4386 Rideau Valley Drive

Environmental Impact Statement

Uniform Urban Developments Ltd.

CIMA+ file number: A001244C

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16 November 2022 – Review 001

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Table of Involved Resources

In addition to the signatories of this report, the following individuals have also been involved in the study and writing of the report as technical experts within the project team:

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Review and submission register			
Review No.	Reviewed by	Date	Description of the change or submission
001	ML	Nov 16/22	Update of Draft as per comments

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ABBO	Atlas of Breeding Birds of Ontario
ANSI	Area of Natural and Scientific Interest
BHA	Butternut Health Assessment
BHE	Butternut Health Expert
CC	Co-Efficient of Conservation
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
DBH	Diameter at breast height
EIS	Environmental Impact Study
ELC	Ecological Land Classification
ESA	Endangered Species Act (Provincial)
GPS	Global Positioning System
NAD 83	North American Datum 1983
UTM	Universal Transverse Mercator
LIO	Land Information Ontario
MCSS	Mud Creek Subwatershed Study
NHIC	Natural Heritage Information Centre
NHRM	Natural Heritage Reference Manual
MBCA	Migratory Bird Convention Act (Federal)
MECP	Ministry of Environment, Conservation and Parks
MNRF	Ministry of Natural Resources and Forestry
MVCA	Mississippi Valley Conservation Authority
NHIC	Natural Heritage Information Centre
NHRM	Natural Heritage Reference Manual
OMNR/MNRF/MNDMNRF	Ontario Ministry of Natural Resources (old name) Ministry of Natural Resources and Forestry (old name) Ministry of Northern Development, Mines, Natural Resources and Forestry
OP	Official Plan
OWES	Ontario Wetland Evaluation System
PSW	Provincially Significant Wetlands
RVCA	Rideau Valley Conservation Authority
SAR	Species at Risk (in this report they refer to species that are provincially or federally listed as endangered or threatened and receive protection under ESA or SARA)
SARA	Species at Risk Act (Federal)
SARO	Species at Risk in Ontario
SWHTG	Significant Wildlife Habitat Technical Guide

SRANK DEFINITIONS

S1 Critically Imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.

S2 Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.

S3 Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

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

S5 Secure; Common, widespread, and abundant in the nation or state/province.

? Inexact Numeric Rank—Denotes inexact numeric rank

SNA Not Applicable, A conservation status rank is not applicable because the species is not a suitable target for conservation activities.

S#B Breeding

S#N Non-Breeding

SARA STATUS DEFINITIONS

END Endangered: a wildlife species facing imminent extirpation or extinction.

THR Threatened: a wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.

SC Special Concern, a wildlife species that may become threatened or endangered because of a combination of biological characteristics and identified threats.

SARO STATUS DEFINITIONS

END Endangered: A species facing imminent extinction or extirpation in Ontario which is a candidate for regulation under Ontario's ESA.

THR Threatened: A species that is at risk of becoming endangered in Ontario if limiting factors are not reversed.

SC Special concern: A species with characteristics that make it sensitive to human activities or natural events.

COEFFICIENT OF CONSERVATISM RANKING CRITERIA

0 Obligate to ruderal areas.

1 Occurs more frequently in ruderal areas than natural areas.

2 Facultative to ruderal and natural areas.

3 Occurs less frequent in ruderal areas than natural areas.

4 Occurs much more frequently in natural areas than ruderal areas.

5 Obligate to natural areas (quality of area is low).

6 Weak affinities to high-quality natural areas.
7 Moderate affinity to high-quality natural areas.
8 High affinity to high-quality natural areas.
9 Very high affinity to high-quality natural areas.
10 Obligate to high-quality natural areas.

1. INTRODUCTION

CIMA+ was retained by Uniform Urban Developments Ltd, hereafter referred to as the proponent, to prepare an Environmental Impact Statement (EIS), a Tree Conservation Report (TCR), and a Headwater Drainage Features Assessment Report (HDFR). All three reports are stand alone documents, however the pertinent information from each has been included in this EIS. The EIS is the report to be consulted for the full list of avoidance and mitigation measures.

The proponent owns two properties along Rideau Valley Drive; 4386 Rideau Valley Drive on the west side, and another parcel on the east (along the Rideau River) (Figure 1 and 2). The second parcel does not have a civic number. They are proposing a residential subdivision on a portion of the 4386 Rideau Valley Drive property and to make improvements to access to the parcel along the Rideau River to create parkland. Both parcels are in part of Lot 1, Concession 1, of the Geographic Township of Nepean.

4386 Rideau Valley Drive is roughly 20 ha and is situated northwest of the intersection of Rideau Valley Drive and Bankfield Road (2). This parcel is split into two by Mud Creek. It is the portion of to the south of Mud Creek, zoned Development Reserve, Subzone 1 (DR1), that is proposed for development. That part of the property is also bordered on its west side, by the Wilson Cowan Drain. The portion of this property that would be developed is approximately 9.3 hectares and its existing land uses are a single lot residential development and cropland. The remaining portion of 4386 Rideau Valley Drive, north of Mud creek, would be left untouched. The proposed subdivision will consist of a combination of single, semi and town units and it will be fully serviced. The second property is immediately opposite of 4386 Rideau Valley Drive and is a small parcel (0.95 hectares) that abuts the Rideau River. What appears to be the old connection between Rideau River and the oxbow represents the northern extent of this parcel. There is no longer any direct hydrological connection to the Rideau River from the oxbow (it is connected to Mud Creek during periods of high-water levels). This proposed parkland area, Blocks 83 and 84 on the Draft Plan of Subdivision, is currently mowed meadow with a narrow deciduous tree riparian corridor along the Rideau River. Details on the parkland design are not available at this time, but it is anticipated to consist of passive recreational spaces with a walking trail.

The proposed works includes the removal of vegetation, grading, and excavation for the installation of new sewer and water mains, roads, and houses. Setbacks have been established, based on the greatest of hazard or natural features, from both Mud Creek (30m) and Wilson Cowan Drain (15m) and are discussed herein. Some trees may also be selectively cleared in the property designated for the parkland to facilitate the creation of a walking trail. Only limited grading would take place for the installation of passive recreational access from Rideau Valley Drive. Further detail to be worked out as part of the City's Facility Fit Plan process.

1.1 Legislative Context

1.1.1 Planning Act/Official Plan

This project is situated with the Rural Area for the City of Ottawa as well as within the Village of Manotick. The Village of Manotick has a Secondary Plan which depicts its Natural Heritage Systems on Annex 2 and describes them in its Section 4.2. However, the Secondary Plan states that Natural Heritage Features (NHFs) that are not identified on Annex 2 but that either meet the City of Ottawa's OP definitions (City of Ottawa Section 2.4.2[1]) or are described in the Mud Creek Subwatershed Study (MCSS) (2015) are also subjected to the policies of the Secondary Plan. Where features are identified, an Environmental Impact Statement (EIS) is required for projects that impact the feature or its adjacent lands. For larger projects, such as this, the adjacent lands are described as within 120 m of the feature.

It is noted that the Council of the City of Ottawa in November 2021 approved a new Official Plan (OP) to replace the 2008 OP. The new OP received the Province's approval on November 4, 2022. This EIS follows the new OP as well as the *City of Ottawa Environmental Impact Statement Guidelines* (City of Ottawa, 2015). However, with respect to significant woodlands, this EIS utilizes the City's newer approach *Significant Woodlands: Guidelines for Identification, Evaluation, and Impact Assessment* (no date). The OP schedules from the November 2021 Council approved OP are provided in Appendix A. As noted above, the Secondary Plan refers to Section 2.4.2 of the City of Ottawa 2008 Plan. A summary of Policy 1 under that section is provided in the table below. Further, Policy 2 under Section 2.4.2, notes that Rural Natural Features as depicted on the L Schedules. Schedule L has also been included in the Appendix A.

Pre-consultation notes from the City of Ottawa to the proponent dated June 24, 2021 note that:

- The evaluation of the Natural Heritage System and Environmental Constraints will be taken from the Mud Creek Sub-watershed Study (2015).
- The setback from is to be the greater of:
  - Limit of geotechnical hazard;
  - Floodplain;
  - 15m from top of bank (2008 OP) (15m from Top of Slope (2021 OP)); or
  - 30m setback from normal high-water mark (2008 OP) (30m from Top of Bank (2021 OP)).
- Watercourses (Mud Creek and Wilson Cowan Drain) need to be protected and may provide significant wildlife habitat and species at risk habitat.
- EIS needs to identify the natural heritage system (wildlife, Blanding's turtle, valley land)
- Pathways are recommended to be outside of the Blanding's Turtle habitat / setbacks or approved by MECP.
- Farm buildings should be reviewed for SAR.

[1] Note: Reference in the Secondary Plan refers to the 2008 City's OP as the Secondary Plan has not been updated to reflect the current City of Ottawa OP (approved November 4, 2022)

Table 1: Summary of the Secondary Plan and the 2008 City of Ottawa's Section 2.4.2 Policy 1 (Natural Heritage Systems)

Natural Heritage Systems (as listed in the City of Ottawa's 2008 OP)	References for Secondary Plan for Manotick and City of Ottawa (OP approved November 4, 2022)	Definition/ Guidance for Evaluation
1a. Significant wetlands	Section 4.2 Section 4.8.1[2]; and Section 7, Schedules C11 (City of Ottawa)	Province's Mapping (boundary may need to be fine-tuned in field using the province's Ontario Wetland Evaluation System, Southern Manual 3.3 (2014)
1b. Significant habitat of Endangered and Threatened Species (SAR)	Site-specific basis as per province's guidelines	As defined by province
1c. Significant woodlands	Section 4.2 Section 4.8.1 City of Ottawa;	Definition and Evaluation: *Evaluated using Significant Woodlands: Guidelines for Identification, Evaluation, and Impact Assessment* (no date)
1d. Other Wetlands	Section 4.2 and Annex 2 Section 4.8.1 City of Ottawa	Refers to those that are included with associated with Significant Woodlands as depicted by Natural Environment Area or Rural Natural Features.
1e. Significant Valleyland	Section 4.2 and Annex 2 Section 4.8.1 City of Ottawa	Definition: Slopes exceeding 15% (or roughly 6:1) and length >50m, with water for a period of the year, but excluding man-made structures (i.e., pits or quarries) Evaluation: *Natural Heritage Reference Manual* (MNRF, 2010)
1f. Significant Wildlife Habitat	Section 4.2 and Annex 2 (Linkages) Section 4.8.1 City of Ottawa; Site-specific basis	Defined and Evaluated using the province's *Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E* (January 2015)
1g. and 1h. Areas of Natural and Scientific Interest	Section 4.8.1 (Life Science); (Earth Science; Provincial mapping	As per provinces mapping

[2] Section 4.8.1 of the City OP approved November 2022 replaces the Section 2.4.2 referred to in the Secondary Plan

Natural Heritage Systems (as listed in the City of Ottawa's 2008 OP)	References for Secondary Plan for Manotick and City of Ottawa (OP approved November 4, 2022)	Definition/ Guidance for Evaluation
1i. Urban Natural Features	n/a – site is in Rural Area	Remnant woodlands, wetlands, and ravines within the urban area.
1j. Forest remnants and corridors	Section 4.8.2 City of Ottawa; Site-specific basis	These will be identified through site investigations
1k. Groundwater Features	Section 4.8.2 City of Ottawa; Conservation Authority	
1l. Surface Water Features / Fish Habitat	Section 4.8.1 and 4.9.3 City of Ottawa,	For example, headwater drainage features, lakes, seepage areas, spring etc. Definitions include those from: • Fish habitat as per *Fisheries Act* • Headwater Drainage Feature as per the *Evaluation, Classification and Management of Headwater Drainage Features Guidelines* (January 2014)

1.1.2 Other Acts, and Regulations

In addition to the protections offered by the OP, there are several other acts and regulations that need to be considered:

- *Fisheries Act* - Fisheries and Oceans Canada (DFO)
- *Species at Risk Act* - Environment and Climate Change Canada (ECCC)

  Note: For projects on lands that are not federal, this Act only applies to aquatic species (which are those listed as "fish" under the *Fisheries Act* or a migratory bird as per the *Migratory Birds Convention Act* (MBCA), unless a federal order has been created.
- *Migratory Bird Conventions Act* - ECCC
- *Endangered Species Act* - Ministry of Environment, Conservation and Parks (MECP)
- *Fish and Wildlife Conservation Act* - Ministry of Northern Development, Mines, and Natural Resources and Forestry (NDMNRF)
- O. Reg. 174/06 Development, Interference with Wetlands and Alterations to Shorelines and Watercourses under the *Conservation Authorities Act* – Rideau Valley Conservation Authority (RVCA)

The following report provides a summary of the findings and an assessment of the functions and values of the natural features on site and in the adjacent lands. It assesses the features to determine their significance following the applicable guidelines as referred to in the OP. The potential impacts to significant natural features are assessed and avoidance and mitigation measures provided.

Figure 1: General Location of Site

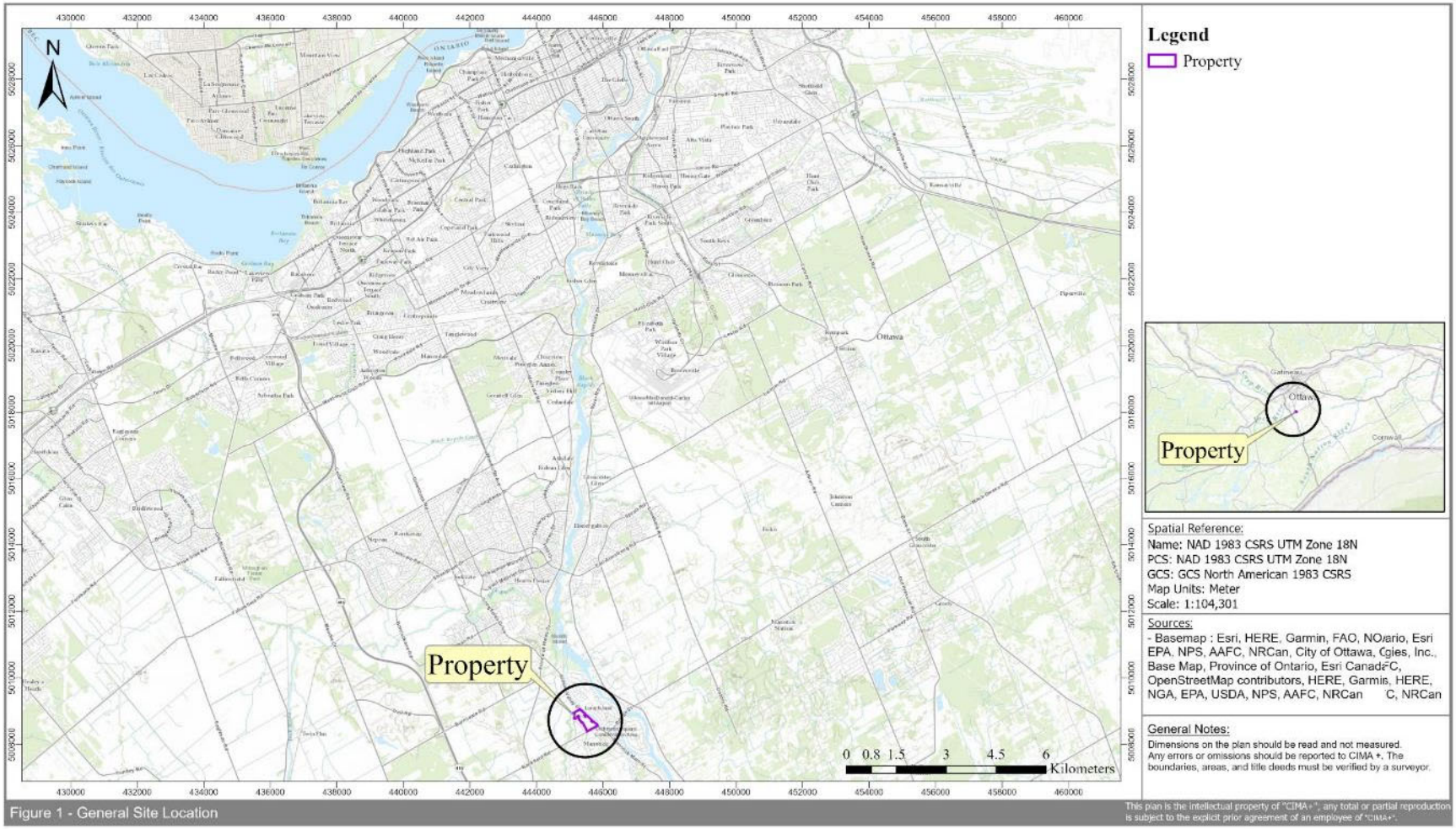


Figure 2: Property, Site (area to be disturbed), and the Adjacent Lands

2. METHODOLOGY

2.1 Study Area

For the most part, the OP calls for an evaluation of the areas to be impacted directly and in the adjacent lands (120 m). This is widened when analyzing the potential for species at risk (SAR) as their protected habitats vary with the species being considered. For this project, information from others was reviewed and included herein for vegetation communities on the full property. However, the other surveys were restricted to suitable habitat within the lands to be directly impacted. That is to say, those to the south of Mud Creek and east of Wilson Cowan Drain.

2.2 Background Review

Where the OP indicated that the features to be considered were those identified on their schedules, these took precedent. Other information collected from outside sources was used to help inform the functions of these features and to identify those not found on the schedules (i.e., Endangered and Threatened species habitat). Outside sources included: Natural Heritage Information Centre (NHIC) database, iNaturalist, Atlas of Breeding Birds of Ontario (ABBO), Make-a-Map Land Information Ontario (LIO), National Aquatic Species at Risk (DFO online mapping), and LIO databases. Information from personal knowledge has also been included as appropriate. The desktop review included a larger area (~5 km).

2.3 Field Studies

2.3.1 Habitat Descriptions and Flora Observations

Note that the initial vegetation community descriptions were completed by Muncaster Environmental Planning (MEP). Reference to these is included herein and in the Appendix E with permission from both MEP and the proponent. Additional habitat mapping was completed for the Site by CIMA+, through the use of satellite imaging and verified during the field visits. The field studies were completed by systematically walking the study area. Specific habitat types within the study area, identified during the preliminary mapping exercise were also targeted for community description. Habitat descriptions were based on the appropriate methodologies such as: Ontario Wetland Evaluation System, Southern Manual (OWES) for wetland habitats and the Ecological Land Classification for Southern Ontario (ELC) for terrestrial habitats. The MNRF's ELC and OWES definition of wetlands do not match one another. Since wetlands are to be evaluated following OWES, the determination of the presence/absence of wetland habitat was based on the OWES definition of wetland habitat:

> *"Lands that are seasonally or permanently flooded by shallow water as well as lands where the water table is close to the surface; in either case the presence of abundant*

water has caused the formation of hydric soils and has favored the dominance of either hydrophytic or water tolerant plants".

Specific attention was paid to locating species at risk (SAR) or species of conservation value listed as potentially occurring within the study area. If these species were observed, they would be photographed, and their coordinates recorded on a hand-held GPS using NAD83. Plants that could not be identified in the field were collected for a more detailed examination in the laboratory. Nomenclature used in this report follows the Southern Ontario Plant List (Bradley, 2007) for both common and scientific names which are based on Newmaster et al. (1998). Authorities for scientific names are given in Newmaster et al. (1998).

Butternuts

Note that the site investigations did not include a full Butternut Inventory as these are only valid for 2-years. Rather, the potential for butternuts have been noted and assessed in Section 5. All identified during other field work (i.e., Tree Conservation Inventory, vegetation communities etc..) are depicted on Figure 9 herein.

2.3.2 Bird Surveys

Information on bird use of the area was collected through a raptor nest survey and daytime breeding bird surveys. The raptor nest survey consisted of looking for evidence of nesting (such as stick nests, food caches, whitewashing of branches and foliage, accumulation of feathers/fur or prey remains on the ground or in shrubs as per the Significant Wildlife Habitat Technical Guide (SWHTG) Appendix O) as well as the raptors themselves. The general breeding bird methods are provided below.

- Minimum of two visits were completed for the forest.
- Surveys began no earlier than 30 minutes after dawn and completed by midday (adjusted as needed in response to reduced calling).
- Visits were conducted on days with no rain, little to no wind and good visibility.
- The survey type was point counts.
    - Consisted of 5-min point count stations. They were generally spaced 300 m apart (or as near as 100 m if needed to obtain information from all habitat types)
    - Point counts consisted of listening and observing over the specified time period and recording the number of birds heard/seen, their sex, location, behavior and interactions with others; and
    - While walking between points, any additional observations were recorded.
- Birds were identified by sound and/or sight.

Note that the agricultural fields consisted of row crops (corn) and were not grassland bird habitat.

Also note that no woodlands are proposed to be impacted by this development and that those in the adjacent lands are smaller than what has been noted as being used by Eastern Whip-poor-will or are separated from the site by residential subdivision. No nighttime breeding bird surveys were completed, and this is further discussed in Section 5. That said, the bat exit visit was conducted on an evening when almost all of the Eastern Whip-poor-will conditions were met, and this is discussed under the results for incidentals. Survey point locations are depicted on Figure 3.

2.3.3 Turtle Surveys

As is described in Section 5, there is a potential for Blanding's Turtle to occur in this general area. The need to follow the province's Blanding's Turtle specific protocol depends on the potential impacts. For this project, the proponent has agreed to setbacks that will protect much of this species habitats prior to field investigations. The initial survey confirmed that there were no nesting habitats and that it would be best to assume that there is a potential for Blanding's Turtle to be present in the study area and to assess the potential to impact this species. However, it was also determined that the collection of data on the possible use of the oxbow as overwintering turtle habitat would be beneficial for both information on SAR habitat and Significant Wildlife Habitat. The province's Blanding's Turtle Survey Protocol (MNRF, 2015) was followed. This protocol requires at least five visual surveys of areas within the project area and adjacent lands outlined as being potential turtle habitat using Blanding's Turtle general habitat description by MNDMNRF. The survey period begins following ice-melt and ends on June 15th. The spacing of surveys should be such that a minimum period of 3 weeks is covered. The protocol requires that basking surveys be completed between 8 am and 5 pm during sunny periods and when air temperature is at least 5°C (partially cloudy is accepted if air temperature is above 15°C and is warmer than the water temperature). When possible, surveys should target days immediately following inclement weather, when turtles would be more prone to basking. Information collected included: date of survey, start and stop time, weather conditions, number and species of turtles observed, and their location was noted using a hand-held GPS. A map was produced identifying the location of the turtles.

2.3.4 Bat Exit Surveys

Visual bat exit survey was completed for the house and farm buildings on site to evaluate the potential use by bats. Exit surveys were completed based on the *Bats and Bat Habitats: Guidelines for Wind Power Projects* (OMNR, 2011). The guidelines were followed to conduct the exit survey and are outlined below:

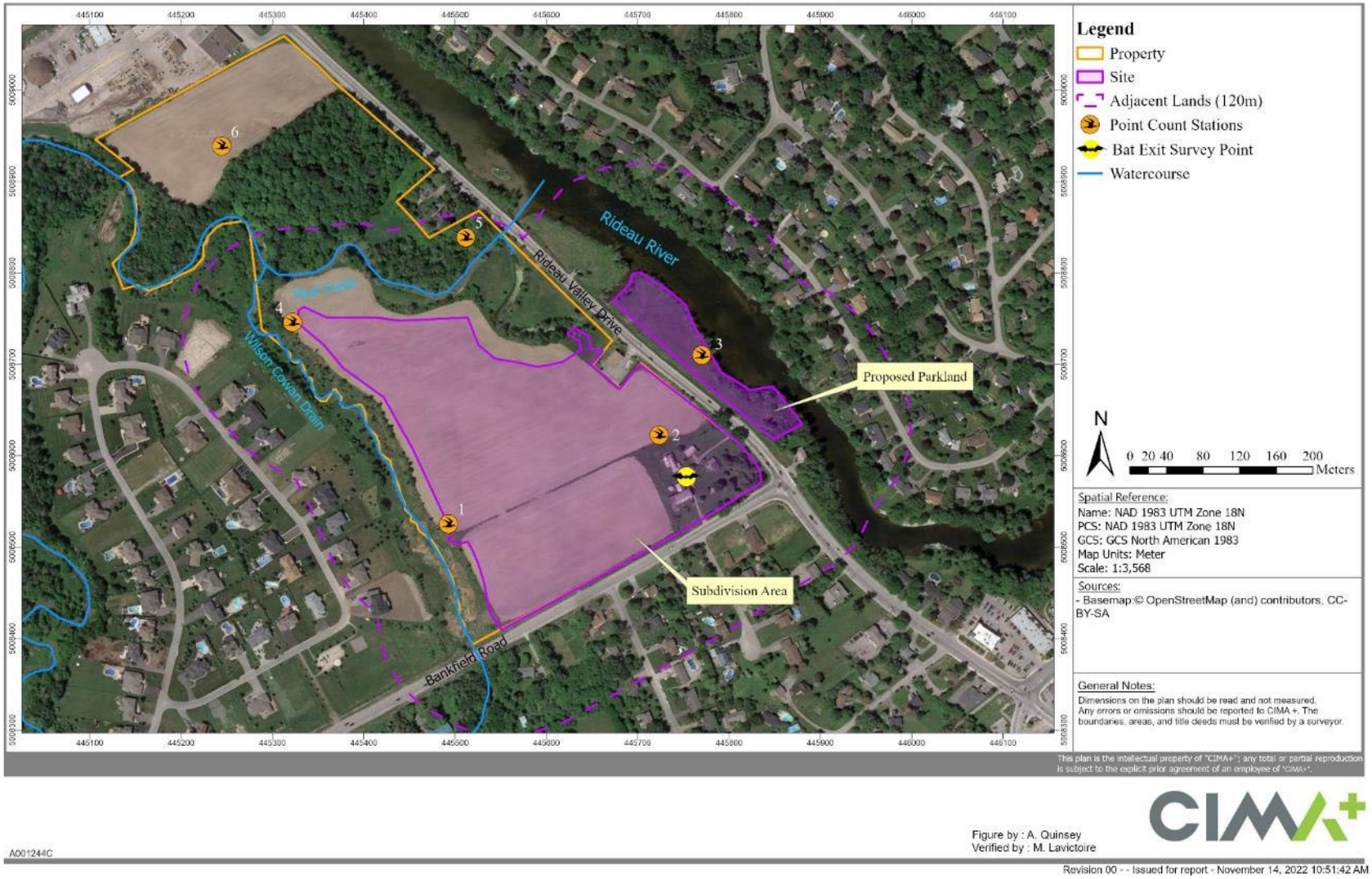
- Exit surveys were conducted in June (June 4 and 5, 2020).
- Cavity openings on suitable trees were monitored from 30 minutes before dusk until 60 minutes after dusk.

If bats were identified, then the proponent could assume presence of SAR bats or complete acoustic monitoring as per the province's protocol.

2.3.5 Incidental Fauna Observations

During all visits, any wildlife observations were recorded. Incidental observations included observations of an individual, its tracks, burrows, feces and/or kill sights.

Figure 3: Breeding Bird and Bat-Exit Survey Points



3. BACKGROUND

3.1 Location

This project is situated northwest of the intersection of Rideau Valley Drive and Bankfield Road. It is in part of Lot 1-2, Concession 1-2, in the Geographic Township of Nepean (UTM 18T 445640 m E; 5008500 m N, and Latitude 45.22855 Longitude -75.69067). It is bordered by the Rideau River to the east and residential area to the north, south, and west. The proposed subdivision is also bordered by Mud Creek to the north and Wilson Cowan Drain to the west.

3.2 Summary of Known Natural Heritage Features

The schedule associated with the City of Ottawa official plan identifies the presence of a Natural Heritage Feature within the parcel at 4386 Rideau Valley Road, including within the area to be graded. Within the 120 m Adjacent Lands, the schedule identifies of the presence of watercourses (identified as the Rideau River, Mud Creek, and Wilson Cowan Drain), and the Natural Heritage Features also extends to these lands. No other features were identified near the Property.

As per the Secondary Plan, the Mud Creek Subwatershed Study (MCSS) is to be referenced for identified natural heritage features. That report discusses:

- Habitat for endangered or threatened species (to be confirmed through site investigations);
- Significant woodlands;
- Wetlands associated with significant woodlands;
- Significant valleylands (Mud Creek and several tributaries);
- Significant wildlife habitat (to be confirmed through site investigations);
- Life and earth science areas of natural and scientific interest (candidate, Manotick Drunlin Forest);
- Linkages (Wilson Cowan Drain and its tributary);
- Groundwater features and
- Surface water features.

Of the list above, the only features identified in the MCSS for this site are:

- Significant Valleylands (Mud Creek and Wilson Cowan Drain)
- Surface water features (Mud Creek and Wilson Cowan Drain)

The MCSS also notes that a portion of Mud Creek along the edge of this site is a potential restoration area for riparian planting.

CIM+ 2022 investigations into the potential for Headwater Drainage Features on the site was undertaken as per the *Evaluation, Classification and Management of Headwater Drainage Features Guidelines* (TRCA, July 2014) and the only candidate feature, outside of the Wilson Cowan Drain, was dry in early April and its catchment was likely less than 2.5 ha (making it too small to be considered a headwater drainage feature). Regardless, the outcome was a No Management Requirement and no further action was required. The Wilson Cowan Drain will be protected by an appropriate setback discussed herein.

A summary of the information available from the background review and the presence/absence of natural heritage features in or within 120 m of the subdivision or parkland parcel (Blocks 83 and 84) is summarized below. Note that the subdivision parcel refers to the area that could be directly impacted by that development. To determine this, the report has selected the area to be impacted by grading as the development area. No works will occur outside of the lands to be graded.

Table 1: Summary of Available Background Information on the Identified Natural Features

Natural Heritage Systems	Present within Subdivision or Parkland	Present within Adjacent Lands (120m) of Subdivision or Parkland	Comments
1a.Significant wetlands	None	None	None
1b. Significant habitat of Endangered and Threatened Species (SAR)	Potential for endangered or threatened species needs to be determined following assessment of the suitable habitats in or near the site. Preliminary review of the satellite images suggests that there is a potential for several species at risk such as Blanding's Turtle, Bank Swallow, Barn Swallow, Chimney Swift, Bats and Butternuts.		Endangered species habitat is discussed in Section 5.3.1
1c. Significant woodlands	None	Present within Adjacent Lands of the subdivision	Discussed in Section 5.3.2
1d. Other Wetlands	None	Present within Adjacent Lands of the subdivision	None
1e. Significant Valleyland	None	Identified along Mud Creek and Wilson Cowan Drain by the Mud Creek Subwatershed Study	Discussed in Section 5.3.3
1f. Significant Wildlife Habitat	To be determined from site investigations		Discussed in Section 5.3.4
1g. and 1h. Areas of Natural and Scientific Interest	None	None	None

Natural Heritage Systems	Present within Subdivision or Parkland	Present within Adjacent Lands (120m) of Subdivision or Parkland	Comments
1i. Urban Natural Features	n/a	n/a	n/a
1j. Forest remnants and corridors	None in the subdivision area. Treed riparian of Rideau River along Parkland	None	None
1k. Groundwater Features	None	None	None
1l. Surface Water Features / Fish Habitat	None	Mud Creek, Wilson Cowan Drain and the Rideau River	Discussed in Section 5.3.5

3.3 Available Information on Fish Habitat and Communities Details

As mentioned above, there are three watercourses present within 120 m of the subdivision lands: the Rideau River, Mud Creek, and Wilson Cowan Drain.

Fisheries information was present on all three watercourses on LIO, and additional information was present for the first two in their respective RVCA Catchment Reports. This reach of the Rideau River is called the Long Island Catchment and contains a warm to cool water recreational and baitfish fishery. LIO and RVCA combined provided a list of 42 common warm to cool water fish species for this section of the Rideau River, near the site (Figure 4). Of these, seven sport fish were identified (northern pike, muskellunge, channel catfish, smallmouth bass, largemouth bass, yellow perch, and walleye) (Table 2). Four pan fish (rock bass, green sunfish, pumpkinseed, and bluegill) were also listed. Note that green sunfish is not listed as naturally occurring in this part of Ontario (https://www.ontariofishes.ca/home.htm). Its presence may be a case of misidentification or introduction.

Photo 1: Rideau River adjacent to the site (April 11, 2022)

Mud Creek is a tributary to the Rideau River entering that larger water body downstream of Rideau Valley Road, and north of the parkland parcel. The MCSS describes it as a cool water system (City of Ottawa, 2015) ranging from cool to warm water (City Stream Watch, 2014). LIO and RCVA combined provided a list of 32 common warm to cold water fish species for the portion of Mud Creek near the site (Figure 4). Note the MCSS states that there are 36 species but the table in that report only lists 30 species identified to species, and another 2 to family that were not listed to species (darters and redhorses) the remaining were either not identified or were identified to a family for which there is a representative species on the list (sculpins, minnows, sunfishes, and unknown). Of the32 species, 7 sport fish were identified (brook trout, northern pike, muskellunge, smallmouth bass, largemouth bass, yellow perch, and walleye) (Table 2). Three pan fish (rock bass, pumpkinseed, and bluegill) were also listed.

Photo 2: Looking at the upstream end of Mud Creek that is on Site (April 11, 2022)

Photo 3: Looking at a flooded section of the floodplain near the downstream end of Mud Creek that is on Site (April 11, 2022)

Photo 4: Looking at the downstream end of the oxbow (April 11, 2022)

Wilson Cowan Drain is a tributary to Mud Creek. The MCSS notes that while it was previously listed as cool water, more recent studies have suggested warm water. LIO and the MCSS (City of Ottawa, 2015) identified a total of 4 species (Figure 4). No sport or pan fishes were identified (Table 2).

Photo 5: Wilson Cowan Drain within the site (April 11, 2022)

The DFO National Aquatic Species at Risk Mapping (NASAR) identified the presence of Bridle Shiner in the Rideau River downstream of the site, within 1 km. This shiner is a species of special concern (**APPENDIX D**).

These three systems are all considered direct fish habitat, and no fish habitat or community descriptions were undertaken as information on the general habitat and communities is available, and because the proponent designed the proposed works to ensure that they would be protected. This protection includes a setback that will allow for meandering channels and is discussed in Section 5.0.

Figure 4: Summary of Background Fish Community Information

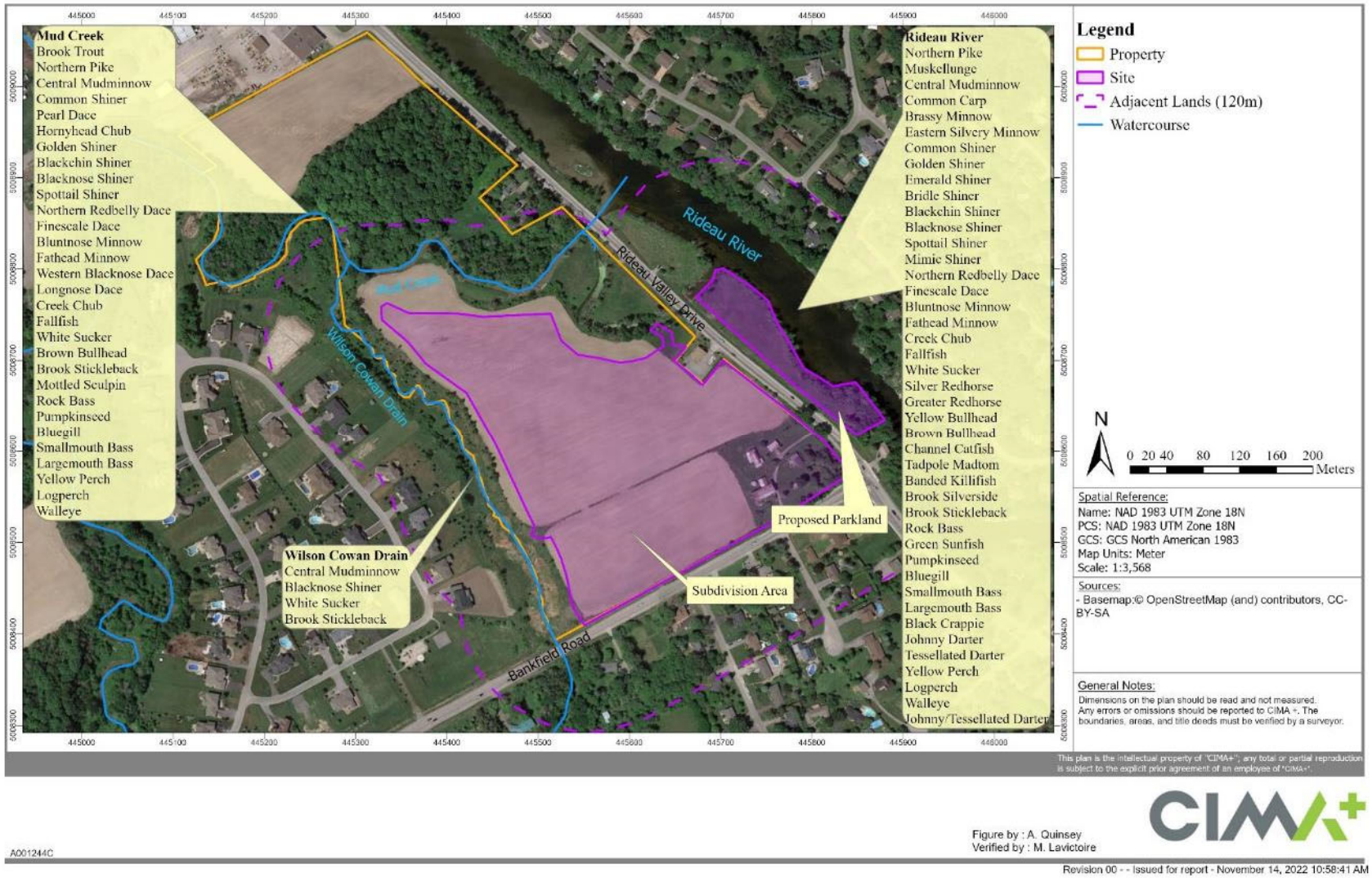


Table 2: Background Fish Community Information for the Rideau River, Mud Creek, and Wilson Cowan Drain

Common Name	Scientific Name	Trophic Class*	Thermal Regime	SRank	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status	Present in Area Depicted on (Figure 8)		
							Wilson Cowan Drain	Mud Creek	Rideau River
Brook Trout	*Salvelinus fontinalis*	invertivore/ carnivore	cold	S5	No Status	No Status		Y	
Northern Pike	*Esox lucius*	carnivore	cool	S5	No Status	No Status		Y	Y
Muskellunge	*Esox masquinongy*	carnivore	warm	S4	No Status	No Status		Y	Y
Central Mudminnow	*Umbra limi*	invertivore	cool	S5	No Status	No Status	Y	Y	Y
Common Carp	*Cyprinus carpio*	invertivore/ detritivore	warm	SNA	No Status	No Status			Y
Brassy Minnow	*Hybognathus hankinsoni*	planktivore/ detritivore	cool	S5	No Status	No Status			Y
Eastern Silvery Minnow	*Hybognathus regius*	herbivore/ detritivore	warm	S2	No Status	No Status			Y
Common Shiner	*Luxilus cornutus*	invertivore	cool	S5	No Status	No Status		Y	Y
Northern Pearl Dace	*Margariscus nachtriebi*	invertivore/carnivore	cool	S5	No Status	No Status		Y	
Hornyhead Chub	*Nocomis biguttatus*	invertivore/herbivore	cool	S4	No Status	No Status		Y	
Golden Shiner	*Notemigonus crysoleucas*	invertivore/ herbivore	cool	S5	No Status	No Status		Y	Y
Emerald Shiner	*Notropis atherinoides*	planktivore	cool	S5	No Status	No Status			Y

Common Name	Scientific Name	Trophic Class*	Thermal Regime	SRank	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status	Present in Area Depicted on (Figure 8)		
							Wilson Cowan Drain	Mud Creek	Rideau River
Bridle Shiner	*Notropis bifrenatus*	planktivore	cool	S2	Special Concern	Special Concern			Y
Blackchin Shiner	*Notropis heterodon*	invertivore	cool	S4	No Status	No Status		Y	Y
Blacknose Shiner	*Notropis heterolepis*	invertivore/ herbivore	cool	S5	No Status	No Status	Y	Y	Y
Spottail Shiner	*Notropis hudsonius*	invertivore/ planktivore	cool	S5	No Status	No Status		Y	Y
Mimic Shiner	*Notropis volucellus*	invertivore/ herbivore	warm	S5	No Status	No Status			Y
Northern Redbelly Dace	*Chrosomus eos*	invertivore/ planktivore	cool	S5	No Status	No Status		Y	Y
Finescale Dace	*Chrosomus neogaeus*	invertivore/ planktivore	cool	S5	No Status	No Status		Y	Y
Bluntnose Minnow	*Pimephales notatus*	detritivore	warm	S5	No Status	No Status		Y	Y
Fathead Minnow	*Pimephales promelas*	detritivore/ invertivore	warm	S5	No Status	No Status		Y	Y
Western Blacknose Dace	*Rhinichthys obtusus*	invertivore	cool	S5	No Status	No Status		Y	
Longnose Dace	*Rhinichthys cataractae*	invertivore	cool	S5	No Status	No Status		Y	
Creek Chub	*Semotilus atromaculatus*	invertivore/ carnivore	cool	S5	No Status	No Status		Y	Y

Common Name	Scientific Name	Trophic Class*	Thermal Regime	SRank	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status	Present in Area Depicted on (Figure 8)		
							Wilson Cowan Drain	Mud Creek	Rideau River
Fallfish	*Semotilus corporalis*	invertivore/ carnivore	cool	S4	No Status	No Status		Y	Y
White Sucker	*Catostomus commersonii*	invertivore/ detritivore	cool	S5	No Status	No Status	Y	Y	Y
Silver Redhorse	*Moxostoma anisurum*	invertivore	cool	S4	No Status	No Status			Y
Greater Redhorse	*Moxostoma valenciennesi*	invertivore	warm	S3	No Status	No Status			Y
Yellow Bullhead	*Ameiurus natalis*	invertivore/ carnivore	warm	S4	No Status	No Status			Y
Brown Bullhead	*Ameiurus nebulosus*	invertivore/ herbivore/ carnivore	warm	S5	No Status	No Status		Y	Y
Channel Catfish	*Ictalurus punctatus*	invertivore/ carnivore	warm	S4	No Status	No Status			Y
Tadpole Madtom	*Noturus gyrinus*	invertivore/ planktivore	warm	S4	No Status	No Status			Y
Banded Killifish	*Fundulus diaphanus*	invertivore/ planktivore	cool	S5	No Status	No Status		Y	Y
Brook Silverside	*Labidesthes sicculus*	planktivore/ invertivore	warm	S4	No Status	No Status			Y
Brook Stickleback	*Culaea inconstans*	planktivore/i nvertivore	cool	S5	No Status	No Status	Y	Y	Y

Common Name	Scientific Name	Trophic Class*	Thermal Regime	SRank	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status	Present in Area Depicted on (Figure 8)		
							Wilson Cowan Drain	Mud Creek	Rideau River
Mottled Sculpin	*Cottus bairdii*	invertivore	cool	S5	No Status	No Status		Y	
Rock Bass	*Ambloplites rupestris*	invertivore/ carnivore	cool	S5	No Status	No Status		Y	Y
Green Sunfish*	*Lepomis cyanellus*	invertivore/ carnivore	warm	S4	No Status	No Status			Y
Pumpkinseed	*Lepomis gibbosus*	invertivore/ carnivore	warm	S5	No Status	No Status		Y	Y
Bluegill	*Lepomis macrochirus*	invertivore	warm	S5	No Status	No Status		Y	Y
Smallmouth Bass	*Micropterus dolomieu*	invertivore/ carnivore	cool	S5	No Status	No Status		Y	Y
Largemouth Bass	*Micropterus salmoides*	invertivore/ carnivore	warm	S5	No Status	No Status		Y	Y
Black Crappie	*Pomoxis nigromaculatus*	invertivore/ carnivore	cool	S4	No Status	No Status			Y
Johnny Darter	*Etheostoma nigrum*	invertivore	cool	S5	No Status	No Status			Y
Tessellated Darter	*Etheostoma olmstedi*	invertivore	cool	S4	No Status	No Status			Y
Yellow Perch	*Perca flavescens*	invertivore/ carnivore	cool	S5	No Status	No Status		Y	Y
Logperch	*Percina caprodes*	invertivore	warm	S5	No Status	No Status		Y	Y

Common Name	Scientific Name	Trophic Class*	Thermal Regime	SRank	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status	Present in Area Depicted on (Figure 8)		
							Wilson Cowan Drain	Mud Creek	Rideau River
Walleye	*Sander vitreus*	invertivore/ carnivore	cool	S5	No Status	No Status		Y	Y
						Number of Species	4	32	42
	Indicates presence								

(DFO, 2019; Eakins, 2018; OMNRF, 2014; MNRF, 2017; MTO, 2006)

* Green Sunfish is not listed as naturally occurring in this part of Ontario This may be a case of misidentification or a released individual (https://www.ontariofishes.ca/home.htm)

Status Updated: September 2022

SRANK DEFINITIONS

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

S5 Secure, Common, widespread, and abundant in the nation or state/province.

SNA Not Applicable, A conservation status rank is not applicable because the species is not a suitable target for conservation activities

3.3.1 Soil Conditions

The area is identified as Clay Plains in the mapping from the *Characterization of Ottawa's Watershed: An Environment Foundation Document with Supporting Information Base* (March 2011). A summary of the information from the above-mentioned report and maps is provided in Table 3. The soils map of the area shows the subject lands as having the Rideau Clay and Grenville Loam (*Soils of Regional Municipality of Ottawa-Carleton*). This matches information from the Paterson Group report that notes the presence of topsoil underlain by silty clay or sand with one bore hole with fill underlain by glacial till (Paterson Group, 2022).

Table 3: Summary of Soil and Geology Information Available from the Characterization of Ottawa's Watershed Maps

Map	Classification
Bedrock	Dolomite Limestone
Surficial Geology	Marine Deposits Till, drumlinized (MCSS)
Physiography Unit	Clay Plains
Permeability	Low to Medium
Overburden Depth	Deep
Hydrological Soil Group	B-D

4. Site Investigation

The 4386 Rideau River subdivision portion of the site was flat, and mostly planted in row crop (corn). The natural features were limited to the valley of Mud Creek (including the oxbow) and Wilson Cowan Drain. Individual trees were presence scattered along the banks and around the residential house and barns. There was no woodland or wetland on site (again defined as area to be directly impacted). The parkland parcel was bordered by a well-treed, but narrow, deciduous remnant forest and the Rideau River. The remainder of the lands, including a portion that contained standing water in the spring (north section), and all were mowed.

4.1 Site Visit Dates and Purpose

As mentioned above, several site visits were undertaken. A summary of the dates, times, ambient conditions, and purpose for the visits are provided in Table 4. The vegetation communities are described in the section below, followed by the results from the species-specific surveys.

Table 4: Summary of Dates, Times, Conditions and Purpose of Site Investigations

Date	Time (h)	Staff	Air Temperature (Min-Max) °C*	Cloud Cover (%) Beaufort Wind Scale [Descriptor (scale)]	Total Rainfall (mm) 7 days prior to visit*	Water Level Conditions ***	Purpose
April 5, 2022	1600-1645	S. Lafrance A. Quinsey	12.0 (0.0-13.2)	Mostly Cloudy Wind: light breeze (2)	3.3	Flood Outlook	- Initial Visit -Headwater Drainage Assessment

Date	Time (h)	Staff	Air Temperature (Min-Max) °C*	Cloud Cover (%) Beaufort Wind Scale [Descriptor (scale)]	Total Rainfall (mm) 7 days prior to visit*	Water Level Conditions ***	Purpose
April 11, 2022	1015-1215	M. Lavictoire	7.0 (-4.0-13.0)	Clear Sky Wind: light breeze (2)	37.2	Water Safety	- Initial Visit -Headwater Drainage Assessment -Turtle Basking Survey
May 5, 2022	0945-1125	A. Quinsey	11.0 (4.1-17.8)	Clear Sky Wind: light breeze (2)	N/A	N/A	-Turtle Basking Survey
May 16, 2022	1230-1300	S. Lafrance	23.0 (10.3-22.4)	Mostly cloudy Wind: light air (1)	N/A	N/A	-Turtle Basking Survey
May 31, 2022	830-1030	A. Quinsey	23.0 (14.0-24.5)	Clear sky Wind: light air (1)	N/A	N/A	- Daytime Breeding Bird
June 6, 2022	1630-1645 2017-2147	S. Lafrance	17.0-19.0 (7.4-21.1)	Partially Cloudy Wind: Light Air (1) to Light Breeze (2)	N/A	N/A	-Turtle Basking Survey -Bat/Chimney Swift Survey
June 8, 2022	1100-1300	C. Little	20.0 (14.2-24.0)	Clear Sky Wind: Gentle Breeze (3)	N/A	N/A	-Turtle Basking Survey - Tree Inventory
June 24, 2022	830-1030	A. Quinsey	20.0 (13.0-27.6)	Partly Cloudy Wind: Light Breeze (2)	N/A	N/A	- Daytime Breeding Bird

Date	Time (h)	Staff	Air Temperature (Min-Max) °C*	Cloud Cover (%) Beaufort Wind Scale [Descriptor (scale)]	Total Rainfall (mm) 7 days prior to visit*	Water Level Conditions ***	Purpose
August 18, 2022	0900-1700	C. Little	21.0 (15.3-26.9)	Mostly Cloudy Wind: Light Breeze (2)	N/A	N/A	- Vegetation
October 5, 2022	1000-1200	A. Quinsey	9.0 (1.9-21.9)	Clear sky Wind: light air (1)	N/A	N/A	-Vegetation

M. Lavictoire – Michelle (Nunas) Lavictoire – B. Sc. Wildlife Resources and M.Sc. Natural Resources
S. Lafrance – Sophie Lafrance – B.Sc. Biology and graduate diploma in Ecosystem Restoration
C. Little – Casey Little - Ecosystems Management Diploma
A. Quinsey – Al Quinsey - B.Sc. Environmental Biology

*Min-Max Temp Taken From: Environment Canada. National Climate Data and Information Archive. Ottawa International Airport. Available: http://climate.weatheroffice.gc.ca/ [October 3, 2022].
**Water Level Conditions taken from Rideau Valley Conservation Authority (RVCA): https://www.rvca.ca/

Water Level Definitions

Flood Outlook: Gives early notice of the potential for flooding based on weather forecasts calling for heavy rain, snow melt, high winds or other conditions.

Water Safety: High flows, unsafe banks, melting ice or other factors that could be dangerous for recreational users such as anglers, canoeists, hikers, children, pets, etc. are present. Flooding is not expected.

4.2 Vegetation Description and Butternut Survey Results

The description of the vegetation communities was initially completed by Muncaster Environmental Planning and that report, with permission, has been included in Appendix E. On August 18, 2022, CIMA+ walked the property and confirmed that the vegetation community descriptions were representative of what was seen in the field. In addition, between the visits from April until October, CIMA+ added more detailed descriptions for the communities within the subdivision and parkland parcels.

Subdivision Lands

The area to be graded consisted mostly of ploughed fields planted in corn in 2022. The natural vegetation communities within this area were restricted to the narrow lands surrounding the aquatic features: Mud Creek, its oxbow and Wilson Cowan Drain. There were also some larger individual trees surrounding the house. These consisted of eastern white cedar, Norway spruce, Manitoba maple, American elm, and bur oak.

One area was identified as a Cultural Meadow. These lands were found north of the Manotick Wastewater Pumping Station and to the south of Mud Creek. They extended about half-way to the west within the site but were separated from the cultural meadow associated with the Wilson Cowan Drain by the agricultural lands (corn field in 2022). Located within this area was also the oxbow (an inclusion to this community).

The dominant vegetation was the herbaceous layer which consisted mostly of smooth brome followed by New-England aster, wild carrot, and smooth bedstraw. The northern half was almost entirely smooth brome, forbs became more prevalent in the southern half. The trees were limited to those present along the top of bank or around the oxbow. These were green ash and Manitoba maple.

Photo 6: Looking east along northern side of central cultural meadow community (October 5, 2022)

Figure 5: Vegetation Community

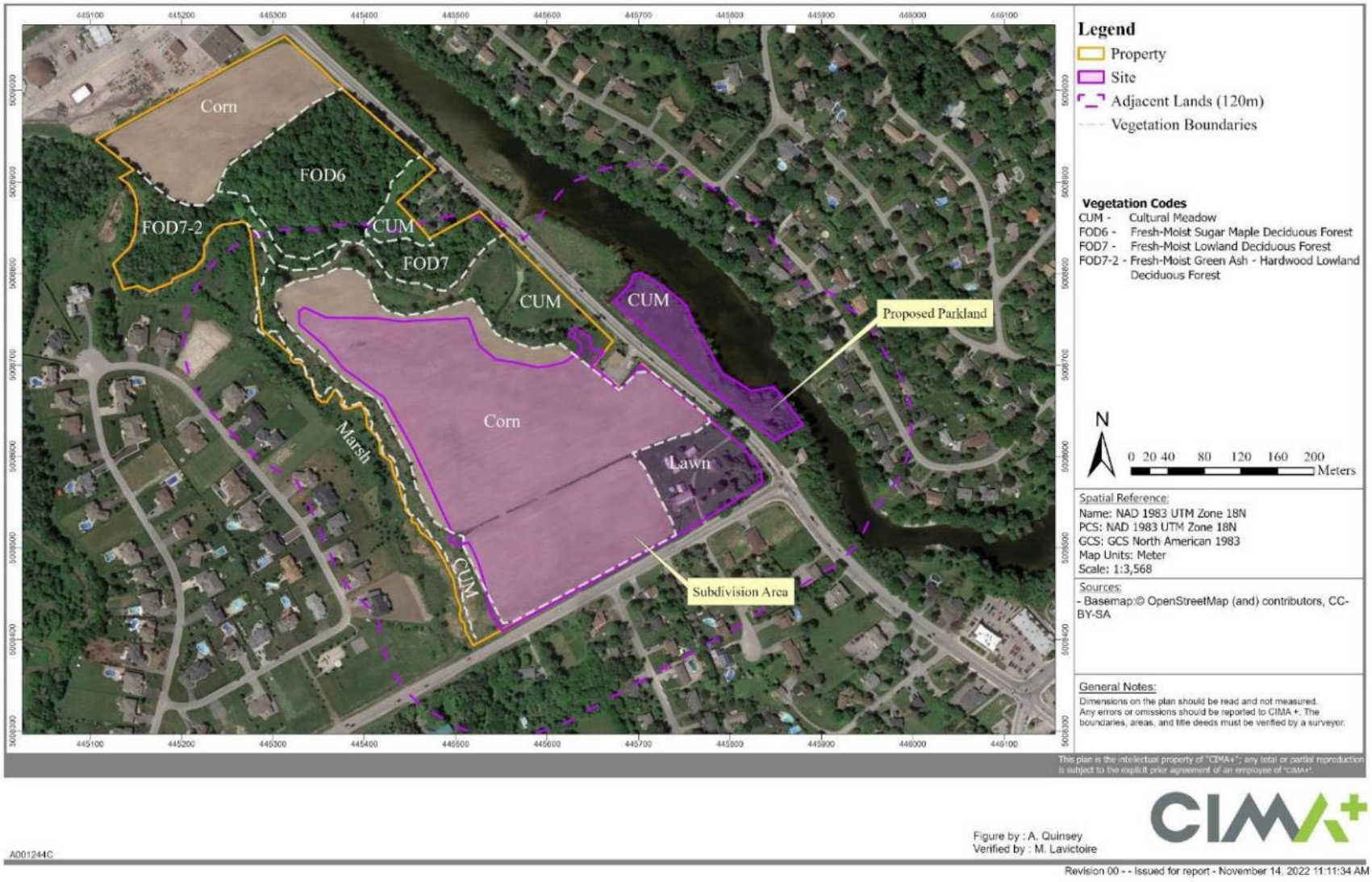


Photo 7: Looking north along from southern edge of central cultural meadow community (October 5, 2022)

The oxbow had a maximum depth of 58 cm in the spring and contained some water even in the summer. The Paterson Group report (2022) notes that surveyors identified maximum depths for the normal water level mark of 0.7-0.9 m. The oxbow was well-shaded by trees and shrubs on its banks. The oxbow itself was a robust emergent marsh with two dominant forms, robust emergent (big bur-reed) and ground cover (purple loosestrife, flat topped white aster, and spotted joe-pyeweed). Other commonly encountered species were lesser duckweed, glossy buckthorn, nannyberry, green ash, and flowering rush. These were present in insufficient concentrations to be considered a form under the OWES protocol.

Photo 8: Looking downstream at the upstream end of oxbow (October 5, 2022)

Photo 9: Looking south across oxbow (October 5, 2022)

As noted above, another Cultural Meadow habitat was noted between the agricultural fields along the west side of the site. This habitat continued down the bank towards Wilson Cowan Drain. The dominant

species was smooth brome, followed by New England aster, wild parsnip, tall goldenrod, and common milkweed. The canopy layer (cover: 20%) was primarily American elm (12-18 DBH, 5-10m tall) with some sugar maple (10-15 DBH, 5-8m tall), and Manitoba maple (DBH 10, 6m tall).

Photo 10: Looking north along narrow western cultural meadow community (October 5, 2022)

Between the above meadow and Wilson Cowan Drain was a narrow marsh community. It was composed of two dominant forms, narrow emergents (reed canary grass and riverbank sedge) and ground cover (purple loosestrife, spotted joe-pyeweed, stinging nettle, and goldenrods). Other commonly encountered species included bittersweet nightshade, meadowsweet, and nannyberry. The edge of this community was used in determining the potential habitat classification for Blanding's Turtle (see Section 5).

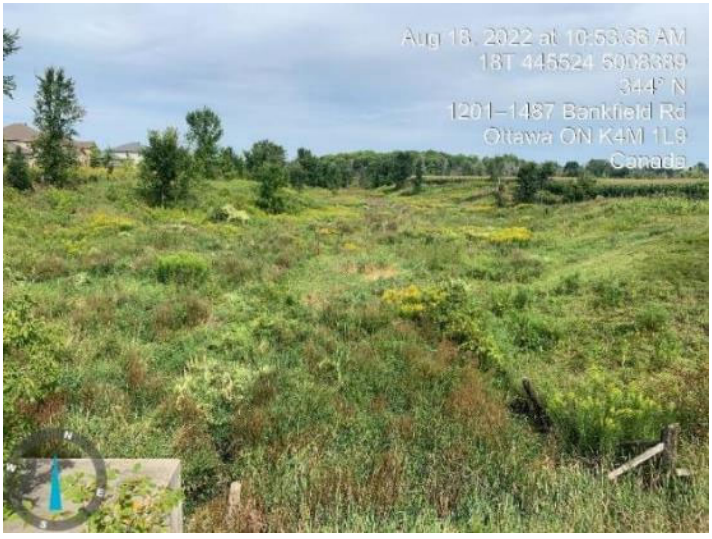


Photo 11: Looking north along narrow marsh and western cultural meadow community (August 18, 2022)

Parkland (Blocks 83 and 84)

The proposed parkland and open space adjacent to the western branch of the Rideau River (Blocks 83 and 84 on the Draft Plan of Subdivision) was dominated by herbaceous vegetation. Similar to the other cultural meadows, the dominant species were smooth brome, New-England aster, tall goldenrod, and smooth bedstraw. Shrub and tree species were confined to the rivers edge, common species included Manitoba maple, bur oak, eastern white cedar, sugar maple honeysuckle, and nanny berry.

Photo 12: Flooded floodplain along north side of parkland area in Block 84 (April 11, 2022)

Photo 13: Looking southeast across the eastern cultural meadow community (October 5, 2022)

4.2.1 Bird Survey Results

General daytime breeding bird surveys were conducted on May 31 and June 24, 2022. Due to the potential of the noise of the road affecting the results, an extra station (Station 3) was added on the east side of Rideau Valley Drive. In total 33 species of birds were observed on site and within the adjacent lands (Appendix B). Of these 10 species were found to likely be nesting on site or within the adjacent lands: killdeer, mourning dove, eastern kingbird, blue jay, American robin, American redstart, song sparrow, red-winged blackbird, common grackle, and American goldfinch.

No species at risk were observed, however several (4) barn swallow nests were present within the barns on the southeastern corner of site, none of the nests had fledglings, fresh material, or signs of whitewashing, and no foraging individuals were observed. As such, barn swallows are considered absent from site.

An eastern wood-pewee was heard calling offsite, just west of the confluence of Mud Creek and Wilson Cowan Drain, during one visit (June 24, 2022).

Photo 14: Old barn swallow nests in barns on southeastern corner of site (June 24, 2022)

4.2.2 Turtle Survey Results

Five turtle basking surveys were conducted in 2022 in the oxbow, though incidental sightings of turtles were noted while conducting other surveys (Table 5). Two species of turtle were observed on site, midland painted turtles and northern map turtles. Midland painted turtles were primarily observed in the oxbow on site while northern map turtles were primarily in the Rideau River adjacent to site (Figure 6). Two northern map turtles were also observed in the agricultural field adjacent to Mud Creek during bird surveys on May 31 and June 24.

Table 5: Turtle Survey Results

Date	Turtles observed
April 11, 2022	None
May 5, 2022	4 Midland Painted Turtles in Oxbow
May 16, 2022	3 Midland Painted Turtles in Oxbow
May 31, 2022	1 Northern Map Turtle in field near Mud Creek (incidental)
June 6, 2022	1 Midland Painted Turtle in Oxbow
June 8, 2022	2 Midland Painted Turtles in Oxbow, 1 Midland Painted Turtle and 19 Northern Map Turtles in Rideau River adjacent to site
June 24, 2022	1 Northern Map Turtle in Mud Creek (incidental)

Figure 6: Turtle Basking Survey Results

4.3 Incidentals

During the site investigations, evidence of the presence of or observations of individuals were noted. Incidental observations included 1 amphibian (northern leopard frog), 1 bird (recorded outside of the breeding bird survey period) (wood duck), 1 mammal (grey squirrel). The information on incidental turtle observations was included in the section above.

It is noted that a single nighttime survey was completed on June 5, 2022. The conditions were favorable for Eastern Whip-poor-will surveys (apart from the moon illumination being slightly lower than preferred at 43.4% instead of 50%). The nighttime survey was completed by a biologist with experience with this species and none were heard or observed.

Eleven butternuts were noted while completing other field investigations. Their locations are shown on Figure 9.

5. ANALYSIS OF POTENTIAL TO IMPACT THE NATURAL FEATURES

The following section looks at the identified or potential natural features and the results from the field investigations to assess whether the feature is present and if present, whether it is significant based on the appropriate reference document.

As mentioned above, the Secondary Plan for the Village of Manotick has not identified any features within the site other than the two watercourses (subdivision and parkland parcels). However, the MCSS and/or the City of Ottawa official Plans have identified the potential or the presence for several natural heritage features. Following site investigations by CIMA+ it was confirmed that the following was present, outside of the active agricultural lands:

- Potential for Endangered or Threatened Species and/or their Habitat
- Potential Significant Woodlands
- Potential Significant Valleylands
- Potential Significant Wildlife Habitat (including potential for Linkages)
- Confirmed Fish Habitat
    - Mud Creek including the oxbow which is seasonally connected
    - Wilson Cowan Drain

The determination as to whether the above features are present and significant has been completed in the sections below based on the appropriate reference documents and the potential for the proposed project to impact the feature. Where a significant natural heritage feature is present, their significance was assessed, and avoidance and mitigation measures recommended.

5.1 Review of Project Activities

There are two components to this project: (1) the proposed residential subdivision on the west side of Rideau Valley Drive and (2) the proposed open space and parkland adjacent to the Rideau River (Blocks 83 and 84). The activities associated with each of these are listed below.

1. Construction of residential subdivision
    a. Clearing of 8.22 ha (of which 8.16 ha consists of row crops and 0.07 ha of cultural meadow)
    b. Backfilling, and grading
    c. Revegetation of the setback identified along Mud Creek (30 m) and Wilson Cowan Drain (15 m)
    d. Design and development of a stormwater management strategy includes the following:
        i. Water Quality will remain the same or better:
            - A water quality treatment unit will treat most of the post-development flows to an enhanced level of protection (80% TSS removal), prior to discharging at the Oxbow.
            - Other areas that are directed to the Mud Creek and the Wilson Cowan Drain are rear yards and rooftops that do not require quality control treatment as there is no introduction of grit or road salts.
        ii. Water Quantity: Has been designed to minimize impacts to the adjacent waterbodies (following information has been provided by Novatech).
            - Given the proximity to the Rideau River, post-development flows can be conveyed via the Rideau Valley Drive bridge.
            - Rear-yard drainage for lots 1-22 and 23-29, and 56-64 will be directed overland sheet flow to the adjacent waterbodies (Mud Creek, Wilson Cowan and the oxbow).
            - The change in catchment for Mud Creek upstream of the oxbow (due to re-directing of flow to the oxbow) is minimal as it represents 0.06% of the watershed area (3.68ha of 6425ha).
            - The change in catchment for Wilson Cowan Drain (due to re-directing of flow to the oxbow) is minimal as it represents 0.6% of the watershed area (2.78ha of 477ha).

- Has been designed to avoid impacts from erosion

2. Parkland (Blocks 83 and 84)
    a. Selective tree removal
    b. Minimal grading for passive recreational access from Rideau Valley Drive
    c. Construction of passive recreational design such as stone dust pathways and benches (details pending)

5.2 Impact Assessment Methods

The assessment of the potential impacts is completed by analyzing the impact of various activities associated with the project. The significance of the potential impacts is measured using four different criteria:

1. Area affected may be:
    a. local in extent signifying that the impacts will be localized within the project area
    b. regional signifying that the impacts may extend beyond the immediate project area.

2. Nature of Impact:
    a. negative or positive
    b. direct or indirect
    c. Risk (certainty, understanding of impacts)

3. Duration of the impact may be rated as:
    a. short term (construction phase, 1-2 years)
    b. medium term (>2years)
    c. long term (>7 years).
    d. permanent

4. Magnitude of the impact may be:
    a. negligible signifying that the impact is not noticeable
    b. minor signifying that the project's impacts are perceivable and require mitigation
    c. moderate signifying that the project's impacts are perceivable and require mitigation as well as monitoring and/or compensation
    d. major signifying that the project's impacts would destroy the environmental component within the project area.

Where identified, the boundaries of any significant features are noted and the potential for the development to cause negative impacts is assessed. For those features which may be negatively

impacted, avoidance and mitigation measures are recommended, as appropriate. The PPS states that a negative impact signifies:

> *"a) in regard to policy 2.2, degradation to the quality and quantity of water, sensitive surface water features and sensitive ground water features, and their related hydrologic functions, due to single, multiple or successive development or site alteration activities;*
>
> *c) in regard to fish habitat, any permanent alteration to, or destruction of fish habitat, except where, in conjunction with the appropriate authorities, it has been authorized under the Fisheries Act;*
>
> *d) in regard to other natural heritage features and areas, degradation that threatens the health and integrity of the natural features or ecological functions for which an area is identified due to single, multiple or successive development or site alteration activities."*

5.3 Evaluation of Potential Impacts

5.3.1 Endangered and Threatened Species

Endangered and threatened Species at Risk (SAR) are protected under provincial Endangered Species Act. The federal Species at Risk Act (SARA) applies to only fish species on private land. Most birds, including SAR, also receive protection from Migratory Bird Convention Act and/or Fish and Wildlife Conservation Act. Together, provincially, and federally protected species are referred, herein, to as SAR, herein. This site is situated on private lands and as such, the evaluation of presence was complete following the province's guidelines (as noted above, no federal "fish" listed as endangered or threatened are listed for these waterbodies).

Background review identified a potential of twelve endangered or threatened species to occur within the general area. These are: Blanding's turtle, eastern whip-poor-will, chimney swift, bank swallow, barn swallow, bobolink, eastern meadowlark, little brown myotis (bat), northern myotis (bat), eastern small-footed myotis (bat), tri-colored bat, and butternut. As is discussed in the table below, the habitat requirements for most of these species was not present. Those that were present, potentially present or that should be highlighted for avoidance during construction have been discussed further in the paragraphs below.

Table 6: List of Potential Endangered or Threatened Species and Identification of those Brought Forward

Common Name/ Population	Scientific Name	SRANK	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status	Preferred Critical Habitat	Reference	Guidelines/Triggers for Review	Brought Forward (Yes/No)
INSECTS								
Transverse Lady Beetle	*Coccinella transversoguttata*	S1	END	No status	Habitat generalists, primarily feeding on aphids and occurring across a wide range of habitats. Inhabits agricultural areas, suburban gardens, parks, coniferous forests, deciduous forests, prairie grasslands, meadows, riparian areas, and other natural areas.	COSEWIC 2016	There have been no new records of this species since 1985. Its distribution in Ottawa is unknown by the City of Ottawa. This species is considered absent.	No
REPTILES								
Blanding's Turtle	*Emydoidea blandingii*	S3	THR	THR	Shallow water, large marshes, shallow lakes or similar such water bodies. General habitat protection is provided for suitable habitat that is within 2 km of an occurrence when certain conditions are met.	COSEWIC 2016	Record of one individual within 2 km collected roughly 10 years ago (NHIC). Surveys in 2022 did not find any Blanding's Turtles within the oxbow.	Yes

Common Name/ Population	Scientific Name	SRANK	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status	Preferred Critical Habitat	Reference	Guidelines/Triggers for Review	Brought Forward (Yes/No)
BIRDS								
Least Bittern	*Ixobrychus exilis*	S4B	THR	THR	Freshwater marshes habitat with dense vegetation (Sandilands, 2005; COSEWIC, 2009a). Nest are typically in cattail marshes, near edge or openings but they have been found in other emergents and occasionally in willow (Woodcliff, 2007), COSEWIC states that the species must have emergent marsh with open water areas and stable water levels and are usually found in those that are larger than 5 ha (COSEWIC 2009a).	COSEWIC 2009	No suitable habitat on site.	No
Eastern Whip-poor-will	*Caprimulgus vociferus*	S4B	THR	THR	Rock or sand barrens with scattered trees, savannahs, old burns or other disturbed sites in a state of early to mid-forest succession, or open conifer plantations	COSEWIC 2009	Site is within 500m of a woodland.	Yes

Common Name/ Population	Scientific Name	SRANK	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status	Preferred Critical Habitat	Reference	Guidelines/Triggers for Review	Brought Forward (Yes/No)
Loggerhead Shrike	*Lanius ludovicianus*	S2B	END	END	Loggerhead Shrike breeding habitat is characterized by open areas dominated by grasses and/or forbs, interspersed with scattered shrubs or trees and bare ground. Suitable habitat includes pasture, old fields, prairie, savannah, pinyon-juniper woodland, shrub-steppe and alvar.	COSEWIC 2014	No suitable habitat on site. Additionally, two breeding bird surveys were conducted, and species was not observed. It is considered absent.	No
Chimney Swift	*Chaetura pelagica*	S4B, S4N	THR	THR	Cities, towns, villages, rural, and wooded areas. When selecting trees, they prefer those that are >50 cm in diameter and that are within 1 km of waterbodies.	COSEWIC 2007	Potentially could use structures on site. Two breeding bird surveys were conducted as well as a bat/chimney swift exit survey by the barns. None were observed, This species is considered absent.	No
Bank Swallow	*Riparia riparia*	S4B	THR	THR	This species nests within vertical banks, with a preference for sand-silt substrate. Nesting sites may be near open upland habitats	COSEWIC 2013	Vertical banks present along Mud Creek, some of which had exposed soil. Two breeding bird visits and several other visits were undertaken. This species was not observed, and no nests were observed in the banks, it is considered absent.	No
Barn Swallow	*Hirundo rustica*	S4B	THR	THR	Open or semi-open lands: farms, field, marshes.	COSEWIC 2011a	There is a barn and other structures in the southeastern corner of the site. A barn swallow was observed in 2021 and several inactive nests were present in 2022. None were observed in 2022.	Yes

Common Name/ Population	Scientific Name	SRANK	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status	Preferred Critical Habitat	Reference	Guidelines/Triggers for Review	Brought Forward (Yes/No)
Bobolink	*Dolichonyx oryzivorus*	S4B	THR	THR	Primarily in forage crops, and grassland habitat.	COSEWIC 2010	The lands were planted in corn, which is not used by this species. Additionally, active agricultural fields are not protected under the ESA. That said this species was not observed throughout the many visits to the site and is considered absent.	No
Eastern Meadowlark	*Sturnella magna*	S4B	THR	THR	Fields, meadows and prairies.	COSEWIC 2011b	The lands were planted in corn, which not used by this species. Additionally, active agricultural fields are not protected under the ESA. That said this species was not observed throughout the many visits to the site and is considered absent.	No
MAMMALS								
Little Brown Myotis	*Myotis lucifugus*	S4	END	END	Buildings, attics, roof crevices and loose bark on trees or under bridges. Always roost near waterbodies.	Eder 2002	MECP recommends the use of avoidance timing window for clearing of trees (>10 cm in diameter) if this can be accomplished then no impacts. Additionally, the barn on site could be used as habitat. A bat exit survey was completed, and none were observed.	Yes
Northern Myotis/Northern Long-eared Bat	*Myotis septentrionalis*	S3	END	END	Older (late successional or primary forests) with large interior habitat.	Menzel et al. 2002, Broders et al. 2006		

Common Name/ Population	Scientific Name	SRANK	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status	Preferred Critical Habitat	Reference	Guidelines/Triggers for Review	Brought Forward (Yes/No)
Eastern Small-footed Myotis	*Myotis leibii*	S2S3	END	No Status	Found within deciduous or coniferous forests in hilly areas.	Eder 2002		
Tri-colored Bat	*Perimyotis subflavus*	S3?	END	END	Prefers shrub habitat or open woodland near water.	Eder 2002		
PLANTS								
Butternut	*Juglans cinerea*	S3?	END	END	Variety of sites, grows best on well-drained fertile soils in shallow valleys and on gradual slopes	COSEWIC 2003	Suitable habitat and site are well within the range for this species. Inventories valid for 2-years. Inventory completed in 2021 by others on the 4386 Rideau Valley Drive property identified six individuals. Additional Butternuts were identified by CIMA+ during other visits (as incidentals) on both the Site and in the Parkland parcels.	Yes

Status updated: September 27, 2022

SRANK DEFINITIONS

S1 Critically Imperiled, Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.

S2 Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.

S3 Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

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

? Inexact Numeric Rank—Denotes inexact numeric rank
S#B Breeding
S#N Non-Breeding
SARA STATUS DEFINITIONS
END Endangered: a wildlife species facing imminent extirpation or extinction.
THR Threatened: a wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.
SARO STATUS DEFINITIONS
END Endangered: A species facing imminent extinction or extirpation in Ontario which is a candidate for regulation under Ontario's ESA.
THR Threatened: A species that is at risk of becoming endangered in Ontario if limiting factors are not reversed.

Reptiles

Blanding's Turtle

Blanding's turtle is associated with a variety of shallow slow aquatic habitats with submergent and emergent plants and soft substrate (COSEWIC, 2016). Their preferred aquatic habitat is less than <2 m deep (ECCA, 2018). To err on the side of caution, depths up to 4.5 m are considered habitat for this species (ECCA, 2018). These turtles require basking sites located near the water such as exposed rocks or partially submerged logs. The nesting sites are located within areas of loose substrates varying from sand to cobblestone and may occur along roadways as far as 400 m away. Marsh habitat is important for the juveniles for protection from predators. The species overwinters within permanent water bodies (COSEWIC, 2016). This species can migrate far distances of up to 6 km (OMNR, 2013b). Migration routes can include overland movement. However, some habitats such as: active agricultural croplands, sand pits, large waterbodies, fast-flowing systems, and high use highways are not considered suitable habitat (ECCA, 2018). They also note that heavily developed urban areas without aquatic or wetland habitats are considered unsuitable (ECCA, 2018).

The habitat guidelines for Blanding's turtle provide protection to the areas surrounding a nest, or perceived nest area as well as overwintering habitat. The level of protection varies with the distance from these habitats and has been categorized by the province into three categories. These, along with their protection level are:

Category 1 Nest and the area within 30 m or Overwintering sites and the area within 30 m

Category 2 The wetland complex (i.e., all suitable wetlands or waterbodies within 500 m of each other) that extends up to 2 km from an occurrence, and the area within 30 m around those suitable wetlands or waterbodies

Category 3 Area between 30 m and 250 m around suitable wetlands/waterbodies identified in Category 2, within 2 km of an occurrence

Based on the documented occurrences, and the provincial automatic mapping of Category 1-3 habitats (see above), Mud Creek (including the oxbow), Wilson Cowan Drain and the Rideau River can provide Blanding's Turtle habitats. Referring to Figure 7 below, there are occurrence on NHIC database that are within 2 km of the site. The figure shows that there are linear corridors (watercourses) between the occurrences and the site which could allow for movement between the occurrence and the project area (meeting the 500m distance requirements). As such, Mud Creek (including the oxbow) and Wilson Cowan Drain should be considered Category 2 habitat and the adjacent lands Category 3 habitat. No Blanding's Turtles were observed in 2022 and the oxbow is not overwintering habitat. There is also no nesting habitat on site.

This also supports conclusions/assumptions noted in other consultant's reports for the area (Muncaster Environmental Planning Inc., 2021)). The mapping of the Blanding's Turtle habitat depicting category 2 habitat is shown on Figure 7. Preliminary list of avoidance and mitigation measures are included in this report. These have

been circulated to MECP for comments. MECP will also be circulated on the concept plan for the parkland of Blocks 83 and 84 as the details become available.

Birds

Eastern Whip-poor-will

The whip-poor-will is a well camouflaged species can be found in a multitude of forest types. Its requirements consist of areas that are semi-open forests or sites with a closed forest intermixed with other open habitats. It also needs some areas with little ground cover (COSEWIC, 2009b). The General Habitat Description for Eastern Whip-poor-will (MNRF on-line document) indicates that the protected habitat for this species includes three categories:

Category 1	Known nests and 20 m of the nest
Category 2	the area between 20 m and 170 m from the nest or the approximate centre of the defended territory
Category 3	the area of suitable habitat between 170 m and 500 m of the nest or approximate centre of the defended territory

Species is generally accepted as having a territory from 3-30ha within a home range of 20-50ha. The provincial habitat guidelines assume that the protected territory of an individual spans up to 500m from a nest however, the Category 2 habitat extends only 170m. This Category 2 habitat represents a minimum area of 9ha per breeding pair. While this does not preclude the presence of this species in smaller woodlands, or narrower woodlands such as that found at this site, it diminishes the likelihood. There is no woodland in the area to be impacted but a relatively narrow woodland is present in the adjacent 500 m (adjacent land width based on Category 3 description) (Figure 8). That woodland is roughly 16 ha and is within 30-254 m of the site (note that the delineation of this forest does not follow the Natural Heritage Reference Manual but rather simply what could be used by the bird and as such as been referred to as wooded area). The portion that is within 170 m (i.e., Category 2 lands) is a narrow forest that is less likely to be suitable for the species. The bat exit survey took place during the Eastern Whip-poor-will survey period and on a night with appropriate conditions (except moon was 43.4% illuminated and not 50%). That visit was on June 5, 2022. No Eastern Whip-poor-will were heard. This suggests that none were present which is supported by the lack of occurrences within 5km of the site on NHIC database or on iNaturalist. However, since the full three surveys were not completed, it will be assumed to be present and appropriate avoidance and mitigation measures will be applied. This species will be discussed with MECP. Preliminary avoidance and mitigation measures are included below.

Barn Swallow

The barn swallow can often be found nesting on man-made structures. The General Habitat Description for Barn Swallow (OMNRF, 2018b) indicates that the protected habitat for this species includes three categories:

Category 1	Nest
Category 2	The area within 5 m of the nest
Category 3	The area between 5 m and 200 m of the nest

The were several buildings present within the subdivision parcel (barn and auxiliary structures). Two of the buildings were found to contain barn swallow nests. There were 3 nests in the barn and 1 nest in the auxiliary structure. While notes from MEP indicated that a single individual was noted flying through the area on May 23, 2021, none were noted during any of the site investigations of 2022. This included two dedicated breeding bird visits. There were also no signs of recent use of an of the nests (i.e., white-washing, new nesting material). Barn swallows can re-use the same nests year and after year and the nest is considered protected under ESA outside of the nesting season. This species will be discussed with MECP. Preliminary avoidance and mitigation measures are included below.

Bats

The federal potential SAR bats within the general area are little brown myotis, northern myotis, and tri-coloured. The eastern small-footed myotis is only protected provincially. Their habitat requirements vary for different life stages: hibernacula (winter hibernation sites), bat maternity sites and day-roots. The recovery strategy for the three federally listed species considered critical habitat to only include hibernacula.

These species prefer to hibernate in caves or mines (Humphrey, 2017; COSEWIC, 2013) . No hibernation habitat was present on site.

The northern myotis tends to prefer larger expanses of older forests (late successional or primary forests) and chose maternity sites in snags that are in the mid-stage of decay. They prefer habitat with intact interior habitat and is shown to be negatively correlated with edge habitat (Menzel et al., 2002; Broders et al., 2006; Yates et al., 2006; OMNRF, 2015). As mentioned in the vegetation descriptions, there are no woodlands within the grading area for the subdivision or in the parkland parcel. The preferred habitat was not present and as such, this species is considered unlikely to have maternity sites here.

The Atlas of Mammals of Ontario (Dobbyn, 1994) suggests that the tri-colored bat is not present within this part of Ontario however, the NatureServe mapping in the COSSARO (2015) includes all of southeastern Ontario. The City of Ottawa summary of Species at Risk in Ottawa (June 2022) indicates that only historical records of this species are available, there are no recent sightings. Based on this information, this species is considered to have a very low potential of occurring.

This leaves only the little brown myotis as potentially using the study area for maternity sites. Bat exit surveys were completed on June 5, 2022 following the provinces guidelines. No bats were observed within any of the buildings on site.

There also remains the potential for various species to utilise the individual trees on-site for day-roosts. Neither the maternity sites, nor the day-roosts are considered critical habitat in this portion of Ontario by MECP (personal communications) or by Environment Canada (ECCC, 2018c). However, MECP only considers impacts to this species to be avoided if all of their recommended mitigation measures are followed. These measures are included below.

Plants

Butternut

Butternut is listed as an endangered species federally signifying that it is at risk of becoming Extinct or Extirpated in Ontario and in Canada. Butternut is a shade intolerant species that is often found along edge habitats on rich, moist, well-drained loams or well-drained gravels (COESWIC, 2003). The butternut is threatened by a canker for which there is no known control (COESWIC, 2003).

While the lands that are been routinely mowed or ploughed are not suitable habitat for this species, the riparian and shorelines as well as cultural meadows could provide suitable habitat for butternut . As noted in the SAR table above, a butternut inventory was completed by others in 2021 during which time six butternuts were identified. All six identified by others were situated to the north of Mud Creek and will not be impacted by the proposed project. During the field investigations by CIMA+ eleven additional butternuts were noted as incidentals. Those within the subdivision lands were saplings and those identified within the riparian lands of Rideau River were >10 cm dbh (noted as part of the TCR). Since the proposed works associated with this project are likely more than 2 years away, and as no large butternuts were found near the proposed work areas (the field work for the TCR would have noted large butternuts), the butternut inventory and assessment should be delayed. This is because these inventories are, currently, only valid for 2-year period. Mitigation measures are included below. The appropriate process as per the provinces guidelines is well-defined and is to be followed.

Figure 7: Blanding's Turtle Candidate 2 Habitat and Area to be Impacted on Subdivision Lands

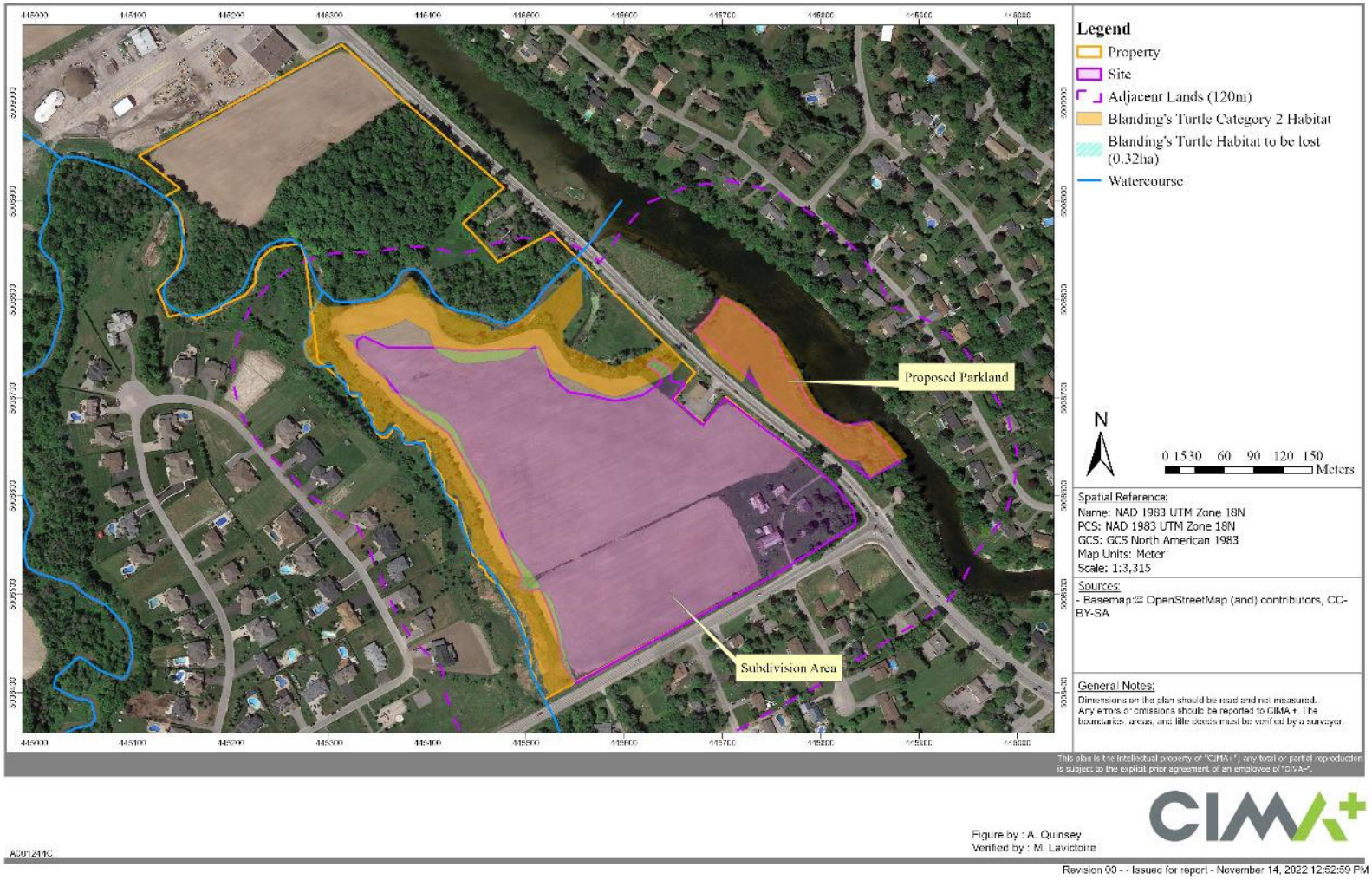


Figure 8: Potential Eastern Whip-poor-will Forest Habitat

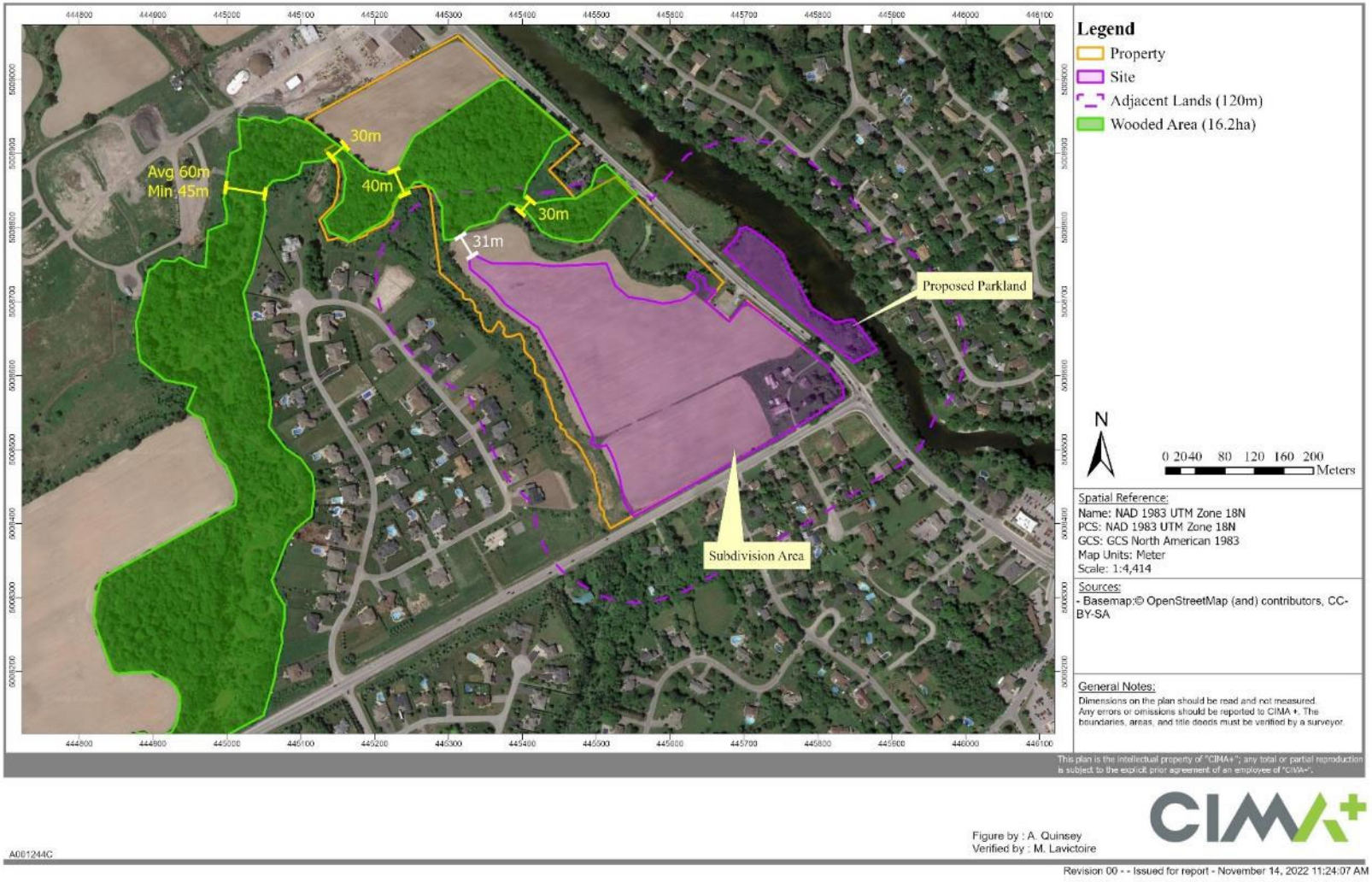
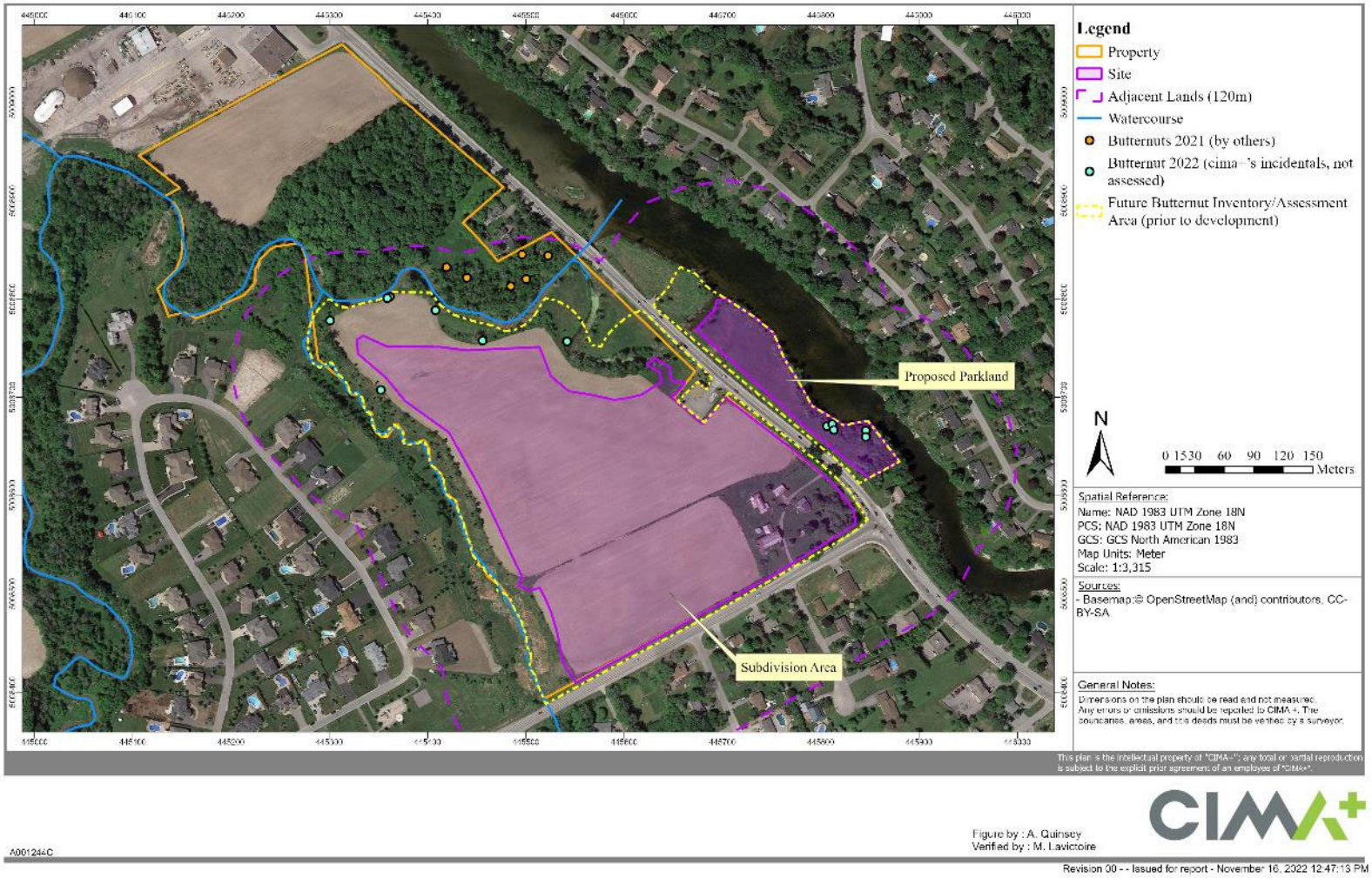


Figure 9: Butternut Habitat



5.3.1.1 Mitigation Measures:

General:

- Endangered and threatened species are protected and cannot be harmed, harassed, or killed and in some cases their habitats are also protected. These individuals will only be handled by qualified person and only if the individual is in imminent threat of harm. An authorization under the ESA 2007 would be required to handle individuals that are not in imminent threat of harm.
- If a SAR enters the work area during the construction period, any work that may harm the individual is to stop immediately and the supervisor will be contacted. No work will continue until the individual has left the area.
- Should an individual be harmed or killed then work will stop, and the Ministry of Environment, Conservation and Parks (MECP) will be contacted immediately.
- Educate staff and contractors on the potential for SAR, with a particular emphasis on Blanding's Turtle, Barn Swallows and Butternut to be in the area and their significance.
- Mitigation measures listed elsewhere in this report are also applicable to this section.
- If a SAR is encountered, this information will be provided to the Natural Heritage Information Centre (Report rare species (animals and plants) | Ontario.ca)

Turtles

- MECP will be contacted for advice for both the Subdivision Lands and the Parkland of Blocks 83 and 84.
- Minimize the temporary and permanent works within Category 2 lands.
- Implement a strict speed limit of <15 km/h during construction.
- Clearing of vegetation should take place during the turtle inactive season when they are hibernating which typically occurs between October 15-April 16 (weather dependent). Otherwise, additional surveys (sweeps for turtles by fish and wildlife technician or biologist familiar with the species are needed). **Note that the timing constraint for tree removal is more restrictive as it follows the bat window (no clearing between April 1 and September 30, inclusive).**
- Sediment fencing along the edge of the area to be cleared can be used for temporary exclusion fencing during construction. These will be properly countersunk and maintained to ensure that any turtles cannot get into the site. This sediment fencing is, at a minimum, to include the three sides of the project area closest to the watercourses (i.e., the north, east, west edges of the work area). A turn-around will be built on each end. *Reptile and Amphibian Exclusion Fencing: Best Practices* (OMNR, 2013d) should be followed for exclusion fence design.
- Stockpiles that might provide suitable nesting substrate (i.e., gravel, soil) will be provided with additional sediment fencing to prevent turtles from nesting in the work area. Note that should

Blanding's Turtle nest on-site, then all work would be stopped until the appropriate process is followed.

- Contractor is to perform daily sweeps during the active season (approximately April 15 to October 16, subject to weather conditions).
- If an individual is found, work that puts the individual in danger will cease (i.e., moving machinery), and the individual will be watched from far to document where and when it leaves the site for a minimum of 2 hours. If it does not leave, them it may need to be relocated. Contact a biologist experienced with this species to relocate the individual.
- During clearing of vegetation, contractors are to be informed that they should keep a look out for wildlife and if any are observed, they should be given the opportunity to leave the area.
- Recommend clearing from south to north direction to allow wildlife the opportunity to leave the site into the natural areas that are to remain.
- The only work in the aquatic portion of the turtle habitat is the connection of the outlet channel of the SWM facility to the oxbow. A turtle salvage (and fish) is to be performed in wetted areas. The in-water work area will be isolated (even if dry). Timing is to avoid turtle overwintering period unless it has been confirmed (by a biologist) that turtle overwintering habitat will not be impacted (directly or indirectly).
- The final design of the development will include a permanent barrier to turtle access. This will be submitted to MECP for comment.

Area	**Nature**	**Duration**	**Magnitude**
Local	Negative Direct	Permanent	Loss of 0.32ha of Category 2 Habitat in the subdivision parcel, some of which is active agricultural fields. To be reviewed by MECP. Discussion on impacts to Category 2 Habitat in Blocks 83/84 to be discussed with MECP as the concept plan is developed

SAR Birds: It is anticipated that selective tree removal may occur in the Subdivision and Parkland (Blocks 83/84) areas and that the buildings will be removed. Daytime and, one nighttime breeding bird surveys were completed. No SAR birds were found but old nests of barn swallows were identified and there remains the potential for eastern whip-poor-will in the adjacent lands.

- No impacts to federal SAR bird nests, or their eggs is permitted under the federal *Species at Risk Act*. If a federally listed bird species at risk nest is encountered, then work must stop until the young have fledged. If the nest/young have been harmed, then Environment Canada must be notified immediately for guidance.

- No impacts to provincial SAR bird nests or their eggs is permitted under the provincial *Endangered Species Act*. If a provincially listed bird species at risk is encountered, then work must stop and MECP contacted (sarontario@ontario.ca).
- Should a nest be discovered, stop all work that may disturb the birds (i.e., that cause the adults to fly off the nest) and contact a biologist or MECP or Environment Canada, as appropriate for the species.
- Note that timing windows for bird species in general are included further below as are those for bats (both of these are more restrictive).
- Provided that fields are under active agricultural uses, then there is no protected grassland breeding bird habitat (as per communications with MECP). If fields on-site become fallow (even for one year) during the breeding bird season, then additional monitoring and/or registration of habitat may be required.
- Prior to the removal of the barn structures, MECP comments on the need to register the removal of Barn Swallow nests will be required.
    - NOTE: Current guidelines are that no removal of active or inactive Barn Swallow nests is to occur between May 1 and August 31 unless the structure has been effectively isolated (closed-off to birds), and it is confirmed that there are no nesting individuals.
    - Plan to remove the buildings between October 1 and March 31 (to avoid birds and bats)
- Prior to clearing native vegetation MECP's comments on the assessment of potential to impact Eastern whip-poor-will will be required.

Area	Nature	Duration	Magnitude
Local	Negative Direct	Permanent (removal of vegetation)	Unlikely to occur based on 2022 findings but must be confirmed with MECP. Timing constraint (no clearing between May 1 and August 31 must be adhered to for the removal of the buildings.

Bats: It is understood that most vegetation will be removed from the area to be graded and that selective tree removal may take place in Park Block 83 and Open Space Blocks 82 and 84. The potential to impact SAR bats would be restricted to day-roosts with the most likely species to be little brown myotis. Recent discussions with MECP on these species indicate that they do not need to be approached if the timing window below can be adhered to.

- Educate contractors by informing them that most bats in Ontario are protected.
- **Remove all buildings and trees that are 10 cm in diameter at breast height or larger between October 1 and March 31 (Bat active season is currently assumed to be April 1 to September 30).**

If this is not possible, conduct exit survey prior to cutting them down. If the exit survey identifies bats, contact MECP or biologist for additional guidance.

Area	Nature	Duration	Magnitude
Local	Negative Direct	Permanent (removal of trees)	Low potential (since no hibernacula are present and it is anticipated that all buildings and the trees that are larger than 10 cm in diameter will be removed during the timing window. Also note that bat exit survey of the buildings did not identify any use by bats)

Plants: Butternuts are present within the property

Avoidance/Mitigation Measures for Butternuts:

- A butternut inventory and assessment must be completed prior to clearing any vegetation (see Figure 9). Butternut inventories have a 2-year shelf-life and the timing of the inventory should reflect this period. Note that as guidelines can be updated from time to time, the most recent guidelines and Ontario Regulations should be followed (at the time of writing, the O. Reg for Butternuts is 830/21).
- Butternut inventories are best completed during the green-leaf period and assessments must be completed during the green-leaf period which is typically between mid-May to mid-August).
- Should butternuts be identified then these will need to be assessed and the appropriate actions taken.
- Follow guidance on clearing of trees from bats and birds and wildlife in general sections.
- Note that if the impacts cannot be registered using the online Notice of Butternut Impacts, then the timeline for obtaining permitting should be considered in the planning process (currently 18 months is recommended with the inventory being completed in the mid-May to end of August period preceding the 18 months).

5.3.2 Significant Woodlands

This report makes use of the City of Ottawa's recently released Significant Woodlands Guidelines that notes that in the Rural Area a woodland must meet at least one of the criteria as described in the province's *Natural Heritage Reference Manual* (NHRM) (OMNR, 2010). There are four criteria described in the NHRM, these along with the minimum standards are described in the table below. The NHRM defines a woodland as a treed area, woodlot or forested area. For the purposes of this report, a woodland included any community that was described as a treed swamp (deciduous, coniferous or mixed), tall shrub or low shrub swamp composed of tree species, woodland or forest (regardless of tree size).

The determination of significance is based on the criteria presented in the NHRM (OMNR, 2010): size, ecological function, uncommon characteristics and economical and social functional values. The City has

identified 5 watersheds, and this project is in the Lower Rideau River which has an approximate forest cover of 38% (City of Ottawa, significant woodlands guidelines). If the woodland meets any one of these criteria, then it is deemed to be significant, and the functions identified should be maintained. Note that the delineation of the woodland stand is based on the NHRM guidelines which note that in areas with 38% forest cover, the minimum width for delineation is 60 m. This results in two stands, one that is 2.8 ha and is within 30 m of the site and one that is 10.8 ha but that is over 120 m from the site (254 m from the site) (Figure 10). The second stand is not within the adjacent lands and does not need to be assessed.

Woodland Size

The stand that is within the adjacent lands is 2.8 ha in size (Figure 10). Based on the forest cover of approximately of 38% for this area, any forest stand that is ≥50 ha should be considered significant. The stand is NOT considered significant in terms of size.

Ecological Functions Criteria

This criterion is based on five factors. The forest stand meets the criteria for proximity to other significant natural heritage features (fish habitat) and water protection (Table 7). Neither of these functions will be negatively impacted by the development. The establishment of a setback from the watercourse on the south side would be a positive impact.

Uncommon Characteristics

Based on the information from the City of Ottawa Significant Woodlands guidelines (no date) the minimum size for the sub-criteria unique species composition, provincially significant vegetation community, and rare, uncommon or restricted plant species is 0.8 ha. For the final criterion, a minimum size of 5ha is required. This criterion refers to woodland stands that are considered uncommon based on the composition, cover type, age or structure. Based on the information available in the *Significant Wildlife Habitat Technical Guide Appendix M* there are no rare plant communities found within the woodlands. This criterion is not significant.

Economic and Social Functional Values

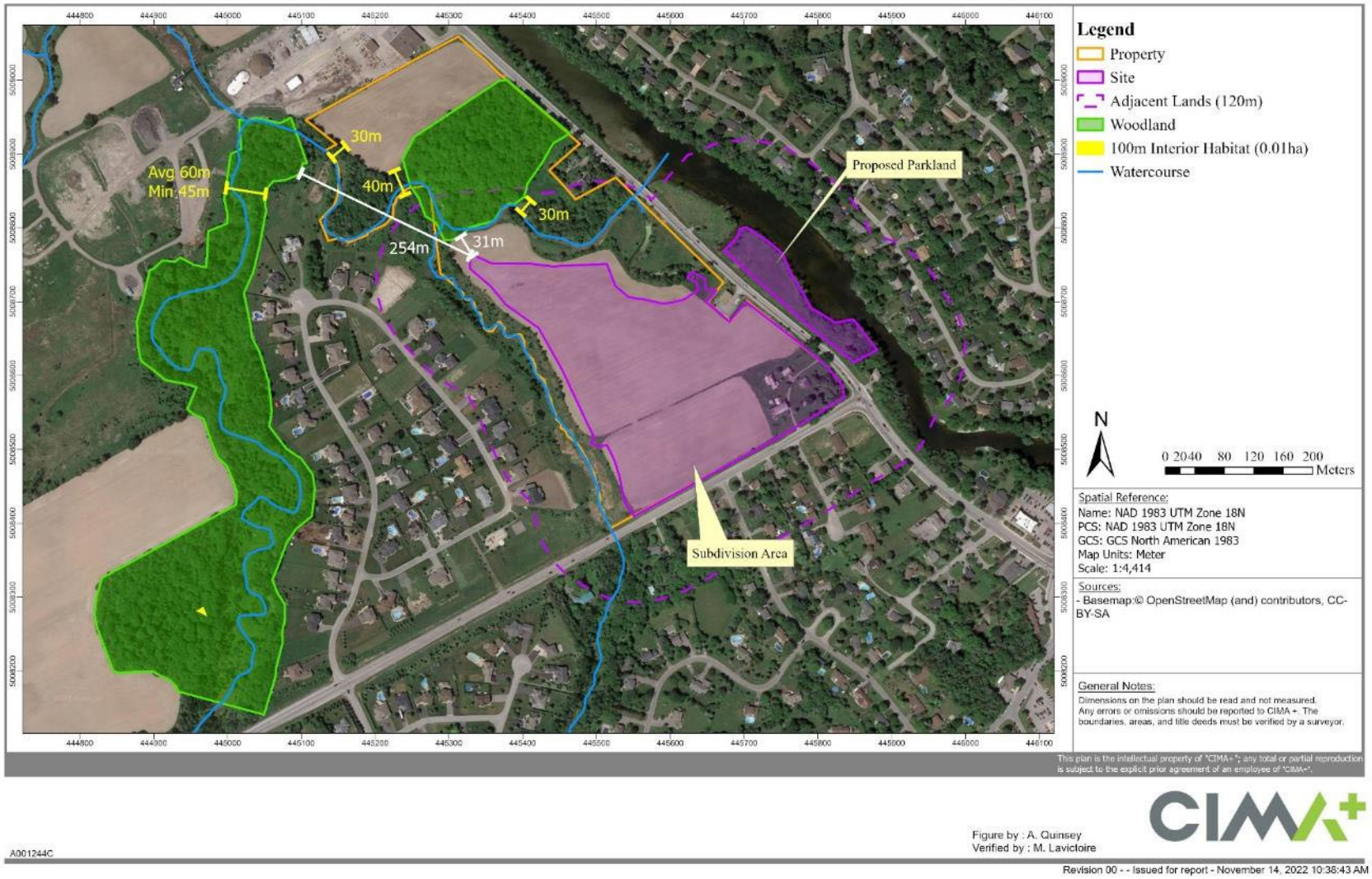
Based on the information from the City of Ottawa Significant Woodlands guidelines (no date) the minimum size for this criterion is 10 ha. This site does not meet this minimum size criterion and is not known to have a significant economic or social function. It is on mostly private lands and not accessible for social or economic functions.

Table 7: Summary of Ecological Functions Sub-Criteria (as per City of Ottawa's Significant Woodland Guidelines, no date)

Factor	Comments/Rational	Meets Minimum Requirements Current	Meets Minimum Requirements After Development
Woodland interior (includes all forest located at least 100 m from the woodland's perimeter) **Minimum size – 8 ha**	No interior habitat present	No	n/a
Proximity to other woodlands or other significant natural heritage features **Minimum size – 10 ha** **Minimum distance: 30m**	The stand is near fish habitat (Mud Creek) but is less than 10 ha in size	No	n/a
Linkages **Minimum size – 10 ha** **No minimum distances. Any woodland meeting minimum size criterion (50 ha) AND is within a core natural area or natural landscape linkage as shown in Appendix E of the City's Guideline**	The stand does not provide a meet the minimum size criterion to be considered	No	n/a
Water protection **Minimum size – 10 ha** **Minimum distance: 30m**	The stand is within 30 m of fish habitat but does not meet the minimum size criteria	No	n/a
Woodland diversity	The stand does not meet the minimum size criteria.	No	n/a

Factor	Comments/Rational	Meets Minimum Requirements Current	Meets Minimum Requirements After Development
Minimum size – 10 ha	These stands did not contain any declining natural communities or a high variety of native diversity through composition or terrain. The majority of the site consisted of regenerating poplar or green ash.		

Figure 10: Potential Significant Woodland



5.3.3 Significant Valleylands

The City of Ottawa policies indicates that significant valleylands are areas that have a minimum length of 50 m, contain water for at least a portion of the year and have banks that are steep (>15%). Significant valleylands are not to include man-made features. The MCSS (City of Ottawa, 2015) notes that both the Mud Creek and the Wilson Cowan Drain are significant valleylands. However, not all of these areas on site met the minimum with respect to the steepness of the slope. Some portions were gentler or non-existent (see various photographs in sections above and below). The slopes were noted to be between 2H: 1V to 15H:1V along the north boundary, 2.5H:1V to 4H:1V along the northeast and 2.5H:1V to 4H:1V along the west in the Paterson Group (August 2022) report. The City's definition is a 15% slope (roughly 1H:6V) over a minimum length of 50m. Regardless, the proponent has committed to protecting the valleys for both systems as such, both will be assumed to be significant. The protection of the valley banks is also necessary for the protection of the following functions:

- Fish habitat (Mud Creek, Wilson Cowan Drain, and Oxbow)
- Turtle habitat.

Negative impacts to the valleylands have been avoided through the establishment of setbacks that will protect the slope stability (see Paterson Group, August 2022), and fish and turtle habitat.

Photo 15: Looking at the gentle slope of Wilson Cowan Drain is on Site (April 11, 2022)

Photo 16: Looking at the steep bank along a portion of Mud Creek that is on Site (April 11, 2022)

Photo 17: Looking at the gentle bank along a portion of Mud Creek that is on Site (April 11, 2022)

5.3.4 Significant Wildlife Habitat/Linkages

The PPS indicates that no development or site alteration is permitted within significant wildlife habitat unless it has been demonstrated that there will be no negative impacts on the natural feature or its ecological functions. It defines wildlife habitat as:

> *"Areas where plants, animals and other organisms live and find adequate amounts of food, water, shelter and space needed to sustain their populations. Specific wildlife habitat of concern may include areas where species concentrate at a vulnerable point in their annual or life cycle; and areas which are important to migratory or non-migratory species"*

The ELC communities were compared to the MNRF's SWHECS 6E (2015) and those that were deemed candidate SWH are discussed in Table 8. A few items deserve to be highlighted:

- An eastern wood-pewee (Special Concern) was heard on a single occasion during the breeding bird surveys in 2022. It was situated in the adjacent lands to the northwest. This sighting is the lowest possible breeding evidence, as it was not heard defending territory on more than one occasion it is unlikely it was using the site for breeding. The bird was not on site and the project proposes to establish setbacks (15-30 m) which will be an improvement over the existing conditions.
- Turtle surveys did not confirm the use of the oxbow area as overwintering by more than 5 individuals or by any special concern species and as such it is not a significant turtle overwinter habitat
- Northern Map Turtles are likely overwintering adjacent to the site in the Rideau River.
- A killdeer was feigning injury on the western edge of the agricultural field on the June 24th visit suggesting that it was likely nesting in area.
- The oxbow could provide amphibian breeding habitat. This oxbow is part of the fish habitat (connected during the spring) and as such would limit the use by amphibians that avoid fish habitat. The potential impacts with the oxbow have been considered and avoidance measures are included below and under Fish sections of this report. Impacts to amphibian use have been avoided. Any movement between the oxbow and other habitat will be protected by the setback provided.

Table 8: Candidate Significant Wildlife Habitat

Candidate SWH	Discussion of Findings		Impact
Waterfowl Stopover and Staging Areas (Aquatic)	The area is not identified as such on NHIC and is not an Important Bird Area however, the Rideau River could provide this habitat and 150 Canada Geese were observed in the fall on a single day. Since formal surveys were not completed it is assumed to be present.	+	The project will not directly impact the Rideau River.
Turtle Wintering Area	Five basking turtle surveys were completed as per the province's protocols. Insufficient early basking turtles were present as such the oxbow does not provide significant overwintering habitat. This section of the Rideau River and Mud Creek could provide overwintering habitat for Northern Map Turtle and is assumed to be present.	+	The project will not directly impact any of the aquatic habitats and the new setback (15-30m) will be an improvement for turtle movement.
Amphibian Breeding Habitat (Wetlands)	The only suitable habitat was the Oxbow. No amphibian surveys were completed but Leopard Frogs were noted.	+	There is little interaction between the project activities and this habitat. Refer to Figure 3.1 in the Conceptual Servicing and Stormwater Management Report). The outlet will connect to the oxbow but only on the edge of the habitat. Measures below and under Fish will avoid impacting any amphibian breeding.
Special Concern Wildlife	The Northern Map Turtles are Special Concern species. These were only observed within Mud Creek (not the oxbow) and Rideau River.	+	The project will not directly impact any of the aquatic habitats and the new setback (15-30m) will be an improvement for turtle movement.

Mitigation Measures:

- Note that the measures listed under all of the other sections cover much of the impacts to SWH and must be reviewed.
- The location of the outlet is to minimize the physical impacts to the Oxbow. The slight increase in depth from the SWM facility is not anticipated to impact the habitat.
- The SWM facility has been designed to enhanced water quality and erosion control measures have been included.
- The work scheduled to take place in or within 30 m of the oxbow is to follow the fisheries timing window (July 1 to March 14, inclusive) which will also benefit other wildlife species. Note that clearing of vegetation outside of the agricultural fields, the turtle active season window should take precedent (see Blanding's turtle measures).
- Almost all breeding birds are protected under the MBCA and/or FWCA. The only species not protected are: American crow, brown-headed cowbird, common grackle, house sparrow, red-winged blackbird, and starling. It is prohibited to destroy or disturb an active nest of other birds, or to take or handle nests, eggs, or nestlings. In this part of Ontario, the current standard nesting period is between **April 5 to August 28**. Outside of this timing window, it is considered unlikely that birds would be nesting. Note, there are some birds (birds of prey, herons etc.) that do begin nesting earlier in the year. It should also be noted, that if an active nest is present before or after the above dates that it is still protected.
- There is a high potential for ground nesting birds (i.e., killdeer) to be present during construction. These prefer to nest on bare soil or gravel areas. Perform regular walks of the cleared areas looking for ground nesters. If any are present, the contact a biologist for guidance.
- Work during the daytime hours to prevent light disturbances.
- Ensure that all equipment have the appropriate mufflers to reduce noise disturbances.
- If a turtle nest is suspected, then flag a 10 m buffer to protect the nest. Contact MECP (for Endangered or Threatened species) and MNRF (all other species, including those listed as special concern).
- Do not flag bird nests as it attracts predators.

Area	Nature	Duration	Magnitude
Local	Negative Direct	Permanent (rip rap)	Negligible
Local	Positive	Permanent (Establishment of 15-30m setback)	Anticipated to improve corridor use in this section of Mud Creek

Cumulative Impacts: The project's footprints have been designed to avoid the areas identified as assumed or known wildlife habitat. The only potential direct interaction is with the outlet channel of the SWM facility, and this interaction will be limited to the edge of the habitat. No other works are known to be planned for this area. The establishment of a 15-30m setback will be a positive impact that could improve movement between Rideau River and further upstream on Mud Creek. No negative cumulative impacts for significant wildlife habitat.

5.3.5 Fish and Fish Habitat

Rideau River, Mud Creek (including the oxbow) and the Wilson Cowan Drain are permanent fish bearing watercourses. The proposed subdivision would take place within the adjacent lands of these watercourses.

The potential for fish habitat was investigated during the early spring of 2022. The findings confirmed that fish habitat was limited to Mud Creek and Wilson Cowan Drain but did note that the oxbow is directly connected to Mud Creek. As such, all three areas provide direct fish habitat. The proposed project will not impact below the high-water mark on Wilson Cowan Drain or Mud Creek or the Rideau River. The only direct impact would be of the outlet channel from the SWM facility. This connection would need to be reviewed by DFO. But the risk, size and scope of the work is considered negligible, and it is anticipated that a letter of advice would be provided. The following measures may need to be updated pending comments from DFO.

Potential to Impact Fish and Fish Habitat and Avoidance/Mitigation Measures:

Planning

- SWM vortex is connected by a ditch that is inaccessible to fish due to gradient as such, the SWM management strategy is an offline system.
- SWM strategy has been designed to ensure that the contribution of water quantity and quality pre- and post-construction remain similar along Mud Creek, the Oxbow and Wilson Cowan Drain. As discussed in the sections above, the water quantity will remain similar, and the quality will meet MECP's standards.
- Provide a Request for Review for the SWM facility's outlet channel to DFO for their review.
- Plan the construction of the outlet channel for the normal in-water timing window (July 1 to March 14, inclusive is appropriate for the Oxbow).
- Erosion and sediment control measures will be installed prior to the clearing of vegetation within 30 m of the wetland.
- Suspend activities that cause muddy environments during periods of heavy rains.

Erosion and Sediment Control

- An erosion and sediment control plan will be developed by contractor and implemented prior to any work within 30 m of the wetland.
    - Provide regular maintenance to the erosion and sediment control measures during construction. Contractor shall be responsible for ensuring that the erosion and sediment control measures are maintained and will monitor the water clarity downstream of the work site throughout the day and during rain events. Water quality is to meet the *Canadian Water Quality Guidelines for the Protection of Aquatic Life*. Monitoring for visible plumes outside of the work area is to be undertaken.
    - At a minimum, the erosion and sediment control plan will include the installation of sediment fencing prior to clearing within 30 m of the waterbodies. Properly keyed in to prevent turbidity from reaching wetland or river.
    - Additional materials (*i.e.,* rip rap, filter cloth and silt fencing) will be readily available in case they are needed promptly for erosion and/or sediment control.
- Any stockpiles of soil or fill material will be stored as far as possible from the channel and protected by silt fencing (minimum 30 m).
- The sediment fencing will not be removed until the bank is stabilized (<20% bare soil).
- All equipment working within 30 m of the water will be well maintained, clean and free of leaks.
- Where banks/riparian area (area within 30 m of channel) have been stabilized by seeding and/or planting, monitor the revegetation to ensure that the vegetation becomes fully established.

Fish and Fish Habitat Protection/Fish Passage

- Plan for the outlet work to occur during the winter (when it is anticipated to be frozen) or during periods of lower flow (i.e., summer). Note that during the winter, the tie-in can only occur if it will not negatively impact overwintering turtles.
- All material introduced for the temporary measures will be fully removed from the water at the completion of the work.
- Isolate the work area from the oxbow. Depending on the tie-in, it may be possible to isolate with steel plates or a few large meter bags.
- This work would take place on the edge of fish habitat and would not impact fish movement.
- Fish (and other aquatic fauna) will be salvaged from the isolated channel by a qualified biologist/technologist. The salvage will need to be repeated if the work area becomes flooded.
- Dewatering of water in areas that may contain fish will be completed from hoses placed in fish baskets or covered with clean wash rock or other such method to prevent fish impingement and entrainment. Note that the screens that come on the hoses are not enough to prevent fish from harm. Contractor should refer to DFO's Standard Code of Practice for End-of-Pipe.
- Monitor the end of pump frequently for ensure that all fish protection measures are functioning.
- Minimize the size of temporary in-water work areas.
- No bypass flow is anticipated (working along the edge of the oxbow).
- The outlet channel from the vortex is not accessible to fish due to gradient.

- Any disturbed bank will be returned to pre-construction conditions, including revegetation, as necessary, with native vegetation appropriate for site conditions.

Contaminant and Spill Management

- All equipment working in or near the water should be well maintained, clean and free of leaks. Maintenance on construction equipment such as refueling, oil changes or lubrication would only be permitted in designated area located at a minimum of 30 m from the shoreline in an area where sediment erosion control measures and all precautions have been made to prevent oil, grease, antifreeze, or other materials from inadvertently entering the ground or the surface water flow.
- Emergency spill kits will be located on site. The crew will be fully trained on the use of clean-up materials to minimize impacts of any accidental spills. The area would be monitored for leakage and in the unlikely event of a minor spillage the project manager would halt the activity and corrective measures would be implemented.
- If a spill occurs:
  - Stop all work
  - Spills are to be immediately reported to the MECP Spills Action Centre (1800 268-6060). Note that under the *Fisheries Act* deleterious substance includes sediments.
  - Clean-up measures are to be appropriate and are not to result in further harm to fish/fish habitat.
  - Sediment-laden water will be removed and disposed of appropriately.
- No construction debris will be allowed to enter the watercourse.
- Following the completion of construction, all construction materials will be removed from site.

5.3.6 Rural Natural Features/Natural Heritage System

The Secondary Plan does not identify any NHS, but the City of Ottawa's schedules do include NHF along the Wilson Cowan Drain and Mud Creek. One of the comments from the pre-consultation was that the EIS was to identify the NHS for the site. Based on the findings from the background review and site investigations it is proposed that the following be considered a Rural NHS:

- Mud Creek and the Oxbow
- Wilson Cowan Drain
- The associated valley along the two channels. Note that the valley, while not steep along Wilson Cowan Drain, did provide a distinct landscape and offered room for the drain to meander. The protection of the valley banks would be mandatory to protect the meandering system below. The valley along Mud Creek was not distinct along its entirety as agricultural row crop activities occurred immediately adjacent to the channel. There was a distinct landscape feature at both the confluence with Wilson Cowan Drain and around the Oxbow.

- The agricultural lands that are currently cropped but are within the proposed setbacks for Mud Creek and Wilson Cowan Drain should be converted into natural vegetation.
- Riparian lands along the Rideau River.

These areas would allow for the improvement over the existing conditions by creating an uninterrupted corridor and allow for the revegetation of the riparian area. Riparian enhancement of this area was flagged in the MCSS. Grading within the setback would be permitted, but once completed the area would be revegetated with a mixture of native herbaceous and woody vegetation. This revegetated area would be isolated from the developed by a turtle barrier. This would serve to protect the functions of the natural features identified: fish habitat, turtle habitat, potential for significant amphibian habitat.

In addition, proposed Open Space Block 84 abutting the Rideau River would also offer an opportunity for enhancements in the form of pond (amphibian, turtle, fish) habitats. This could be explored further following the first rounds of comments and following discussions with DFO and MECP.

Potential Impact and Mitigation Measures:
As mentioned above, there are no direct impacts to this NHS. Early in the design, the location of the development footprint was adjusted to minimize impacts to the natural heritage features. Indirect impacts have been avoided through the measures outlined above for SAR, SWH and fish habitat. The only additional measures are those proposed in the Tree Conservation Report – see Section 5.3.8.

5.3.7 Other

Machinery should be cleaned prior to arriving on-site to prevent the potential spread of invasive species. Invasive species on site (i.e., Common Reed, buckthorn, honeysuckle) should be removed as appropriate for the species. See National Capital Commission website (https://ncc-ccn.gc.ca/projects/management-of-invasive-alien-plants) .

5.3.8 Tree Conservation Report – Mitigation Measures

As mentioned above, the TCR is a stand-alone document, however the mitigation measures have been included herein:

- Delineation of the disturbance limits within work areas will be clearly defined on drawings and on the site prior to construction.
- Install Tree Protection Fencing prior to commencement of construction activities, and retain fencing until construction activities have been completed, as per City of Ottawa's Tree Protection (By-law No. 2020-340), Part VI:
- Tree protection fencing shall be at least 1.2 metres in height and installed in such a way that the fence cannot be altered.
- Do not place any material or equipment within the CRZ of a tree.

- Do not raise or lower the existing grade within the CRZ of a tree.
- Do not extend any hard surface or significantly change landscaping.
- If the construction will have to encroach into a tree's minimum CRZ, installing a temporary layer of 150 mm deep partially composed wood chips mulch over the root zone can help to protect roots from compaction damage, and conserve soil moisture levels.
- Equipment and materials should not be stored near trees
- Ensure that exhaust fumes from all equipment are not directed towards any tree's canopy.
- Do not attach any signs, notices, or posters to trees.
- Ensure that site clearing is carried out only in areas where it is specifically required, and that the areas to be cleared are carefully and clearly delineated.
- Do not damage the root system, trunk, or branches of any tree; if any roots are encountered during excavation while working outside the CRZ, they should be cut off cleanly with sharp pruning tools rather than allow them to be torn by large equipment; clean cuts will help to minimize decay and entry points for disease.
- All exposed roots of trees to be retained should be covered in a minimum of 5 cm of firm soil within 24 hours of exposure.
- If root pruning is implemented, the crown of the tree should be reduced proportionately under the direction of a Certified Arborist or Registered Forester, to decrease wind sail. Pruning should be kept to thinning cuts (no major limb removal), and crowns should be monitored, and maintenance carried out for two (2) years after root pruning to remove any dieback under the direction of a Certified Arborist or Registered Forester.
- If branches are likely to hang in the way of passing equipment, the branches should be pruned by a Certified Arborist or Registered Forester to avoid tearing and undue injury to the tree.
- All pruning work must be performed under the supervision and guidance of a qualified tree professional in accordance with the latest ANSI A300 Pruning Standards and best management practices identified by the International Society of Arboriculture.

Figure 11: Natural Heritage Constraints

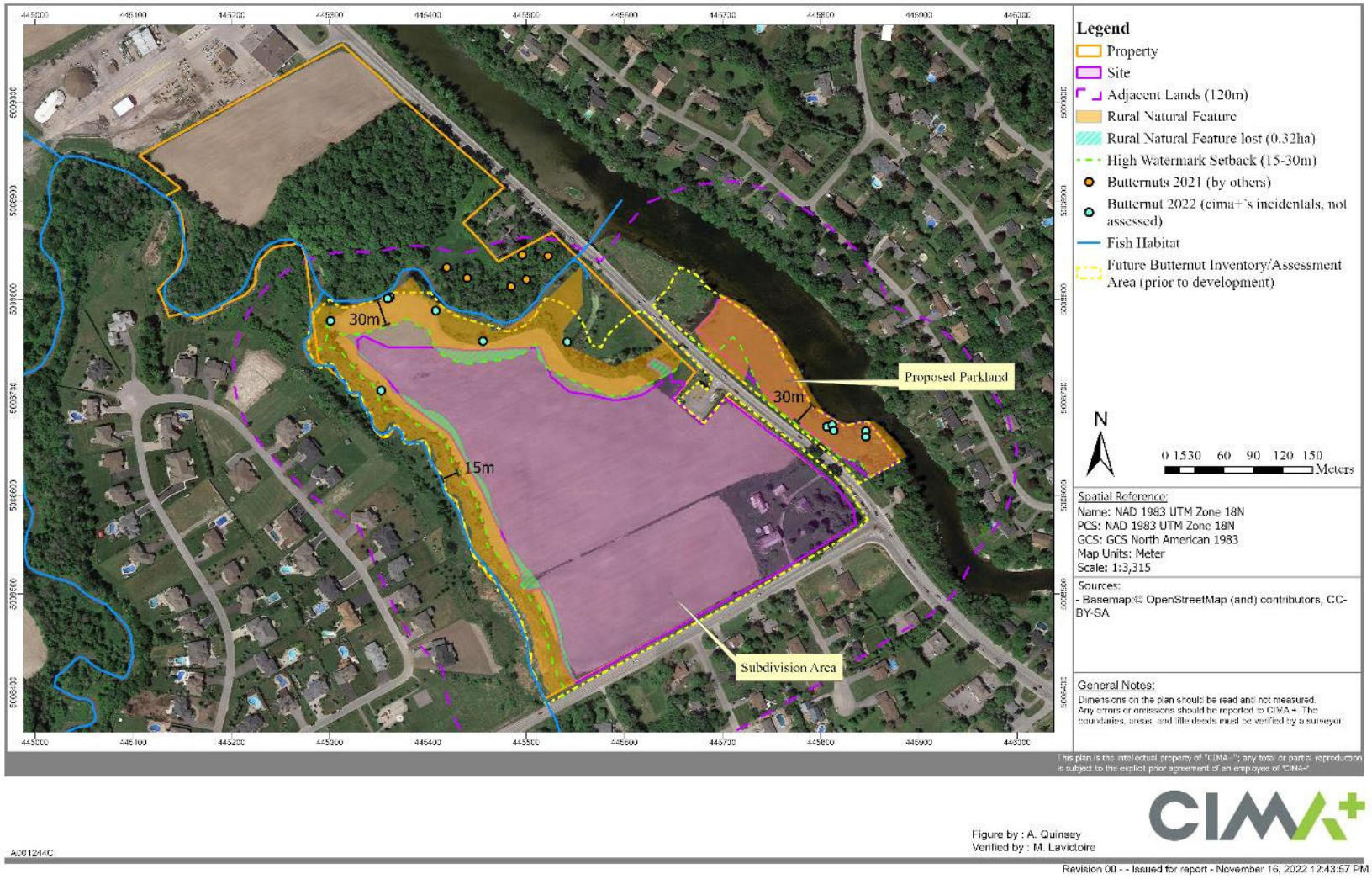


Table 9 Summary of Impacts, Mitigation Measures and Residual Effects

Activity	Natural Heritage Feature/Function	Potential Effect	Proposed Mitigation	Residual Effect
Construction				
Vegetation Clearing and removal of buildings in preparation development Construction of houses, infrastructure	Breeding bird and rural wildlife habitat Forest remnant along Rideau River Assumed Blanding's Turtle Habitat Significant Wildlife Habitat - Northern Map Turtle (special concern) -Assumed amphibian breeding habitat (wetland) (Oxbow)	Removal of vegetation would destroy (temporarily or permanently) breeding habitat. Indirect impacts to vegetation not scheduled to be removed. Introduction of non-native vegetation. Potential to injure or kill wildlife during construction as a result of collisions. Potential impacts from noise or lights	+ Machinery should be cleaned prior to arriving on-site to prevent the potential spread of invasive species. + Contractors to be educated for potential for Species at Risk (Butternut, Blanding's Turtle, Barn Swallow and Bats). + Contractors to be educated about the function of the oxbow for amphibians, turtles and fish and of Mud Creek for Norther Map Turtle and fish habitat, and Wilson Cowan Drain as fish habitat. + If a SAR enters the work area during the construction period, any work that may harm the individual is to stop immediately and the supervisor will be contacted. No work will continue until the individual has left the area. These sightings will be reported to MECP and NHIC. + Should an individual be harmed or killed then work will stop and MECP will be contacted immediately. + Avoid clearing of vegetation during the sensitive times of the year for local wildlife (i.e., spring to early summer) when animals are bearing and nursing their young. + If a SAR is encountered, this information will be provided to the Natural Heritage Information Centre (Report rare species (animals and plants) | Ontario.ca)	Loss of up to 0.32ha of Category 2 habitat for Blanding's Turtle though this area includes cropland. Positive following offset Establishment of vegetated setback of 15m (from Wilson Cowan Drain) and 30m from Mud Creek.

Activity	Natural Heritage Feature/Function	Potential Effect	Proposed Mitigation	Residual Effect
			+ Contractor is to refer to the City of Ottawa Protocol for Wildlife Protection during Construction (August 2015). + Strict speed limit of <15 km/h during construction to allow workers opportunity to avoid harming/killing of wildlife with machinery. + Installation of temporary turtle exclusion fencing along the north, east and west sides of the site with appropriate turn arounds and following the province's *Reptile and Amphibian Exclusion Fencing: Best Practices* (OMNR, 2013). This fence should be installed prior to May 1 (to minimize potential for nesting turtles). + Fence is to be maintained throughout the active turtle season which is from mid-April to mid-October. If an individual is found, work that puts the individual in danger will cease and individual watched from far. 2-hours or more is to be provided to turtle to allow it to leave on its own. Afterwards, contact an environmental/wildlife technician or biologist with reptile experience to relocate individual and to contact appropriate authorities as dictated by species. + Contractor to perform daily sweeps for turtles within the work area during the turtle active season (mid-April to mid-October). + Pending confirmation from MECP, the entrances to the buildings must be closed off to prevent use by Barn Swallows prior to May	

Activity	Natural Heritage Feature/Function	Potential Effect	Proposed Mitigation	Residual Effect
			1 unless buildings will be removed outside of the Barn Swallow Active season (May 1 to August 31). No exceptions. + All vegetation clearing should occur outside of sensitive timing windows. The preferred period would be from October 16 to March 31 (this would avoid: breeding bird season, active turtle period and active bat season). Additional measures required if work is to be completed during the various sensitive windows: ○ Between April 1 and September 30 (active bat season) any removal of buildings or trees that are more than 10 cm in diameter would require a bat exit survey. Repeated every 2 days until clearing of building/trees is completed. ○ Between April 15 and October 15 (dates approximate, subject to ice off and fall) a search for turtles by qualified professional (must be a fish, wildlife or environmental technician or biologist with experience with turtles) prior to removing vegetation until the turtle exclusion fencing is installed. ○ Breeding bird survey for removal of any type of vegetation or removal of any building between April 5 and August 28 by a fish, wildlife or environmental technician or biologist with experience with birds. Within 2 days of the area being cleared.	

Activity	Natural Heritage Feature/Function	Potential Effect	Proposed Mitigation	Residual Effect
			+ If an individual is found, work that puts the individual in danger will cease (i.e., moving machinery), and the individual will be watched from far to document where and when it leaves the site for a minimum of 2 hours. If it does not leave, them it may need to be relocated. Contact a biologist experienced with this species to relocate the individual. + During clearing of vegetation, contractors are to be informed that they should keep a look out for wildlife and if any are observed, they should be given the opportunity to leave the area. + Recommend clearing from west to east direction to allow wildlife the opportunity to leave the site into the natural areas that are to remain. + Work during the daytime hours to prevent light disturbances. + Ensure that all equipment have the appropriate mufflers to reduce noise disturbances. + There is a high potential for ground nesting birds (i.e., killdeer) to be present. These prefer to nest on bare soil or gravel areas. Perform regular walks of the cleared areas looking for ground nesters. If any are present, the contact a biologist for guidance. + If a turtle nest is suspected, then flag a 10 m buffer to protect the nest. Contact MECP (for SAR) and MNRF (all other species).	

Activity	Natural Heritage Feature/Function	Potential Effect	Proposed Mitigation	Residual Effect
			+ Do not flag bird nests as it attracts predators. Tree Conservation Report + Delineation of the disturbance limits within work areas will be clearly defined on drawings and on the site prior to construction. + Install Tree Protection Fencing prior to commencement of construction activities, and retain fencing until construction activities have been completed, as per City of Ottawa's Tree Protection (By-law No. 2020-340), Part VI: + Tree protection fencing shall be at least 1.2 metres in height and installed in such a way that the fence cannot be altered. + Do not place any material or equipment within the CRZ of a tree. + Do not raise or lower the existing grade within the CRZ of a tree. + Do not extend any hard surface or significantly change landscaping. + If the construction will have to encroach into a tree's minimum CRZ, installing a temporary layer of 150 mm deep partially composed wood chips mulch over the root zone can help to protect roots from compaction damage, and conserve soil moisture levels. + Equipment and materials should not be stored near trees	

Activity	Natural Heritage Feature/Function	Potential Effect	Proposed Mitigation	Residual Effect
			+ Ensure that exhaust fumes from all equipment are not directed towards any tree's canopy. + Do not attach any signs, notices, or posters to trees. + Ensure that site clearing is carried out only in areas where it is specifically required, and that the areas to be cleared are carefully and clearly delineated. + Do not damage the root system, trunk, or branches of any tree; if any roots are encountered during excavation while working outside the CRZ, they should be cut off cleanly with sharp pruning tools rather than allow them to be torn by large equipment; clean cuts will help to minimize decay and entry points for disease. + All exposed roots of trees to be retained should be covered in a minimum of 5 cm of firm soil within 24 hours of exposure. + If root pruning is implemented, the crown of the tree should be reduced proportionately under the direction of a Certified Arborist or Registered Forester, to decrease wind sail. Pruning should be kept to thinning cuts (no major limb removal), and crowns should be monitored, and maintenance carried out for two (2) years after root pruning to remove any dieback under the direction of a Certified Arborist or Registered Forester.	

Activity	Natural Heritage Feature/Function	Potential Effect	Proposed Mitigation	Residual Effect
			+ If branches are likely to hang in the way of passing equipment, the branches should be pruned by a Certified Arborist or Registered Forester to avoid tearing and undue injury to the tree. + All pruning work must be performed under the supervision and guidance of a qualified tree professional in accordance with the latest ANSI A300 Pruning Standards and best management practices identified by the International Society of Arboriculture.	
Construction of Stormwater management	Mud Creek and Wilson Cowan Drain (fish habitat, turtle habitat) Oxbow (fish habitat, amphibian habitat, turtle habitat).	Potential to impact the quality or quantity of water entering any of these systems. Potential for direct impact to the oxbow during the construction of the outlet to the SWM facility. Potential for erosion or sediment control issues during construction. Potential impacts to slope stability.	+ SWM strategy includes a vortex and outlet drain. The outlet drain is steep, making this offline from existing fish habitat. + The only work below the high-water mark is the connection of the outlet from the SWM facility to the oxbow this will be reviewed by DFO. + The work scheduled to take place in or within 30 m of the oxbow is to follow the fisheries timing window (July 1 to March 14, inclusive) which will also benefit other wildlife species. Note that clearing of vegetation outside of the agricultural fields, the turtle active season window should take precedent (see Blanding's turtle measures). + Work below the high-water mark will be done in an isolated area. + Fish and wildlife (i.e., turtles and amphibians) rescue will be performed for any work occurring in the wet.	None provided that mitigation measures are properly implemented and maintained.

Activity	Natural Heritage Feature/Function	Potential Effect	Proposed Mitigation	Residual Effect
		Introduction of non-native vegetation. Potential to injure or kill fish or wildlife during construction.	+ Timing of the connection of the outlet channel to the oxbow is to avoid turtle overwintering period unless it has been confirmed that no overwintering habitat can be impacted. + The work within 30 m of the high-water mark is to be minimized and is to be completed only after appropriate sediment and erosion control measures (and turtle exclusion measures) have been installed. + Site instruction will be provided to contractor to highlight that the oxbow is fish habitat. + Suspend activities that cause muddy environments during periods of heavy rains. + An erosion and sediment control plan will be developed by contractor and implemented prior to any work within 30 m of the watercourse. - Provide regular maintenance to the erosion and sediment control measures during construction. Contractor shall be responsible for ensuring that the erosion and sediment control measures are maintained and will monitor the water clarity downstream of the work site throughout the day and during rain events. Water quality is to meet the *Canadian Water Quality Guidelines for the*	

Activity	Natural Heritage Feature/Function	Potential Effect	Proposed Mitigation	Residual Effect
			Protection of Aquatic Life. Monitoring for visible plumes outside of the work area is to be undertaken. - At a minimum, the erosion and sediment control plan will include the installation of sediment fencing along the east, west and north sides. Properly keyed in to prevent turbidity from reaching wetland or river. - Additional materials (*i.e.,* rip rap, filter cloth and silt fencing) will be readily available in case they are needed promptly for erosion and/or sediment control. + Any stockpiles of soil or fill material will be stored as far as possible from the channel and protected by silt fencing (minimum 30 m). + The sediment fencing will not be removed until the bank is stabilized (<20% bare soil). + Where banks/riparian area (area within 30 m of channel) have been stabilized by seeding and/or planting, monitor the revegetation to ensure that the vegetation becomes fully established. + Any slope stability measures provided by geotechnical experts will be adhered to.	
Accidents or Malfunctions	Mud Creek Wilson Cowan Drain	Spills or accidents during construction could impact	+ Follow all guidance provided by geotechnical experts to ensure protection of the banks.	Unlikely

Activity	Natural Heritage Feature/Function	Potential Effect	Proposed Mitigation	Residual Effect
	Valleyland (Wilson Cowan Drain or Oxbow) Significant Wildlife Habitat (amphibian breeding, turtle habitat) Fish Habitat	the quality of wetland habitat or its functions (wildlife and fish habitat), could cause slope failure of the banks	+ Educate contractors that Mud Creek, its oxbow, Rideau River and Wilson Cowan Drain are all fish habitat, and it is a contravention of the *Fisheries Act* to release deleterious substances (including sediment) into fish bearing watercourses. + All equipment working in or near the water should be well maintained, clean and free of leaks. Maintenance on construction equipment such as refueling, oil changes or lubrication would only be permitted in designated area located at a minimum of 30 m from the shoreline in an area where sediment erosion control measures and all precautions have been made to prevent oil, grease, antifreeze, or other materials from inadvertently entering the ground or the surface water flow. + Emergency spill kits will be located on site. The crew will be fully trained on the use of clean-up materials to minimize impacts of any accidental spills. The area would be monitored for leakage and in the unlikely event of a minor spillage the project manager would halt the activity and corrective measures would be implemented. + If a spill occurs: - Stop all work	

Activity	Natural Heritage Feature/Function	Potential Effect	Proposed Mitigation	Residual Effect
			- Spills are to be immediately reported to the MECP Spills Action Centre (1800 268-6060). Note that under the *Fisheries Act* deleterious substance includes sediments. - Clean-up measures are to be appropriate and are not to result in further harm to fish/fish habitat. - Sediment-laden water will be removed and disposed of appropriately. + No construction debris will be allowed to enter the watercourse. + Following the completion of construction, all construction materials will be removed from site.	
Planting	Rural Natural Feature Fish Habitat Turtle Habitat Amphibian Breeding Habitat General Wildlife Habitat	Positive	+ Where appropriate, the setbacks are to be revegetated with a mixture of native herbaceous and woody (including trees) species.	Positive improvement over the existing conditions on the subdivision site.
Operations	Rural Natural Feature Fish Habitat Turtle Habitat Amphibian Breeding Habitat General Wildlife Habitat	Potential for noise and lighting impacts to natural heritage affecting fauna use.	+ Permanent turtle exclusion barrier to be erected to contain turtle in the Rideau River (along Blocks 83 and 84), and to Mud Creek and its Oxbow, and to Wilson Cowan Drain (as per guidance being sought from MECP). + Indirect impacts could occur as a result of change in water supply or quality, sediment/erosion of the wetland.	None provided properly designed and installed.

Activity	Natural Heritage Feature/Function	Potential Effect	Proposed Mitigation	Residual Effect
		Potential for impacts to water quality.	- The stormwater management strategy will outlet to the oxbow, following treatment. It has been designed and will be constructed to not impact the water quality of the receiving waterbodies. It has also been designed to prevent erosion. - Water quantity will meet MECP's guidelines. - Appropriate measures will be implemented along the slopes to ensure that no slope failure occurs (slope failure could result in the transportation of soil down into the waterbodies). + Lighting will be required to focus on the site itself, as is typical for development in Ottawa. This would be addressed through the site plan review and approval process	

6. CONCLUSION

The proponent would like to develop a portion of their property at 4386 Rideau Valley Drain. The portion that would be developed is approximately 9.3 hectares and its existing land uses are a single lot residential development and cropland. The remaining portion of 4386 Rideau Valley Drive, north of Mud creek, would be left untouched. The proposed subdivision will consist of a combination of single, semi and town units and it will be fully serviced. The second property (shown as Blocks 83 and 84) is immediately opposite of 4386 Rideau Valley Drive and is a small parcel (0.89 hectares) that abuts the Rideau River. What appears to be the old connection between Rideau River and the oxbow represents the northern extent of this parcel. There is no hydrological connection at this location anymore. This area is currently mowed meadow with a narrow deciduous tree corridor. A portion of this parcel is proposed as open space (Block 84) and a portion is proposed as parkland (Block 83). Details on the parkland is not available, but it is anticipated to consist passive recreational spaces with a walking trail.

The proposed works includes the removal of vegetation, grading, and excavation for the installation of new sewer and water mains, roads, and houses. Setbacks have been established from both Mud Creek (30m) and Wilson Cowan Drain (15m) and are discussed herein. Some trees may also be selectively cleared in the Open Space at the intersection of Rideau Valley Drive and Bankfield Road, and in the parkland adjacent to the Rideau River to facilitate the creation of a walking trail. But only limited grading would take place for the installation of passive recreational access from Rideau River Road.

The background review and field investigations found:

- Potential for Blanding's Turtle
- Presence of Butternuts
- Presence of old (inactive in 2022) Barn Swallow nests
- Potential (low) for Eastern Whip-poor-will in adjacent forests
- Fish habitat
- Northern Map Turtle (Mud Creek and Rideau River)

Prior to clearing of vegetation or removal of buildings the following would be required:

- Communications with MECP with respect to:
  - Barn Swallow nests
  - Avoidance and Mitigation measures for Blanding's Turtle and Eastern Whip-poor-will
- Butternut inventory and assessment during appropriate time of year (currently between May 15-August 31).

Project will include the positive impacts of:

- Establishing 15-30m vegetated (native species, mix herbaceous and woody) corridor along Mud Creek and Wilson Cowan Drain.
- Opportunities for enhancement of habitat in the open space area abutting the north side of the Parkland along the Rideau River
- Protection of migrating turtles through turtle barriers designed to keep them away from vehicles.

The City's pre-consultation notes identified the area as potentially a Rural Natural Heritage System (NHS). Following the site investigations, it is proposed that the following be considered as a Rural Natural Heritage System (NHS):

- Mud Creek and its Oxbow
- Wilson Cowan Drain
- Rideau River
- Setbacks to the above as depicted on Figure 11

This proposed Rural NHS would protect:

- Fish habitat (Mud Creek, oxbow, Wilson Cowan Drain, Rideau River)
- Assumed Turtle Overwintering Habitat (Mud Creek, Rideau River)
- Linkages (including for turtles) (Mud Creek, oxbow, Wilson Cowan Drain, Rideau River)
- Assumed Amphibian Breeding Habitat (oxbow)
- Some of the Butternuts identified
- Meander belts and slope of Mud Creek and Wilson Cowan Drain

And would offer the option for restore the riparian habitat as identified as a goal in the MCSS.

Provided that the avoidance and mitigation measures identified herein are followed and that further communications with MECP and DFO confirm these findings, then this proposed development can be accepted as planned.

I trust that this report will meet your requirements. Should you have any questions or comments, please contact the undersigned.

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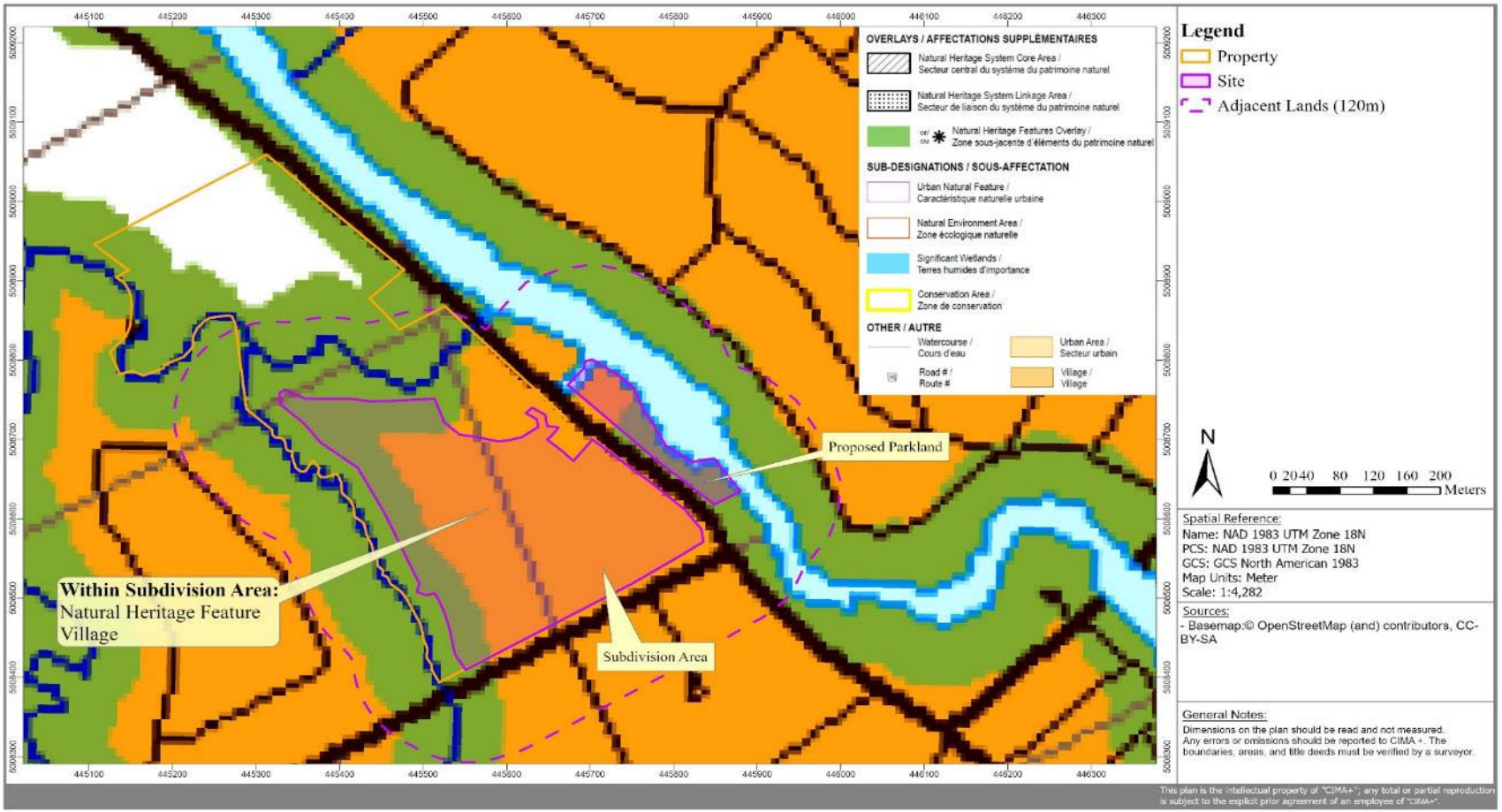
A

Appendix A
Background Information

City of Ottawa Official Plan Schedule C9



City of Ottawa Official Plan Schedule L2

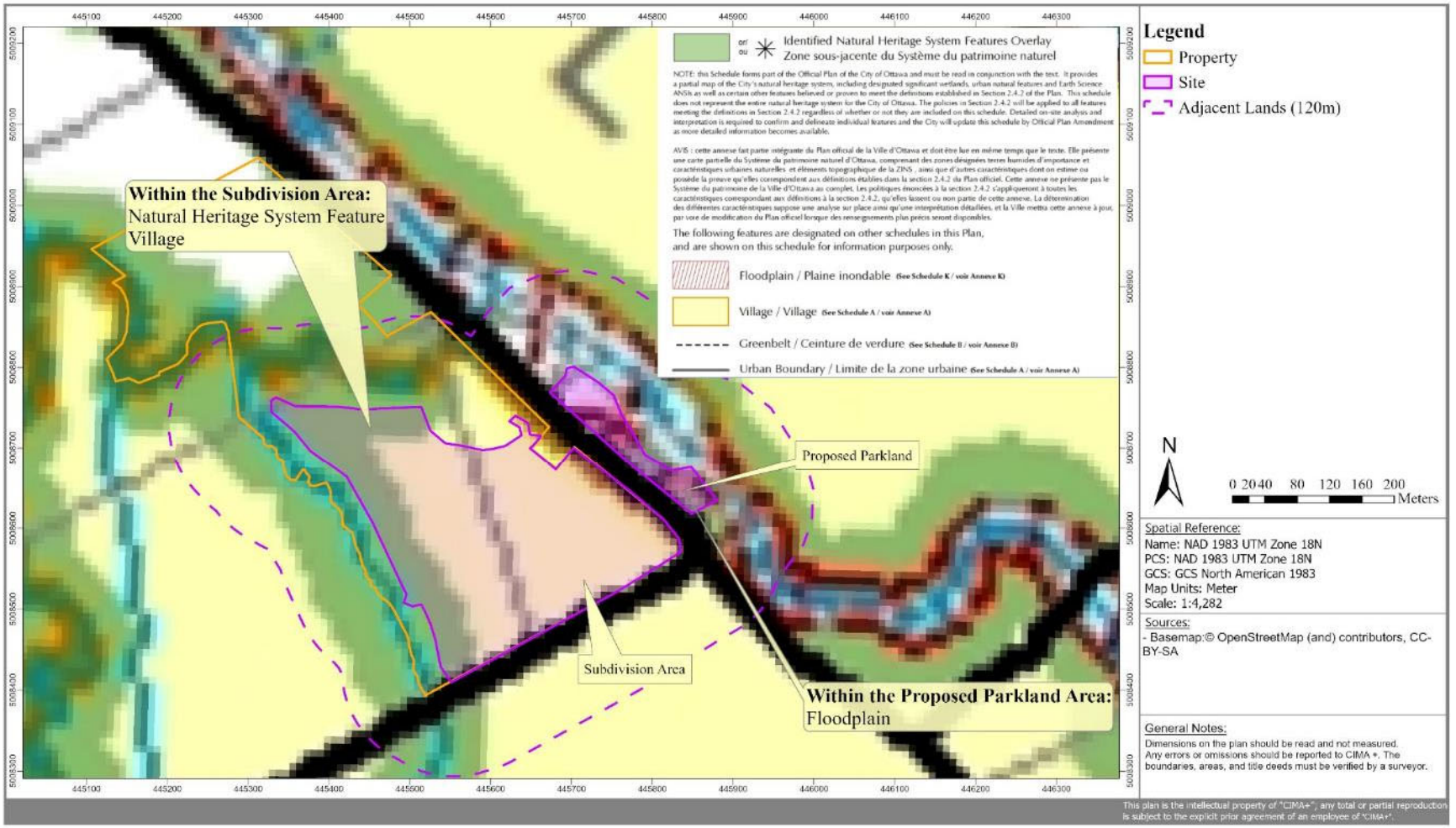

Identified Natural Heritage System Features Overlay
Zone sous-jacente du Système du patrimoine naturel
NOTE: this Schedule forms part of the Official Plan of the City of Ottawa and must be read in conjunction with the text. It provides a partial map of the City's natural heritage system, including designated significant wetlands, urban natural features and Earth Science ANSIs as well as certain other features believed or proven to meet the definitions established in Section 2.4.2 of the Plan. This schedule does not represent the entire natural heritage system for the City of Ottawa. The policies in Section 2.4.2 will be applied to all features meeting the definitions in Section 2.4.2 regardless of whether or not they are included on this schedule. Detailed on-site analysis and interpretation is required to confirm and delineate individual features and the City will update this schedule by Official Plan Amendment as more detailed information becomes available.
AVIS : cette annexe fait partie intégrante du Plan officiel de la Ville d'Ottawa et doit être lue en même temps que le texte. Elle présente une carte partielle du Système du patrimoine naturel d'Ottawa, comprenant des zones désignées terres humides d'importance et caractéristiques urbaines naturelles et éléments topographique de la ZINS , ainsi que d'autres caractéristiques dont on estime ou possède la preuve qu'elles correspondent aux définitions établies dans la section 2.4.2 du Plan officiel. Cette annexe ne présente pas le Système du patrimoine de la Ville d'Ottawa au complet. Les politiques énoncées à la section 2.4.2 s'appliqueront à toutes les caractéristiques correspondant aux définitions à la section 2.4.2, qu'elles fassent ou non partie de cette annexe. La détermination des différentes caractéristiques suppose une analyse sur place ainsi qu'une interprétation détaillées, et la Ville mettra cette annexe à jour, par voie de modification du Plan officiel lorsque des renseignements plus précis seront disponibles.
The following features are designated on other schedules in this Plan, and are shown on this schedule for information purposes only.
Floodplain / Plaine inondable (See Schedule K / voir Annexe K)
Village / Village (See Schedule A / voir Annexe A)
Greenbelt / Ceinture de verdure (See Schedule B / voir Annexe B)
Urban Boundary / Limite de la zone urbaine (See Schedule A / voir Annexe A)
Within the Subdivision Area:
Natural Heritage System Feature
Village
Proposed Parkland
Subdivision Area
Within the Proposed Parkland Area:
Floodplain
Legend
Property
Site
Adjacent Lands (120m)
N
0 20 40 80 120 160 200
Meters
Spatial Reference:
Name: NAD 1983 UTM Zone 18N
PCS: NAD 1983 UTM Zone 18N
GCS: GCS North American 1983
Map Units: Meter
Scale: 1:4,282
Sources:
- Basemap:© OpenStreetMap (and) contributors, CC-BY-SA
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Figure by : A. Quinsey
Verified by : M. Lavictoire
Revision 00 - - Issued for report - November 14, 2022 12:22:12 PM

ATLAS of Breeding Birds in Ontario
Squares 18VR41, 18VR40, 18VR50, 18VR51, 18VR30, 18VR31

Common Name	Scientific Name	ABBO Category	SRANK	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status
Canada Goose	*Branta canadensis*	Confirmed	S5	no status	no status
Wood Duck	*Aix sponsa*	Confirmed	S5	no status	no status
Gadwall	*Anas strepera*	Confirmed	S4	no status	no status
American Black Duck	*Anas rubripes*	Confirmed	S4	no status	no status
Mallard	*Anas platyrhynchos*	Confirmed	S5	no status	no status
Northern Pintail	*Anas acuta*	Confirmed	S5	no status	no status
Green-winged Teal	*Anas crecca*	Probable	S4	no status	no status
Blue-winged Teal	*Anas discors*	Confirmed	S4	no status	no status
Hooded Merganser	*Lophodytes cucullatus*	Probable	S5B,S5N	no status	no status
Common Merganser	*Mergus merganser*	Probable	S5B,S5N	no status	no status
Ruddy Duck	*Oxyura jamaicensis*	Probable	S4B,S4N	no status	no status
Gray Partridge	*Perdix perdix*	Confirmed	SNA	no status	no status
Ruffed Grouse	*Bonasa umbellus*	Confirmed	S4	no status	no status
Wild Turkey	*Meleagris gallopava*	Confirmed	S5	no status	no status
Pied-billed Grebe	*Podilymbus podiceps*	Confirmed	S4B, S4N	no status	no status
American Bittern	*Botaurus lentiginosus*	Confirmed	S4B	no status	no status
Great Blue Heron	*Ardea herodias*	Confirmed	S4	no status	no status
Green Heron	*Butorides virescens*	Confirmed	S4B	no status	no status
Turkey Vulture	*Cathartes aura*	Probable	S5B	no status	no status
Osprey	*Pandion haliaetus*	Confirmed	S5B	no status	no status
Northern Harrier	*Circus cyaneus*	Confirmed	S4B	no status	no status
Sharp-shinned Hawk	*Accipiter striatus*	Confirmed	S5	no status	no status
Cooper's Hawk	*Accipiter cooperii*	Confirmed	S4	no status	no status
Northern Goshawk	*Accipiter gentilis*	Confirmed	S4	no status	no status
Red-shouldered Hawk	*Buteo lineatus*	Possible	S4B	no status	no status
Broad-winged Hawk	*Buteo platypterus*	Confirmed	S5B	no status	no status
Red-tailed Hawk	*Buteo jamaicensis*	Confirmed	S5	no status	no status
American Kestrel	*Falco sparverius*	Confirmed	S4	no status	no status
Merlin	*Falco columbarius*	Confirmed	S5B	no status	no status
Virginia Rail	*Rallus limicola*	Confirmed	S5B	no status	no status
Sora	*Porzana carolina*	Confirmed	S4B	no status	no status
Common Gallinule	*Gallinula galeata*	Confirmed	S4B	no status	no status
American Coot	*Fulica americana*	Probable	S4B	no status	no status
Killdeer	*Charadrius vociferus*	Confirmed	S5B, S5N	no status	no status
Spotted Sandpiper	*Actitis macularia*	Confirmed	S5	no status	no status
Upland Sandpiper	*Bartramia longicauda*	Confirmed	S4B	no status	no status
Common Snipe	*Gallinago delicata*	Confirmed	S5B	no status	no status

Common Name	Scientific Name	ABBO Category	SRANK	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status
American Woodcock	*Scolopax minor*	Confirmed	S4B	no status	no status
Rock Pigeon	*Columba livia*	Confirmed	SNA	no status	no status
Mourning Dove	*Zenaida macroura*	Confirmed	S5	no status	no status
Black/Yellow-billed Cuckoo	*Coccyzus erythropthalmus/americanus*	Possible	S5B, S4B	no status	no status
Black-billed Cuckoo	*Coccyzus erythropthalmus*	Confirmed	S5B	no status	no status
Eastern Screech-Owl	*Megascops asio*	Probable	S4	no status	no status
Great Horned Owl	*Bubo virginianus*	Confirmed	S4	no status	no status
Barred Owl	*Strix varia*	Probable	S5	no status	no status
Long-eared Owl	*Asio otus*	Possible	S4	no status	no status
Short-eared Owl	*Asio flammeus*	Probable	S2N, S4B	SC	SC
Northern Saw-whet Owl	*Aegolius acadicus*	Probable	S4	no status	no status
Common Nighthawk	*Chordeiles minor*	Possible	S4B	SC	THR
Whip-poor-will	*Caprimulgus vociferus*	Possible	S4B	THR	THR
Chimney Swift	*Chaetura pelagica*	Possible	S4B, S4N	THR	THR
Ruby-throated Hummingbird	*Archilochus colubris*	Confirmed	S5B	no status	no status
Belted Kingfisher	*Ceryle alcyon*	Confirmed	S4B	no status	no status
Yellow-bellied Sapsucker	*Sphyrapicus varius*	Confirmed	S5B	no status	no status
Downy Woodpecker	*Picoides pubescens*	Confirmed	S5	no status	no status
Hairy Woodpecker	*Picoides villosus*	Confirmed	S5	no status	no status
Northern Flicker	*Colaptes auratus*	Confirmed	S4B	no status	no status
Pileated Woodpecker	*Dryocopus pileatus*	Confirmed	S5	no status	no status
Olive-sided Flycatcher	*Contopus cooperi*	Possible	S4B	SC	THR
Eastern Wood-Pewee	*Contopus virens*	Confirmed	S4B	SC	SC
Alder Flycatcher	*Empidonax alnorum*	Confirmed	S5B	no status	no status
Willow Flycatcher	*Empidonax traillii*	Confirmed	S5B	no status	no status
Least Flycatcher	*Empidonax minimus*	Confirmed	S4B	no status	no status
Eastern Phoebe	*Sayornis phoebe*	Confirmed	S5B	no status	no status
Great Crested Flycatcher	*Myiarchus crinitus*	Confirmed	S4B	no status	no status
Eastern Kingbird	*Tyrannus tyrannus*	Confirmed	S4B	no status	no status
Blue-headed Vireo	*Vireo solitarius*	Possible	S5B	no status	no status
Yellow-throated Vireo	*Vireo flavifrons*	Probable	S4B	no status	no status
Warbling Vireo	*Vireo gilvus*	Confirmed	S5B	no status	no status
Red-eyed Vireo	*Vireo olivaceus*	Confirmed	S5B	no status	no status
Blue Jay	*Cyanocitta cristata*	Confirmed	S5	no status	no status
American Crow	*Corvus brachyrhynchos*	Confirmed	S5B	no status	no status
Common Raven	*Corvus corax*	Confirmed	S5	no status	no status
Horned Lark	*Eremophila alpestris*	Confirmed	S5B	no status	no status

Common Name	Scientific Name	ABBO Category	SRANK	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status
Purple Martin	*Progne subis*	Confirmed	S3S4B	no status	no status
Tree Swallow	*Tachycineta bicolor*	Confirmed	S4B	no status	no status
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	Confirmed	S4B	no status	no status
Bank Swallow	*Riparia riparia*	Confirmed	S4B	THR	THR
Cliff Swallow	*Petrochelidon pyrrhonota*	Confirmed	S4B	no status	no status
Barn Swallow	*Hirundo rustica*	Confirmed	S4B	THR	THR
Black-capped Chickadee	*Poecile atricapilla*	Confirmed	S5	no status	no status
Red-breasted Nuthatch	*Sitta canadensis*	Confirmed	S5	no status	no status
White-breasted Nuthatch	*Sitta carolinensis*	Confirmed	S5	no status	no status
Brown Creeper	*Certhia familiaris*	Confirmed	S5B	no status	no status
House Wren	*Troglodytes aedon*	Confirmed	S5B	no status	no status
Winter Wren	*Troglodytes troglodytes*	Confirmed	S5B	no status	no status
Sedge Wren	*Cistothorus platensis*	Probable	S4B	no status	no status
Marsh Wren	*Cistothorus palustris*	Confirmed	S4B	no status	no status
Golden-crowned Kinglet	*Regulus satrapa*	Possible	S5B	no status	no status
Eastern Bluebird	*Sialia sialis*	Confirmed	S5B	no status	no status
Veery	*Catharus fuscescens*	Confirmed	S4B	no status	no status
Swainson's Thrush	*Catharus ustulatus*	Possible	S4B	no status	no status
Hermit Thrush	*Catharus guttatus*	Probable	S5B	no status	no status
Wood Thrush	*Hylocichla mustelina*	Confirmed	S4B	SC	THR
American Robin	*Turdus migratorius*	Confirmed	S5B	no status	no status
Gray Catbird	*Dumetella carolinensis*	Confirmed	S4B	no status	no status
Northern Mockingbird	*Mimus polyglottos*	Confirmed	S4	no status	no status
Brown Thrasher	*Toxostoma rufum*	Confirmed	S4B	no status	no status
European Starling	*Sturnus vulgaris*	Confirmed	SNA	no status	no status
Cedar Waxwing	*Bombycilla cedrorum*	Confirmed	S5B	no status	no status
Nashville Warbler	*Vermivora ruficapilla*	Confirmed	S5B	no status	no status
Yellow Warbler	*Dendroica petechia*	Confirmed	S5B	no status	no status
Chestnut-sided Warbler	*Dendroica pensylvanica*	Confirmed	S5B	no status	no status
Magnolia Warbler	*Dendroica magnolia*	Probable	S5B	no status	no status
Black-throated Blue Warbler	*Dendroica caerulescens*	Probable	S5B	no status	no status
Yellow-rumped Warbler	*Dendroica coronata*	Probable	S5B	no status	no status
Black-throated Green Warbler	*Dendroica virens*	Confirmed	S5B	no status	no status
Blackburnian Warbler	*Dendroica fusca*	Confirmed	S5B	no status	no status
Pine Warbler	*Dendroica pinus*	Probable	S5B	no status	no status
Black-and-white Warbler	*Mniotilta varia*	Confirmed	S5B	no status	no status
American Redstart	*Setophaga ruticilla*	Confirmed	S5B	no status	no status

Common Name	Scientific Name	ABBO Category	SRANK	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status
Ovenbird	*Seiurus aurocapillus*	Confirmed	S4B	no status	no status
Northern Waterthrush	*Seiurus noveboracensis*	Confirmed	S5B	no status	no status
Mourning Warbler	*Oporornis philadelphia*	Confirmed	S4B	no status	no status
Common Yellowthroat	*Geothlypis trichas*	Confirmed	S5B	no status	no status
Canada Warbler	*Wilsonia canadensis*	Possible	S4B	SC	THR
Chipping Sparrow	*Spizella passerina*	Confirmed	S5B	no status	no status
Clay-colored Sparrow	*Spizella pallida*	Confirmed	S4B	no status	no status
Field Sparrow	*Spizella pusilla*	Confirmed	S4B	no status	no status
Vesper Sparrow	*Pooecetes gramineus*	Confirmed	S4B	no status	no status
Savannah Sparrow	*Passerculus sandwichensis*	Confirmed	S4B	no status	no status
Grasshopper Sparrow	*Ammodramus savannarum*	Confirmed	S4B	SC	no status
Le Conte's Sparrow	*Ammodramus leconteii*	Possible	S4B	no status	no status
Song Sparrow	*Melospiza melodia*	Confirmed	S5B	no status	no status
Lincoln's Sparrow	*Melospiza lincolnii*	Possible	S5B	no status	no status
Swamp Sparrow	*Melospiza georgiana*	Confirmed	S5B	no status	no status
White-throated Sparrow	*Zonotrichia albicollis*	Confirmed	S5B	no status	no status
Dark-eyed Junco	*Junco hyemalis*	Possible	S5B	no status	no status
Scarlet Tanager	*Piranga olivacea*	Confirmed	S4B	no status	no status
Northern Cardinal	*Cardinalis cardinalis*	Confirmed	S5	no status	no status
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	Confirmed	S4B	no status	no status
Indigo Bunting	*Passerina cyanea*	Confirmed	S4B	no status	no status
Bobolink	*Dolichonyx oryzivorus*	Confirmed	S4B	THR	THR
Red-winged Blackbird	*Agelaius phoeniceus*	Confirmed	S4	no status	no status
Eastern Meadowlark	*Sturnella magna*	Confirmed	S4B	THR	THR
Common Grackle	*Quiscalus quiscula*	Confirmed	S5B	no status	no status
Brown-headed Cowbird	*Molothrus ater*	Confirmed	S4B	no status	no status
Baltimore Oriole	*Icterus galbula*	Confirmed	S4B	no status	no status
Purple Finch	*Carpodacus purpureus*	Confirmed	S4B	no status	no status
House Finch	*Carpodacus mexicanus*	Confirmed	SNA	no status	no status
Red Crossbill	*Loxia curvirostra*	Possible	S4B	no status	no status
Pine Siskin	*Carduelis pinus*	Possible	S4B	no status	no status
American Goldfinch	*Carduelis tristis*	Confirmed	S5B	no status	no status
Evening Grosbeak	*Coccothraustes vespertinus*	Possible	S4B	SC	SC
House Sparrow	*Passer domesticus*	Confirmed	SNA	no status	no status

Status Updated March 25, 2021

SRANK DEFINITIONS

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

S5 Secure, Common, widespread, and abundant in the nation or state/province.

SNA Not Applicable, A conservation status rank is not applicable because the species is not a suitable target for conservation activities.

S#S# Range Rank, A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).

S#B Breeding

S#N Non-Breeding

SARO STATUS DEFINITIONS

THR Threatened: A species that is at risk of becoming endangered in Ontario if limiting factors are not reversed.

SC Special Concern: A species with characteristics that make it sensitive to human activities or natural events.

SARA STATUS DEFINITIONS

THR Threatened, a wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.

SC Special Concern, a wildlife species that may become threatened or endangered because of a combination of biological characteristics and identified threats.

B

Appendix B
Breeding Bird Results

CIMA+

Survey Point	1		2		3		4		5		6	
Visit	1	2	1	2	1	2	1	2	1	2	1	2
Common Name												
Canada Goose			5									
Mallard					4							
Wild Turkey	1											
Great Blue Heron			2									
Cooper's Hawk											1	
Red-tailed Hawk											1	1
Killdeer		2DD	2									
Mourning Dove	1		1				1	1				
Belted Kingfisher								1				
Northern Flicker	1	1								1		
Eastern Wood Pewee										1		
Eastern Phoebe	1											
Eastern Kingbird					1	1						
Red-eyed Vireo											1	1
Blue Jay	1		1	1				1	2	1	3	1
American Crow	2	2	2		2	1	1			1		2
Common Raven		3	2									
Black-capped Chickadee								1				1
American Robin	1	1	1	1	3	1	1	1		2	1	4
European Starling			4				1				1	1
Cedar Waxwing	4	1	1			1	3		1			2
Yellow Warbler	1						1					
American Redstart								1			2	1
Common Yellowthroat								1	1			
Eastern Towhee			1									
Chipping Sparrow			1									
Song Sparrow	4	2	1	3	3	2	1	3	2	1	1	2
Northern Cardinal			2		1			1			1	
Red-winged Blackbird	3				2	3	1	2	2	2	2	
Common Grackle	1	1	2				1			1	2	6
Brown-headed Cowbird										1		
House Finch	1											
American Goldfinch	2					1	5	1	1		1	2

C

Appendix C
SAR Hand-Out

Appendix A: SAR Hand-Out

The following table provides photographs and general descriptions of potential species at risk that may occur within the project area and information on what actions to take should any of these species be observed.

Endangered and Threatened species are protected and cannot be harmed, harassed, or killed and in some cases their habitats are also protected. These individuals will only be handled by qualified person and only if the individual is in imminent threat of harm. An authorization under the ESA 2007 would be required to handle individuals that are not in imminent threat of harm.

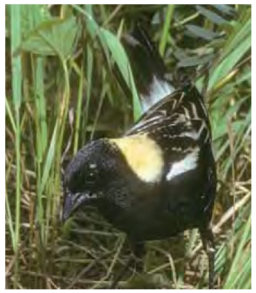
If a SAR enters the work area during the construction period, any work that may harm the individual is to stop immediately and the supervisor will be contacted. No work will continue until the individual has left the area.

Should an individual be harmed or killed then work will stop, and the Ministry of Environment, Conservation and Parks (MECP) will be contacted immediately.

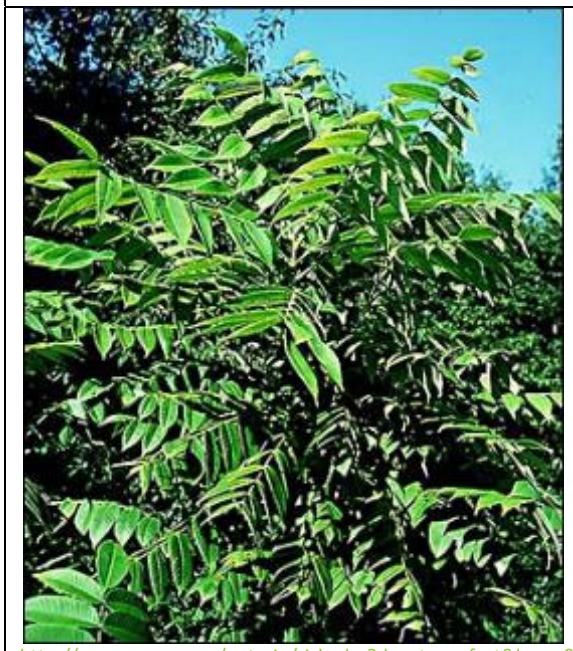
Educate staff and contractors on the potential for SAR to be in the area and their significance.

Mitigation measures listed elsewhere in this report are also applicable to this section.

If a SAR is encountered, this information will be provided to the Natural Heritage Information Centre (Report rare species (animals and plants) | Ontario.ca)

BIRDS		
Photograph	**Description**	**Action to be Taken**
 http://birdweb.org/Birdweb	**Barn Swallow** Swallow with a long tail which is deeply forked in adult males An orange front (no white on the forehead) Narrow pointed wings Juveniles have a white band across the top of the tail. THREATENED	Stop any activity that may cause harm to this specie and contact project Supervisor. Individuals should only be encouraged to move if it is in immediate harm's way. These animals can only be handled by a qualified biologist when it is in imminent threat of harm, otherwise an ESA 2007 authorization will be required.
  Male Female Photo: Royal Ontario Museum Website http://www.rom.on.ca/	**Bobolink** Medium-sized songbird Female is tan with black stripes and resembles a sparrow Male is black with a white patch on the back and yellow patch on the side of his head THREATENED	Stop any activity that may cause harm to these species and contact project supervisor Individuals should only be encouraged to move if it is in immediate harm's way. These animals can only be handled by a qualified biologist when it is in imminent threat of harm, otherwise an ESA 2007 authorization will be required.

REPTILES		
Photograph	**Description**	**Action to be Taken**
 Photo: Royal Ontario Museum website http://www.rom.on.ca/ontario/risk.php  Bernie Muncaster	**Blanding's Turtle** Medium sized turtle (12.5-28 cm) Bright yellow on chin and throat Shell is dark with light coloured spots or lines. The spots fade with age. The shell is domed THREATENED	Take a photograph and record the date observed, name of person who observed it If turtle is located within the construction site, then construction activities that may impact it must STOP until the turtle is clear of the site. Contact supervisor

PLANTS		
Photograph	**Description**	**Action to be Taken**
 http://www.rom.on.ca/ontario/risk.php?doc_type=fact&lang=&id=298	**Butternut** Medium sized tree with multiple leaflets. Similar to walnuts, but walnuts usually have a small or missing leaflet at the tip ENDANGERED	Note that none have been found on-site. If any are located, any construction activities within 50 m of an induvial to be retained shall be carried out carefully in order to ensure that no harm comes to the tree (i.e., no heavy machinery, no excavation or stockpiling within 50 m of the tree, no braking of branches, leaves).

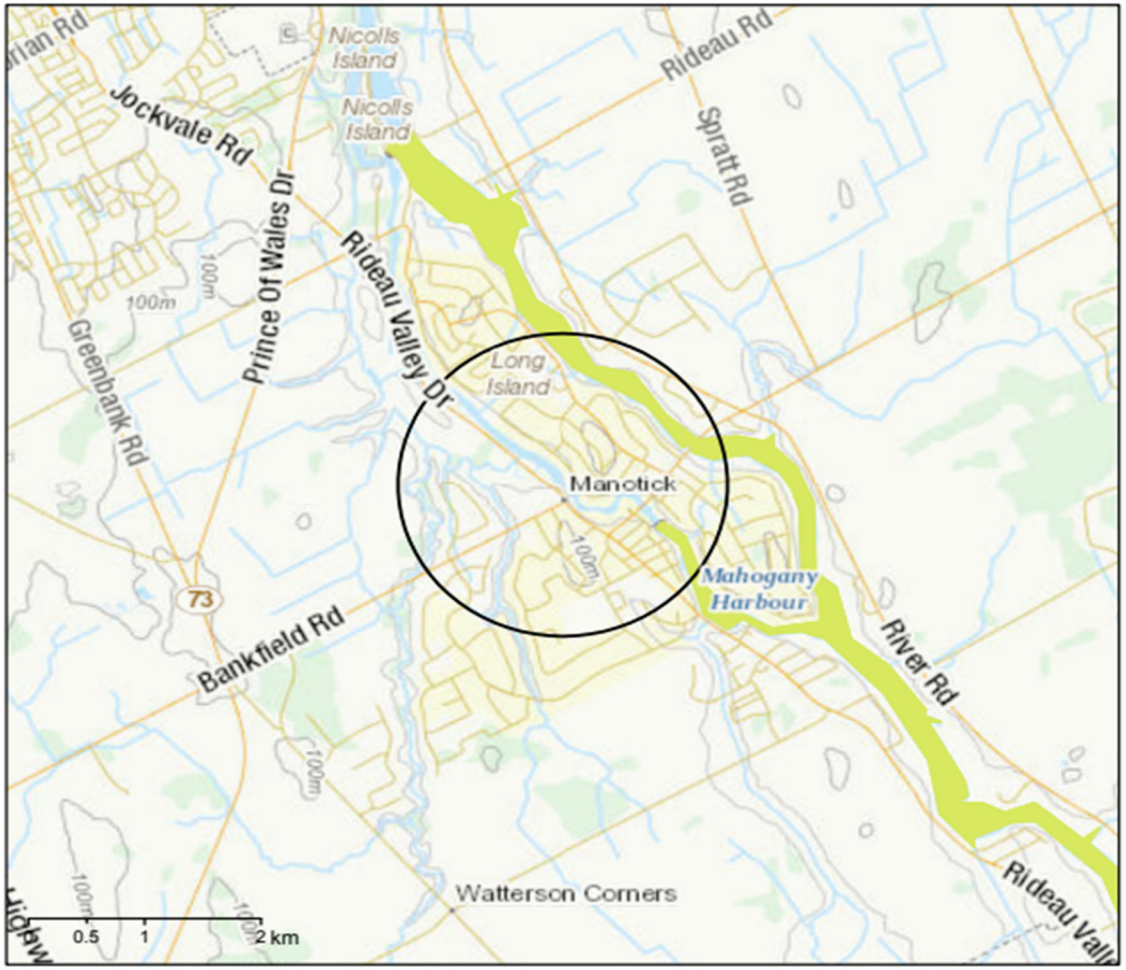
D

Appendix D
Aquatic Species at Risk Map

Fisheries and Oceans Canada | Pêches et Océans Canada

Aquatic Species at Risk Report

Canada



One or more aquatic species listed under the Species at Risk Act are found (or potentially found) within the coloured areas.

- Critical Habitat
- Extirpated, Endangered, or Threatened
- Special Concern

How to use this information:

1. The map and species list are intended to provide a general overview of aquatic species at risk and their critical habitat that may occur within the mapped area.

2. To assess your project go to: www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html

If you encounter an aquatic species at risk in an area that is not currently mapped, please notify your regional Fisheries Protection Program office to ensure that you are compliant with the Species at Risk Act.
The official source of information for species at risk is the Species at Risk Public Registry www.sararegistry.gc.ca

To protect fish and fish habitat, including aquatic species at risk, their residences, and their critical habitat, efforts should be made to avoid, mitigate and/or offset harm. Following the measures to avoid harm will help you comply with the Fisheries Act and the Species at Risk Act.

Critical habitat for these species is found within the outlined area

Critical habitat is identified in recovery strategies or action plans for species listed under Schedule 1 of the Species at Risk Act as extirpated, endangered or threatened.

Name	Where Found	Species Status
	No critical habitat	

Species found (or potentially found) within the outlined area

Name	Where Found	Species Status
Bridle Shiner	Rideau River (Rivière)	Special Concern

E

Appendix E
Vegetation Community Descriptions

Please note that the information provided below was provided by Muncaster Environmental Planning who approved the inclusion of this information within this report.

4386 Rideau Valley Drive, Manotick - Preliminary Natural Environment Summary

Hi Ryan,

My colleague Shaun St. Pierre of BCH Environmental Consulting Inc. reviewed the above site on May 23rd, 2021 (10:45 to 13:30) under overcast skies (clearing later in the survey), a light breeze and an air temperature of 26°C.

Terrestrial Features

As shown on the Figure at the end of this letter, the south half of the site is a cultivated crop field, with the north half a combination of crop field in the north portion and upland deciduous forests between the crop field and Mud Creek to the south.

The approximately 3.5-hectare forest includes three forest types as described below. The forest trees, except for the ash, generally appeared to be in good condition and non-native plants do not appear to have a large influence over the communities.

Fresh-Moist Sugar Maple Lowland Deciduous Forest (FOD7-5)

Deciduous trees provide on average 75-100% cover, with an average diameter within the canopy of 25-35cm DBH (Photo 1), and the very occasional larger trees up to 75cm DBH. The canopy was the dominant layer. The canopy (10m tall; 100% cover) was dominated by sugar maple which was much more than American beech, which was more than basswood (some ash was present but dead). The sub-canopy (6-8m tall; 40% cover) consisted of sugar maple. The understory (1-3m tall; 40% cover) was dominated by sugar maple followed by Tatarian honeysuckle, alternate-leaved dogwood, American beech, and bur oak. The ground layer provided 20-40% cover and consisted of wild-lily-of-the-valley, grasses, and northern lady fern.

PHOTO 1: Fresh-Moist Sugar Maple Lowland Deciduous Forest (May 21, 2021)

Fresh-Moist Ash Lowland Deciduous Forest (FOD7-2)

This land is lower than the FOD7-5 described above (1-2m lower, Photo 2). Deciduous trees provided on average 75% cover, with an average diameter within the canopy of 20-30cm DBH. The dominant canopy layer (8-10m tall; 75% cover) was co-dominated by green ash and Manitoba maple with sugar maple, American beech, and American basswood also present. The sub-canopy (6m tall; 40% cover) consisted of Manitoba maple and green ash. The understory (1-3m tall; 40% cover) consisted of Tatarian honeysuckle, alternate-leaved dogwood, American beech, and bur oak. The ground layer provided 50-60% cover and consisted of wild-lily-of-the-valley, grasses, and sensitive fern.

PHOTO 2: Fresh-Moist Ash Lowland Deciduous Forest (May 21, 2021)

Fresh-Moist Lowland Deciduous Forest (FOD7)

This area is also lower than the FOD7-5 (1-2m lower). Portions of this area and other forests closer to Mud Creek are mapped as unevaluated wetlands on geoOttawa, Ministry, and RVCA mapping but overall, the initial assessment is that the community is considered upland. Trees cover and composition was highly variable (50-90% cover) and consisted of deciduous trees (Photo 3). The average diameter within the dominant canopy layer was 20cm DBH. The canopy (6-8m tall; 50-90% cover) consisted white ash (dead), Manitoba maple, butternut, and sugar maple. There was no sub-canopy. The understory (1-3m tall; 70% cover) consisted of Tatarian honeysuckle, Manitoba maple, and white ash. The ground layer provided 90% cover and consisted of spotted jewel-weed, field horsetail, and Canada enchanter's nightshade.

PHOTO 3: Fresh-Moist Lowland Deciduous Forest (May 21, 2021)

Co-owned trees and adjacent trees with critical root zones extending onto the site may be associated with the existing residences along Rideau Valley Drive (4306, 4314, and 4344).

It is not anticipated that the on-site forests would be considered significant woodlands due to the small size, lack of continuity with forests adjacent to the site (I believe the linkage to the forest to the west in the northwest corner of the site is too short to consider the adjacent forest contiguous, but this has not been studied in detail), general young age distribution of the trees, and lack of forest interior habitat. Note the forests are identified on RVCA mapping as 'RVCA Woodlands'. We are unaware of implications associated with this.

Aquatic Features

Mud Creek bisects the central portion of the site. In addition, a tributary to Mud Creek, the downstream portion of the Wilson Gowan Drain, is along the central and south portions of the west site edge and an oxbow of the creek is adjacent to Rideau Valley Drive along the central-east edge of the site (Photos 4 and 5). Water was present in the oxbow channel on May 21st, with a sighting of a painted turtle. The oxbow channel is still connected to the main channel. This area is also two to three metres lower than the adjacent crop field. For much of the site these channels are within valleylands, as shown on the Figure below. Other than pathways, no development activities should be anticipated within 15 metres of the top of valley slope of the valleylands. Where the valleylands are not well developed, the development constraint will be 30 metres from the normal high-water mark of the channels.

PHOTO 4: Valleylands and Wilson Gowan Drain (May 21, 2021)

PHOTO 5: Oxbow originally part of the main channel of Mud Creek and still connected (May 21, 2021)

Potential Species at Risk

Bats: Three potential bat maternity cavity trees (with suitable cavities) were observed in the upland maple forest. All three trees were sugar maples approximately 50cm DBH. However, the forest does not represent a candidate for maternity colony roosts as the density of potential cavity trees is well under the Ministry threshold of 10 per hectare.

Butternuts: Six butternuts were observed during the survey within the site and adjacent 50 metres. Three of the butternuts were assessed by Shaun as Category 1 (unhealthy) butternuts and three (5 – 13cm DBH) were assessed as Category 2 (healthy). If work is to be completed within 25 metres of the Category 2 butternuts, the impact can be registered on-line, without the need for a permit. If all three Category 2 butternuts were removed, there would be a total requirement for 15 plantings of pure butternut stems. This is usually done off-site by a third-party provider at approximately $ 400 per planting (includes land costs, companion plantings, and monitoring and reports). Additional butternuts may be observed during additional fieldwork, but the on-site numbers are not high.

Barn swallow: A barn and auxiliary structures are in the southeast corner of the site. These structures appear suitable for barn swallow and a barn swallow was observed on May 23rd flying in the area. If the barns are present at application time, they should be reviewed in detail for potential barn swallow nesting. Again, this can be registered on-line rather than requiring a permit if barn swallows are observed nesting in the barns. Compensation would involve installation of nesting structures in a creek corridor.

Bobolink and eastern meadowlark: The cultivated crop fields do not represent suitable nesting habitat for these grassland species.

Eastern whip-poor-will: the forest is too small for potential eastern whip-poor-will use;

Blanding's turtle: Mud Creek upstream (south of Bankfield Road) has been designated as Blanding's turtle habitat, though City staff continue to have concerns with this designation. The Category 2 Blanding's turtle habitat would extend 30 metres from the normal high-water mark of Mud Creek, the Drain, and oxbow. These areas should be left undisturbed as part of the setbacks discussed above. Much of the site will fall within Category 3 Blanding's turtle habitat and as you know compensation was required for Maple Creek Estates to the south. It may be good to complete turtle surveys next spring. The painted turtle is not considered at risk in Ontario and is not covered by legislation.

Summary

In terms of significant natural heritage features, the on-site forests are too small, lack a larger number of older trees, and contain no forest interior habitat. No characteristics were observed for which they would be considered significant woodlands. However, tree retention demands by many members of the public has increased noticeably in recent years.

As discussed above Mud Creek, the Drain, and oxbow and associated valleylands are features to be retained, with a setback of 30 metres from the normal highwater mark or 15 metres from the top of valley slope, whichever is greater. Note the RVCA regulatory limit

(https://www.rvca.ca/regulations-planning/map-a-property) often extends in the range of 30 metres from the top of valley slope. They should be contacted for an explanation.

In terms of significant wildlife habitat potential, features such as marsh or swamp wetlands with larger areas of standing water, forest interior habitat, rock piles, stick nest or other evidence of raptor use, or important staging, wintering or migration areas were not observed. Wildlife may use the few potential cavities trees. Removal of the trees with cavities can be handled with best management practices such as timing restrictions when wildlife is not present.

On-line registration and associated compensation will be required for removal or harm of healthy Category butternuts and potentially barn swallow nests. We are hopeful following the Maple Creek Estates discussions that compensation will not be required for removal of Category 3 Blanding's turtle habitat.

Please call if with questions on the above and have a good day.

Many thanks

Bernie

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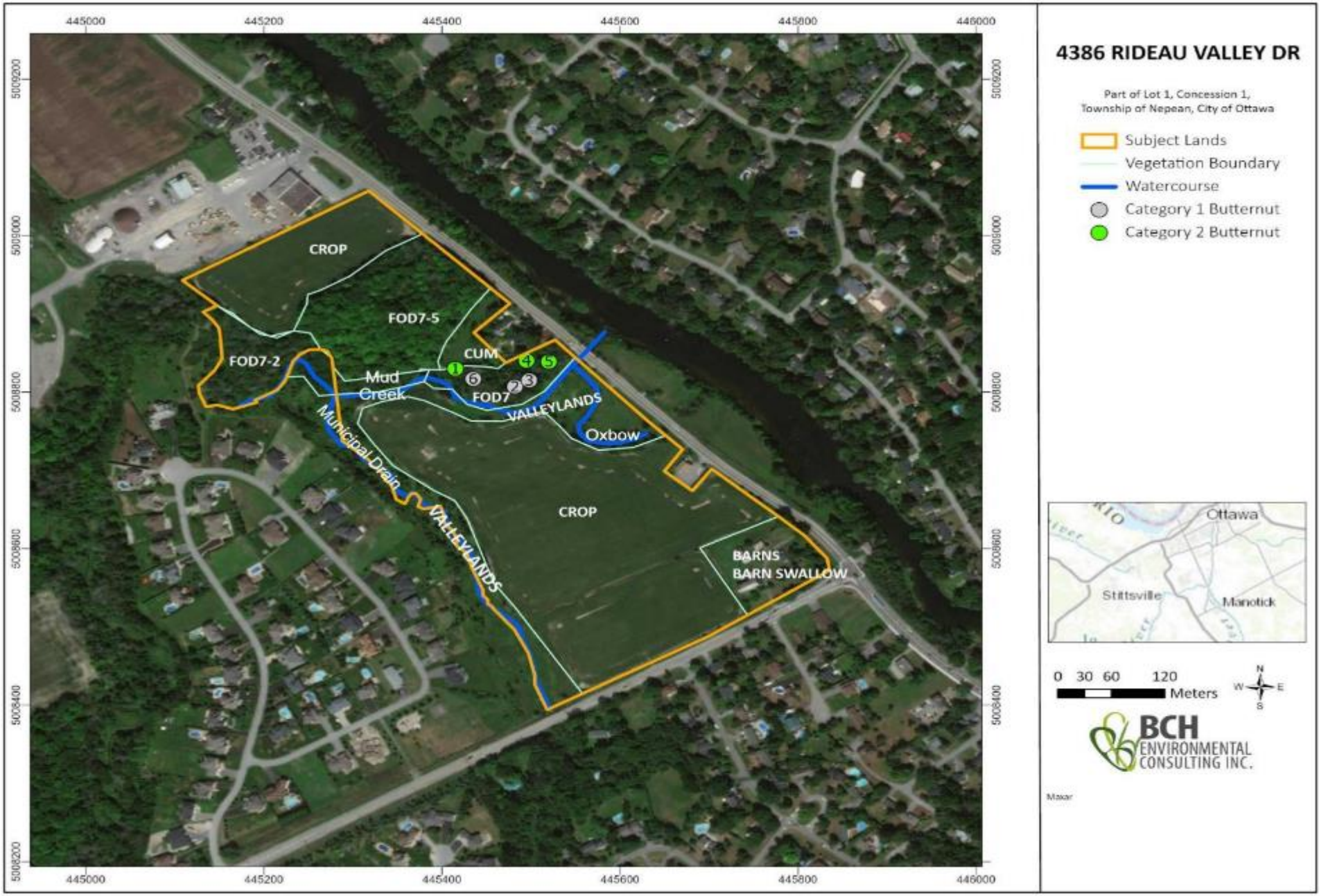
613-748-3753
bmuncaster@rogers.com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CROP
FOD7-5
FOD7-2
CUM
Mud Creek
FOD7
VALLEYLANDS
Oxbow
Municipal Drain
VALLEYLANDS
CROP
BARNS
BARN SWALLOW
4386 RIDEAU VALLEY DR
Part of Lot 1, Concession 1,
Township of Nepean, City of Ottawa
Subject Lands
Vegetation Boundary
Watercourse
Category 1 Butternut
Category 2 Butternut
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CONSULTING INC.

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F

Appendix F
Significant Wildlife Habitat Table

Table 10: Candidate SWH

Significant Wildlife Habitat	Candidate SWH		Confirmed SWM		Comments
	ELC Codes	Additional Criteria Summary	In Site	In Adjacent Lands	
Seasonal Concentration Areas of Animals					
Waterfowl stopover and staging areas (terrestrial)	Certain cultural meadow or thicket Plus, evidence of annual spring flooding	Fields flooded from mid-March to May	Small fields present but no spring flooding		Not discussed further
Waterfowl stopover and staging areas (aquatic)	Specific aquatic habitat types (marsh, swamps)	Ponds, marshes, lakes, bays, coastal inlets, and watercourses used for migration. Stormwater and sewage management facilities are not included.	There is a potential as large flocks of birds have been sighted both up and downstream on the Rideau River; including 150 Canada Geese on October 5, 2022. However, the area has not been designated as such on NHIC databases, and this section is narrower due to Long Island. Since surveys were not completed, it is assumed present.		Assumed present
Shorebird migratory stopover area	Beach/Bar Sand Dunes Meadow marsh	Shorelines used in May to mid-June and early July to October. Stormwater and sewage management facilities are not included.	No shallow shorelines, beaches, bars, dunes, or meadow marshes. No shorebirds observed during surveys.		Not Present; Not discussed further
Raptor wintering area	Requires combination of forest (deciduous, mixed, or coniferous) and upland (cultural meadow, cultural thickets, cultural savannahs or cultural woodlands)	Combination of habitats must >20 ha and the field portion must be wind swept with little accumulation of snow. Where site is for eagles, open water and large trees and snags must be available.	The overall woodland stand is 16.2 ha, relatively narrow along Mud Creek. Unlikely to be large enough. No large trees suitable for eagles were noted.		Not discussed further
Bat hibernacula	Crevices and caves	Active mines are not to be included. Buildings are not included.	No crevices or caves present		Not Present; Not discussed further
Bat maternity colonies	Deciduous, or mixed forests Deciduous or mixed Swamps (>5m tall)	>10/ha large diameter (>25 cm diameter at breast height) Snag trees in the decay classes 1-3 are preferred.	Timing windows for SAR bats will protect for general bats.		Not Present; Not discussed further

Significant Wildlife Habitat	Candidate SWH		Confirmed SWM		Comments
	ELC Codes	Additional Criteria Summary	In Site	In Adjacent Lands	
Turtle wintering areas	Swamps, marshes, open water, shallow water, open fen, or open bog	Water that is deep enough not to freeze solid with soft bottoms. Must be permanent waterbody (or wetlands with adequate dissolved oxygen)	This section of the Rideau River and Mud Creek likely provides turtle overwintering habitat. Five basking turtle surveys were completed as per the province's protocols. Insufficient early basking turtles present to demonstrate the oxbow provides overwintering habitat. Note that the Northern Map Turtles (special Concern) were restricted to Mud Creek and the Rideau River (not in the oxbow).		Overwintering habitat will not be impacted.
Reptile hibernaculum	Any habitat except very wetlands Talus, rock barren, cave and alvar	For snakes – needs to be below frost lines.	No rocky outcroppings present. No snakes encountered during the site investigations.		Not Present; Not discussed further
Colonially – Nesting bird breeding habitat (Bank and Cliff Swallow)	Exposed sandy slopes of banks or piles. Cliff faces or structures (bridges, silos etc.…)	Does not include licensed aggregate areas. Does not include man-made structures or recently (within 2 years) disturbed soil	Some exposed dirt banks present, no bank swallows were observed during the breeding bird visits or as incidental observations. No nests observed. The taller, eroded banks on Mud Creek were on the north side of the watercourse, on the opposite side of the proposed development. Wilcon Cowan Drain did not provide appropriate habitat at this location.		Not Present; Not discussed further
Colonially – Nesting bird breeding habitat (Trees/Shrubs)	Swamps – deciduous or mixed (trees >5m) Treed fen	Typically requires tall trees as nests are usually 11-15m from ground but shrubs and emergent vegetation could be used.	Breeding bird surveys were completed, and no colonial nesting species were observed.		Not Present; Not discussed further
Colonially – Nesting bird breeding habitat (Ground)	Any rocky island or peninsula on lake or large river. For Brewer's Blackbird – near watercourses in open fields, pastures		No rocky islands, or peninsulas were present. Breeding bird surveys were completed, and no colonial nesting species were observed.		Not Present; Not discussed further
Migratory butterfly stopover area	Not applicable to Ottawa Area – must be within 5 km of Lake Ontario				

Significant Wildlife Habitat	Candidate SWH		Confirmed SWM		Comments
	ELC Codes	Additional Criteria Summary	In Site	In Adjacent Lands	
Landbird migratory stopover area					
Deer yarding areas	Mixed or coniferous forests or swamps (>5m tall trees) Can include plantations, cultural thickets, or dry-fresh poplar-white birch deciduous forest	These are mapped by OMNRF	None mapped by OMNRF for this area		Not Present; Not discussed further
Deer winter congregation area	All forest and wetland habitats and small conifer plantations	These are mapped by OMNRF (typically, >100ha in size)			Not Present; Not discussed further
Rare Vegetation Communities or Specialized Habitat for Wildlife					
Cliffs and talus slopes	Near vertical face that is >3m in height (cliff or talus)	Typically, in Niagara Escarpment	Cliffs and talus slope habitat were not present		Not Present; Not discussed further
Sand barren	Sand barrens various types but tree cover is always ≤ 60%	Must be >0.5ha	Sand barrens not present		Not Present; Not discussed further
Alvar	Alvar, Coniferous forest, cultural meadow, cultural savannah, cultural thickets, and cultural woodlands	Must have at least 4 indicator species with substantial cover (must not have large amounts of exotic or introduced species) Must be >0.5ha	Alvar habitat is typically flat and mostly unfractured calcareous bedrock. Not present		Not Present; Not discussed further
Old growth forest	Any forest or treed (>5 m) swamp	Must be at least 30 ha with at least 10 ha of interior habitat (edge considered 100 m)	Woodland (10.8 ha) did not meet the requirements for old growth.		Not Present; Not discussed further

Significant Wildlife Habitat	Candidate SWH		Confirmed SWM		Comments
	ELC Codes	Additional Criteria Summary	In Site	In Adjacent Lands	
		Have specific characteristics (snags, mosaic of gaps, multi-layered canopy)			
Savannah	Tallgrass prairie savannah and cultural savannah	Must have indicator species	No savannah present		Not Present; Not discussed further
Tallgrass prairie	Tallgrass prairie (open prairie - <25% tree cover)	No minimum size	No tallgrass prairie was present.		Not Present; Not discussed further
Other rare vegetation communities	Provincially rare S1-S3 communities as described in Appendix M of the SWHTG		None of the communities listed for the Ottawa-Carleton Area in Appendix M were present.		Not Present; Not discussed further
Specialized Habitat for Wildlife					
Waterfowl nesting area	Shallow marsh, meadow marsh, thicket swamp or deciduous (treed >5 m tall) swamps	Wetland must be 0.5 ha or consist of up to 3 smaller wetlands within 120 m of each other if known nesting is occurring.	Between the dedicated breeding bird surveys and the incidental observations, the site did not meet the minimum requirements of 3 or more nesting pairs of species (American Black Duck, Northern Pintail, Northern Shoveler, Gadwall, Blue-winged Teal, Green-winged Teal, Wood Duck, Hooded Merganser) or 10 or more pairs of Mallards.		Not Present; Further wetland is being protected.
Bald Eagle and Osprey nesting, foraging, and perching habitat	Any forest or swamp (trees >5m) type of habitat that is immediately next to rivers, lakes, ponds, or wetlands	Nests on man-made structures are not included.	Some active in general area but none observed during survey, no nests present on or near site.		Not Present; Not discussed further
Woodland raptor nesting habitat	Any forest habitat or treed swamp (>5m tall) or coniferous plantation	Stand must be > 30 ha with >10 ha of interior habitat (edge is 200 m)	Minimum habitat requirements not present; no nesting raptors noted during surveys.		Not Present; Not discussed further

Significant Wildlife Habitat	Candidate SWH		Confirmed SWM		Comments
	ELC Codes	Additional Criteria Summary	In Site	In Adjacent Lands	
Turtle nesting areas	Shallow marsh, shallow water, open bog	Close to water but away from roads. It must provide sand and gravel that turtles can dig through and be in open sunny areas. Areas on the sides of municipal or provincial roads are not included.	The only potential habitat noted were the ploughed agricultural fields however, these are actively cropped and not suitable for nesting turtles.		Not Present; Not discussed further.
Seeps and springs	Any forested community could have a seep/spring	Forest area with <25% meadow/pasture in the headwaters of a stream.	Candidate habitat not present		Not Present; Not discussed further
Amphibian breeding habitat (woodland)	Any forest or treed swamp (>5m tall trees)	Wetland, pond, or vernal pool must be > 500 m^2 Those with water until mid-July (during most years) are better candidates	Woodland breeding habitat not present.		Not Present; Not discussed further
Amphibian breeding habitat (wetlands)	Swamps, marsh, fen, bog, open water, or shallow water	Unless it is a larger wetland, must be >120 m from woodlands Must be > 500 m^2	The Oxbow provided wetland habitat and is assumed to be significant. Leopards frogs were noted as incidental observation in the oxbows.		Assumed present.
Woodland area-sensitive bird breeding habitat	Any forest or treed swamp (>5 m tall)	Interior habitat (200m edge used) in mature (>60 years) large (>30 ha) stand	Candidate habitat not present.		Not Present; Not discussed further
Habitat for Species of Conservation Concern (not including Endangered or Threatened Species)					
Marsh bird breeding habitat	Meadow marsh, shallow water, fen, or open bog		Does not meet the minimum requirements.		Not Present; Not discussed further
Open country bird breeding habitat	Cultural meadows	Must be large grasslands (>30 ha) Agricultural class 1 and 2 are not included	Candidate habitat not present.		Not Present; Not discussed further

Significant Wildlife Habitat	Candidate SWH		Confirmed SWM		Comments
	ELC Codes	Additional Criteria Summary	In Site	In Adjacent Lands	
		Agricultural lands planted in row crop or intensive hay, or pastures (within past 5 years) not included.			
Shrub/early successional bird breeding habitat	Cultural thickets or woodlands	Must be > 10 ha Agricultural class 1 and 2 are not included Agricultural lands planted in row crop or intensive hay, or pastures (within past 5 years) not included	Candidate habitat not present.		Not Present; Not discussed further
Terrestrial crayfish	Not present in Ottawa Area				
Special concern and rare wildlife species	All special concern or species ranked as S1-S3, SH (plants or animals)	Habitat depends on the species. Of those listed in SWHCS there is a potential for Snapping Turtle.	Northern Map Turtles present on site		Discussed under SWH section.
Animal Movement Corridors					
Amphibian movement corridor	Any habitat but amphibian breeding wetland habitat must be identified		The criterion indicates that amphibian movement corridors are to have a minimum of 15m of native vegetation on both sides of the waterway. This is not present at this location.		Not Present; Not discussed further
Deer movement corridor	All forests but project must be in Stratum II Deer Wintering Area and Deer Wintering Habitat must be confirmed.		Not applicable – no Deer Wintering Areas or Habitat identified by OMNRF for area.		Not Present; Not discussed further