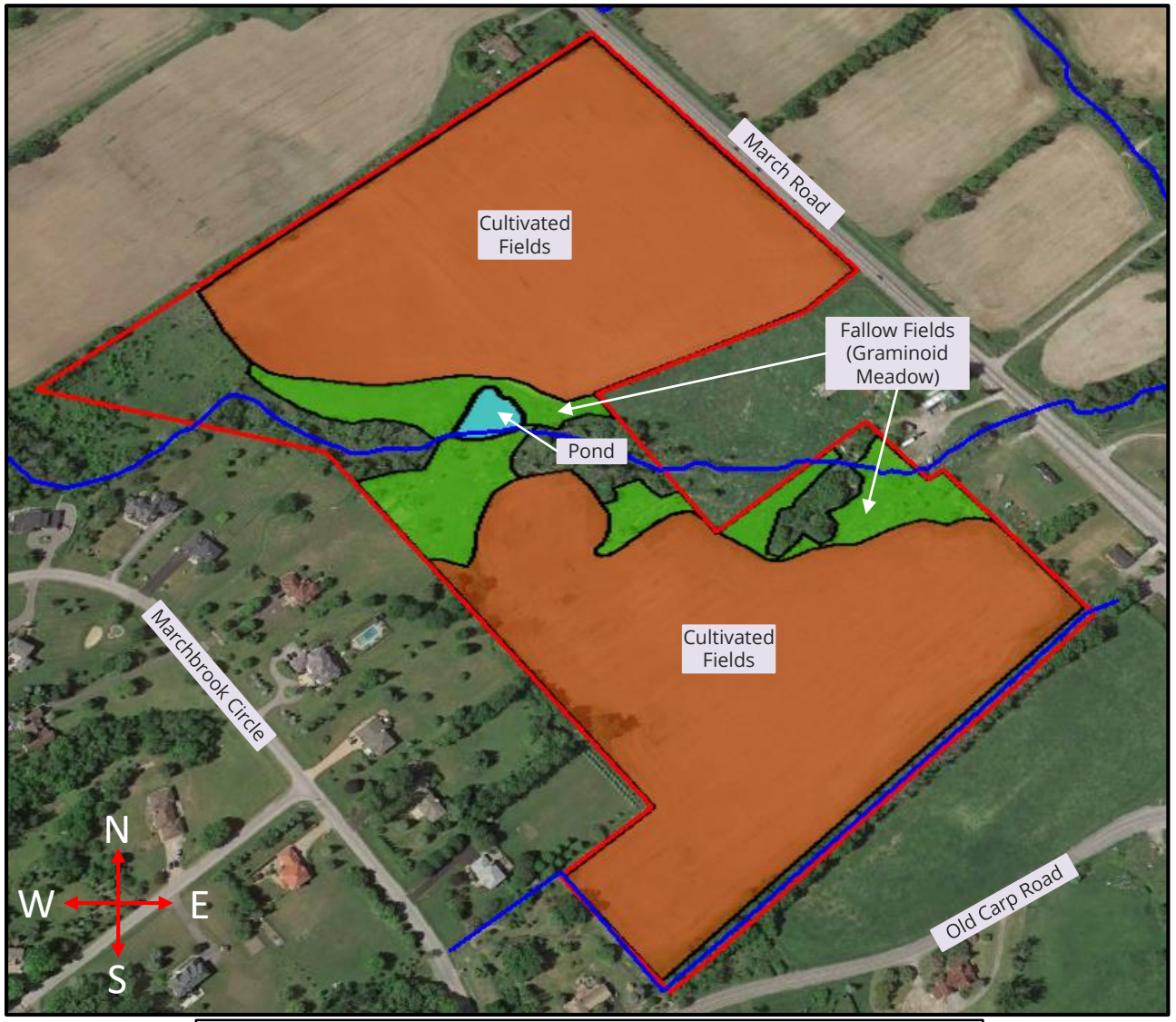
- **Cultivated Fields:** Areas under cultivation in 2018 are shown in Figure 3. The fields were observed to be cleared and planted with soybeans in the summer of 2018. The southern Cultivated Field has an isolated 114 cm diameter at breast height (dbh) Bur Oak growing near the western property line.
- **Fallow Fields (Graminoid Meadow):** The Fallow Fields (Graminoid Meadow) consist of areas that have been farmed in recent years, but which were fallow at the time of the site surveys (summer of 2018). The Fallow Fields (Graminoid Meadow) are dominated by Meadow Grass, Orchard Grass, and Brome Grass, while Reed Canary Grass is dominant in wet areas adjacent to the North Branch (Tributary #3). The Fallow Fields (Graminoid Meadow) surrounding the North Branch appear to have been mowed less recently, and have comparatively more shrub and tree cover, although woody vegetation remains <10%. Tree and shrub cover is generally sparse within the Fallow Fields (Graminoid Meadow), and includes isolated Trembling Aspen, White Ash, American Elm, Bur Oak, and White Cedar stems, as well as Common Buckthorn, Wild Red Raspberry, Hawthorn, Riverbank Grape, Red Osier Dogwood, Prickly Ash, Domestic Apple, and Tartarian Honeysuckle shrubs.

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

FIGURE 3: OPEN HABITATS

Brigil Kanata North Development

Combined Environmental Impact Statement and Tree Conservation Report



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

Photograph 6: Looking west across the Southern Cultivated Field (June 8th, 2018).

Photograph 7: Looking west across the Northern Cultivated Field (June 21st, 2018).

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

Photograph 8: Looking west at the Fallow Field (Graminoid Meadow) northwest of the inline pond (May 12th, 2018).

Photograph 9: Looking north at the Fallow Field (Graminoid Meadow) southwest of the inline pond (June 8th, 2018).

3.4 Wetlands and Watercourses

3.4.1 North Branch (Tributary #3) and the Inline Pond

The North Branch (Tributary #3) of Shirley's Brook flows through the Site in a northwest to southeast direction (Refer to Figure 4, below). The Kanata North Urban Expansion Area (KNUEA) Community Design Plan (CDP) and the associated Environmental Management Plan (EMP) establish a minimum 40 m wide corridor which is to be retained and/or enhanced surrounding the tributaries of Shirley's Brook (Novatech 2016a; 2016b). Within the Site, the minimum 40 m wide North Branch corridor is approximately 1.58 ha in size. The North Branch is not proposed to be realigned within the Site, however, the existing inline pond that is found along the North Branch will be reshaped during the development of the Site, in order to fit the inline pond within the minimum 40 m wide watercourse corridor. Habitat restoration and enhancement works will also be undertaken within the minimum 40 m wide corridor in order to improve the quality of the habitat for Blanding's Turtles, fish, and other wildlife. The proposed habitat restoration and enhancement works are discussed in greater detail in Section 4.2.2.

Within the Site, the North Branch channel has well-defined banks. The substrate includes many areas of exposed bedrock within the channel bed, as well as areas with a silt and grass substrate. The channel width is approximately 1 m to 3 m in most areas, although the channel width broadens to 5 m in some areas. On May 12th, 2018, the North Branch was observed to be relatively fast flowing with shallow water depths throughout the system (<30 cm deep). The majority of the North Branch was observed to contain limited standing water with no flow on June 21st, 2018. MEP (2016) also noted that the North Branch had limited standing water in the summer of 2013. The North Branch conveys substantial flows in the spring, but is prone to drying out in late summer, when standing water and flow throughout the system may be very limited. Upstream connection and the bulk of water flow is contributed from the upstream areas of the North Branch. While overland flow from within the Site likely contributes to the North Branch hydrology, the bulk of water flow originates from upstream areas.

Three (3) concrete weirs occur along the North Branch, each of which creates pooling conditions. The largest weir has created an open water inline pond in the central part of the Site. The remaining two (2) weirs have created smaller pools, which are present at each weir. The inline pond is a relatively shallow feature, with much of its substrate consisting of bedrock. The presence of bedrock at the bottom of the inline pond likely limits its functionality as Blanding's Turtle habitat, as Blanding's Turtles require soft substrate that they can burrow into for overwintering (OMNRF 2014a). The inline pond has a generally flat profile with approximately 50 cm of water depth noted on May 12th, 2018. MEP (2016) noted that standing water depths in the inline pond reached 75 cm in

the spring of 2013. The inline pond was observed to contract significantly in the late summer, with the wetted area of the inline pond reduced by as much as 50% by July 2018. Notably, the northern approximately 50% of the inline pond was dry by July 2018, whereas the southern half of the inline pond remained hydrated. The southern half of the inline pond is likely to remain hydrated throughout the summer in most years.

Vegetation found growing within the channel and along the banks of the North Branch (Tributary #3) included Reed Canary Grass, Queen Anne's Lace, Spotted Touch Me Not, Purple Loosestrife, and Common Cattail. The North Branch within the Site is partially shaded by the trees and shrubs found within Tree Stands D, E, and F (described above). Vegetation growing within the inline pond and around its margins included Broad Leaved Cattail, Broadleaf Arrowhead, Purple Loosestrife, Spotted Touch Me Not, and Pondweed. The inline pond is predominantly unshaded, with limited tree and shrub growth along its banks.

As described above in Section 2.0.2, due to the fact that the development of the Site will not involve the realignment and/or removal of the North Branch, a Headwaters Drainage Assessment (HDA) addressing the North Branch is not anticipated to be required.

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

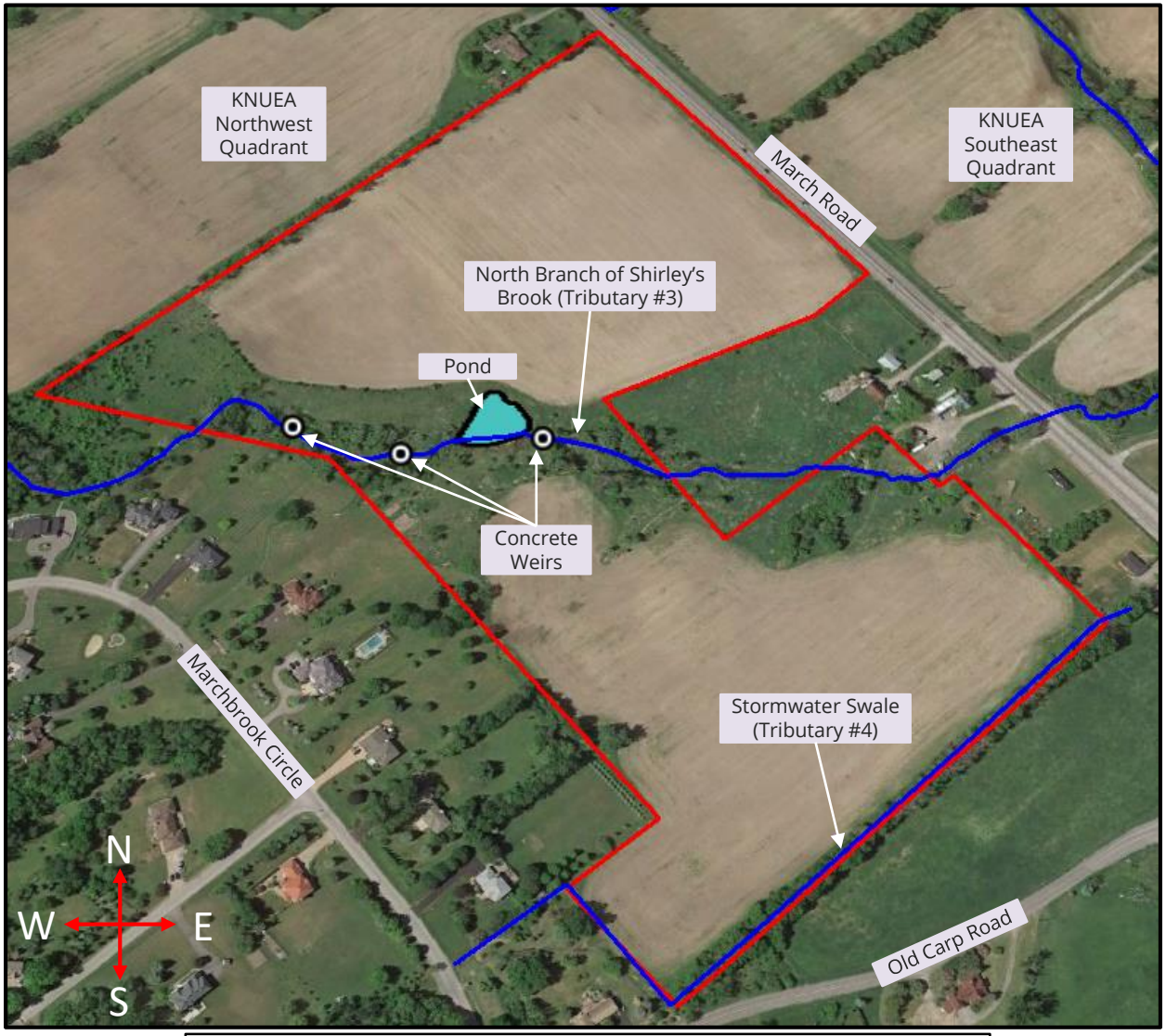
McKINLEY ENVIRONMENTAL SOLUTIONS

September 2020

FIGURE 4: AQUATIC HABITATS

Brigil Kanata North Development

Combined Environmental Impact Statement and Tree Conservation Report



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

Photograph 10: Looking east along the North Branch. The culverts under March Road are shown (beyond the eastern limit of the Site) (May 12th, 2018).

Photograph 11: Looking north along the North Branch in the eastern portion of the Site. The collapsing barn is shown in the background (May 12th, 2018).

Photograph 12: Looking north at the inline pond. Note that the water level is relatively shallow (May 12th, 2018).

Photograph 13: Looking west at the inline pond. Note that the water level is relatively shallow (June 21st, 2018).

Photograph 14: Looking west at the concrete weir (west of the inline pond) (May 12th, 2018).

Photograph 15: Upstream section of the North Branch at the western limit of the Site. Note the exposed bedrock in the channel (May 12th, 2018).

3.4.2 Stormwater Swale (Tributary #4)

A Stormwater Swale (Tributary #4) flows through the Site in a southwest to northeast direction. The Stormwater Swale occurs within Deciduous Hedgerow B, and is fed by stormwater outflow from the adjacent Marchbrook Circle subdivision and the roadside ditch of Old Carp Road. The Stormwater Swale was observed to be predominantly dry with limited areas of standing water (<10 cm) and no flow on May 12th, 2018. The feature was observed to be entirely dry on May 29th, 2018. MEP (2016) also noted that the feature was predominantly dry in the spring and summer of 2013. The Stormwater Swale is likely only hydrated for limited periods immediately following the spring snow melt and after major storms. No fish were documented within the Stormwater Swale during the fish surveying (MEP 2016).

The Stormwater Swale does not include significant aquatic vegetation, and the feature's substrate is dominated by woody debris. The feature is fully shaded by Deciduous Hedgerow B (described above). The channel width is approximately 0.5 m to 1 m wide. MEP (2016) previously assessed the Stormwater Swale and determined that the feature is not ecologically significant. As such, a Headwaters Drainage Assessment (HDA) assessing the Stormwater Swale is not anticipated to be required. The Kanata North Urban Expansion Area (KNUEA) Environmental Management Plan (EMP) identified that the Stormwater Swale will be decommissioned, and flows that are currently conveyed by the feature will be rerouted to the North Branch via a new stormwater sewer (Novatech 2016b).

Photograph 16: Downstream (east) section of the Stormwater Swale (Tributary #4). The feature is found within Deciduous Hedgerow B (May 12th, 2018).

Photograph 17: Downstream (east) section of the Stormwater Swale (Tributary #4). The feature is found within Deciduous Hedgerow B. Note that the feature was completely dry by late May (May 29th, 2018).

Photograph 18: Upstream (west) section of the Stormwater Swale (Tributary #4). The feature is found within Deciduous Hedgerow B (May 12th, 2018).

Photograph 19: Upstream (west) section of the Stormwater Swale (Tributary #4). Stormwater flows to the feature from the Marchbrook Circle subdivision and the roadside ditch along Old Carp Road (May 12th, 2018).

3.4.3 Fish Habitat

In 2013, fish sampling was completed at four (4) locations along the North Branch and the quality of the aquatic habitat was described to support the Kanata North Urban Expansion Area (KNUEA) Environmental Management Plan (EMP) (MEP 2016). MEP (2016) noted that the three (3) concrete weirs, as well as rises created by bedrock outcrops within the channel, likely represent barriers to fish passage, except during periods with high water levels. Five (5) species of fish were documented within the North Branch. These included Central Mudminnow, Northern Redbelly Dace, Finescale Dace, Blacknose Dace, and Creek Chub. Within the inline pond, six (6) species were captured, including Central Mudminnow, Northern Redbelly Dace, Creek Chub, White Sucker, Brook Stickleback, and Pumpkinseed. Each of these are common species typically found in degraded systems and areas of low quality fish habitat. MEP (2016) concluded that the North Branch appears to add to the overall productivity of the Shirley's Brook system, especially during the spring period. However, water depths are comparatively low and the North Branch is prone to drying out. As such, fish communities may migrate downstream in the summer in some years. As noted above, the North Branch will be preserved within the minimum 40 m wide watercourse corridor, thereby maintaining the associated fish habitat.

In 2013, MEP (2016) also completed fish sampling at one (1) location along the Stormwater Swale (Tributary #4). No fish were captured within the Stormwater Swale, and the feature does not appear to provide direct fish habitat.

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

3.5 Adjacent Lands and Significant Features

The Site is located along the west side of March Road, with the Kanata North Urban Expansion Area (KNUEA) Northwest Quadrant located directly to the north, and the KNUEA Southeast Quadrant located on the opposite side of March Road. 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. An existing rural estate subdivision (the Marchbrook Circle subdivision) is located west of the Site. The 1145 Old Carp Road property, which consists of a vacant field, is located south of the Site. March Road, as well as the existing developed portions of 927 March Road and 941 March Road, are located east of the Site. The Site is within the urban area of the City of Ottawa.

The presence of aquatic habitats within and adjacent to the Site is described above in Section 3.4. The presence of Significant Wildlife Habitat and Species at Risk habitat is described below in Sections 3.6 and 3.7. No other significant natural heritage features have been identified within the Site or within the immediately adjacent lands.

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

3.6 Wildlife and Significant Wildlife Habitat

Wildlife and bird species encountered during the surveys of the Site are listed in Appendix B. As discussed below in Section 3.7, the habitat of Barn Swallows (threatened), Blanding's Turtles (threatened), and Snapping Turtles (special concern) was confirmed within the Site. The habitat of Species at Risk (SAR) is considered Significant Wildlife Habitat (SWH) (Refer to Section 3.7) (OMNRF 2014b). As noted above in Section 3.4.3, the North Branch (Tributary #3) of Shirley's Brook provides warm-water fish habitat. Fish habitat is also considered SWH (OMNRF 2014b). As described above in Section 3.4.3, the Stormwater Swale (Tributary #4) does not provide direct fish habitat.

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 Site (OMNRF 2014b).

Breeding bird survey points are shown below in Figure 5. A total of forty nine (49) bird species were noted within the Site. The majority of species are common migratory birds typically found in suburban and rural areas. Nesting Barn Swallows, non-breeding Bobolink, and foraging Chimney Swifts were also noted within the Site (discussed below). Other wildlife observed within the Site included Eastern Grey Squirrel, Red Squirrel, Eastern Chipmunk, White Tailed Deer, Common Raccoon, Groundhog, Coyote, Green Frog, Grey Tree Frog, Spring Peeper, Snapping Turtle (discussed below), and Common Garter Snake.

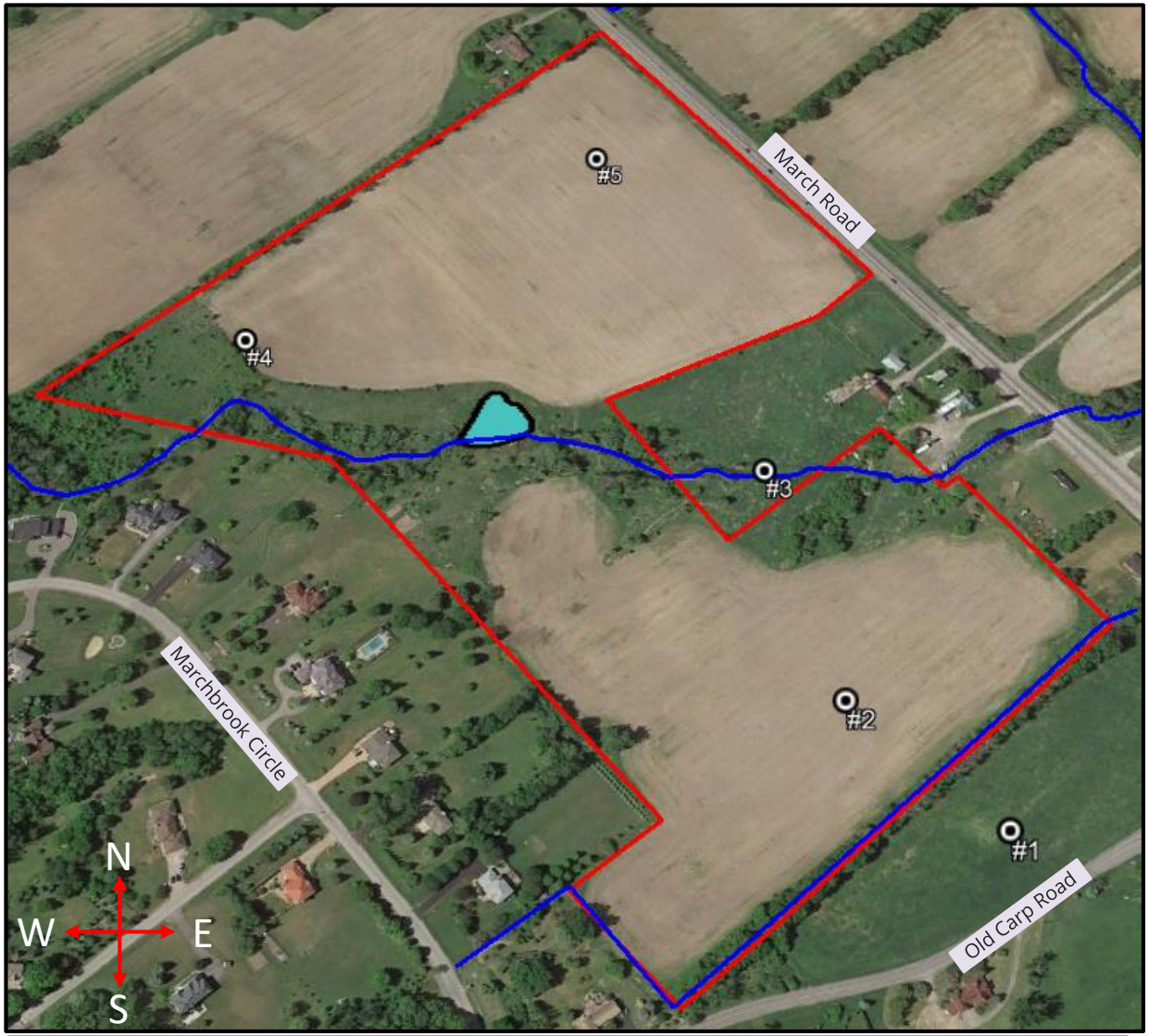
McKINLEY ENVIRONMENTAL SOLUTIONS
613-620-2255
mckinleyenvironmental@gmail.com
www.mckinleyenvironmental.com

McKINLEY ENVIRONMENTAL SOLUTIONS

FIGURE 5: BIRD SURVEY POINTS

Brigil Kanata North Development

Combined Environmental Impact Statement and Tree Conservation Report



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

Photograph 20: Coyote observed within the northern part of the Site (June 8th, 2018).

613-620-2255
mckinleyenvironmental@gmail.com
www.mckinleyenvironmental.com

3.7 Species at Risk

3.7.1 Bobolink and Eastern Meadowlark

Bobolink and Eastern Meadowlark can be found breeding in natural tallgrass prairies, open meadows, pastures, fallow fields, and hayfields (OMNRF 2014e; OMNRF 2014f). Both species nest primarily in grass (graminoid) dominated fields. The Fallow Fields (Graminoid Meadow) found within the Site represent potentially suitable breeding habitat for both species. The Bobolink breeding season is defined by the Ontario Ministry of Natural Resources and Forestry (OMNRF) as occurring between the last week of May and the first week of July (OMNRF 2011a). A Bobolink (threatened) was noted at Bird Survey Point #3 prior to the start of the breeding bird season (May 12th, 2018). During the bird surveys that were completed during the breeding bird season (May 29th, June 8th, and June 21st, 2018), no evidence of Bobolink was noted within the Site. This suggests that the early season sighting of a Bobolink within the Site (on May 12th, 2018) likely represented a migrating bird, which had not yet established its 2018 breeding territory. The lack of Bobolink sightings during the breeding bird season indicates that the Site did not provide Bobolink breeding habitat in the summer of 2018. It should be noted that the *General Habitat Description for Bobolink* defines Bobolink habitat based on the presence of nests and breeding territories (OMNRF 2014e). Therefore, evidence of Bobolink breeding within a given area is required in order for the Site to qualify as Bobolink habitat. The lack of Bobolink sightings during the breeding bird season suggests that the Site did not provide Bobolink habitat in the summer of 2018. No evidence of Eastern Meadowlark was documented within the Site during the 2018 breeding bird surveys. Bobolink and Eastern Meadowlark are therefore unlikely to be a significant concern for the proposed development.

Photograph 21: Bobolink found north of Bird Survey Point #3 prior to the breeding season (May 12th, 2018).

3.7.2 Butternut Trees (TCR)

Vegetation surveys were completed in 2013 as part of the Existing Conditions Natural Environment Features Report, and no Butternut Trees were noted within the Kanata North Urban Expansion Area (KNUEA) Southwest Quadrant (which includes the Site) (MEP 2016). During the 2018 vegetation surveys and tree inventory, no Butternut Trees were noted within the Site. Therefore, a Butternut Health Assessment (BHA) was not required to support the proposed development. Butternut Trees are therefore unlikely to be a significant concern for the proposed development.

3.7.3 Blanding's Turtle

Detailed Blanding's Turtle surveying was completed in 2014 to support the Kanata North Urban Expansion Area (KNUEA) Environmental Management Plan (EMP) (MEP 2016). During the targeted turtle surveying, the only confirmed occurrence of a Blanding's Turtle within the KNUEA was a single sighting of a turtle within the inline pond found west of 1035 March Road (within the Northwest Quadrant). More recently, in August 2017 a dead Blanding's Turtle (likely killed by road mortality) was found along March Road, adjacent to the entrance to the 936 March Road driveway. The August 2017 road mortality sighting was reported to the Ontario Ministry of Natural Resources and Forestry (OMNRF). The turtle found adjacent to the 936 March Road driveway was found just north of the North Branch of Shirley's Brook (Tributary #3), where the watercourse runs through the 910 March Road property (on the east side of March Road). This suggests that Blanding's Turtles were continuing to utilize the tributaries of Shirley's Brook in the vicinity of the KNUEA Southwest Quadrant, as recently as 2017. The occurrence of confirmed Blanding's Turtle sightings within 2 km of the Site automatically designates suitable areas as habitat for the species (OMNRF 2014a). However, the fact that only two (2) individuals have been sighted in the Kanata North 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 surveying 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 future Overall Benefit Permit application (discussed in Section 4.4.1), 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:

- **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). Although Blanding's Turtles can overwinter in ponds, the inline pond found within the Site is unlikely to provide Category 1 habitat, due to the fact that the substrate of the inline pond predominantly consists of bedrock (Refer to Section 3.4.1). The presence of bedrock at the bottom of the inline pond likely limits its functionality as potential

Blanding's Turtle overwintering habitat, as turtles require soft substrates that they can burrow into for overwintering (OMNRF 2014a). As such, the inline pond found along the North Branch was not previously identified by the OMNRF as a potential overwintering location, and was instead designated as Category 2 habitat. 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 significant areas of natural exposed sand or gravel, and no artificial stockpiles within the Site. During the Blanding's Turtle habitat mapping exercise, no Category 1 habitat was identified within the Site (DST 2015). ***Under existing conditions, the total extent of Category 1 habitat shown within the Site is 0.00 ha (DST 2015).***

- **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 tributaries of Shirley's Brook (including the North Branch) and the surrounding 30 m provides Category 2 habitat. Within the Site, the inline pond found along the North Branch also provides Category 2 habitat. In consultation with the OMNRF, it was determined that the Stormwater Swale (Tributary #4) does not qualify as Category 2 habitat (DST 2015). The majority of the Category 2 habitat that is found within the Site is considered low quality habitat (DST 2015). ***The total amount of Category 2 habitat that was identified within the KNUEA Southwest Quadrant under existing conditions is 3.96 ha (DST 2015). Approximately 1.08 ha of the Category 2 habitat occurs within the 927 March Road and the 941 March Road properties (outside the Site limits). Approximately 2.88 ha of the Category 2 habitat occurs within the Site.***
- **Category 3 Habitat:** Category 3 habitat includes terrestrial areas extending up to 250 m from the edge of Category 2 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 Category 2 habitat features (OMNRF 2014a). The portions of the Site that are within 250 m of the North Branch and the inline pond are shown as Category 3 habitat. ***As shown below, approximately 1.0 ha of the Site occurs beyond the limit of the Category 3 habitat (DST 2015). As noted above, approximately 2.88 ha of the Site falls within the definition of Category 2 habitat. The remaining approximately 16.1 ha of the Site qualifies as Category 3 habitat.***

The quality of the Blanding's Turtle habitat within the Site, as well as potential impacts to the habitat and regulatory requirements, are discussed below in Section 4.4.1.

425000 425500 426000 426500 427000 427500 428000

5024500 5024000 5023500 5023000

Quadrant B - Valecraft

Quadrant D - Metcalfe Realty Company Limited

Quadrant A - Junic/Multivesco

Quadrant C - Brigil

March Road

March Valley Road

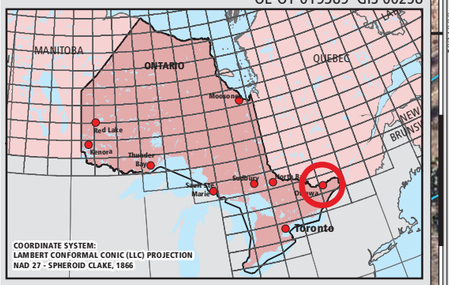
Portion of the Brigil Property that is Beyond the Category 3 Habitat (1.0 ha)

Adjacent Property

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 and Chimney Swift

Barn Swallows were observed foraging throughout the Site during each breeding bird survey. A maximum of eight (8) individual birds were observed foraging in a group on May 29th and June 21st, 2018. The collapsing barn is the only structure within the Site. The location of the collapsing barn is shown below in Figure 6. The collapsing barn has wooden walls and a tin roof. The roof has a large hole that allows Barn Swallows to enter and exit. Two (2) Barn Swallow nests were observed within the collapsing barn (one (1) active nest and one (1) inactive nest). The active nest included wet mud around its rim, which indicates that it was being maintained by nesting birds. The inactive nest was degraded and incomplete, indicating that it was unlikely to be in use by nesting birds. Barn Swallow regulatory requirements are discussed below in Section 4.4.3.

Three (3) Chimney Swifts were observed foraging high above Bird Survey Point #1 (southern part of the Site) on June 8th, 2018. However, it should be noted that Chimney Swifts forage during the daytime up to several kilometers from their nests, and hence the presence of the species foraging above the Site does not necessarily indicate that they are nesting in close proximity (SARO 2020). The collapsing barn does not have a chimney, and therefore the Chimney Swifts that were observed foraging over the Site are unlikely to be nesting within the Site. Chimney Swifts are therefore unlikely to be a significant concern for the proposed development.

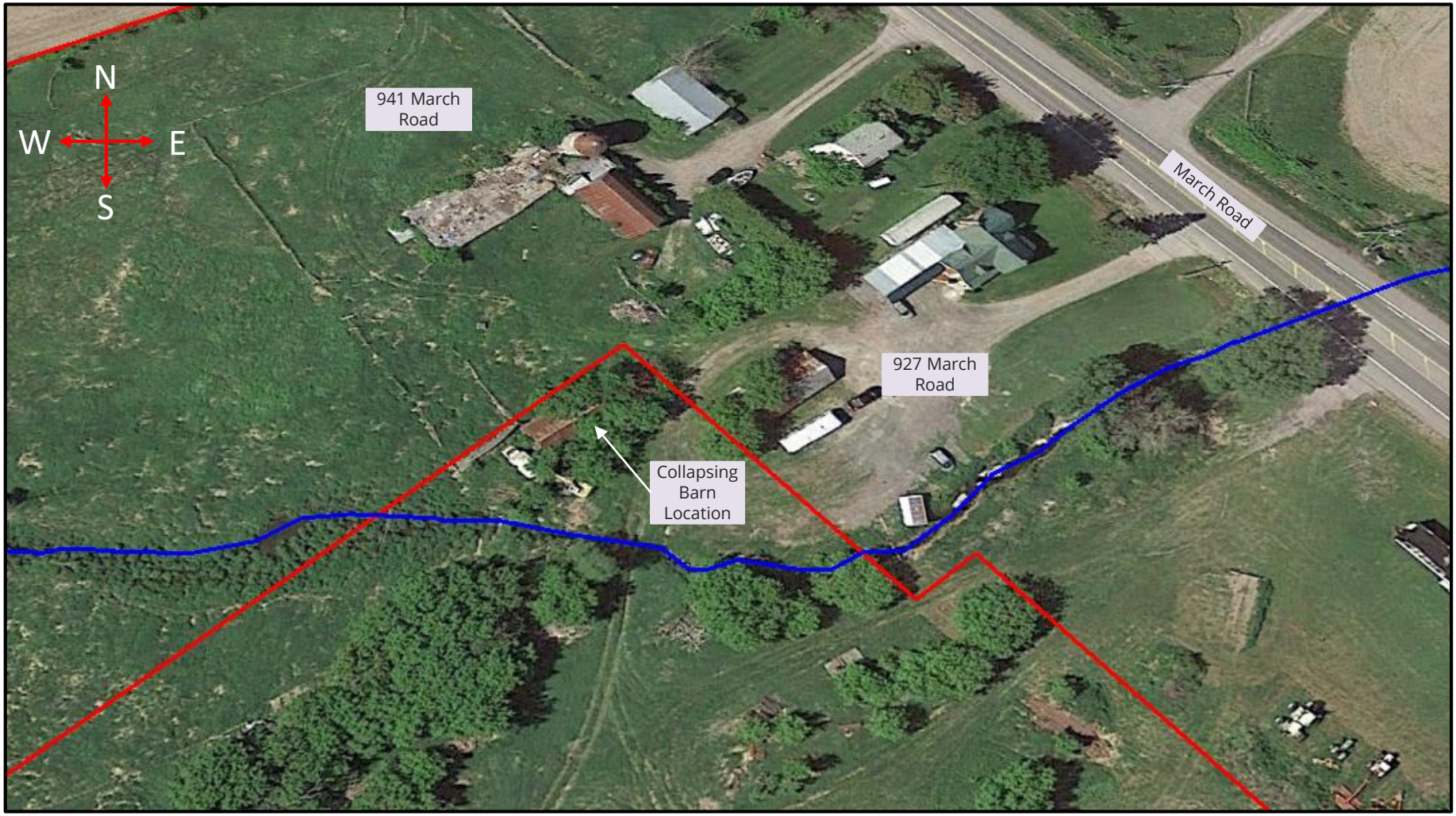
McKINLEY ENVIRONMENTAL SOLUTIONS

FIGURE 6: COLLAPSING BARN LOCATION

September 2020

Brigil Kanata North Development

Combined Environmental Impact Statement and Tree Conservation Report



- Site Boundary
- Tributaries of Shirley's Brook

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

Photograph 22: Looking southeast at the collapsing barn. One (1) active and one (1) inactive Barn Swallow nest were observed within the collapsing barn (May 12th, 2018).

Photograph 23: Active Barn Swallow nest (center) and inactive Barn Swallow nest (right) within the collapsing barn (May 12th, 2018).

Photograph 24: Barn Swallow observed roosting on a wire outside the collapsing barn (May 12th, 2018).

3.7.5 Additional Species at Risk

The Natural Heritage Information Center (NHIC) records for the nine (9) grids that include and surround the Site were reviewed. This included an area 3 km x 3 km in size, from which all published Species at Risk (SAR) records were noted (OMNRF 2020). The Ontario Ministry of Natural Resources and Forestry (OMNRF) provided a Potential Species at Risk (SAR) List for the Geographic Township of March (Appendix C). In addition to Bobolink, Eastern Meadowlark, Butternut Trees, Blanding's Turtle, Barn Swallow, and Chimney Swift (discussed above), the following SAR were identified as potentially occurring within the vicinity:

- Little Brown Bat – Endangered
- Northern Long Eared Bat – Endangered
- Tricolored Bat – Endangered
- Eastern Small Footed Myotis – Endangered
- American Eel – Endangered
- Lake Sturgeon – Threatened
- Hickorynut – Endangered
- American Ginseng – Endangered
- Bank Swallow – Threatened
- Least Bittern - Threatened
- Loggerhead Shrike – Endangered
- Rusty Patched Bumblebee – Endangered
- Transverse Lady Beetle – Endangered
- Bald Eagle – Special Concern
- Black Tern – Special Concern
- Horned Grebe – Special Concern
- Canada Warbler – Special Concern
- Eastern Wood Pewee – Special Concern
- Wood Thrush – Special Concern
- Peregrine Falcon – Special Concern
- Rusty Blackbird – Special Concern
- Snapping Turtle – Special Concern
- Eastern Musk Turtle – Special Concern
- Northern Map Turtle – Special Concern
- River Redhorse – Special Concern
- Silver Lamprey – Special Concern
- Monarch – Special Concern
- Eastern Whip Poor Will – Threatened

- Common Nighthawk – Special Concern

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

- **Little Brown Bat, Northern Long Eared Bat, Tricolored Bat, Eastern Small Footed Myotis**: No caves, bedrock fissures, mining shafts, abandoned buildings, or other features which may function as bat hibernacula habitat were noted within the Site. 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 3.3.1, there are no forested habitats within the Site. Therefore, Little Brown Bat, Northern Long Eared Bat, Eastern Small Footed Myotis, and Tricolored Bat are not likely to be a significant concern for the proposed development.
- **American Eel and Lake Sturgeon:** American Eel and Lake Sturgeon are fish species that are found in association with the Ottawa River (SARO 2020). The aquatic habitats within the Site are too small and too ephemeral to provide habitat for these species, and therefore American Eel and Lake Sturgeon are unlikely to be a significant concern for the proposed development.
- **Hickorynut:** Hickorynut is a freshwater mussel found in association with the Ottawa River (SARO 2020). The aquatic habitats within the Site are too small and too ephemeral to provide habitat for Hickorynut, and therefore Hickorynut are unlikely to be a significant concern for the proposed development.
- **American Ginseng:** American Ginseng are found in association with Deciduous Forests (SARO 2020). As noted above in Section 3.3.1, there are no forest habitats found within the Site, and therefore American Ginseng are unlikely to be a significant concern for the proposed development.
- **Bank Swallow:** Bank Swallows nest in natural and artificial deposits of sand and silt with vertical faces (SARO 2020). There are no significant areas of exposed sand or silt within the Site, and no stockpiles currently exist. As such, Bank Swallows are unlikely to be a significant concern for the proposed development.
- **Least Bittern:** Least Bittern breed in open marshes and wetlands. As described above in Section 3.4, there are no significant areas of marsh or open wetland habitat within the Site. Least Bittern are therefore unlikely to be a significant concern for the proposed development.
- **Loggerhead Shrike:** Loggerhead Shrike are found nesting in large pastures and grasslands with scattered low trees and thorny shrubs. They also nest and forage in alvars (SARO 2020). As discussed above in Section 3.3.2, the Site does not provide open pasture, alvar, and/or grassland habitat that is large enough to support Loggerhead Shrike. Therefore, Loggerhead Shrike are not likely to be a significant concern for the proposed development.

- **Rusty Patched Bumblebee and Transverse Lady Beetle:** Rusty Patched Bumblebee is exceedingly rare in Ontario and the only sightings in the province since 2002 have been at the Pinery Provincial Park on Lake Huron (SARO 2020). There have been no records of Transverse Lady Beetle in Ontario since 1990 (SARO 2020). As such, Rusty Patched Bumblebee and Transverse Lady Beetle are unlikely to be a significant concern for the proposed development.
- **Bald Eagle:** Bald Eagles are a species of Special Concern, and therefore their habitat is not protected by the Ontario Endangered Species Act (ESA). Bald Eagles are primarily found nesting adjacent to large lakes and rivers (e.g. the Ottawa River) (SARO 2020). Due to the absence of large bodies of water in the vicinity of the Site, Bald Eagles are unlikely to be present. As such, Bald Eagles are unlikely to be a significant concern for the proposed development.
- **Black Tern and Horned Grebe**: Black Terns build their nests in shallow marshes (SARO 2020). Horned Grebe build their nests in marshes, ponds, and shallow bays (SARO 2020). As discussed above, there are no large wetland habitats or ponds found within the vicinity of the Site. The wetland vegetation found along the North Branch and within the inline pond is much too small for Black Terns and/or Horned Grebes to nest. Therefore, Black Terns and Horned Grebes are unlikely to be a significant concern for the proposed development.
- **Canada Warbler, Eastern Wood Pewee, Wood Thrush**: Canada Warbler, Eastern Wood Pewee, and Wood Thrush are all species that are found nesting in forested areas (SARO 2020). As discussed above in Section 3.3.1, there are no forested habitats within the Site, and therefore Canada Warbler, Eastern Wood Pewee, and Wood Thrush are unlikely to be a significant concern for the proposed development.
- **Peregrine Falcon:** Peregrine Falcons nest on steep cliff edges and at the top of tall buildings in urban areas (SARO 2020). There are no potentially suitable nest sites for Peregrine Falcons within the Site, and therefore they are unlikely to be a significant concern for the proposed development.
- **Rusty Blackbird**: Rusty Blackbirds breed in coniferous forest near wetlands (SARO 2020). As discussed above in Section 3.3.1, there are no forested habitats within the Site, and therefore Rusty Blackbird are unlikely to be a significant concern for the proposed development.
- **Snapping Turtle:** A Snapping Turtle was observed within the North Branch (Tributary #3) on May 12th, 2018 and within the inline pond on June 8th, 2018. Snapping Turtles are found in many wetland and watercourse habitats, and hence they can be assumed to be present throughout the North Branch and the inline pond (SARO 2020). As noted above, the North Branch is considered Significant Wildlife Habitat due to the presence of Snapping Turtles and fish. The North Branch and the inline pond will be protected by the mitigation measures discussed below in Section 4.2. It should be noted that Snapping Turtles are a species of special concern, and therefore their habitat is not protected under the Ontario ESA. The wildlife and Species at Risk

mitigation measures discussed in Sections 4.4.4 and 4.4.5 are designed to mitigate potential impacts to individual Snapping Turtles at the construction stage.

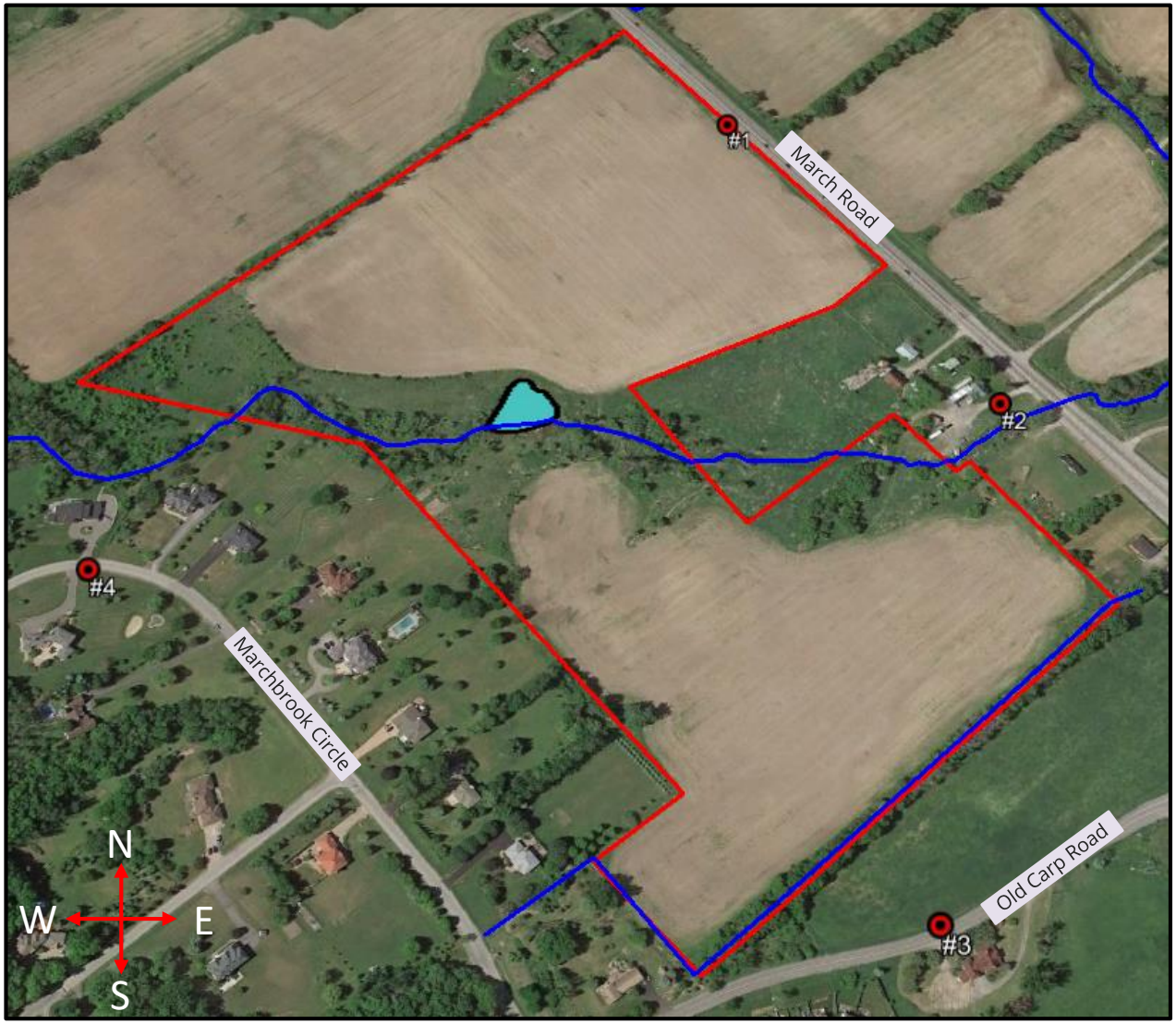
- **Eastern Musk Turtle, Northern Map Turtle, River Redhorse, Silver Lamprey**: Eastern Musk Turtle, Northern Map Turtle, River Redhorse, and Silver Lamprey are all species of special concern, and therefore their habitat is not regulated under the Ontario ESA. All four (4) species are primarily riverine species, and typically they would not be found within small flowing watercourses such as the North Branch (SARO 2020). Most sightings of these species in the region are associated with the Ottawa River and its major tributaries (SARO 2020). Therefore, Eastern Musk Turtle, Northern Map Turtle, River Redhorse, and Silver Lamprey are unlikely to be a significant concern for the proposed development.
- **Monarch Butterfly:** Monarch Butterflies are found in association with their milkweed host plants (SARO 2020). As described above in Section 3.3.1, Common Milkweed was noted within the Site in association with the Cultural Thicket. However, the density of Common Milkweed was not high, and no Monarch Butterflies were noted within the Site during the site visits. It should be noted that Monarch Butterflies are a species of special concern, and therefore their habitat is not protected under the Ontario ESA. The wildlife and Species at Risk mitigation measures discussed below in Section 4.4.4 will help to mitigate any potential impacts to individual Monarch Butterflies at the construction stage.
- **Eastern Whip Poor Will and Common Nighthawk:** The Eastern Whip Poor Will survey results are summarized below in Table B. Survey sites are shown in Figure 7. In addition to surveying for Eastern Whip Poor Will, the Eastern Whip Poor Will call survey method is also effective for detecting Common Nighthawk. No evidence of either species was documented during the surveys. The *General Habitat Description for the Eastern Whip Poor Will* (OMNRF 2014c) 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). As noted above, the majority of the Site consists of open agricultural habitats, with comparatively little tree cover. The Site generally does not provide the 'mosaic' of open and closed space preferred by Eastern Whip Poor Will. Common Nighthawk generally breed in areas with bare ground including recently burned areas, rock barrens, peat bogs, lake shores, and mines/quarries (SARO 2020). The majority of the Site includes well established groundcover or planted soybeans. Therefore, the Site generally does not provide suitable habitat for Common Nighthawk. Neither species was observed during the Eastern Whip Poor Will Call surveys, and therefore Eastern Whip Poor Will and Common Nighthawk are unlikely to be a significant concern for the proposed development.

McKINLEY ENVIRONMENTAL SOLUTIONS

FIGURE 7: WPWI SURVEY POINTS

Brigil Kanata North Development

Combined Environmental Impact Statement and Tree Conservation Report



- Site Boundary
- Tributaries of Shirley's Brook
- Whip Poor Will Survey Points

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

Table B: Whip Poor Will Survey Results						
Survey Date	**Temperature**	**Conditions**	**Wind Speed**	**Start Time**	**Whip Poor Will Calls**	**Other Species**
May 22nd, 2018	11°C	Clear Skies	1 kph	11:24 PM	None	WPW 1 - Spring Peepers Heard East of March Road WPW 2 - Same as WPW 1 WPW 3 - Spring Peepers Heard North in North Branch WPW 4 - Spring Peepers Heard Northwest Along North Branch
May 29th, 2018	18°C	Clear Skies	10 kph	10:30 PM	None	WPW 1 - Spring Peepers and Grey Treefrogs Heard East of March Road WPW 2 - Same as WPW 1 WPW 3 - Spring Peepers and Grey Treefrogs Heard North in North Branch WPW 4 - Grey Treefrogs Heard South Beyond Site
June 22nd, 2018	20°C	60% Clear	4 kph	11:00 PM	None	WPW 1 - Green Frogs Heard East of March Road WPW 2 - None WPW 3 - None WPW 4 - None

3.8 Linkages

Existing development along March Road, March Road itself, Old Carp Road, and the Marchbrook Circle rural estates subdivision surround the Site on three (3) sides. Each of these developments/roads represents a barrier to wildlife movement, which likely discourages most terrestrial species from utilizing the Site as a major linkage corridor. Due to the fact that the Site does not lie between adjacent undeveloped areas, it is unlikely to provide a significant linkage function for most terrestrial species.

Aquatic wildlife species, including fish, Snapping Turtles, and Blanding's Turtles, may utilize the North Branch (Tributary #3) as a movement corridor to traverse the Site. The watercourse and its surrounding riparian corridor provide food, water, and shelter for species that utilize aquatic and riparian habitats. However, it should be noted that the three (3) concrete weirs that are present along the North Branch (Tributary #3), as well as rises created by bedrock outcrops within the channel, represent barriers to fish passage. Fish may be unable to traverse these barriers, except during periods with high water levels. Turtles are less susceptible to these barriers, as they can walk overland through adjacent riparian areas to go around the weirs/bedrock rises.

Following the future development of the Site and the adjacent quadrants of the Kanata North Urban Expansion Area (KNUEA), wildlife movement through the Site will be confined to the open space blocks that will provide the minimum 40 m wide corridor surrounding the North Branch. The 40 m wide corridor was designed to provide a viable movement corridor, in order to maintain connectivity through the KNUEA lands (Novatech 2016b).

4.0 DESCRIPTION OF ENVIRONMENTAL IMPACTS AND MITIGATION

4.1 Terrestrial Habitat and Tree Removal (TCR)

4.1.1 Tree Retention (TCR)

Tree cover within the Site is present within the two (2) Deciduous Hedgerows and the three (3) Tree Stands. As discussed above in Section 3.3.1, the majority of the Site consists of open agricultural lands without significant tree cover. Where trees overlap with areas identified for future development, trees generally cannot be preserved due to the density of the 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 Site are listed here):

- *Where feasible, trees are to be retained within the 40 m wide corridors surrounding the tributaries of Shirley's Brook;*
- *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*; and
- *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*.

During development of the Site, the tree retention recommendations of the KNUEA EMP will be implemented as follows:

- Where feasible, trees will be preserved within the open space blocks that will form the minimum 40 m wide corridor surrounding the North Branch (Tributary #3) of Shirley's Brook. The majority of Tree Stand D and portions of Tree Stands E and F overlap the minimum 40 m wide corridor. Wherever feasible, existing trees within Tree Stands D, E and F will be retained within the minimum 40 m wide watercourse corridor. The aquatic habitat enhancement features will be placed to take advantage of existing openings (discussed below in Section 4.2.2);
- A portion of Deciduous Hedgerow A runs in a west to east direction along the northern edge of the Community Park Block. Where compatible with the park design, portions of Deciduous Hedgerow A could be preserved along the northern edge of the Community Park Block. However, it should be noted that within the KNUEA Southwest Quadrant (which includes the

Site), the KNUEA EMP did not identify the retention of the vegetation communities that overlap the Community Park (Novatech 2016b). As such, tree retention within the Community Park Block should not be considered a priority from a conservation perspective, and should only be undertaken where tree retention is deemed compatible and/or beneficial to the design of the park; and

- The Site is anticipated to be developed in multiple phases over several years. However, it is anticipated that the entire Site will be cleared during the initial phase of development, as servicing and grading requirements are not anticipated to allow for phased tree removal.

4.1.2 Tree Preservation Mitigation Measures (TCR)

Trees that are to be retained within tree retention areas (described above), must be protected during construction. In addition, trees that occur beyond the Site on neighboring properties must also be protected. The following tree preservation 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. Tree retention areas 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 4.4.2 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 diameter at breast height (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.

4.1.3 Transplanting and Replanting (TCR)

In order to mitigate the loss of woody vegetation from tree clearing, trees and shrubs will be replanted selectively between lots, at the back and front of lots, and along roadways. The planting locations and specific planting requirements will be confirmed by a detailed Landscaping Plan. Plantings should emphasize the use of native trees and shrubs, which may include those identified in Appendix A. Planting of Ash trees should be avoided due to the high likelihood that any planted Ash trees will become infested with Emerald Ash Borer. Plantings recommendations within the minimum 40 m wide North Branch corridor are described below in Section 4.2.3.

4.2 Watercourses and Aquatic Habitats

4.2.1 North Branch (Tributary #3) - Setbacks

The Kanata North Urban Expansion Area (KNUEA) Environmental Management Plan (EMP) 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, the minimum 40 m wide corridor surrounding the North Branch is approximately 1.58 ha in size. The purpose of the minimum 40 m wide corridor surrounding the North Branch 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. In addition, trees provide shade which helps to cool surface water temperatures, while they also help to prevent erosion, stabilize banks, and enhance the 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 a watercourse 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 corridors surrounding the tributaries of Shirley's Brook established by the KNUEA EMP effectively require implementation of a 20 m setback from the watercourses (on each side). 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:** Within the Site, no significant slope and bank stability issues have been identified (Novatech 2016b). The retention of existing vegetation within the minimum 40 m wide corridor will help to minimize erosion potential.
B. **Natural Vegetation and Ecological Functions in the Setback Area:** As described above, vegetation cover within the minimum 40 m wide corridor will be retained in order to maintain ecological functions. As discussed below, habitat enhancement works are proposed to improve the habitat functionality for Blanding's Turtles, fish, and other wildlife.
C. **The Nature of the Abutting Waterbody and the Presence of the Floodplain:** The floodplain of the North Branch will be confined within the minimum 40 m wide watercourse corridor following the development of the Site (Novatech 2016b).
D. **No Negative Impacts on Fish Habitat:** As discussed above, the North Branch currently provides fish habitat for a tolerant warm-water fish community. The full length of the watercourse will be maintained, and hence there will be no direct loss of fish habitat. The proposed habitat enhancement works are intended to improve the quality of the habitat for fish (as well as other wildlife).

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

4.2.2 North Branch (Tributary #3) – Aquatic Habitat Enhancement Features

The habitat enhancement features for the Site were designed primarily to improve the quality of the North Branch as habitat for Blanding's Turtles (DST 2015). However, the habitat enhancement features will also improve the quality of the aquatic habitat for other organisms, including Snapping Turtles, amphibians, and fish.

The *Kanata North Community Design Plan – Blanding's Turtle Habitat Compensation Plan* (DST 2015) and the Kanata North Urban Expansion Area (KNUEA) Environmental Management Plan (EMP) (Novatech 2016b) outline in detail the proposed habitat enhancement works that are to be undertaken during the development of the Southwest Quadrant (which includes the Site). For the purposes of this Combined Environmental Impact Statement and Tree Conservation Report, and the Overall Benefit Permit application for Blanding's Turtle, typically a conceptual design for the habitat enhancement features would be deemed sufficient. The conceptual design for the habitat enhancement features is outlined below. It should be noted that at the time of report preparation, a Conceptual Design Plan for the 40 m wide North Branch watercourse corridor and the habitat enhancement features was being developed. The Conceptual Design Plan will be provided to the City of Ottawa and the Mississippi Valley Conservation Authority (MVCA) for review, prior to the obtainment of Draft Plan of Subdivision Approval. Typically the Overall Benefit Permit is obtained prior to initiating the detailed design process for habitat enhancement features, 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 Branch habitat enhancement works will be developed and submitted to the MVCA, the City of Ottawa, and the Ministry of Environment, Conservation, and Parks (MECP) for review and approval.

As described above, the full length of the North Branch throughout the Site will be retained, and the development will not require realignment of the existing channel. As such, the habitat enhancement features will be installed within and/or adjacent to the existing watercourse alignment. DST (2015) identified that the habitat enhancement features within the Southwest Quadrant, which includes the Site, should include one (1) Deep Pool, one (1) Artificial Nesting Area, one (1) Shallow Pan/Shallow Pool, three (3) Deep Channel Pockets, and Hard Substrate Features (which will be placed along the banks of the channel). The intention of the habitat enhancement features is both to offset the loss of Category 2 Blanding's Turtle habitat associated with the development, and to restore/enhance the ecological functions of the North Branch. As described above in Section 3.7.3, the Site includes 2.88 ha of the 3.96 ha of Category 2 Blanding's Turtle habitat that was shown to be present throughout the Southwest Quadrant (DST 2015). The remaining 1.08 ha of Category 2 habitat is present within the adjacent 927 March Road and 941 March Road properties (beyond the Site limits). As such, the Site accounts for approximately 73% of the Category 2 habitat within the Southwest Quadrant. In

order to reflect the proportion of the Category 2 habitat that is present within the Site, Brigil will undertake the installation of one (1) Deep Pool, one (1) Shallow Pan/Shallow Pool, two (2) Deep Channel Pockets, and Hard Substrate Features within the Site. The one (1) Artificial Nesting Area and the remaining Deep Channel Pocket, which were recommended to be installed by DST (2015), can be installed in future by the adjacent landowners during the future development of the 927 March Road and/or 941 March Road parcels.

The following is a summary of the conceptual design for the habitat enhancement features that will be installed as part of the current undertaking (Refer to DST (2015) and Novatech (2016b) for additional detail):

1. **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 approximately 0.07 ha of Category 1 habitat will be created within the watercourse corridor. This will include one (1) Deep Pool. The Deep Pool design is as follows:

    a. **The Deep Pool** will function as a potential hibernacula site for Blanding's Turtles, while also providing general foraging habitat and refuge areas for other aquatic wildlife (including fish). The Deep Pool will measure approximately 15 m x 45 m (675 m^2) and will be designed as an offline pond. The Deep Pool will include the following:
        - The Deep Pool should have a maximum depth of approximately 2 m and an average depth of approximately 1 m.
        - Approximately 1/3rd of the Deep Pool will be graded to maintain 2 m average water depth, while the remaining 2/3^{rds} of the Deep Pool will transition to an approximate average water depth of 1 m.
        - The Deep Pool will include similar substrate and vegetation characteristics as the existing channel sections. The banks of the Deep Pool will be seeded with a native wetland restoration mix/riparian vegetation mix.

2. **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 Category 2 habitat within the 40 m wide watercourse corridor will be enhanced by adding one (1) Shallow Pan/Shallow Pool, two (2) Deep Channel Pockets, and Hard Substrate Features. This will enhance approximately 0.06 ha of Category 2 habitat. The design for these features is as follows:

a. **The Shallow Pan/Shallow Pool** excavated adjacent to the channel will expand the wetted width and will provide an area where aquatic and semi-aquatic vegetation can grow to create marsh habitat for amphibians, turtles, and other aquatic wildlife. The 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).
    - The Shallow Pan/Shallow Pool will be dug to an average of approximately 30 cm below the channel grade, so that it maintains 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 adjacent to the channel for turtles, fish, and other aquatic wildlife.
    - The 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 will be interspersed along the banks of the channel to create habitat within and/or adjacent to the main channel.

The Shallow Pan/Shallow Pool and the Deep Channel Pockets are intended to provide Category 2 habitat enhancement and are designed to be offline features. The offline Shallow Pan/Shallow Pool and the Deep Channel Pockets will be excavated around the channel and will provide areas where riparian marsh vegetation can grow to create habitat for amphibians, turtles, and other aquatic wildlife. The Shallow Pan/Shallow Pool and the Deep Channel Pockets will be constructed within the floodplain of the North Branch, and hence will be directly connected to the North Branch seasonally during periods of high water (e.g. in spring and following major storms).

The Shallow Pan/Shallow Pool and the Deep Channel Pockets are intended to function primarily as riparian marsh habitat, with water depths ranging from standing water just above the surface (during dry periods) to 45 cm. The Shallow Pan/Shallow Pool and the Deep Channel Pockets will be dug 30 cm to 45 cm below the main channel, and hence are likely to retain water even during periods when the main channel may dry out. As such, the Shallow Pan/Shallow Pool and the Deep Channel Pockets will provide refuge habitat adjacent to the main channel. These features are unlikely to become anoxic, as the standing water will be very shallow. The Shallow Pan/Shallow Pool and the Deep Channel Pockets are intended to include riparian marsh vegetation, which will be very similar to naturally occurring abandoned oxbows/meanders, which are often present within the

floodplain adjacent to watercourses with unaltered channels. Many unaltered watercourses include depressions adjacent to the main channel where old meanders/oxbows have been cut off from the main channel (as the channel moves over time), and those areas often become shallow riparian marsh habitat. The Shallow Pan/Shallow Pool and the Deep Channel Pockets will hence be designed to mimic natural riparian marsh conditions.

4.2.3 North Branch (Tributary #3) - Riparian Planting (TCR)

The Kanata North Urban Expansion Area (KNUEA) Environmental Management Plan (EMP) includes 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.
- As discussed above in Section 4.1.1, where feasible, existing trees will be preserved within the open space blocks that will form the minimum 40 m wide corridor surrounding the North Branch (Tributary #3). The majority of Tree Stand D and portions of Tree Stands E and F are anticipated to be retained within the minimum 40 m wide watercourse corridor.
- 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. In addition, trees 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.
- 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.

4.2.4 Inline Pond Reshaping

The Site development will include reshaping of the inline pond, which is required in order for the inline pond to fit within the minimum 40 m wide watercourse corridor. As described above in Section 3.4.1, the inline pond is an artificial feature that is maintained by a concrete weir. The inline pond is a relatively shallow feature, with much of its substrate consisting of bedrock. The presence of bedrock at the bottom of the inline pond likely limits its functionality as Blanding's Turtle habitat, as Blanding's Turtles require soft substrate that they can burrow into for overwintering (OMNRF 2014a). The inline pond has a generally flat profile with approximately 50 cm of water depth noted on May 12th, 2018. MEP (2016) noted that standing water depths in the inline pond reached 75 cm in the spring of 2013. The inline pond was observed to contract significantly in the late summer, with the wetted area of the inline pond reduced by as much as 50% by July 2018. Notably, the northern approximately 50% of the inline pond was dry by July 2018, whereas the southern half of the inline pond remained hydrated. The southern half of the inline pond is likely to remain hydrated throughout the summer in most years. Because the northern approximately 50% of the inline pond is seasonally dry, it is anticipated that reshaping of the inline pond can be completed without significant disturbance to fish and turtle habitat, provided that the reshaping is completed in the late summer.

4.2.5 North Branch (Tributary #3) - Wildlife Passage Culvert

As shown in the Concept Land Use Plan (above), the main road through the Site will cross the North Branch. The future road crossing will include a suitable wildlife passage culvert that will allow Blanding's Turtles (and other wildlife) to pass beneath the new road. Per the Kanata North Urban Expansion Area (KNUEA) Environmental Management Plan (EMP) (Novatech 2016b), the wildlife passage culvert will include a box culvert that is a minimum of 1.8 m wide x 1.2 m tall. The width of the Right of Way of the main road through the Site will be 24 m, and hence the wildlife passage culvert will be 24 m long. The Ontario Ministry of Natural Resources and Forestry (OMNRF) guidance document - *Best Management Practices for Mitigating the Effects of Roads on Amphibian and Reptile Species at Risk in Ontario* (Gunson et al. 2016) recommends that for culvert crossings that are between 15 m and 25 m in length, the minimum culvert size should be 1.8 m x 1.0 m. As such, the proposed culvert size conforms to the recommendations of Gunson et al. (2016). As discussed below in Section 4.4.2, 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 culvert, to ensure there are no gaps in the system.

4.2.6 Stormwater Swale (Tributary #4) - Decommissioning

As described above in Section 3.4.2, MEP (2016) previously assessed the Stormwater Swale and determined that the feature is not ecologically significant. As such, a Headwaters Drainage Assessment (HDA) addressing the Stormwater Swale is not anticipated to be required.

As described above in Section 3.4.2 and Section 3.4.3, the Stormwater Swale does not provide significant fish and/or amphibian habitat functionality. The primary effect that the removal of the Stormwater Swale may have on downstream areas is a potential reduction in the flow of water and nutrients to downstream areas. The Kanata North Urban Expansion Area (KNUEA) Environmental Management Plan (EMP) identified that the Stormwater Swale will be decommissioned, and that flows that are currently conveyed by the feature will be rerouted to the North Branch via a new stormwater sewer (Novatech 2016b). This arrangement will maintain the hydrological and nutrient contributions of the Stormwater Swale to downstream areas.

4.2.7 Servicing and Stormwater Management

Stormwater runoff will be addressed through the construction of a new Stormwater Management (SWM) Pond. The new SWM Pond will be located within the Site (Refer to the Concept Land Use Plan (above)). The new SWM Pond will outlet clean water to the North Branch west of March Road. The Kanata North Urban Expansion Area (KNUEA) Environmental Management Plan (EMP) states that the recommended SWM facility design will incorporate baseflow enhancement, water quality control (80% long-term TSS removal), erosion control, and peak flow control (Novatech 2016b).

4.2.8 Sediment and Erosion Controls

As discussed below in Section 4.4.2, during the construction phase, Blanding's Turtle temporary exclusion fencing (wire re-enforced silt fencing) will be required surrounding the minimum 40 m wide watercourse corridor open space blocks. 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 Branch (Tributary #3).

During construction, existing conveyance systems along March Road and Old Carp Road 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 that 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 and Old Carp 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.

4.3 Adjacent Lands and Significant Features

Adjacent lands and adjacent significant features are discussed above in Section 3.5. The significant adjacent features are addressed by the mitigation measures discussed above in Section 4.1 and Section 4.2. No additional mitigation measures are required for adjacent lands.

4.4 Wildlife and Species at Risk

4.4.1 Blanding's Turtle Habitat Impacts and Regulatory Requirements

The following is a summary of the quantification of Blanding's Turtle habitat loss:

- As discussed above in Section 3.7.3, there are no areas of Category 1 Blanding's Turtle habitat known to exist within the Site.
- The Category 2 habitat found in association with the North Branch is 60 m wide. Narrowing of the North Branch into the minimum 40 m wide corridor, as well as the reshaping of the inline pond, will reduce the extent of Category 2 habitat within the Site from approximately 2.88 ha (pre-development) to approximately 1.58 ha (post development). This results in a net loss of Category 2 habitat of approximately 1.3 ha.
- As described above in Section 3.7.3, approximately 16.1 ha of Category 3 habitat will be removed by the development.

The aquatic habitat enhancement features described above in Section 4.2.2 will partially offset the loss of Category 2 habitat. As described above in Section 4.2.2, the habitat enhancement features will add approximately 0.07 ha of Category 1 habitat and approximately 0.06 ha of Category 2 habitat (within the minimum 40 m wide watercourse corridor). Taking into account the aquatic habitat enhancement features, the following is a summary of the net loss of habitat associated with the development:

- **Category 1 Habitat:** 0.00 ha (habitat loss) + 0.07 ha (habitat enhancement) = +0.07 ha
- **Category 2 Habitat: -**1.30 ha (habitat loss) + 0.06 ha (habitat enhancement) = -1.24 ha
- **Category 3 Habitat:** -16.10 ha (habitat loss) + 0.00 ha (habitat enhancement) = -16.10 ha

The net gain in Category 1 habitat, which results from the installation of the new Deep Pool (described above in Section 4.2.2), partially offsets the net loss of Category 2 habitat. However, even with the aquatic habitat enhancement features taken into account, it is anticipated that ultimately there will be a net loss of both Category 2 habitat and Category 3 habitat associated with the development.

The majority of the Category 2 habitat loss results from the narrowing of the Category 2 habitat from 60 m to 40 m (as a result of confining the North Branch within the minimum 40 m wide watercourse corridor). As such, the majority of Category 2 habitat loss will consist of the removal of terrestrial buffer areas adjacent to the watercourse, as opposed to the direct removal of aquatic habitat. As described above in Section 3.3.2, the majority of the area of Category 2 habitat removal currently consists of Fallow Fields (Graminoid Meadow) (Refer to Figure 3). The Fallow Fields can be considered degraded riparian habitats that offer relatively little Blanding's Turtle habitat functionality. Similarly, although approximately 16.1 ha of Category 3 habitat will be removed by the development, it should be noted that the majority of this area is currently Cultivated Fields. Although Blanding's Turtles may be capable of traversing these areas, they are relatively inhospitable and hazardous. Blanding's Turtles traversing the Kanata North Urban Expansion Area (KNUEA) are more 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. Therefore, both the Category 2 habitat and the Category 3 habitat that will be removed by the development can be considered low quality habitat (DST 2015).

DST (2015) discusses in detail how the potential loss of habitat may impact the regional population of Blanding's Turtles. As noted above in Section 3.7.3, comparatively few Blanding's Turtles have been found within the KNUEA. The existing Category 2 habitat within the Site is comparatively small and degraded, and the Site provides 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, these management priorities will be addressed by enhancing the quality of

the habitat within the minimum 40 m wide watercourse corridor (discussed above in Section 4.2.2), and by fencing the minimum 40 m wide corridor (described below).

Due to the anticipated loss of Blanding's Turtle habitat, an Overall Benefit Permit under Clause 17(2)(C) of the Ontario Endangered Species Act (ESA) will be required to support the development. The Overall Benefit Permit will require the proponent to offset the net loss of Blanding's Turtle habitat through offsite habitat compensation measures. Several options for offsite habitat compensation were discussed with the Ontario Ministry of Natural Resources and Forestry (OMNRF) as part of the KNUEA Community Design Plan (CDP) process (DST 2015). Options for offsite habitat compensation include 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 may also help to direct turtles to move north of the KNUEA, through undeveloped lands beyond the urban boundary;
- Creation of new Category 1 and/or Category 2 habitat in offsite areas; and
- Funding of research programs to study and advance the conservation of Blanding's Turtles.

One or more of the options listed above may be pursued to provide the required habitat compensation. The location and configuration of offsite Blanding's Turtle habitat compensation measures will be determined in consultation with the Ministry of Environment, Conservation, and Parks (MECP) through the Overall Benefit Permit application and review process. Mitigation measures to protect individual Blanding's Turtles during the construction phase are discussed below in Section 4.4.4 and Section 4.4.5.

4.4.2 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 along the edges of the minimum 40 m wide watercourse corridor, in order to mitigate the risk that Blanding's Turtles may leave the corridor to enter the development area and/or roads.

A sketch showing the approximate position of the fencing within the Site is included below. However, it should be noted that the final fencing configuration will be determined in consultation with the Ministry of Environment, Conservation, and Parks (MECP) as part of the Overall Benefit Permit process. The final fencing location and fencing materials will be confirmed at the detailed design stage. As shown in the fencing sketch, the fencing will be installed at the development edge adjacent to the open space blocks that will form the 40 m wide North Branch corridor. The fencing will be required to tie into the adjacent Blanding's Turtle exclusion fencing that is to be installed to the north within the KNUEA Northwest Quadrant. As described above in Section 4.2.5, the fencing will also be required to tie into the new wildlife passage culvert. The Blanding's Turtle exclusion fencing will be positioned between the edge of the minimum 40 m wide watercourse corridor and the 6 m wide recreational pathway, thereby separating the pathway from the watercourse corridor.

Temporary fencing will be required at the construction stage. The temporary fencing will 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 the 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.

Fencing ends at March Road.

WIDENING
0.17 ha
(0.41 ac.)

Sketch of Temporary and Permanent Blanding's Turtle Exclusion Fencing Locations (Black Dashed Lines).

Fencing ends along the back of the adjacent existing developed properties.

MIXED-USE
1.31 ha
(3.25 ac.)

101.4m

PARK
4.26 ha
(10.52 ac.)

SWM
1.60 ha
(3.95 ac.)

CREEK
1.58 ha
(3.89 ac.)

CONDO BLOCK
3.77 ha
(9.31 ac.)

239.3m

285.4m

CONDO BLOCK
0.54 ha
(1.34 ac.)

84.3m

SCHOOL
1.00 ha
(2.46 ac.)

Note that the fencing will be placed at the edge between the watercourse corridor and the 6 m wide recreational pathway, thereby separating the 6 m wide pathway from the watercourse corridor.

Fencing to tie into the adjacent 40 m wide corridor fencing in the KNUEA Northwest Quadrant.

ROADS 2.85 ha (7.04 ac.)

301.6m

65.5m

SINGLES 1.77 ha (4.37 ac.)

148.3m

TOWNS 1.13 ha (2.80 ac.)

90.8m

82.7m

Fencing to tie into the wildlife passage culvert at the North Branch road crossing (tie-in at each corner).

Fencing ends along the back of lots of the adjacent existing single detached homes.

KNUEA CONCEPT	
BRIGIL LANDS MARCH ROAD	
FIGURE	BRIGIL
2019-10-28	*"Proud to build a better quality of life"*
1:1000	

4.4.3 Barn Swallow Habitat Impacts and Regulatory Requirements

As described above in Section 3.7.4, Barn Swallow nests were documented within the collapsing barn. This included one (1) active nest and one (1) inactive nest. The rules and regulations of the Ontario Endangered Species Act (ESA) require that prior to altering or demolishing a building containing Barn Swallow nests, the activity must be registered through the Ministry of Environment, Conservation, and Parks (MECP) Online Impact Registration Process. Following completion of the registration process, the collapsing barn can be demolished outside of the Barn Swallow nesting season (demolition between September 1st and April 30th). The demolition of the collapsing barn will not be undertaken until construction of the planned development is underway. As such, the MECP Online Impact Registration Process will be completed after obtainment of Draft Plan of Subdivision Approval.

The rules and regulations of the Ontario ESA require the proponent to provide compensation habitat that can accommodate more Barn Swallow nests than the structure(s) that are to be demolished. Following completion of demolition, habitat compensation for the removal of the collapsing barn will be provided by constructing one (1) artificial nesting structure, which will have a minimum of six (6) nest cups. The six (6) nest cups will compensate for the one (1) active nest that was observed within the collapsing barn. The artificial nesting structure will be located within 1 km of the Site, and will be monitored and maintained for a three (3) year period. Monitoring results will be documented within a brief annual report.

4.4.4 Species at Risk and Wildlife Construction Stage Mitigation - Terrestrial

Potential impacts to Blanding's Turtles, Barn Swallows, Snapping Turtles 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 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, Snapping Turtle, and Barn Swallow:

- **Pre-Stressing:** Prior to vegetation removal, the area will 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 will be cleared towards the open space blocks that form the minimum 40 m wide watercourse corridor, in order to provide an opportunity for wildlife to leave the work 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 (e.g. Snapping Turtles);
- **Inspections:** Construction stage monitoring will include, at a minimum, weekly inspections by a Qualified Biologist during initial tree clearing, the installation of mitigation measures, the installation of habitat enhancement features within the 40 m wide North Branch corridor, 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 Turtles, Snapping Turtles and other wildlife are not present. A designated staff member will be required to conduct daily sweeps each morning prior to the 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:** Contractor awareness training packages will be prepared and utilized to complete contractor 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 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 stop safely to avoid wildlife;
- **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 will be required. The spill response plan is to be implemented in the event of a sediment release or spill of a deleterious substance. An emergency kit will be kept on Site any time development activities are taking place;
- **Species at Risk (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:**
    - As noted above, the demolition of the collapsing barn must occur between September 1st and April 30th in order to avoid the Barn Swallow nesting season;
    - 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 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 15th and April 15th.

4.4.5 Species at Risk and Wildlife Construction Stage Mitigation - Aquatic

As described above in Section 4.2, the development will not involve the realignment of the North Branch of Shirley's Brook. As described above in Section 4.2.4, it is anticipated that the inline pond can be reshaped without the need for in-water work. However, if the inline pond reshaping does ultimately require in-water work, the following mitigation measures will apply. In addition, in-water work is likely to be required during the installation of the new wildlife passage culvert and potentially during the installation of the habitat enhancement features. 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 commencement of in-water work, 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 the relocation of any fish, reptiles, and amphibians found within the dewatering work areas. In accordance with the dewatering arrangement, the water level in any dewatering work areas must be drawn down to permit the 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; and
- **In-Water Work Timing:** In-water work must be undertaken to avoid the sensitive in-water work timing period, which is March 15th to June 30th each year. In-water work must also be undertaken during the Blanding's Turtle overwintering season (October 15th to April 15th). In combination, these timing windows require that in-water works must be undertaken between October 15th and March 15th.

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 mitigation measures. The Ontario 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 Turtles will be determined in consultation with the Ministry of Environment, Conservation, and Parks (MECP) through the Overall Benefit Permit process. The mitigation and compensation measures to provide a benefit to Barn Swallows are described above in Section 4.4.3. As described above, the development will not involve any significant loss of forest and/or wetland habitats, and therefore the development will not contribute significantly to the cumulative loss of forest and wetlands.

6.0 MONITORING

Construction stage monitoring requirements are outlined in Section 4.4.4 and Section 4.4.5 (above). Construction stage monitoring will include pre-construction sweeps to inspect fencing and vegetation prior to clearing, daily sweeps by construction staff, and full time supervision by a Qualified Biologist during dewatering.

For previous Overall Benefit Permits, Blanding's Turtle monitoring requirements have typically included five (5) years of post-construction mitigation, population, exclusion fencing, and habitat compensation monitoring. Monitoring requirements related to Blanding's Turtle will be determined in consultation with the Ministry of Environment, Conservation, and Parks (MECP) through the Ontario Endangered Species Act authorization and review process.

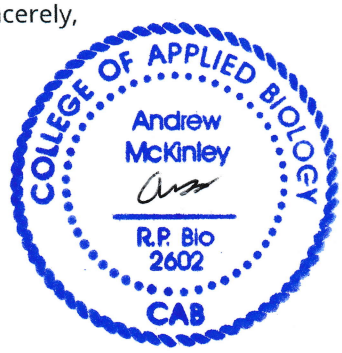
As described above in Section 4.4.3, the Barn Swallow artificial nesting structure (habitat compensation) will be monitored and maintained for a three (3) year period. Monitoring results will be documented within a brief annual report.

7.0 CLOSURE

Pending that the regulatory, mitigation, and avoidance measures outlined in this report are implemented appropriately, the development 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.
Senior Biologist, McKinley Environmental Solutions

8.0 REFERENCES

City of Ottawa (2014) Natural Heritage System Overlay (West). Official Plan Schedule L3.

City of Ottawa (2015) Protocol for Wildlife Protection During Construction.

City of Ottawa (2020) Geo-Ottawa Municipal Mapping Site. Retrieved April 8th, 2020 at <http://maps.ottawa.ca/geoottawa/>

DST Consulting Engineers (DST) (2015) Kanata North Community Design Plan – Blanding's Turtle Habitat Compensation Plan.

Garlapow, R.M. (2007) Whip-poor-will Prey Availability and Foraging Habitat: Implications for Management in Pitch Pine / Scrub Oak Barrens Habitats. Master Dissertation, Univ. of Massachusetts, Amherst, Massachusetts.

Gunson, K., Seburn, D., Kintsch, J, & J. Crowley (2016) Best Management Practices for Mitigating the Effects of Roads on Amphibian and Reptile Species at Risk in Ontario.

Konze, K. and McLaren, M. (1998) Wildlife Monitoring Programs and Inventory Techniques for Ontario. NEST Technical Manual TM-009.

Lee, Harold (2008) Southern Ecological Land Classification Ecosystem Catalogue (2008 version).

Muncaster Environmental Planning (MEP) (2016) Existing Conditions Natural Environment Features – Kanata North Urban Expansion Area.

Novatech Engineering Consultants (Novatech) (2016a) Kanata North Community Design Plan.

Novatech Engineering Consultants (Novatech) (2016b) Kanata North Community Design Plan – Environmental Management Plan.

Ontario Ministry of Natural Resources and Forestry (OMNRF) (1998) Ecological Land Classification for Southern Ontario: First Approximation and its Applications.

Ontario Ministry of Natural Resources and Forestry (OMNRF) (2010) OMNRF Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005, Second Edition.

Ontario Ministry of Natural Resources and Forestry (OMNRF) (2011a) Survey Methodology under the Endangered Species Act: Dolichonyx oryzivorus (Bobolink).

Ontario Ministry of Natural Resources and Forestry (OMNRF) (2011b) Bats and Bat Habitats: Guidelines for Wind Power Projects.

Ontario Ministry of Natural Resources and Forestry (OMNRF) (2014a) General Habitat Description for Blanding's Turtle.

Ontario Ministry of Natural Resources and Forestry (OMNRF) (2014b) Significant Wildlife Habitat Mitigation Support Tool.

Ontario Ministry of Natural Resources and Forestry (OMNRF) (2014c) General Habitat Description for the Eastern Whip Poor Will.

Ontario Ministry of Natural Resources and Forestry (OMNRF) (2014d) Draft Survey Protocol for Eastern Whip Poor Will.

Ontario Ministry of Natural Resources and Forestry (OMNRF) (2014e) General Habitat Description for Bobolink.

Ontario Ministry of Natural Resources and Forestry (OMNRF) (2014f) General Habitat Description for Eastern Meadowlark.

Ontario Ministry of Natural Resources and Forestry (OMNRF) (2020) Natural Heritage Information Center. Retrieved April 8th, 2020 at <http://nhic.mnr.gov.on.ca/>

Paterson Group (2013) Consolidated Preliminary Geotechnical Investigation – Kanata North Urban Expansion Area Community Development Plan.

Species at Risk Ontario (SARO) (2020) Species at Risk Ontario. Retrieved April 8th, 2020 at <http://www.ontario.ca/environment-and-energy/species-risk-ontario-list>

APPENDIX A

Master Plant List

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

TABLE A: VEGETATION

Common Name	Scientific Name	Provincial S rank	Brunton Significance Ranking for the City of Ottawa (Brunton 2005)	Vegetation Type
Broadleaf Arrowhead (Wapato)	Sagittaria latifolia	S5	Common	Aquatic
Common Cattail	Typha latifolia	S5	Common	Aquatic
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
Narrow-leaved Goldenrod	Euthamia graminifolia	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

Spotted Touch Me Not	Impatiens capensis	S5	Common	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
Curled Dock	Rumex crispus	SNA	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
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
Large Tooth Aspen	Populus grandidentata	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 occurrences, populations or records
S4 = Common within the province with 21 - 1000 occurrences, populations or records
S3 = Rare within the province with 6 - 20 occurrences, populations or records
SNA = Ranking not available
SE5 = Very common exotic with > 1000 occurrences, 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
Spotted Sandpiper	Actitis macularia
Red-winged Blackbird	Agelaius phoeniceus
Mallard	Anas fulvigula
Great Blue Heron	Ardea herodias
Cedar Waxwing	Bombycilla cedrorum
Canada Goose	Branta canadensis
Green Heron	Butorides virescens
Northern Cardinal	Cardinalis cardinalis
Turkey Vulture	Cathartes aura
Chimney Swift - Threatened (Foraging Only)	***Chaetura pelagica***
Killdeer	Charadrius vociferus
Northern Flicker	Colaptes auratus
Rock Pigeon	Columba livia
American Crow	Corvus brachyrhynchos
Blue Jay	Cyanocitta cristata
Bobolink - Threatened (Not Nesting)	***Dolichonyx oryzivorus***
Gray Catbird	Dumetella carolinensis
Alder Flycatcher	Empidonax alnorum
Willow Flycatcher	Empidonax traillii
Common Yellowthroat	Geothlypis trichas
Barn Swallow - Threatened (Nesting)	***Hirundo rustica***
Dark-eyed Junco	Junco hyemalis
Ring-billed Gull	Larus delawarensis
Wild Turkey	Meleagris gallopavo
Swamp Sparrow	Melospiza georgiana
Song Sparrow	Melospiza melodia

Black-and-white Warbler	Mniotilta varia
Great Crested Flycatcher	Myiarchus crinitus
House Sparrow	Passer domesticus
Savannah Sparrow	Passerculus sandwichensis
Fox Sparrow	Passerella iliaca
Downy Woodpecker	Picoides pubescens
Hairy Woodpecker	Picoides villosus
Black-capped Chickadee	Poecile atricapilla
Common Grackle	Quiscalus quiscula
Eastern Phoebe	Sayornis phoebe
Yellow-rumped Warbler	Setophaga coronata
Yellow Warbler	Setophaga petechia
American Goldfinch	Spinus tristis
Chipping Sparrow	Spizella passerina
Field Sparrow	Spizella pusilla
European Starling	Sturnus vulgaris
Tree Swallow	Tachycineta bicolor
Brown Thrasher	Toxostoma rufum
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**
Coyote	Canis latrans
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
Grey Tree Frog	Hyla versicolor
Green Frog	Lithobates clamitans
Spring Peeper	Pseudacris crucifer
Snapping Turtle - Special Concern	***Chelydra serpentina***
Common Garter Snake	Thamnophis sirtalis

APPENDIX C

Ontario Ministry of Natural Resources and Forestry (OMNRF) Potential Species at Risk List for the Geographic Township of March

613-620-2255
mckinleyenvironmental@gmail.com
www.mckinleyenvironmental.com

LONGUEUIL	MARCH	MARLBOROUGH
American Eel	American Eel	American Ginseng
American Ginseng	American Ginseng	Bald Eagle
Bank Swallow	Bald Eagle	Bank Swallow
Barn Swallow	Bank Swallow	Barn Swallow
Black Tern	Barn Swallow	Black Tern
Blanding's Turtle	Black Tern	Blanding's Turtle
Bobolink	Blanding's Turtle	Bobolink
Butternut	Bobolink	Bogbean Buckmoth
Canada Warbler	Butternut	Bridle Shiner
Channel Darter	Canada Warbler	Butternut
Chimney Swift	Chimney Swift	Chimney Swift
Common Nighthawk	Eastern Meadowlark	Common Nighthawk
Cutlip Minnow	Eastern Musk Turtle	Eastern Meadowlark
Eastern Meadowlark	Eastern Small-footed Myotis	Eastern Musk Turtle
Eastern Musk Turtle	Eastern Whip-poor-will	Eastern Prairie Fringed Orchid
Eastern Ribbonsnake	Eastern Wood-pewee	Eastern Small-footed Myotis
Eastern Small-footed Myotis	Hickorynut	Eastern Whip-poor-will
Eastern Wood Pewee	Horned Grebe	Eastern Wood-pewee
Evening Grosbeak	Lake Sturgeon	Grasshopper Sparrow
Golden Eagle	Least Bittern	King Rail
Hickorynut	Little Brown Myotis	Least Bittern
Lake Sturgeon	Loggerhead Shrike	Little Brown Myotis
Least Bittern	Monarch	Loggerhead Shrike
Little Brown Myotis	Northern Map Turtle	Monarch
Monarch	Northern Myotis	Northern Map Turtle
Northern Map Turtle	Peregrine Falcon	Northern Myotis
Northern Myotis	River Redhorse	Red-headed Woodpecker
River Redhorse	Rusty Blackbird	Snapping Turtle
Rusty Blackbird	Rusty-patched Bumble Bee	Spotted Turtle
Short-eared Owl	Silver Lamprey	Tri-colored Bat
Silver Lamprey	Snapping Turtle	Wood Thrush
Snapping Turtle	Transverse Lady Beetle	Yellow Rail
Spotted Turtle	Tri-colored Bat	
Tri-colored Bat	Wood Thrush	
West Virginia White	Yellow-banded Bumblebee	
Whip poor will		
Wood Thrush		