Environmental Impact Study for 3930 and 3960 Riverside Drive Ottawa, Ontario

2023-09-29

Final Report

KILGOUR & ASSOCIATES LTD.
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Project Number: TAGG 1299.3

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List of Acronyms and Abbreviations

cm – centimeter
CRZ – critical root zone
DBH – Diameter at breast height
DFO – Department of Fisheries and Oceans (Fisheries and Oceans Canada)
ECCC – Environment and Climate Change Canada
e.g. – *exempli gratia*
EIS – Environmental Impact Study
ELC – Ecological Land Classification
ESC – erosion and sediment control
ESA – *Endangered Species Act*

FWCA – *Fish and Wildlife Conservation Act*
ha – hectare
i.e. – id est
KAL – Kilgour & Associates Ltd.
km – kilometre
m – metre
MBCA – *Migratory Birds Convention Act*
MECP – Ministry of Environment, Conservation, and Parks
MNRF – Ministry of Natural Resources and Forestry
NHIC – Natural Heritage Information Centre
PPS – Provincial Policy Statement
SAR – species at risk
SARA – *Species at Risk Act*
SWH – Significant Wildlife Habitat
SWM – stormwater management
TCR – Tree Conservation Report

1.0 INTRODUCTION

This report is an Environmental Impact Study (EIS) prepared by Kilgour & Associates Ltd. (KAL; Appendix A) on behalf of Taggart Realty Management in support of the proposed development at 3930 and 3960 Riverside Drive, Ottawa, Ontario (the "Site"; Figure 1)'. The proposed residential development includes housing ranging from single detached homes to apartment buildings. This EIS follows the initial EIS prepared by KAL dated January 3, 2023, and includes the results from the required field studies and provides recommendations and mitigation measures to minimize impacts of the proposed development on the natural heritage features located on and adjacent to the Site.

In the City of Ottawa, an EIS is required when development or site alteration is proposed in or adjacent to natural heritage features, as outlined in Section 4.8 of the Official Plan (City of Ottawa, 2021). The purposes of an EIS are to:

- Identify natural heritage features on or adjacent to the Site;
- Assess potential impacts of the proposed development to existing features; and
- Recommend mitigation measures to minimize or eliminate identified impacts.

Figure 1 Location Context

Legend

Site Boundary

Edge of Disturbance

N

0 150 m

Project: TAGG 1299
Map File: TAGG 1299-2212b.map
MTM Zone 9
(NAD 83)
Printed on: 2023-09-29

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2.0 ENVIRONMENTAL POLICY CONTEXT

Natural heritage policies and legislation relevant to this EIS are outlined below.

2.1 The Provincial Policy Statement, 2020

The Provincial Policy Statement (PPS) was issued under Section 3 of the *Planning Act* (Government of Ontario, 1990b). The current PPS came into effect May 1, 2020 (Government of Ontario, 2020). Natural features are afforded protections under Section 2.1 of the PPS, via the official plans and environmental policies of the municipal jurisdictions in which development is proposed. Protections may include maintenance, restoration, and improved function of diversity, connectivity, ecological function, and biodiversity of natural heritage systems. These protections restrict development and site alteration in significant natural areas (e.g., significant habitat of endangered and threatened species, significant wetlands, significant coastal wetlands, significant woodlands, significant valleylands, significant wildlife habitat (SWH), Areas of Natural and Scientific Interest (ANSI), and fish habitat) unless it can be demonstrated that there will be no negative effects on the features and ecological functions of those natural areas. Technical guidance for implementing the natural heritage policies of the PPS is found within the second edition of the *Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005* (NHRM; Ministry of Natural Resources (MNR, 2010)). This manual recommends the approach and technical criteria for protecting natural heritage features and areas in Ontario. This manual further addresses the width of adjacent lands to be considered when evaluating potential negative impacts, such as areas within 120 m of protected natural heritage features.

2.2 City of Ottawa Official Plan

The City of Ottawa Official Plan (2021) provides direction for future growth in the City and is a policy framework to guide physical development to 2031 in accordance with the PPS. The Official Plan was first approved in 2003 and is typically updated every five years. The Site is designated “Greenspace” and “Neighbourhood” in Schedule B3 of the Official Plan. The Official Plan includes a Natural Heritage Features map (Schedule C12), providing additional information on wetlands, watercourses, and wooded areas within the City boundaries (2021). Urban Natural Features are mapped directly adjacent to the northern Site boundary.

2.3 *Species at Risk Act*, 2002

The federal *Species at Risk Act* (SARA; Government of Canada, 2002) is administered by Environment and Climate Change Canada (ECCC) and provides direction to protect and ensure the survival of wildlife species in Canada. The purpose of the SARA is to prevent populations of wildlife from becoming Extirpated, Endangered, or Threatened, provide recovery Endangered or Threatened species, and to manage other species to prevent them from becoming Endangered or Threatened.

All species listed on Schedule 1 of SARA are afforded protection on federal lands. Aquatic species and species of migratory birds protected by the *Migratory Birds Convention Act* (MBCA; (Government of Canada, 1994) and listed as Endangered, Threatened, or Extirpated under Schedule 1 of SARA are protected wherever they occur in Canada, regardless of land ownership. SARA protections do not typically apply for other species groups on non-federal properties. However, the Federal Minister of ECCC can impose SARA protections on

private projects where habitat is deemed "…necessary for the survival or recovery of the species… " in the area of concern.

2.4 *Endangered Species Act*, 2007

The provincial *Endangered Species Act* (ESA; Government of Ontario, 2007) is administered by the Ministry of Environment, Conservation, and Parks (MECP) and provides protection for species at risk (SAR) and their habitat. The ESA states that it is illegal to harm the habitat of species listed as Extirpated, Endangered, and Threatened. It is also illegal to kill, harm, harass, possess, transport, buy, or sell Extirpated, Endangered, and Threatened species, whether it is living or dead. Species listed as Endangered, Threatened, or Extirpated and their habitats (e.g., areas essential for breeding, rearing, feeding, hibernation, and migration) are automatically afforded legal protection under the ESA.

2.5 *Fisheries Act*, 1985

The federal *Fisheries Act* (Government of Canada, 1985) is administered by Fisheries and Oceans Canada (DFO) and provides protections to fish, fish habitat, and fisheries. Specifically, the *Fisheries Act* in its current version provides: 1) Protection for all fish and fish habitat; 2) Prohibition against the "harmful alteration, disruption or destruction of fish habitat"; and 3) Prohibition against causing "the death of fish by means other than fishing".

Projects with a scope that does not fall within DFO's defined standards and codes of practice require submission of a request for review to DFO.

2.6 *Migratory Birds Convention Act*, 1994

Nesting migratory birds are protected under the MBCA (Government of Canada, 1994). No work is permitted that would result in the destruction of active nests or the wounding or killing of bird species protected under the MBCA and/or associated regulations (e.g., SARA). The "incidental take" of migratory birds and the disturbance, destruction, or taking of the nest of a migratory bird is prohibited. "Incidental take" is the killing or harming of migratory birds due to actions that are not primarily focused on taking migratory birds (e.g., economic development) and no permits exist for the incidental take of migratory birds or their nest/eggs as a result of activities that are not focused on taking migratory birds. These prohibitions apply throughout the year. The Government of Canada has compiled nesting calendars that apply across Canada that can be used to greatly reduce the risk of harming/destroying active nests by ensuring works that may impact nests are performed outside of the nesting period.

2.7 *Fish and Wildlife Conservation Act*, 1997

The provincial *Fish and Wildlife Conservation Act* (FWCA; Government of Ontario, 1997) governs the hunting and trapping of a variety of wildlife including mammals, birds, reptiles, amphibians, and fish in Ontario, thereby facilitating the protection of wildlife and their habitat. The FWCA outlines the prohibition of hunting or trapping specially protected species and the requirement for provincially issued licenses for the hunting or trapping of "furbearing" or "game" animals. Examples of specifically protected animals include, for example, Southern Flying Squirrel (*Glaucomys volans*), Northern Harrier (*Circus cyaneus*), American Kestrel (*Falco sparverius*), Blue Jay (*Cyanocitta cristata*), Midland Painted Turtle (*Chrysemys picta marginata*),

Northern Watersnake (*Nerodia sipedon*), and Gray Treefrog (*Hyla versicolor*). In particular, raptors that are not protected under the MBCA (including Peregrine Falcon) are protected under the FWCA.

2.8 *Conservation Authorities Act*, 1990

Conservation Authorities were created to address erosion, flooding, and drought concerns regionally by managing at the watershed level. Conservation Authorities were given the ability to regulate under Section 28 of the *Conservation Authorities Act* (Government of Ontario, 1990a). The Act provides mechanisms to regulate works and site alterations that have potential to affect erosion, flooding, land conservation, and alterations to waterbodies within their jurisdiction. It is the obligation of all Conservation Authorities to implement Ontario Regulations 42/06 and 146/06 to 182/06 *Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses* under Section 28 of the *Conservation Authorities Act* for relevant works.

3.0 PROPERTY IDENTIFICATION

The Site is approximately 8.15 ha in size and is located at 3930 and 3960 Riverside Drive, Ottawa, Ontario (Lat: 45.336400°N and Long: -75.695265°W; Figure 1). It is located directly east of the Rideau River. The Site is predominantly forested within the western portion, and predominantly an open meadow community within the eastern portion. A small unevaluated wetland is partially located within the Site in the northwest corner, located adjacent to the Rideau River. A steep slope bisects the northern end of the Site from north to south, sloping down steeply to the west towards the Rideau River. Slopes along the Rideau River are densely vegetated. The slope within the northern portion of the Site is dominated by a sandy ridge with exposed substrate in several areas. The steepest part of the slope was observed along the sandy ridge on the western side of the trail towards the northern point of the Site. Prior to 1991, a stormwater management (SWM) pond was developed approximately 245 m north of the Site (City of Ottawa, 2023a). The northern end of the Site is divided by an access road and hydro line that runs northeast to the southwest; the trail continues southeast along the Rideau River. A pumphouse station exists along the Rideau River where the trail veers southeast.

The Site is currently zoned GM1[1719] S251 H(137 A.S.L.), following a zoning by-law amendment approval under By-Law 2019-93, supported by City Council on April 10, 2019 (Appendix B). The majority of the zoning of the property is GM1 (General Mixed-Use Zone), while the northwestern portion of the property is EP1 (Environmental Protection Zone). Within Environmental Protected Zones permitted uses are environmental preservation and/or education areas, and forestry operations. Within the EP1 Subzone, utility installation is also permitted (City of Ottawa, 2023b). The Environmental Protection zone is associated with the City of Ottawa Urban Natural Area (UNA), Riverwood Park Woods (UNA #147), which extends to the north along the Rideau River (Figure 2). It is anticipated that the edge of the Environmental Protection zone and therefore UNA #147 would be impacted by the proposed development. UNA #147 will be discussed in detail in Section 5.8.

The Site is bordered by:

- Forested areas, unevaluated wetlands, Quinterra SWM Pond, and residential properties to the north;
- Riverside Drive and golf course to the east;
- Hunt Club Road, commercial properties, meadow, SWM pond, and airport landing strips to the south; and,

- Rideau River, forested areas, residential properties, and commercial properties to the west.

4.0 METHODOLOGY

4.1 Desktop and Background Data Review

4.1.1 Agency Oversite and Consultation

The Site is located within the jurisdictions of the City Ottawa and Rideau Valley Conservation Authority (RVCA). A pre-consultation meeting was held with the City of Ottawa on September 1, 2021, to determine the scope of the EIS (Appendix B). Further, the Client engaged the City of Ottawa in a further pre-consultation meeting (with KAL present) to scope the EIS on February 9, 2022. Pre-consultation comments identified that the need for this EIS was triggered by 1) proximity of the proposed development to wetland and floodplain areas, with potential impacts to aquatic habitats; 2) UNA #147 encroachment; and 3) potential impacts to SAR and SAR habitat.

4.1.2 Site Overview

Aerial imagery from Google Earth and the City of Ottawa's geoOttawa system was used to develop a preliminary mapping of existing site features and landcover and to inform how the Site may be divided into vegetation communities.

4.1.3 Preliminary SAR Review

The review of existing information included a preliminary SAR screening for species listed under the federal SARA and provincial ESA. The screening functions to identify SAR having some potential to be in the broader vicinity of the Site. The screening was completed following the *Draft Client's Guide to Preliminary Screening for Species at Risk* (MECP, 2019a; Appendix C). The MECP previously conducted reviews of Preliminary Screenings, but no longer offers this service. The Preliminary Screening considered data sources including:

- Species at Risk in Ontario (SARO; Ministry of Environment, Conservation, and Parks (MECP, 2023);
- Species at Risk Public Registry (Government of Canada, 2023);
- Natural Heritage Information Centre (NHIC; Ministry of Natural Resources, and Forestry (MNRF, 2023c);
- Land Information Ontario (MNRF, 2023b);
- Aquatic Species at Risk Map (DFO, 2023);
- Ontario Reptile and Amphibian Atlas (Ontario Nature, 2019);
- Ontario Breeding Birds Atlas (Birds Canada, Canadian Wildlife Service (Environment and Climate Change Canada), et al., 2009);
- Ontario Butterfly Atlas (Toronto Entomologists' Association, 2023);

- eBird (The Cornell Lab of Ornithology, 2023);
- iNaturalist (California Academy of Sciences and National Geographic Society, 2023);
- Bumble Bee Watch (Wildlife Preservation Canada et al., 2023);
- Recovery Strategy for the Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*), and Tri-colored Bat (*Perimyotis subflavus*) in Ontario (Humphrey & Fotherby, 2019);
- Recovery Strategy for the Eastern Small-footed Myotis (*Myotis leibii*) in Ontario (Humphrey, 2017);
- Fish ON-Line (MNRF, 2023a);
- Technical Memorandum: Potential environmental constraints associated with proposed slope modifications at 3930 Riverside Drive, Ottawa (KAL, 2021);
- 3860 and 3930 Riverside Drive: Tree Conservation Report and Environmental Impact Statement (Muncaster Environmental Planning Inc., 2018); and
- Ontario Geotechnical Boreholes (Ontario Ministry of Mines, 2012).

4.2 Field Surveys

KAL conducted an initial site visit on November 24, 2021, as part of a background review of slope modifications proposed to support a potential site plan (KAL, 2021). KAL revisited the Site on October 19, 2022, following the resumption of project planning for the proposed development to document existing ecological conditions on the Site and to confirm the results of the background review.

Field surveys conducted in spring and early summer 2023 included Breeding Bird Surveys (BBS), acoustic bat monitoring, anuran surveys (MMP), a Headwater Drainage Features Assessment (HDFA), and vegetation studies including a Tree Conservation Report (TCR), Butternut Health Assessment (BHA), invasive species survey, and an Ecological Land Classification (ELC) update. 2023 field surveys are detailed in the sections below.

Table 1 Summary of Field Studies

Date	Purpose	Conditions	Personnel
November 24, 2021	• Identify general site conditions • Potential constraints	• 4°C • Sunny • Wind 14 km/h S	• Katie Black
October 18, 2022	• Preliminary ELC • Soil survey	• 10°C • Partly cloudy • Wind 13 km/h SE	• Rob Hallett • Sarantia Katsaras
April 12, 2023	• HDFA #1	• 15°C • Partly cloudy • Wind 12 km/h W	• Rob Hallett • Nick Schulz
April 20, 2023	• Frogs #1	• 9°C • 100% cloud cover • Light wind	• Jenni Velichka • Sarantia Katsaras
May 31, 2023	• BBS #1 • BHA • Frogs #2	• 14°C (BBS), 25°C (MMP) • Sunny • Light wind	• Rob Hallett (BBS, BHA) • Nick Schulz (MMP) • Sawyer Stoyanovich (MMP)

May 25, 2023	• Bat monitor setup	• 18°C • Sunny • Wind 19 km/h NW	• Rob Hallett
June 13, 2023	• BBS #2 • Bat monitor takedown	• 16°C • 85% cloud cover • Moderate wind	• Maren Nielsen
June 20, 2023	• Frogs #3	• 22°C • 10% cloud cover • Light wind	• Rob Hallett • Jenni Velichka
July 5, 2023	• BBS #3	• 23°C • 0% cloud cover • Light wind	• Maren Nielsen
July 18, 2023	• ELC confirmation and update • TCR • Invasive species	• 27°C • Sunny • Wind 10 k/h N	• Maren Nielsen • Nick Schulz

4.2.1 Headwater Drainage Feature Assessment

Aerial imagery and public databases were reviewed as part of the initial EIS to identify potential wetland areas and watercourses (City of Ottawa, 2023a; MNRF, 2023c). Observed wetlands were delineated and characterized as part of the Ecological Land Classification (ELC) exercise (see Section 4.2.2).

A Headwater Drainage Feature Assessment (HDFA) was conducted for the Site following the methods per the *Evaluation, Classification and Management of Headwater Drainage Features Guidelines* (Toronto and Region Conservation Authority & Credit Valley Conservation, 2013). Headwater Drainage Features (HDFs) are typically non-permanently flowing drainage channels that may or may not have explicit bank structure. The HDFA protocol requires up to three surveys of HDFs on a site. The first is conducted near the spring freshet to identify channel and wetted dimensions at peak water levels. Fish communities and habitats are assessed later in the spring for those HDFs hydrologically capable of supporting fish. Water levels of features not found to be dry during the second visit are checked once more in mid to late summer to assess their status as permanent watercourses.

The HDFs identified on the Site are associated with the steep banks in the northern portion of the Site and were deemed highly unlikely to provide habitat for fish. As such, only one HDFA survey was formally completed in early spring 2023. Subsequent site visits throughout the remainder of the field season, however, consistently noted the absence of water within headwater features and thus the inability to support fish generally.

4.2.2 Vegetation

4.2.2.1 Ecological Land Classification

Vegetation communities on the Site were based on standard ELC methods for Ontario (Lee et al., 1998). The ELC methodology provides a consistent approach to identify, describe, and map vegetation communities or physiographic features on the landscape based on dominant plant species and soil composition. This method results in a standardized description of each vegetation community to capture the natural diversity and variability of communities within a site and to provide insight into available habitat and the type of species that may be present. More specifically, the classifications from ELC provide a basis for determining whether potential habitat for a given SAR or other ecological value may be present.

The desktop review of available aerial imagery and preliminary field visits informed how the Site was divided into vegetation communities based on variation in land cover, topography, and vegetation structure. During the initial ELC survey on October 19, 2022, the dominant plant species were recorded within each proposed ecosite in the field to further divide ecosites into vegetation types (the finest resolution in ELC), where possible. A subsequent, in-season ELC survey was conducted on July 18, 2023, to refine vegetation type boundaries and record mid-summer dominant plant species. Representative photos of each ELC unit on the Site were taken and are included with the community descriptions in this report.

Existing data on soils in the vicinity of the Site were obtained from the Ontario Ministry of Agriculture, Food and Rural Affairs' AgMaps (OMAFRA, 2023) soils data and the Ontario Geotechnical Boreholes Data collected in 2001 (Ontario Ministry of Mines, 2012). This data was supplemented by soil cores taken in the field using a 120 cm soil auger at select locations within the Site.

4.2.2.2 Tree Studies (TCR and BHA)

A tree survey was performed for the Site following TCR guidelines set forth by the City of Ottawa Forestry Staff (City of Ottawa, 2020). As part of the survey process, Butternut (*Juglans cinerea*) and Black Ask (*Fraxinus nigra*) trees (Endangered under the ESA) were reviewed and assessed as required. KAL observed two Butternuts and one Black Ash on the Site. While general tree surveys can be completed at any time of year, Butternut Health Assessments (BHAs) following the MECP's Butternut Assessment Guidelines (MECP, 2021a) must be completed between May 15 and August 31. The assessment evaluates Butternut health for the purpose of compliance with the ESA. The BHA was conducted by KAL staff on May 31, 2023.

Detailed surveys of individual trees were not to be completed as part of this study, however included detailed measures of notable trees to be removed along the proposed pathway and forest edge along the western side of the residential area.

4.2.3 Invasive Species Survey

Species were identified as exotic, invasive, or noxious under the Ontario *Invasive Species Act* (Government of Ontario, 2015) and as listed on the OMAFRA Noxious Weed List (2015) and the Ontario Invasive Plant Council's Invasive Plant List (Ontario Invasive Plant Council, 2021). Species considered exotic, invasive, or noxious as described above and observed on-site were identified and photographed. Approximate distributions were mapped; localized concentrations and widespread infestations were documented. Where relevant, estimates of the number of individuals in an infestation was made.

4.2.4 Breeding Bird Surveys

Morning breeding bird surveys were performed via point count surveys following the Ontario Breeding Bird Atlas Guide for Participants (Ontario Breeding Bird Atlas, 2001). Breeding bird surveys are to be completed from survey stations that, combined, provide suitable viewing of all habitats on a site on calm weather days with light wind (≤3 on the Beaufort scale[1]) and no precipitation. Per Birds Canada et al. (2001), two rounds of surveys must take place between sunrise and five hours after sunrise between May 24 and July 10, with approximately 15 days between survey dates. All incidental observations were recorded while moving between survey points as well as during other field visits. Birds were identified by vocalization and/or direct visual observation. KAL staff conducted breeding Bird surveys on May 31st, June 13th, and July 5th, 2023.

The presence of regionally rare bird species was based on an analysis of data from the Atlas of Breeding Birds of Ontario (Birds Canada, Canadian Wildlife Service (Environment and Climate Change Canada), et al., 2009) based on Hill's Site Regions, now Ecoregions. The Ontario Wetland Evaluation System: Southern Manual (MNRF, 2014) also assisted with classifying regionally significant breeding birds in the area (Region 6). The presence of provincially and federally significant species was based on species listed under the ESA and SARA, respectively, and any other non-SAR species that are tracked by the Natural Heritage Information Centre (these species are considered provincially significant; (MNRF, 2023c).

4.2.5 Anurans

Anuran (frog and toad) surveys were performed following the Marsh Monitoring Program (Birds Canada, Environmental Canada, et al., 2009). This protocol calls for multiple survey stations across a site to capture spatial and habitat variability. The Marsh Monitoring Program advises that each station be visited three times at night, no less than 15 days apart, during the spring and early summer. Following this protocol, the timing of the three anuran surveys is based on nighttime air temperature:

- Early breeders (Wood Frog, Western Chorus Frog, Spring Peeper): above 5°C;
- Mid-season breeders (Mink Frog, American Toad, Gray Treefrog): above 10°C; and
- Late breeders (Green Frog, Bullfrog): above 17°C.

Anuran surveys are to begin one half hour after sunset and end before midnight on evenings with appropriate temperatures and light winds (≤3 on the Beaufort Scale[1]). Anuran surveys took place on the evenings of April 20th, May 31st, and June 20th, 2023. Additional observations of amphibians were made throughout the spring and summer during other field visits.

4.2.6 Acoustic Bat Monitoring

Bat monitoring was completed following acoustic surveys under the MNRF's *Survey Protocol for Species at Risk Bats within Treed Habitats* (2017). This is currently the recommended protocol for confirming the presence/absence of Little Brown Myotis, Northern Myotis, and Tri-colored Bat, where it is determined that potentially suitable habitat for the establishment of maternity roosts is present. Acoustic surveys took place by placing a song meter SM4 acoustic recorder on site between May 26th and June 2nd, scheduled to record after dusk and continuing for five hours.

The Site contains mature forests and a woodland, with treed swamps directly north of the Site. Many trees are potentially suitable for bat roosting, having diameters at breast height (DBH) >10 cm, crevices, and loose bark, and being in the early stages of decay (MNRF, 2017). Snags on-site were captured though a combination of ELC and the Tree Conservation Report (TCR). Kaleidoscope Pro analysis software was used to automatically detect and identify bat calls from acoustic data. This software typically has an identification accuracy rate of ~70-80%; approximately 10% of the acoustic data were manually verified.

Figure 2 Existing Site Conditions

Legend

- Site Boundary
- Edge of Disturbance
- UNA 147
- Floodplain
- HDF1
- HDF2
- HDF3
- Black Ash
- Butternut

ELC Code

- FOCM1-2
- FODM5-1
- MEMM3
- SWMM1-1
- SWTM1-1
- WODM5

N

0 150 m

Project: TAGG 1299
Map File: TAGG 1299-2212b.map
MTM Zone 9
(NAD 83)
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5.0 RESULTS

5.1 Landforms, Soils and Geology

The Site is located within the Russell and Prescott Sand Plains physiographic region (Chapman & Putnam, 1984). The surficial geology of the area is composed of sand overlying clay that are acid derived from the Canadian Shield. Soils on the Site are mapped in Report No. 58 of the Ontario Institute of Pedology, *The Soils of The Regional Municipality of Ottawa-Carleton* (Schut & Wilson, 1987) as Urban (ZUR). Soils on similar adjacent lands to the south of the Site are mapped as Rubicon (RUB) soils along the shoreline of the Rideau River and Carlsbad (CLA) soils within the upland areas. Rubicon soils are imperfectly drained mineral soils, with a very coarse loamy sand texture, often located on steep slopes (slope class C). Carlsbad soils are well drained mineral soils with a very coarse loamy sand texture location on moderately sloped lands (slope class B). It can be reasonably assumed that soils on the site exhibit a similar mode of deposition and soil composition.

Based on our assessment of soils associated with the ELC survey, soils on the Site were found to be generally consistent with adjacent mapped soils. Soils within the woodland community (WODM5) were found to be sandy to depths of approximately 25 cm, overlying bedrock. The mixed meadow community (MEMM3) had mineral organic soils to depths of 30 cm, overlaying rock. The soil in the mature Sugar Maple Forest (FODM5-1) is composed of 5 cm of organic with a transition to dry, loose sand, silt, clay to a depth of 120 cm. A 120 cm soil core was taken in the White Cedar Swamp (SWMM1-1) and indicated mineral sand and organic material to approximately 25 cm, transitioning to saturated sandy clay with gley to a depth of approximately 70 cm, then transitioning to silty clay soils with gley.

5.2 Vegetation

5.2.1 Ecological Land Classification

Six distinct landcovers or ELC units were delineated on the Site (Figure 2). The portion of the Site east of the steep slope is dominated by a regenerating woodland and meadow. The western portion is dominated by a mature White Pine (*Pinus strobus*) forest to the west and a mature Sugar Maple (*Acer saccharum*) forest to the east. Located north of the Site is a White Cedar (*Thuja occidentalis*) swamp and Speckled Alder (*Alnus incana*) thicket swamp. The results of the ELC survey conducted in fall 2022 were found to be generally consistent during 2023 field studies. The ELC units/codes remain the same, with some small vegetation community boundary adjustments to best delineate those communities based on current site conditions. This includes changes to the boundaries of the WODM5 and MEMM3 communities.

5.2.1.1 Fresh – Moist Deciduous Woodland Ecosite (WODM5)

A Fresh – Moist Deciduous Woodland Ecosite (WODM5; Figures 3 & 4) is located centrally within the southern portion of the Site. It runs along the southwestern edge adjacent to the Rideau River and extends east along Hunt Club Road and Riverside Drive. The woodland canopy was found to be dominated in fall 2022 by White Willow (*Salix alba*), with Trembling Aspen (*Populus tremuloides*) and Manitoba Maple (*Acer negundo*). The mid-layer comprised Staghorn Sumac (*Rhus typhina*) and Alder Buckthorn (*Rhamnus frangula*; invasive species). Canada Goldenrod (*Solidago canadensis*) was the dominant groundcover species, with Common Burdock (*Arctium minus*), Canada Bluejoint (*Calamagrostis canadensis*), Creeping Jenny (*Lysimachia*

nummularia), Red Raspberry (*Rubus idaeus*), and Coltsfoot (*Tussilago farfara*). The northern and western edges of this vegetation community abuts a steep slope.

The July 2023 ELC survey found the woodland canopy species to be dominated by White Ash (Fraxinus americana), American Basswood (*Tilia americana*), Butternut (*Juglans cinerea*), Trembling Aspen (*Populus tremuloides*), White Willow (*Salix alba*), Manitoba Maple (*Acer negundo*), Eastern Cottonwood (*Populus deltoides*), Black Locust (*Robinia pseudoacacia*) and Green Ash (*Fraxinus pennsylvanica*). The dominant mid-layer and ground cover species were Purple Flowering Raspberry (*Rubus odoratus*), Rough Horsetail (*Equisetum hyemale*), Riverbank Grape (*Vitis riparia*), Virginia Creeper (*Parthenocissus quinquefolia*), Staghorn Sumac (*Rhus typhina*), Japanese Knotweed (*Reynoutria japonica*), Canada Goldenrod (*Solidago canadensis*), Common Burdock (*Arctium minus*), Wild Carrot (*Daucus carota*), Alder Buckthorn (*Rhamnus frangula*), Colts Foot (*Tussilago farfara*), Meadow Horsetail (*Equisetum pratense*) and Cow Vetch (*Vicia cracca*).

Figure 3 Fresh – Moist Deciduous Woodland Ecosite (WODM5), October 19, 2022

Figure 4 Fresh - Moist Deciduous Woodland Ecosite (WODM5), July 18, 2023

5.2.1.2 Dry – Fresh Mixed Meadow Ecosite (MEMM3)

The eastern half of the Site is dominated by a Dry – Fresh Mixed Meadow Ecosite (MEMM3; Figures 5 & 6). The meadow is dominated by grass and forb species. The grasses include Perennial Ryegrass (*Lolium perenne*), Kentucky Bluegrass (*Poa pratensis*), and Reed Canary Grass (*Phalaris arundinacea*); while the forbs include Canada Goldenrod, Wild Carrot (*Daucus carota*), Cow Vetch (*Vicia cracca*), Common Milkweed (*Asclepias syriaca*), Bull Thistle (*Cirsium vulgare*; invasive species), Bird's-foot Trefoil (*Lotus corniculatus*), and species of Aster. Trees and shrubs are scattered within the mixed meadow including Trembling Aspen (*Populus tremuloides*), Manitoba Maple (*Acer negundo*), Staghorn Sumac (*Rhus typhina*), and species of Willow (*Salix* spp.).

In July 2023, dominant species were Common Reed (*Phragmites australis*), Common Milkweed (*Asclepias syriaca*), Coltsfoot (*Tussilago farfara*), Common Dandelion (*Taraxacum officinale*), Cow Vetch (*Vicia cracca*), Wild Carrot (*Daucus carota*), Bird's-foot Trefoil (*Lotus corniculatus*), Common Sunflower (*Helianthus annuus*), Common Tansy (*Tanacetum vulgare*), Flat Pea (*Lathyrus sylvestris*), Common Mugwort (*Artemisia vulgaris*), and Common Burdock (*Arctium minus*). Other mid-layer and ground cover included Russian Olive (*Elaeagnus*

angustifolia), Bush Honeysuckle (*Lonicera tatarica*), Manitoba Maple (*Acer negundo*) saplings, Rough Horsetail (*Equisetum hyemale*), Red Raspberry (*Rubus idaeus*), and Smooth Bedstraw (*Galium mollugo*). Scattered tree species included White Willow (*Salix alba*), Trembling Aspen (*Populus tremuloides*), Cottonwood (*Populus deltoides*) and Manitoba Maple (*Acer negundo*).

Figure 5 Dry – Fresh Mixed Meadow Ecosite (MEMM3), October 19, 2022

Figure 6 Dry – Fresh Mixed Meadow Ecosite (MEMM3), July 18, 2023

5.2.1.3 Dry – Fresh Sugar Maple Deciduous Forest Type (FODM5-1)

A Dry – Fresh Sugar Maple Deciduous Forest Type (FODM5-1; Figures 7 & 8) is situated along the northern edge of the Site, west of the steep slope. The forest is dominated by mature Sugar Maple (*Acer saccharum*) and includes American Basswood (*Tilia americana*) with White Birch (*Betula papyrifera*) along the edges. The understory is sparse but contains Dwarf Horsetail (*Equisetum scirpoides*) and species of grasses. Within the forest were drainage features running east to west.

In July 2023, the forest was confirmed to be dominated by Sugar Maple (*Acer saccharum*), with smaller amounts of Weeping Willow (*Salix babylonica*), White Ash (*Fraxinus americana*), Trembling Aspen (*Populus tremuloides*), White Cedar (*Thuja occidentalis*), American Basswood (*Tilia americana*), Balsam Poplar (*Populus balsamifera*), Hemlock (*Conium maculatum*), Butternut (*Juglans cinerea*), and White Willow (*Salix alba*). The dominant mid-layer and ground cover species were White Pine saplings (*Pinus strobus*), Meadow Horsetail (*Equisetum pratense*), Coltsfoot (*Tussilago farfara*), Spotted touch-me-not (*Impatiens capensis*), Spotted Joe-Pye Weed (*Eutrochium maculatum*), Pussy Willow (*Salix discolor*), Common Buckthorn (*Rhamnus cathartica*), Balsam Poplar saplings (*Populus balsamifera*), Common Lady Fern (*Athyrium filix-femina*), Royal

Fern (*Osmunda regalis*), Canada Mayflower (*Maianthemum canadense*), False Solomon's Seal (*Maianthemum racemosum*), Dwarf Horsetail (*Equisetum scirpoides*), Rough Horsetail (*Equisetum hyemale*), Trillium (*Trillium sp.*). There was also a small isolated stand of Common Reed (*Phragmites australis*).

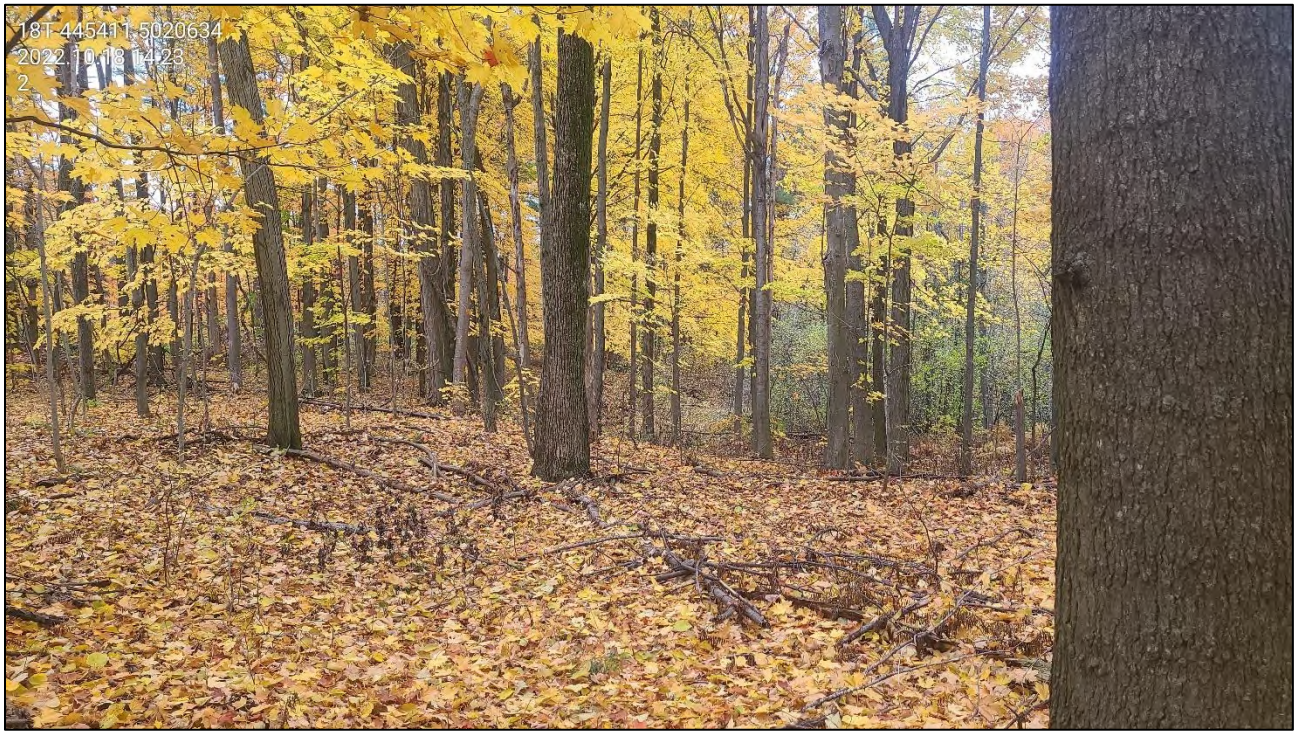

Figure 7 Dry – Fresh Sugar Maple Deciduous Forest Type (FODM5-1), October 19, 2022

Figure 8 Dry – Fresh Sugar Maple Deciduous Forest Type (FODM5-1), July 18, 2023

5.2.1.4 Dry – Fresh White Pine – Red Pine Coniferous Forest Type (FOCM1-2)

In the northwest corner of the Site is a Dry – Fresh White Pine – Red Pine Coniferous Forest Type (FOCM1-2; Figure 9 & 10). The canopy is dominated by White Pine (*Pinus strobus*) the sub-canopy is made up of Sugar Maple (*Acer saccharum*) and Green Ash (*Fraxinus pennsylvanica*). A Black Ash (*Fraxinus nigra*; Endangered under the ESA) is located at the edge of the forest near the Rideau River. The forest understory is relatively open with debris of fallen branches and contains Alder Buckthorn (*Frangula alnus*) and Sugar Maple (*Acer saccharum*) saplings.

Conditions in July 2023 were found to be consistent. Canopy was dominated by White Pine (*Pinus strobus*), with smaller amounts of White Ash (*Fraxinus americana*), Northern Red Oak (*Quercus rubra*), American Basswood (*Tilia americana*), Sugar Maple (*Acer saccharum*) and Balsam Poplar (*Populus balsamifera*). The dominant mid-layer and ground cover species were Bush Honeysuckle (*Lonicera tatarica*), Wild Carrot (*Daucus carota*), Virginia Creeper (*Parthenocissus quinquefolia*), Canada Goldenrod (*Solidago canadensis*), Alder Buckthorn (*Rhamnus frangula*), American Basswood (*Tilia americana*) saplings, Ostrich Fern (*Matteuccia struthiopteris*), Coltsfoot (*Tussilago farfara*), False Solomon's Seal (*Maianthemum racemosum*),

Canada Mayflower (*Maianthemum canadense*), Tall thimbleweed (*Anemone virginiana*), and Staghorn Sumac (*Rhus typhina*).

Figure 9 Dry – Fresh White Pine – Red Pine Coniferous Forest Type (FOCM1-2), October 19, 2022

Figure 10 Dry – Fresh White Pine – Red Pine Coniferous Forest Type (FOCM1-2), July 18, 2023

5.2.1.5 Speckled Alder Mineral Deciduous Thicket Swamp Type (SWTM1-1)

A small portion of a Speckled Alder Mineral Deciduous Thicket Swamp (SWTM1-1; Figures 11 & 12) is located within the northern portion of the Site. The majority of the thicket swamp extends north of the Site into the adjacent property. The swamp is dominated by Speckled Alder (*Alnus incana*) and contains scattered trees including White Birch (*Betula papyrifera*), Eastern White Cedar (*Thuja occidentalis*), and a species of dead Ash (*Fraxinus spp.*). The groundcover is limited but contains Creeping Jenny (*Lysimachia nummularia*), Sensitive Fern (*Onoclea sensibilis*), and species of horsetail (*Equisetum spp.*). There are also patches of Common Reed (*Phragmites australis*; invasive species) within the thicket swamp.

Similar species were observed in 2023 with Speckled Alder (*Alnus incana*), White Birch (*Betula papyrifera*), and Eastern White Cedar (*Thuja occidentalis*), along with White Spruce (*Picea glauca*), Green Ash (*Fraxinus pennsylvanica*), Balsam Poplar (*Populus balsamifera*) and Trembling Aspen (*Populus tremuloides*) as the

dominant tree species. The dominant sub-canopy and ground cover consisted of Northern Red Oak saplings (*Quercus rubra*), Meadow Horsetail (*Equisetum pratense*), Sensitive Fern (*Onoclea sensibilis*), Common Lady Fern (*Athyrium filix-femina*), Purple Loosestrife (*Lythrum salicaria*) and Spotted Joe-Pye Weed (*Eutrochium maculatum*).

Figure 11 Speckled Alder Mineral Deciduous Thick Swamp Type (SWTM1-1), November 24, 2021

Figure 12 Speckled Alder Mineral Deciduous Thick Swamp Type (SWTM1-1), July 18, 2023

5.2.1.6 White Cedar – Hardwood Mineral Mixed Swamp Type (SWMM1-1)

North of the Site, within the SWTM1-1 community is a pocket of White Cedar – Hardwood Mineral Mixed Swamp (SWMM1-1; Figures 13 & 14). The south side of the swamp borders the mature Sugar Maple Forest (FODM5-1). Dominant species include Eastern White Cedar (*Thuja occidentalis*), with smaller amounts of Eastern Hemlock (*Tsuga canadensis*), White Birch (*Betula papyrifera*), Red Maple (*Acer rubrum*), and American Beech (*Fagus grandifolia*). Speckled Alder (*Alnus incana*) dominates canopy openings, with groundcover of Bracken Fern (*Pteridium aquilinum*) and species of Horsetail (*Equisetum spp.*).

The dominant woodland canopy species observed in July 2023 were White Birch (*Betula papyrifera*), Balsam Poplar (*Populus balsamifera*), White Cedar (*Thuja occidentalis*) and White Willow (*Salix alba*). The dominant mid-layer and ground cover species included Black Ash saplings (*Fraxinus nigra*), Sugar Maple saplings, Speckled Alder (*Alnus incana*), Green Ash saplings (*Fraxinus pennsylvanica*), Bracken Fern (*Pteridium aquilinum*), Alder Buckthorn (*Rhamnus frangula*), Common Buckthorn (*Rhamnus cathartica*), Red Trillium (*Trillium erectum*), Coltsfoot (*Tussilago farfara*), Rice Cutgrass (*Leersia oryzoides*) and Spotted touch-me-not

(*Impatiens capensis*). Some Black Ash trees and Black Ash saplings were observed within this community, an endangered species in Ontario.

Figure 13 White Cedar – Hardwood Mineral Mixed Swamp Type (SWMM1-1), October 19, 2022

Figure 14 White Cedar – Hardwood Mineral Mixed Swamp Type (SWMM1-1), July 18, 2023

5.2.2 Invasive Species

Species considered exotic, invasive, or noxious observed on-site were recorded and representative photos were taken where appropriate. Details of invasive species are discussed below.

Purple Loosestrife (*Lythrum salicaria*) was observed scattered through the SWTM1-1 community, and no widespread infestations were observed (Figure 14). Common Buckthorn (*Rhamnus cathartica*) was observed within the FODM5-1 and SWMM1-1 communities, and Alder Buckthorn (*Rhamnus frangula*) was observed within the SWMM1-1, FOCM1-2, and WODM5 communities in isolated pockets (Figure 15). No widespread infestations were observed.

Figure 15 Common Buckthorn within the FODM5-1 Community

Two isolated stands of Common Reed (*Phragmites australis*) were observed; one at the eastern boundary of the FODM5-1 community and one centrally within the MEMM3 community (Figure 16).

Figure 16 Phragmites stand at eastern boundary of FODM5-1 community

Rough Horsetail (*Equisetum hyemale*) was observed in widespread infestations within the WODM5 community and scattered throughout the FODM5-1 and MEMM3 communities (Figure 17). Coltsfoot (*Tussilago farfara*) was observed as scattered groundcover within the FODM5-1, SWMM1-1, FOCM1-2, WODM5, and MEMM3 vegetation communities (Figure 17).

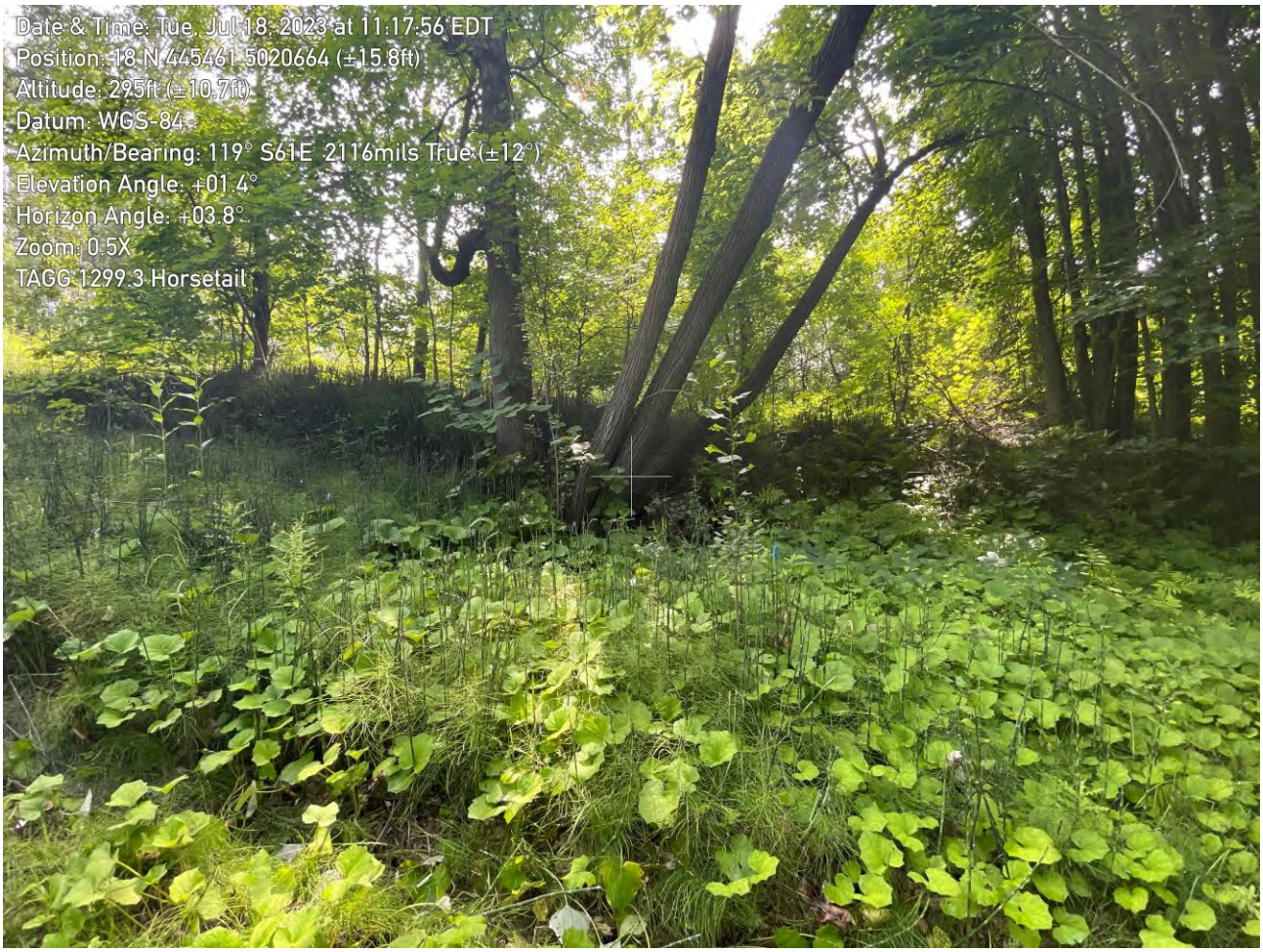

Figure 17 Rough Horsetail and Coltsfoot at the boundary of the WODM5 community

Japanese Knotweed (*Reynoutria japonica*) was observed as an isolated stand within the WODM5 community (Figure 18). Common Burdock (*Arctium minus*) and Smooth Bedstraw (*Galium mollugo*) were observed within the MEMM3 community.

Figure 18 Japanese Knotweed and Rough Horsetail in WODM5 community

5.2.3 Tree Studies

A tree survey was performed for the Site following TCR guidelines set forth by the City of Ottawa Forestry Staff (City of Ottawa, 2020). KAL completed the BHA on May 31, 2023, and the survey of notable trees on the Site was completed on July 18, 2023. Notable trees were scattered throughout the Site and often occurred as individual notable trees or small clusters of mature notable trees. Overall, data from 32 site trees were recorded, representing 11 species. Species included Eastern Cottonwood (*Populus deltoides*), Basswood (*Tilia americana*), Black Cherry (*Prunus serotina*), Black Locust (*Robinia pseudoacacia*), Sugar Maple (*Acer saccharum*), Trembling Aspen (*Populus tremuloides*), Weeping Willow (*Salix babylonica*), White Birch (*Betula papyrifera*), White Cedar (*Thuja occidentalis*), White Willow (*Salix alba*), and Yellow Birch (*Betula alleghaniensis*). The most notable trees on the Site include a 118 DBH White Willow, a 92 DBH Black Cherry, a 89 DBH Sugar Maple, and a 75 DBH White Willow. All notable trees recorded on the Site are shown in Figure 19, and the TCR including the tree data is included in Appendix D.

A total of two Butternuts were observed on the Site (Figure 2, Figure 19) during the Butternut Health Assessment (BHA) completed on May 31, 2023. Both trees were determined to be Category 1. The first Butternut (BN001) was observed on a very steep bank with eroding rocks within the FODM5-1 vegetation community, and the second (BN002) was observed within the WODM5 vegetation community.

5.3 Surface Water, Groundwater, and Fish Habitat

5.3.1 Headwater Drainage Features Assessment (HDFA)

The initial survey of surface and groundwater features was completed in fall 2021. A Headwater Drainage Feature (HDF1) originates at a small culvert within a low-lying area at the northern Site boundary and is oriented westward down the slope of the sandy ridge and eventually to the Rideau River (Figure 2). The feature receives surface water run-off from the Riverside-Uplands Park (northeast of the Site), which is collected via a system of swales, catch basins, and storm sewers and is deposited at the head of the drainage feature at the north corner of the Site. Given its source, the steepness of the slope, and its apparent condition in the late summer, this feature was considered at the time to have only ephemeral hydrology and to be highly unlikely to support fish or amphibians.

The first formal HDFA visit was conducted by KAL Biologist Robert Hallett on April 12, 2023. Three HDFs were observed on the Site (HDF1 as noted above, plus HDF2 and HDF3; Figure 2). All three HDFs are drainage swales that flow westward down a steep slope towards the Rideau River.

HDF1 turns into a multi-thread channel downstream approaching the river. It originates within the Dry – Fresh Sugar Maple Deciduous Forest Type (FODM5-1) community located within the northeast corner of the Site and flows through meadow, swamp and forested vegetation communities. HDF1 was observed to have minimal flow during the spring freshet, with some dry areas and some areas of standing water and lacks in-stream vegetation throughout the entire tributary. The mean bankfull width of the feature is approximately 1.42 m. HDF1 is consistent with the HDF identified in the initial EIS.

HDF2 was observed to have minimal flow during the spring freshet and originates within the Sugar Maple Deciduous Forest (FODM5-1) community and flows primarily through forested and wetland communities (FOCM1-2; SWTM1-1). The mean bankfull width of the feature is approximately 3.75 m.

HDF3 was also observed to have minimal flow during the spring freshet and lacks in-stream vegetation. This feature originates in the southern portion of the Speckled Alder Mineral Deciduous Thicket Swamp (SWTM1-1) community and flows through the Pine Coniferous Forest (FOCM1-2) and Sugar Maple Deciduous Forest (FODM5-1). The mean bankfull width of the feature is approximately 1.1 m.

Figure 19 Notable Site Trees

Legend

- Site Boundary
- Edge of Disturbance
- Black Ash
- Butternut
- 1 Tree #

N

0 150 m

Project: TAGG 1299
Map File: TAGG 1299-2212b.map
MTM Zone 9
(NAD 83)
Printed on: 2023-09-29

KILGOUR & Associates

5.3.1.1 HDFA Functional Assessment

Table 2 Hydrology Classifications

Drainage Feature	Hydrology Classification					
	Assessment Period	Flow Conditions		Flow Classification	Modifiers	Hydrological Function
		Description	(OSAP Code)			
1	April 12, 2023	Minimal Surface flow	4	Ephemeral	No source other than spring run-off and after heavy rain	**Contributing Functions**
		Consistently noted as dry during subsequent site visits.				
2	April 12, 2023	Minimal Surface flow	4	Ephemeral	No source other than spring run-off and after heavy rain	**Contributing Functions**
		Consistently noted as dry during subsequent site visits.				
3	April 12, 2023	Minimal Surface flow	4	Ephemeral	No source other than spring run-off and after heavy rain	**Contributing Functions**
		Consistently noted as dry during subsequent site visits.				

Table 3 Riparian Classifications

Drainage Feature	Riparian Classification			
	OSAP Descriptions	OSAP Riparian Codes	ELC Codes	Riparian Conditions
1	RUB - Forest LUB - Forest	RUB - 7 LUB - 7	FOD, SWT, SWM	**Important Functions**
2	RUB - Forest LUB - Forest	RUB - 7 LUB - 7	FOD, SWT	**Important Functions**
3	RUB - Forest LUB - Forest	RUB - 7 LUB - 7	FOD, FOC	**Important Functions**

Table 4 Fish and Fish Habitat Classification

Drainage Feature	Riparian Classification		
	Fish Observation	Fish & Fish Habitat Designation*	Modifiers/Notes
	Fishing effort		
1	Dry	Limited Functions	N/A
2	Dry	Limited Functions	N/A
3	Dry	Limited Functions	N/A

Table 5 Terrestrial Classifications

Drainage Feature	Description	Amphibians	Terrestrial Classification
1	This reach is a channel on a steep slope, connecting forest, meadow, and swamp vegetation communities	No frogs were observed within the vicinity of this feature	Valued Functions
2	This feature connects forest and swamp vegetation communities on the Site	No frogs were observed within the vicinity of this feature	Valued Functions
3	There is no wetland habitat present. This feature connects deciduous and mixed forest types on the Site	Frogs were observed adjacent to this feature (Gray Treefrog)	Contributing Functions

Table 6 Reach Summary

Drainage Feature	Mean Bankfull Width (m)	Mean Wetted Width (m)	Mean Depth (m)
1	1.42	1.12	2.25
2	3.75	5.5	0.03
3	1.57	1.3	0.02

5.3.1.2 HDFA Management Recommendations

The classification categories identified in the evaluation and classification of the flow attributes and functions of the HDFs provide the basis of the management recommendations provided in this section. The following flow chart (Figure 20) combines and translates the classification results to management recommendations.

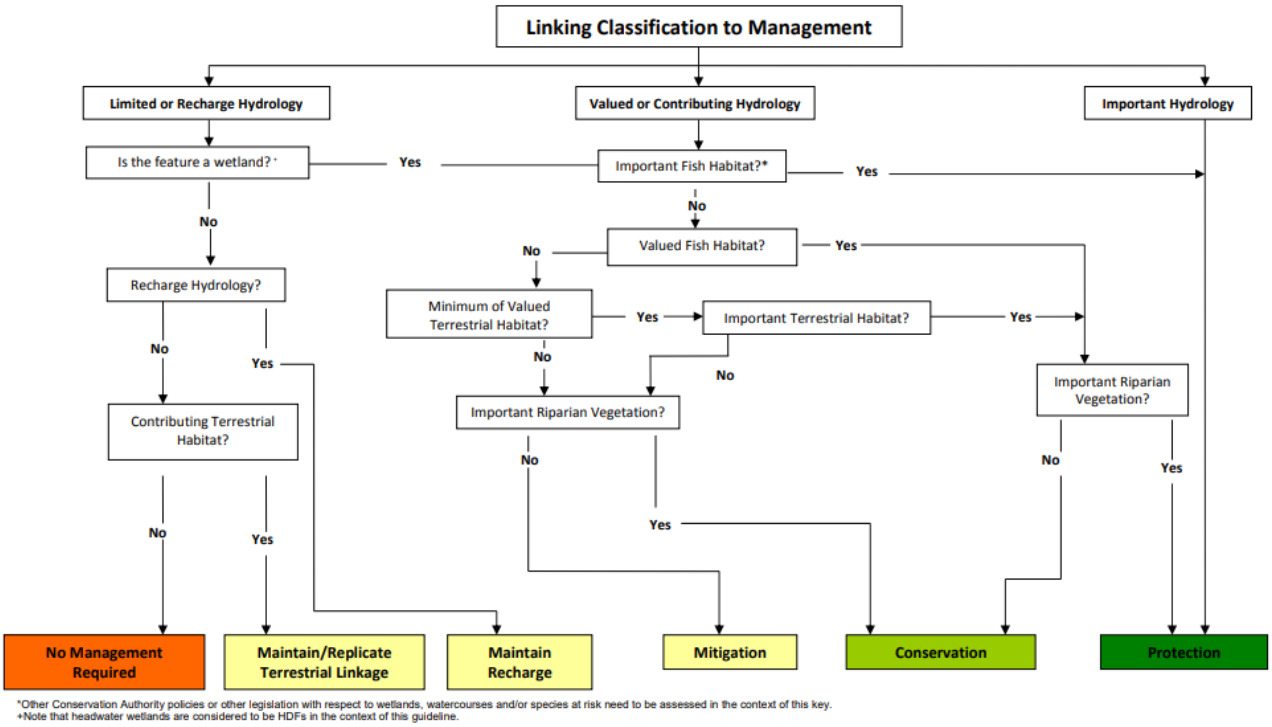

Figure 20 HDFA Flow Chart

Drainage Feature 1

This feature is a multi-thread drainage swale that receives surface water run-off from the Riverside-Uplands Park, which is collected via a system of swales, catch basins, and storm sewers and is deposited at the head of the drainage feature on the Site. It primarily functions as a drainage feature supporting spring run-off and after heavy rainfall. Following the HDFA Guide flow chart linking component classification to management directives, this reach:

1. Provides Contributing Hydrology;
2. Does not provide Important or Valued Fish Habitat;
3. Provides Valued but not Important Terrestrial Habitat; and
4. Provides Important Riparian Vegetation.

This chain of classification descriptors leads to a management directive of **Conservation** for this reach. This feature may be maintained, relocated and/or enhanced using natural channel design techniques to maintain or enhance the overall productivity of the reach. This feature provides ephemeral flow and water storage functions during and after spring freshet and following large rain events only. This feature contains no fish habitat, and no amphibians were heard calling during MMP surveys. HDF1 is recommended to be maintained, or replace external flows, and maintain on-site flows and restore lost functions, ensuring connection to downstream features (i.e., wetland features and Rideau River offsite).

Drainage Feature 2

This feature is a drainage swale located within woodland and forest communities and connects downstream to the Rideau River. It primarily functions as a drainage feature supporting spring run-off and after heavy rainfall. Following the HDFA Guide flow chart linking component classification to management directives, this reach:

1. Provides Contributing Hydrology;
2. Does not provide Important or Valued Fish Habitat;
3. Provides Valued but not Important Terrestrial Habitat; and
4. Provides Important Riparian Vegetation.

This chain of classification descriptors leads to a management directive of **Conservation** for this reach. This feature may be maintained, relocated and/or enhanced using natural channel design techniques to maintain or enhance overall productivity of the reach. This feature provides ephemeral flow and water storage functions during and after spring freshet and following large rain events only. This feature contains no fish habitat, and no amphibians were heard calling during MMP surveys. HDF2 is recommended to be maintained, or replace external flows, and maintain on-site flows and restore lost functions.

Drainage Feature 3

This feature is a drainage swale located within a forest community and connects downstream to the Rideau River. It primarily functions as a drainage feature supporting spring run-off and after heavy rainfall. Following the HDFA Guide flow chart linking component classification to management directives, this reach:

1. Provides Contributing Hydrology;
2. Does not provide Important or Valued Fish Habitat;
3. Does not provide Valued Terrestrial Habitat; and
4. Provides Important Riparian Vegetation.

This chain of classification descriptors leads to a management directive of **Conservation** for this reach. This feature may be maintained, relocated and/or enhanced using natural channel design techniques to maintain or enhance overall productivity of the reach. This feature provides ephemeral flow and water storage functions during and after spring freshet and following large rain events only. This feature contains no fish habitat, and no amphibians were heard calling during MMP surveys. HDF3 is recommended to be maintained, or replace external flows, and maintain on-site flows and restore lost functions.

5.3.2 Rideau River

As the Site is not located within an area addressed by a City Council-approved watershed, subwatershed or environmental management plan, Section 4.9.3 of the OP indicates that setback from the river would typically be based on greater of the following:

> *a) Development limits as established by the conservation authority's hazard limit, which includes the regulatory flood line, geotechnical hazard limit and meander belt;*
>
> *b) Development limits as established by the geotechnical hazard limit in keeping with Council approved Slope Stability Guidelines for Development Applications;*

c) 30 m from the top of bank, or the maximum point to which water can rise within the channel before spilling across the adjacent land; and

d) 15 m from the existing stable top of slope, where there is a defined valley slope or ravine.

The development footprint for this project, however, was established in consultation with the City and the RVCA to be associated with stability improvement to the adjacent valley slope. The RVCA supports the limit of hazard lands associated with the plan of subdivision for the project (with a request to include a verification of the limit of hazard lands as a condition of draft approval; Appendix E). This RVCA support considers the fluvial geomorphic assessment for the project (WSP Golder, 2022), which recommends a 15m erosion allowance at the toe-of-slope and a 6m access allowance setback from the top-of-slope. This review is provided in lieu of the considerations generally associated with Points a), b) and d).

The valley edge is situated >40 m from the edge of the river, thereby addressing Point c).

5.3.3 Fish Habitat

No fish habitat was observed on the Site. The nearest fish habitat is the Rideau River, located adjacent to the western Site boundary. Proposed development is well setback from the Rideau River, and no impact to fish populations or habitat is anticipated.

5.4 Wildlife Surveys

5.4.1 Breeding Birds

Three rounds of breeding bird surveys were conducted on May 31st, June 13th, and July 5th, 2023. A total of two breeding bird survey stations were established in representative habitats on the Site. A summary of the weather conditions during the breeding bird surveys are provided in Table 1. In total, including birds detected incidentally, # bird species were detected through vocalization and/or direct visual observation on or adjacent to the Site.

Table 7 Dates and weather conditions of breeding bird surveys

Date	Wind (Beaufort Scale)	Air Temperature (°C)	Cloud Cover (%)	Precipitation
2023-05-31	1	14	0	None
2023-06-13	3	16	85	Damp/Haze/Fog
2023-07-05	1	23	0	None

The following bird species were detected at the two breeding bird stations:

Song Sparrow (*Melospiza melodia*), Great Crested Flycatcher (*Myiarchus crinitus*), American Redstart (*Setophaga ruticilla*), American Goldfinch (*Spinus tristis*), American Crow (*Corvus brachyrhynchos*), Yellow

Warbler (*Setophaga petechia*), Killdeer (*Charadrius vociferus*), Common Yellowthroat (*Geothlypis trichas*), Ring-billed Gull (*Larus delawarensis*), American Robin (*Turdus migratorius*), Black-capped Chickadee (*Poecile atricapillus*), Warbling Vireo (*Vireo gilvus*), Red-eyed Vireo (*Vireo olivaceus*), American Tree Sparrow (*Spizelloides arborea*), European Starling (*Sturnus vulgaris*), Mallard (*Anas platyrhynchos*), Canada Goose (*Branta canadensis*), Yellow-bellied Sapsucker (*Sphyrapicus varius*), Red-breasted Nuthatch (*Sitta canadensis*), Tree Swallow (Tachycineta bicolor), Northern Cardinal (*Cardinalis cardinalis*), Pine Warbler (*Setophaga pinus*), Double-crested Cormorant (*Nannopterum auritum*), Red-winged Blackbird (*Agelaius phoeniceus*), and House Finch (*Haemorhous mexicanus*). All species observed are abundant and secure in Ontario. No Species at Risk (SAR) were observed on or adjacent to the Site.

5.4.2 Anurans

Anuran surveys were performed on April 20th, May 31st, and June 20th, 2023, at one station on the Site targeted to include the unevaluated wetland area and to capture spatial and habitat variability. No amphibians were heard calling during the first two surveys. One amphibian was heard during the third survey, the Gray Treefrog (Table 8).

Table 8 Dates and weather conditions of anuran surveys

Date Time	Wind (Beaufort Scale)	Air Temperature (°C)	Cloud Cover (%)	Precipitation
2023-04-20 20:32 – 20:37	2	9	100	None/Dry
2023-05-31 21:23 – 21:28	1	25	0	None/Dry
2023-06-20 21:45 – 21:50	1	22	10	None/Dry

Table 9 Summary of Anurans Detected

Common Name	Scientific Name	Station(s) Observed	Survey Date(s) Observed	Highest Calling Code
Gray Treefrog	*Dryophytes versicolor*	MMP1	2023-06-20	1

5.4.3 Bats

One acoustic bat monitor was installed for a minimum of 8 nights and placed within the open meadow community, where the greatest likelihood for bat activity would occur on the Site. Conditions were ideal with mainly clear or cloudy nights and warm temperatures (≥15°C). Bat species identified within the Site include Big Brown Bat (*Eptesicus fuscus*), Hoary bat (*Lasiurus cinereus*), and Silver-haired Bat (*Lasionycteris noctivagans*).

Table 10 Number of bat recordings from acoustic monitoring

Survey Station	Survey Dates	Habitat Description	Big Brown Bat	Hoary Bat	Silver-haired Bat	Mean Number of Calls per Night
AM-1	2023-05-25 to 2023-06-02	Open meadow with sparse shrubs and trees, surrounded by mixed forest	16	3	2	7

5.5 Species at Risk

The Preliminary SAR Screening identified a total of 38 SAR with some potential to occur within the broader vicinity of the Site based on a desktop review of observation records and publicly available databases (Appendix C). That list did identify Black Ash, or three of the four locally occurring SAR bats, as records for those species are generally limited. Those four SAR were added for consideration for due diligence bringing the total number of species assessed to 42.

The 42 SAR initially screened for consideration were assessed based on general habitat availability on the Site, the potential for those species to occur within the project area, and/or their likelihood for interactions generally with future development. Of those 42 species, 25 were considered to have some potential to occur on the Site and/or to interact with the project (Appendix C; Table 11).

Table 11 Species at risk with moderate or high potential to interact with the project

Common Name	Taxonomic Name	ESA Status	SARA Status	Potential to Interact with Project	Observed On Site
Birds					
Bald Eagle	*Haliaeetus leucocephalus*	Special Concern	Not at Risk	Moderate	No observations with focused surveys
Barn Swallow	*Hirano rustica*	Special Concern	Threatened	Moderate	No observations with focused surveys
Chimney Swift	*Chaetura pelagica*	Threatened	Threatened	Moderate	No observations with focused surveys
Common Nighthawk	*Chordeiles minor*	Special Concern	Threatened	Moderate	No observations with focused surveys
Eastern Wood-Pewee	*Contopus virens*	Special Concern	Special Concern	Moderate	No observations with focused surveys
Evening Grosbeak	*Coccothraustes vespertinus*	Special Concern	Special Concern	Moderate	No observations with focused surveys
Red-headed Woodpecker	*Melanerpes erythrocephalus*	Endangered	Endangered	Moderate	No observations with focused surveys
Rusty Blackbird	*Euphagus carolinus*	Special Concern	Special Concern	Moderate	No observations with focused surveys
Wood Thrush	*Hylocichla mustelina*	Special Concern	Threatened	Moderate	No observations with focused surveys

Common Name	Taxonomic Name	ESA Status	SARA Status	Potential to Interact with Project	Observed On Site
Mammals					
Eastern Small-footed Myotis	*Myotis leibii*	Endangered	Not Listed	Moderate	No observations with focused surveys
Little Brown Myotis	*Myotis lucifugus*	Endangered	Endangered	Moderate	No observations with focused surveys
Northern Myotis	*Myotis septentrionalis*	Endangered	Endangered	Moderate	No observations with focused surveys
Tri-colored Bat	*Perimyotis subflavus*	Endangered	Endangered	Moderate	No observations with focused surveys
Amphibians					
Western Chorus Frog	*Pseudacris triseriata*	Not Listed	Threatened (Great Lakes-St. Lawrence population)	Moderate	No observations with focused surveys
Reptiles					
Blanding's Turtle	*Emydoidea blandingii*	Threatened	Endangered	Moderate	No observations
Eastern Milksnake	*Lampropeltis triangulum*	Not Listed	Special Concern	Moderate	No observations
Midland Painted Turtle	*Chrysemys picta marginata*	Not Listed	Special Concern	Moderate	No observations
Northern Map Turtle	*Graptemys geographica*	Special Concern	Special Concern	Moderate	No observations
Snapping Turtle	*Chelydra serpentina*	Special Concern	Special Concern	Moderate	No observations
Arthropods					
American Bumble Bee	*Bombus pensylvanicus*	No Status (Special Concern as of Jan 25, 2023)	No Status	Moderate	No observations
Monarch	*Danaus plexippus*	Special Concern	Special Concern	Moderate	No observations
Suckley's Cuckoo Bumble Bee	*Bombus suckleyi*	No Status (Endangered as of Jan 25, 2023)	No Status	Moderate	No observations
Yellow-banded Bumble Bee	*Bombus terricola*	Special Concern	Special Concern	Moderate	No observations
Vascular Plants					
Black Ash	*Fraxinus nigra*	Endangered	No Status	High	Present on Site
Butternut	*Juglans cinerea*	Endangered	Endangered	High	Present on Site

[1] Rows highlighted in yellow indicate species ranked as Threatened or Endangered under the ESA that have a moderate to high likelihood of occurring on the Site.

SAR presented in Table 1 that are not listed or are listed as Special Concern under the ESA are not considered further as SAR in this report because they do not receive individual or habitat protection under the ESA (whereas Threatened and Endangered species do). However, individuals of these species are protected under other regulations addressing wildlife conservation generally, such as the FWCA, MBCA, and the PPS. In addition, species listed as Special Concern under the ESA may receive habitat protection if they are observed in habitats that meet the criteria for designation as SWH for Special Concern Species (MNRF, 2015a). Species of Special Concern will be discussed with SWH in Section 5.7.

Of the protected SAR reviewed, only two were observed on the Site (Butternut and Black Ash). These are discussed further below. Blanding's Turtles were not observed on the Site, though detailed species surveys were not completed. As such, this species is also discussed below.

5.5.1 Butternut Trees

Butternut (*Juglans cinerea*), endangered under the ESA and SARA, are often found along stream banks as they prefer to grow in moist, well-drained loams; however, the species can tolerate a large range of soil types. Butternut are intolerant of shade and competition, as they require ample sunlight to grow (Poisson & Ursic, 2013).

A total of two Butternuts were observed on the Site (Figure 2, Figure 19) during the Butternut Health Assessment (BHA) completed on May 31, 2023. Both trees were determined to be Category 1. The first Butternut (BN001) was observed on a very steep bank with eroding rocks within the FODM5-1 vegetation community, and the second (BN002) was observed within the WODM5 vegetation community.

Site development would lead to the removal of the two Butternuts. The BHE (Appendix F) may be used to support a project registration through the Ontario Conservation Fund in accordance with O. Reg. 829/21. Completion of the registration through this process would permit the removal of trees as required to proceed with Site development while ensuring an overall a net benefit for the species.

5.5.2 Black Ash

Black Ash (*Fraxinus nigra*), endangered under the ESA and no status under the SARA, are a medium-sized shade-intolerant hardwood tree primarily found in wetland environments like swamps, floodplains and fens. Black Ash can also occur in moist upland forests (COSEWIC, 2018).

One Black Ash was observed on the Site (Figure 2, Figure 19), during the 2022 and 2023 field surveys. Site development is not expected to interact with the Black Ash individual.

5.5.3 Blanding's Turtles

Blanding's Turtle survey protocols generally focus on either spring-time emergence from over-wintering ponds or the identification of nesting sites locations through June and July (MNRF, 2015b). There are no suitable overwintering ponds on the Site, so emergence surveys are not possible or appropriate. Given the size of the site, the cryptic nature of nest digs, and the extended nesting season of the species, specific nesting surveys are not feasible. Regardless, no individuals were observed on the Site during any field visit, and the Site is not considered to be generally supportive of turtles (no suitable wet, organic habitat). As such, this report does not consider turtles to be present on the Site but includes general mitigation approaches to prevent harm to potentially transient individuals (Section 7.3.3).

5.6 Significant Natural Heritage Features

The Site contains significant woodlands and significant habitat of endangered and threatened species and may contain SWH and significant wildlife corridors. Further, the Site contains areas that meet the definition of significant valleylands. The Site does not contain significant wetlands, significant coastal wetlands, ANSIs (life/earth science), or fish habitat.

Forested areas within UNA #147 that were >0.8 hectares and >60 years old (based on aerial imagery) constitute Significant Woodland (City of Ottawa, 2023a). The City of Ottawa does not permit alteration in or

adjacent to (i.e., within 120 m) Significant Woodlands unless it has been demonstrated through an EIS that there will be no negative impacts on the woodland or its ecological functions. UNA #147 is considered to be a significant woodland under the Significant Woodland Policy for the City of Ottawa (City of Ottawa, 2022).

Confirmed and potential significant habitat of endangered and threatened species is discussed in detail in Section 5.5. Two endangered species were confirmed on the Site, while the Site provides suitable habitats for an additional seven endangered and threatened species.

The Site has the potential to contain the following four SWH: bat maternity colonies; bald eagle and osprey nesting, foraging, and perching habitat; turtle nesting areas; and special concern and rare wildlife species (MNRF, 2015a). SWH is discussed in detail in Section 5.7 below.

The Site may provide significant wildlife corridor habitat as it is situated directly north of the Greenbelt. The Site also connects other green spaces along the Rideau River. For example, open, lowland habitats (within the Sugar Maple forest), forest openings with vernal pools, and swamps on-site could provide suitable staging habitat and/or act as a corridor during seasonal movements for Blanding's Turtles.

Significant valleylands are natural areas that occur in a valley or other landform depressions that have water flowing through or standing for some period of the year. Based on the steep slope and areas of groundwater seepage the feature meets the criteria for significant valleylands (MNR, 2010).

5.7 Significant Wildlife Habitat

SWH was assessed based on the MNRF's guidelines and criteria for the identification of SWH in ecoregion 6E (MNRF, 2015a). SWH are identified based on the presence of certain habitat types, identified through ELC codes and the presence and/or groupings of certain species (Appendix G). While "candidate" areas exist on the Site, no confirmed SWH features were ultimately considered to be present.

Table 12 Summary of the types of Significant Wildlife Habitat associated with the Site

Type of Significant Wildlife Habitat (candidate/confirmed[1])	Rationale
Bat Maternity Colonies (candidate)	The habitat on the Site meets the SWH criteria for ecoregion 6E. Forest cover associated with UNA #147 contains mature (>60 years old) trees and there >10 large "wildlife" trees per ha that would provide suitable roosting habitat for bats. Wildlife trees are those with DBH >25 cm that are standing live or dead and have cracks, crevices, hollows, cavities, and/or loose or naturally exfoliating bark in early stages of decay (decay class 1-3; MNRF, 2015a; MNRF, 2017). Confirmed SWH for bat maternity colonies are treed communities with more than 10 Big Brown Bats (*Eptesicus fuscus*) and five adult female Silver-Haired Bats (*Lasionycteris noctivagans*; MNRF, 2015a). Both bat species were recorded on the Site, however counts do not reach the threshold for confirmed SWH. Given the low amount of calls per night, it suggests that bat species are transiently using the Site for foraging, rather than roosting.
Bald Eagle and Osprey Nesting, Foraging, and Perching Habitat (candidate)	The habitat on the Site meets the SWH criteria for ecoregion 6E. The Site contains ELC forest community series directly adjacent to a river.

Type of Significant Wildlife Habitat (candidate/confirmed[1])	Rationale
	Nests are associated with rivers along forested shorelines. FODM5-1 and FOCM1-2 along the Rideau River may qualify as SWH. No Bald Eagle or Osprey individuals or their nests were observed during 2023 surveys.
Turtle Nesting Areas (candidate)	The sandy shoreline of the Rideau River may provide nesting habitat for four species of turtles (Blanding's, Midland Painted, Northern Map, and Snapping). The meadow (MEMM3) may also provide limited suitable nesting habitat. No turtles, however, were observed on the Site
Special Concern and Rare Wildlife Species (candidate)	The Site contains suitable habitat for ten species listed as Special Concern under the ESA (Table 1). The presence of any of these species in suitable habitat would indicate SWH for Special Concern and Rare Wildlife Species. The species include: Bald Eagle, Common Nighthawk, Eastern Wood-Pewee, Evening Grosbeak, Rusty Blackbird, Wood Thrush, Northern Map Turtle, Snapping Turtle, Monarch, and Yellow-banded Bumble Bee. Both mature forests (FODM5-1, FOCM1-2) have potential to provide habitat for Bald Eagle, Common Nighthawk, Evening Grosbeak, and Yellow-banded Bumble Bee. Additionally, the Sugar Maple forest (FODM5-1) has potential to provide habitat for Eastern Wood-Pewee and Wood Thrush. The open habitats (WODM5, MEMM3) have potential to provide habitat for Common Nighthawk, Monarch, and Yellow-banded Bumble Bee. The swamps (SWTM1-1, SWMM1-1) have potential to provide habitat for Rusty Blackbird and Snapping Turtle. While the sandy shoreline along the Rideau River has potential to provide habitat for Northern Map Turtle and Snapping Turtle. Further, the Site also contains suitable habitat for species listed under SARA, but not under the ESA. Western Chorus Frog, Eastern Milksnake, and Midland Painted Turtle may occur on the Site. It is important to note that the Site contains suitable habitat for American Bumble Bee and Suckley's Cuckoo Bumble Bee. As of late January 2023, they will be uplisted as Special Concern and Endangered respectability under the ESA. None of the supporting species, however, were observed on the Site.

[1] MNRF identifies candidate SWH based on ELC ecosite codes and habitat criteria (MNRF, 2015a). Confirmed SWH is identified by MNRF as meeting defining criteria (e.g., obtained through specific studies). Note that protection of either candidate or confirmed SWH is the decision of the municipality.

5.8 Other Natural Heritage Features

5.8.1 Urban Natural Area: Riverwood Park Woods

UNA #147, Riverwood Park Woods is approximately 10.4 ha in size and a portion of the UNA is located in the northwestern portion of the Site and extends north of the Site within the Environmental Protection Zone. It is characterized by an extensive woodland on and adjacent to the Rideau River bank, Hunt Club Woods (Appendix H). UNA #147 is rated overall as moderate. It scored above average for connectivity, size and shape, and representative flora criteria, while habitat maturity and wildlife habitat were rated as average. Regeneration, natural communities, disturbance, and significant flora and fauna were scored below average.

UNA #147 was originally approximated with rough polygon boundaries on aerial photographs (Muncaster Environmental Planning Inc. & Brunton Consulting Services, 2005). UNA #147 is described as a young upland mixed forest in moist, sandy substrate of upper slopes with sub-mature mixed swamp forest over dense buckthorn infestation in thin organic substrate (Appendix H). Based on this description, UNA #147 boundary is recognized to correspond with the edge of the Sugar Maple forest on the Site. Figure 2 displays the boundary as such.

Below are ecological comments from UNA #147 (Appendix H):

- Management: Maintenance of natural forest canopy required to suppress invasive plant development and maintain surface water quality contribution; and vegetated buffer between adjacent development and woodland areas required to minimize edge effect.

- Recommendations – Passive recreation opportunities: Potential for gravel footpath along rivershore from public access off Kimberwick Street with development of interpretation themes, including wildlife corridor functions, woodland contribution to river water quality.

5.9 Incidental Wildlife Observations

Incidental wildlife observations made during field surveys from 2021 to 2023 are summarized in Table 3.

Table 13 Summary of incidental wildlife observations

Species Name	Scientific Name	Year Detected
Birds		
American Crow	*Corvus brachyrhynchos*	2021-11-24, 2022-10-19
American Goldfinch	*Spinus tristis*	2021-11-24
Barred Owl	*Strix varia*	2022-10-19
Black-capped Chickadee	*Poecile atricapillus*	2021-11-24
Blue Jay	*Cyanocitta cristata*	2021-11-24
Canada Goose	*Branta canadensis*	2021-11-24
Common Merganser	*Mergus merganser*	2021-11-24
Great Horned Owl	*Bubo virginianus*	2023-04-20
Mallard	*Anas platyrhynchos*	2021-11-24

Species Name	Scientific Name	Year Detected
Pileated Woodpecker	*Dryocopus pileatus*	2021-11-24
White-breasted Nuthatch	*Sitta carolinensis*	2021-11-24
Mammals		
Coyote	*Canus latrans*	2021-11-24
Eastern Gray Squirrel	*Sciurus carolinensis*	2021-11-24
White-tailed Deer	*Odocoileus virginianus*	2021-11-24

6.0 DESCRIPTION OF THE PROPOSED PROJECT

The proposed project (Figure 22) is a residential subdivision that would be comprised of a mix of housing including four apartment buildings, 52 townhouses, and 24 single detached homes. Development will be primarily located within MEMM3 and WODM5 vegetation communities. The tallest residences are to be located at the northern end of the Site with building heights reducing further south. A stonedust path approximately 3 m in width is proposed for future development along the top of the steep slope intersecting the Site, linking the new subdivision to the existing subdivision west of Riverside Drive. The pathway would border the FODM5-1 vegetation community that constitutes the southeastern edge of UNA #147. It would continue off-site through the SWTM1-1 and SWMM1-1 vegetation communities. This path is to be laid on top of the underground stormwater pipe planned to connect the Site to the existing SWM pond at the north end of UNA #147. It is our understanding that all existing vegetation within the development areas on the Site and within the pathway areas will be removed to accommodate site regrading, construction, and the installation of the stormwater pipe.

A 13 m wide strip along the west side of the proposed pathway (i.e., down the slope) will be stripped of vegetation during construction to allow for slope stabilization works. This will coincide with the western edge of the WODM5 vegetation community and the eastern edge of UNA #147 at the northern portion of the Site. Upon completion of the slope stabilization work, the strip will be re-naturalized with vegetation consistent with the Dry – Fresh Sugar Maple Deciduous Forest Type (FODM5-1).

The development will be located approximately 47 m east of the Rideau River, while the multi-use pathway will be situated approximately 20 m from the Rideau River. The nearest point of disturbance from the proposed development will be approximately 18 m from the Rideau River. All portions of the proposed development are situated outside floodplain.

Figure 22 Proposed Development

Legend

- Site Boundary
- Site Plan
- UNA 147
- Edge of Disturbance

ELC Code

- FOCM1-2
- FODM5-1
- MEMM3
- SWMM1-1
- SWTM1-1
- WODM5

N

0 150 m

Project: TAGG 1299
Map File: TAGG 1299-2212b.map
MTM Zone 9
(NAD 83)
Printed on: 2023-09-29

KILGOUR & Associates

7.0 IMPACT ASSESSMENT AND MITIGATION

The potential area of impact associated with the proposed development includes the edge of UNA #147 and Environmental Protection Zone (Figure 22). This encroachment is not anticipated to have significant ecological impacts to the function of UNA #147.

7.1 Surface Water

The proposed development of the Site is expected to have minimal impacts on surface water, groundwater, and fish habitat. The northwest Site boundary includes a portion of coniferous swamp which extends onto adjacent lands to the northwest. A setback of 30 m is proposed from the top-of-bank of the wetland and the Rideau River for the residential community; the proposed development envelope will encompass areas outside that setback. The community will also be fully constructed outside of the regulatory floodplain.

Work completed along the top of the valley slope will be accompanied by a slope stabilization project allowing the residential community to sit closer than 15 m from the top of the adjacent valley slope (See Section 7.4). The construction of a proposed storm sewer will collect the Riverside-Upland Park stormwater and drain it to the Quinterra SWM pond as part of the site servicing study. The installation of this storm sewer and a new pathway will require the removal of headwater drainage feature one (HDF1), but the associated area will be fully revegetated.

To protect the coniferous swamp and other HDFs on-site, its associated habitats, and the broader catchment area during future development of the Site, an erosion and sediment control (ESC) plan will be required and must be developed to the satisfaction of RVCA. The ESC plan should include:

- A multi-faceted approach to provide ESC;
- Silt fencing paired with sturdy construction fence along the project perimeter to protect adjacent habitats, UNA #147, and the Rideau River. This fencing can also act as a wildlife exclusion measure for smaller and less mobile animals that may occupy or traverse through the Site, such as turtles, snakes, and amphibians;
- Regularly inspecting and maintaining the ESC measures during all phases of the project;
- Retention of existing vegetation and stabilization of exposed soils with native vegetation where possible;
- Keeping the ESC measures in place until all disturbed ground has been permanently stabilized;
- Using biodegradable ESC materials where possible and removing all exposed non-biodegradable ESC materials once the Site is stabilized;
- Limiting the duration of soil exposure and phasing project works;
- Limiting the size of disturbed areas by minimizing nonessential clearing and grading;
- Minimizing the total slope length and the gradient of disturbed areas;

- Refueling of machinery should occur >30 m from surface water features and all machinery will remain on the project-side of silt and construction fence;
- Maintaining overland sheet flow and avoiding concentrated flows;
- Storing/stockpiling materials >30 m away from the wetland and other surface water features;
- Fencing or tarping all stockpiled material (<150 millimeter gravel) during the turtle nesting period (late May to early July) (MECP, 2021b) to prevent turtles from nesting in stockpiles. If the stockpile is within a properly fenced area (i.e., the project footprint) additional fencing is not necessary for turtle management, but is recommended for ESC if piles will be left unused for extended periods;
- Regularly inspecting the Site for signs of sedimentation during all phases of work and taking corrective action if required;
- Developing a response plan to be implemented immediately in the event of a spill of a deleterious substance;
- Keeping an emergency spill kit on the Site;
- Stopping work and containing deleterious substances to prevent dispersal;
- Reporting any spills of sewage, oil, fuel, or other deleterious material whether near or directly into a surface water feature;

7.2 Vegetation

Two regionally uncommon plant species were identified in woodland habitat within UNA #147. However, only one of the species, *Carex utriculata*, was listed (Appendix H). *Carex utriculata* inhabits open, wet areas. As approximately only one-eighth of UNA #147 is on the Site, the regionally uncommon plant species may occur off-site. Two Butternut and one Black Ash was observed on the Site. Extensive vegetation clearing within the deciduous woodland and mixed meadow, including trees, will be required to accommodate development. The following general protection measures are recommended during site preparation and construction to limit impacts to trees:

- Tree removal on the Site should be limited to the highest extent possible and only remove trees necessary to accommodate construction and development;
- Areas on the Site that have invasive species including Common Reed (*Phragmites australis*) , Common Buckthorn (*Rhamnus cathartica*), Alder Buckthorn (*Rhamnus frangula*), and Japanese Knotweed (*Reynoutria japonica*), are to be excavated to a depth of at least 1 m, and out at least 3 m from the invasive species patch(es). Excavated soils are to be stockpiled on the Site greater than 30 m from UNA #147, and tarped with black geotextile fabric. The piles must remain covered for a period of one year, at which point the soil can be reused or removed. If this process is not feasible, soils containing invasive species must be transported in enclosed containers to a disposal site certified to manage invasive species;

- To minimize impacts to retained trees during development:
    - Erect a fence beyond the critical root zone (CRZ; i.e., 10x the diameter at breast height) of trees to be retained. The fence should be highly visible (orange construction fence) and paired with erosion control fencing. Pruning of branches is recommended in areas of potential conflict with construction equipment;
    - Do not place any material or equipment within the CRZ of trees;
    - Do not attach any signs, notices, or posters to any trees;
    - Do not raise or lower the existing grade within the CRZ of trees without approval;
    - Tunnel or bore when digging within the CRZ of a tree;
    - Do not damage the root system, trunk, or branches of any remaining trees; and
    - Ensure that exhaust fumes from all equipment are not directed toward any tree's canopy.
- Ensure equipment is clean prior to vegetation removal to avoid introducing invasive species to the Site, and clean equipment prior to leaving Site to avoid spreading the aforementioned invasive species elsewhere; and
- Incorporate native plants into Site landscaping to the extent possible for the benefit of local wildlife and pollinators (e.g., milkweed for Monarch). It is recommended that plantings encompass a variety of native flowering species with different blooming periods to provide varied food sources for native pollinators. Further, the use of herbicides should be limited within and surrounding the planted habitat.

To help offset vegetation loss, native vegetation should be planted as part of the landscape plan for the Site. The following tree and shrub species are recommended for planting and should be used to direct the development of the landscape plan for the Site. The following species are appropriate given Site conditions and are native and non-invasive: Alternate-leaf Dogwood (*Cornus alternifolia*), American Beech (*Fagus grandifolia*), Balsam Fir (*Abies balsamea*), Balsam Poplar (*Populus balsamifera*), Basswood (*Tilia americana*), Bitternut Hickory (*Carya cordiformis*), Black Cherry (*Prunus serotina*), Black Walnut (*Juglans nigra*), Bur Oak (*Quercus macrocarpa*), Chokecherry (*Prunus virginiana*), Eastern Cottonwood (*Populus deltoides*), Eastern Hemlock (*Tsuga canadensis*), Hawthorns (*Crataegus* spp.), Honey Locust (*Gleditsia triacanthos*), Horse-chestnut (*Aesculus hippocastanum*), Ironwood (*Ostrya virginiana*), Largetooth Aspen (*Populus grandidentata*), Maple-leaf Viburnum (*Viburnum acerifolium*), Nannyberry (*Viburnum lentago*), Northern Bush-honeysuckle (*Diervilla lonicera*), Peachleaf Willow (*Salix amygdaloides*), Pin Cherry (*Prunus pensylvanica*), Red Maple (*Acer rubrum*), Red Oak (*Quercus rubra*), Red Pine (*Pinus resinosa*), Serviceberries (*Amelanchier* spp.), Silver Maple (*Acer saccharinum*), Sugar Maple (*Acer saccharum*), Tamarack (*Larix laricina*), Trembling Aspen (*Populus tremuloides*), White Birch (*Betula papyrifera*), White Cedar (*Thuja occidentalis*), Yellow Birch (*Betula alleghaniensis*), White Oak (*Quercus alba*), White Pine (*Pinus strobus*), and White Spruce (*Picea glauca*).

7.3 Species at Risk

Nine SAR ranked as Threatened or Endangered under the ESA were assessed as having a moderate to high potential to interact with future development on the Site (i.e., may be present during development. Of those, only two SAR trees were found to be present. Butternut and Black Ash are detailed below. Blanding's Turtles, while generally considered to be absent following site reviews, are also discussed.

The general wildlife mitigation measures provided in Section 7.5, while not species-specific, are anticipated to protect the SAR that may potentially occur on the Site. Additional species-specific mitigation measures, however, are provided below.

7.3.1 Butternut

Butternut (*Juglans cinerea*) are often found along stream banks as they prefer to grow in moist, well-drained loams; however the species can tolerate a large range of soil types. Butternut are intolerant of shade and competition, as they require ample sunlight to grow (Poisson & Ursic, 2013).

On November 24, 2021, a large and relatively healthy Butternut (approximately 45-55 cm DBH) was observed near the northeastern portion of the Site, west of the pathway (UTM coordinates: 18N 445485 5020721). This tree was marked with white flagging tape around the trunk (KAL, 2021). On May 31st, 2023, a moderate and relatively healthy Butternut (approximately 22 DBH) was identified at the northern boundary of the WODM5 vegetation community (UTM coordinates: 18N 445471 5020651). Butternut and their associated root harm prevent zone are regulated under the ESA (Government of Ontario, 2007). Currently, the proposed development requires the removal of the Butternuts identified on-site. A BHA was completed on May 31st, 2023 and the Butternut Health Expert Report is included in Appendix F.

7.3.2 Black Ash

Black Ash is a predominantly wetland species that occurs in swamps, floodplains, fens (COSEWIC, 2018). On November 24, 2021, a Black Ash was observed along the Rideau River within the floodplain. The previous EIS for the project also noted the presence of Black Ash on the Site (Muncaster Environmental Planning Inc., 2018). Black Ash was listed as Endangered under the ESA on January 26, 2022; subsequently, however, the Minister of MECP ordered by regulation O.Reg. 23/22 that ESA protections for Black Ash be temporarily suspended for a two-year period following its listing (Government of Ontario, 2022a). The regulation allows activities that impact Black Ash and its habitat to proceed without the requirement for an ESA authorization or exemption during the two-year period (until January 26, 2024). A recovery strategy and associated policy will be developed during this time by the province. The project will not interact with the observed Black Ash given that this tree falls outside the development footprint and within the floodplain. No impact to Black Ash is anticipated on the Site.

7.3.3 Blanding's Turtle

Blanding's Turtles are semi-aquatic as they utilize both aquatic and terrestrial habitats. They breed and overwinter in wetlands (e.g., marshes, swamps, bogs, fens), slow flowing rivers, and lakes with shallow water, soft substrates, and abundant vegetation. They nest in open areas and use vernal pools as staging areas during the nesting season (MECP, 2021b).

The shoreline directly along Rideau River adjacent to the Site is sandy and could provide nesting habitat for Blanding's Turtles. The Rideau River may also provide overwintering habitat for Blanding's Turtles. Blanding's Turtle nests, overwintering sites, and the surrounding 30 m are protected as sensitive Category 1 habitat under the ESA (MECP, 2021b). Waterbodies and wetlands that extend up to 2 km from a Blanding's Turtle occurrence and the 30 m around those waterbodies are protected as Category 2 habitat. Category 2 habitat is important for a range of life processes including feeding, mating, thermoregulation, movement, and protection from predators (MECP, 2021b). Lastly, the area between 30 m and 250 m around Category 2 habitat is considered Category 3 habitat, which is protected for usage as a movement corridor (MECP, 2021b). Since the area expected to be impacted by the project is located more than 30 m from the Rideau River and its shoreline, the project is not expected to impact potential Category 1 or 2 habitats. However, the Site falls within 250 m of the Rideau River and therefore would interact with *potential* Category 3 habitat. However, the Site away from the river leads only to high-traffic roadways and no other wetland areas are nearby. As such, there is no real ability of the Site to provide meaningful travel corridors and so Category 3 areas do not functionally exist on the Site.

Impacts to potential transient Blanding's Turtles can be minimized or eliminated by implementing the following mitigation measures:

- Temporary exclusion fencing should be installed prior to the turtle active season (April through October) (MECP, 2021b) and should follow recommendations in Reptile and Amphibian Exclusion Fencing: Best Practices (MECP, 2021c). Temporary exclusion fence (e.g., silt fence) may be paired with ESC measures and should be installed along the perimeter of the project area. Temporary exclusion measures should be inspected and repaired weekly by a qualified biologist during the turtle active season;

- If a turtle is encountered, the project biologist should be contacted for advice. If a turtle is in immediate harm's way, it should be safely and humanely relocated to appropriate habitat. Encounters with Threatened and Endangered species should be reported to the MECP within 24 hrs; and

7.4 Significant Natural Heritage Features

The proposed development will impact the significant valleyland; however, the steep slope will be re-naturalized post-development. Following proper ESC protocols (see Section 7.1) will be important to minimize long-term impacts to the significant valleylands. The proposed development plan includes mitigation measures that will reduce anticipated adverse impacts to the significant valleyland. The proposed planting of native grasses, shrubs, and trees will restore the slope and reduce future disturbances by stabilizing the slope. Further, the proposed stonedust path along the top of the slope is preferable to a paved path as it will allow water infiltration and reduce runoff to minimize impacts.

The edge (0.53 ha) of the significant woodland and UNA #147 (FODM5-1) will be removed during construction and restored post-construction. A further 0.16 ha of WODM5 will be removed and restored as FODM5-1 post-construction.

7.5 General Wildlife Mitigation

The following mitigation measures shall be implemented during future construction to generally protect wildlife and potential SWH areas:

- Areas shall not be altered or cleared during sensitive times of year for wildlife unless mitigation measures are implemented and/or the habitat has been inspected by a qualified Biologist;
    - Clearing of trees and/or vegetation should not take place April 1 to September 30 inclusive unless a qualified Biologist has determined that no birds are nesting or suitable bat roosting trees are present. The bird nest sweep would be valid for five days:
        - The MBCA protects the nests and young of migratory breeding birds in Canada. The timing of nesting for birds in the area spans April 1 to August 31 (Government of Canada, 1994);
        - No SAR bat species were detected during acoustic bat surveys. The Site contains suitable foraging and roosting habitat, however, due to the lack of detections, it is not expected that SAR bats are utilizing the Site. To eliminate and mitigate any possibility of impacts to at-risk bats directly, tree clearing is recommended to take place outside of the roosting season (April 1 to September 30 inclusive; MNRF, 2017). The breeding and roosting period for bats is recognized as April 1 to September 30 (MNRF, 2015b; MECP (C. Hann) personal communication with KAL (K. Black), July 30, 2021);
- Temporary exclusion fence should be installed prior to the turtle active season (April through October) (MECP, 2021b) and should follow recommendations in Reptile and Amphibian Exclusion Fencing: Best Practices (MECP, 2021c). Temporary exclusion fence (e.g., silt fence) may be paired with ESC measures and should be installed along the perimeter of the project area. Temporary exclusion measures should be inspected and repaired weekly by a qualified biologist during the turtle active season;
- Develop an ESC plan. Install sediment control fence and inspect/maintain it periodically and after each rain event to ensure its integrity and continued function;
- Ensure that a qualified biologist develops a wildlife management plan for the construction process and delivers environmental compliance and biodiversity training to all site workers to implement the plan. The plan should include (but not be limited to) requirements to:
    - Utilize silt fence paired with sturdy construction fence along the project perimeter and around soil stockpiles to serve as a wildlife exclusion measure to prevent smaller animals from accessing/utilizing temporary habitats on the Site (e.g., prevent turtles from nesting in stockpiles on the Site);
    - Check the entire work site for wildlife prior to beginning work each day;

- Do not harm, feed, or unnecessarily harass wildlife;
- Manage waste to prevent attracting wildlife to the work site. Effective mitigation measures include litter prevention and keeping all trash secured in wildlife-proof containers and promptly removing it from the work site, especially during warm weather;
- Enforce a speed limit of 20 km/h during the active season (April 1 to September 30) to reduce wildlife mortality; and
- Manage stockpiles and equipment at the work site to prevent wildlife from being attracted to artificial habitat. Cover and contain any piles of soil, fill, brush, rocks, and other loose materials and cap ends of pipes where necessary to keep wildlife out. Ensure that trailers, bins, boxes, and vacant buildings are secured at the end of each workday to prevent access by wildlife.

Once construction is complete and the residences are occupied, KAL recommends that new residents are encouraged through signage and public education to keep pets on leash during the bird breeding season (April 1 to August 31) and reptile active season (April 1 to October 31). It is recommended that landowners be provided with educational resources about keeping cats on a leash or indoors, as cats are one of the largest threats to bird populations (Blancher, 2013).

8.0 CONCLUSION

This report provides a set of mitigation measures for employment in the design and construction of the proposed development. The assessment of the potential for impacts to the natural heritage system is based on the implementation of these mitigation measures. It is our professional opinion that the proposed development is not anticipated to have negative impacts to existing natural features or ecological functions if the recommended mitigation measures provided in this report are implemented.

9.0 CLOSURE

This report was prepared for exclusive use by Taggart Realty Management and may be distributed only by Taggart Realty Management. Questions relating to the data and interpretation can be addressed to the undersigned.

Respectfully submitted,

KILGOUR & ASSOCIATES LTD.

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10.1 Personal Communication

Hann, Carolyn. Species at Risk Specialist, Kemptville District. Ministry of Environment, Conservation, and Parks (MECP). Communication with KAL (K. Black), July 30, 2021.

Appendix A Qualifications of Report Authors

Anthony Francis, PhD

Dr. Francis is a Senior Ecologist with 20 years' consulting experience to both government agencies and private industry. He has worked on a diversity of projects relating to species at risk (SAR), invasive species, terrestrial and aquatic habitat, environmental effects monitoring and mitigation, and fate/effects of contaminants. Within each of these subject areas, Dr. Francis has completed projects addressing specific site concerns and broader policy initiatives. Dr. Francis' academic background is in spatial ecology with a focus on tree species diversity. As a Senior Ecologist at KAL, he regularly completes TCRs, Environmental Impact Statements, and Integrated Environmental Reviews for land development projects throughout Ottawa and eastern Ontario. He is also a certified Butternut Health Assessor (BHA #104).

Maren Nielsen, BES

Maren is a Biologist with a background in terrestrial ecology. She has over five years of comprehensive field, laboratory and technical report writing experience through a combination of graduate and undergraduate studies and work experience. Maren completed a Bachelor of Environmental Studies with Honours at York University and a Graduate Certificate in Environmental Management and Assessment from Niagara College Canada. Maren has over two years of environmental and agricultural consulting experience, assisting clients to navigate the land development and site rehabilitation processes as well as obtaining permits and approvals from regulatory agencies. She has led numerous studies including Environmental Assessments (EA), Environmental Impact Studies (EIS), Opportunities & Constraints Analysis, Agricultural Impact Assessments (AIA), LEAR Studies and Minimum Distance Separation (MDS) I & II studies. Maren has carried out field programs for the collection of soils, water, sediment, and benthos as well as vegetation surveys, wildlife surveys, wind turbine avian and bat mortality monitoring, and land use surveys. Since joining Kilgour & Associates Ltd. in 2023, Maren has worked on a variety of land development projects and completed numerous Environmental Impact Studies (EIS), Headwater Drainage Feature Assessments (HDFA), Existing Conditions Reports, Opportunities and Constraints Analysis, and Species at Risk (SAR) monitoring. Maren is a certified wetland evaluator under the Ontario Wetland Evaluation System (OWES).

Appendix B Notes from City of Ottawa Pre-Consultation Meeting

Pre-consultation Notes

Meeting: Wednesday September 1 @ 2pm

City Attendees:

Kelby Lodoen Unseth – Planning (File Lead)
Wally Dubyk – Transportation
Eric Harrold – Infrastructure
Jeannette Krabicka – Parks Planning
Mark Richardson – Forestry
Matthew Hayley – Environmental Planner
Randolph Wang – Urban Design

Location:

3930 & 3960 Riverside Drive

Property Overview and Discussion:

The Subject properties are located at 3930 & 3960 Riverside Drive, which is bordered by Riverside Drive to the east, Hunt Club Road to the south, Rideau River to the west, and Uplands-Riverside Park to the north. The site is currently zoned GM1[1719] S251 H(137 A.S.L.) following a zoning amendment approval under By-Law 2019-93, supported by City Council on April 10, 2019.

Discussion:

The proposal includes a mix of housing from single detached to apartments, with the height primarily directed toward the southern areas of the property. The concept identifies heights of 12-storeys with building heights reducing further north on the property.

Much of the discussion focused on the placement of the multi-use pathway crossing the site in a north to south direction. Additionally, discussion focused on the size and location of the park space and how to be connect this park space with the proposed development.

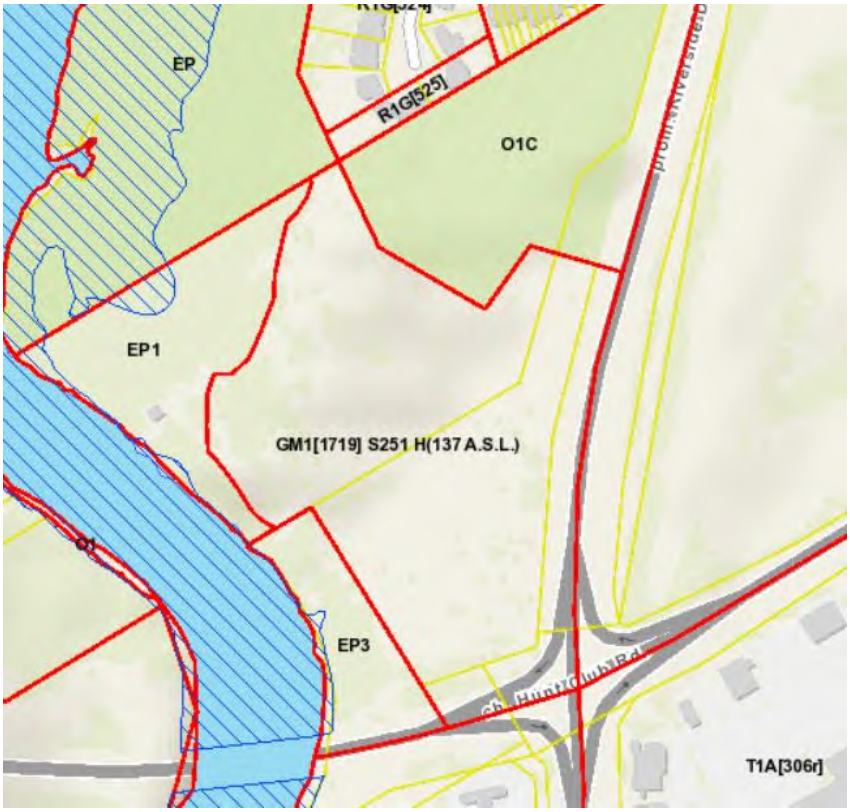
Access to the golf course pumping station along the Rideau River was a consideration with the previous application and I would anticipate similar considerations with this development.

The application proposal includes a subdivision application and zoning amendment to accommodate detached dwellings, townhouses, and apartment buildings. The zoning amendment would include the lifting of Schedule 251 which identifies an area of the property with residential development restrictions.

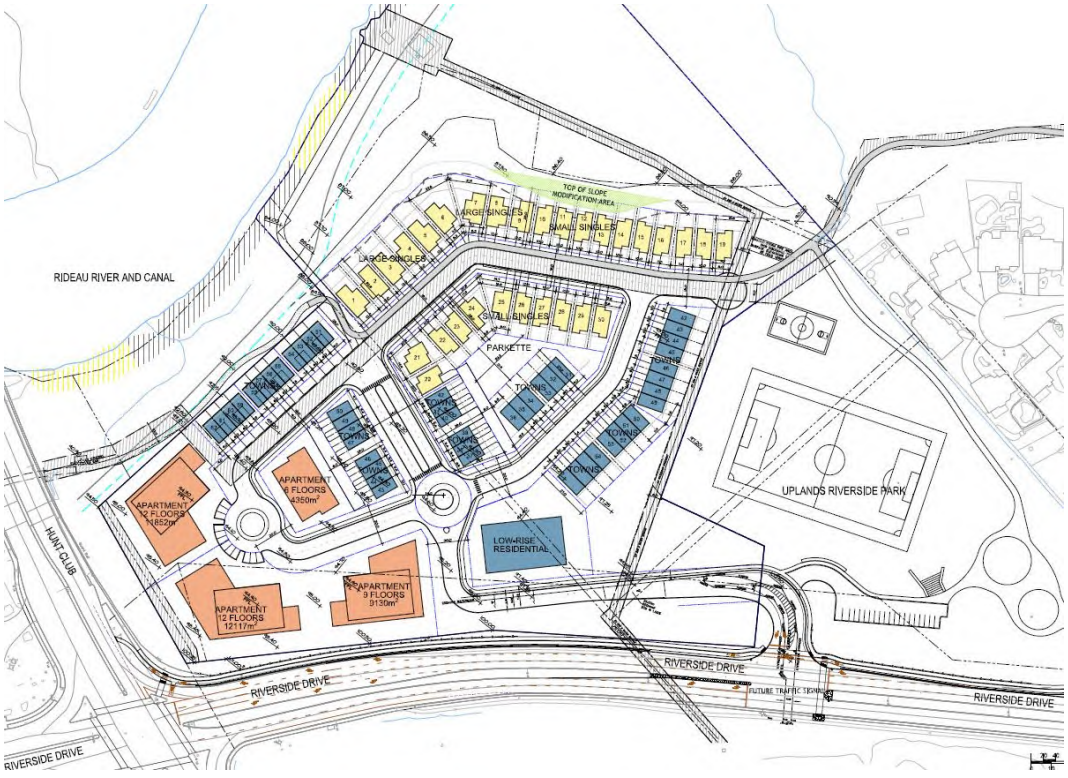
Pre-consultation Notes

Meeting: Wednesday September 1 @ 2pm

Property:



Site Plan Concept:



Pre-consultation Notes

Meeting: Wednesday September 1 @ 2pm

Transportation:

1) The TIA report to be revised and updated (traffic signals at the access still apply).

2) How will the MUP beneath the Hunt Club Road bridge be terminated.

3) The proposed MUP running across the Small Singles driveways is unsafe.
   - Option A: The ROW limits could be reduced to allow the MUP at the back of the Small Singles. Slope grade to be reviewed.
   - Option B: The MUP relocated through park area as discussed by Randall

4) Lighting along the MUP would be required.

Urban Design:

5) A Design Brief is required as part of the submission. The Terms of Reference is attached for convenience. Please note shadow and wind studies are required. Both studies should be focused on assessing the impacts of the proposed high-rise development.

6) The applicant's aspiration of the site, particularly those related to architecture design, is appreciated. However, it appears that the design and development of the site is heavily dependent on a better understanding of the grading situation and relevant regulations. The revised site plan can be very different from the one presented. The applicant is highly encouraged to explore a few site plan and massing options before determining the best strategy moving forward. A second preconsultation is beneficial when options are available for a discussion.

7) The site is quite isolated. It is important to make best efforts and use different place-making tools to ensure the new community will be connected, accessible, and welcoming, rather than a private enclave. Ideas such as an "arrival boulevard" are a great starting point. There are other opportunities such as the integration of the MUP and the expansion of the park.

8) The distribution of density and height on the site shown in the preliminary concept makes some sense. The mix of different building typologies is also appreciated. However, the new community appears to be not fully integrated and there is a lack of sense of place and community in the current design.

    a. High-rise and mid-rise buildings can be better organized to create public spaces, including streets, plazas, and parks.

    b. Mid-rise buildings can be designed to create publicly accessible court yards and other interesting spaces.

c. There may be opportunities to better integrate low-rise with mid-rise and high-rise buildings without having to worry too much about transition because it is a new community and the expectations of the future residents can be managed through master site plan. For example, urban towns may be located adjacent to a high-rise building that includes ground-oriented units in the podium.

d. Overall, a more progressive approach to design is highly encouraged.

9) The location of the MUP and the expansion of the park should be fully explored and carefully determined to make sure that they can contribute to the place-making strategy of the new community. Users of the MUP and park should feel safe, comfortable, and welcomed to use these public facilities. At the same time, residents of this new community should also feel comfortable to see these facilities being frequently used by people from outside of the neighbourhood. There should be an understanding of the hierarchy of "publicity" of the streets (even though they are by definition all public). The MUP, for example, should be aligned with the "more public" streets such as the proposed "arrival boulevard" rather than the streets of single detached houses.

Forestry:

TCR requirements:

10) a Tree Conservation Report (TCR) must be supplied for review along with the suite of other plans/reports required by the City
    a) an approved TCR is a requirement of Site Plan approval.

11) As of January 1 2021, any removal of privately-owned trees 10cm or larger in diameter, or publicly (City) owned trees of any diameter requires a tree permit issued under the Tree Protection Bylaw (Bylaw 2020 – 340); the permit will be based on an approved TCR and made available at or near plan approval.

12) The Planning Forester from Planning and Growth Management as well as foresters from Forestry Services will review the submitted TCR
    a) If tree removal is required, both municipal and privately-owned trees will be addressed in a single permit issued through the Planning Forester
    b) Compensation may be required for city owned trees – if so, it will need to be paid prior to the release of the tree permit

13) the TCR must list all trees on site by species, diameter and health condition

14) please identify trees by ownership – private onsite, private on adjoining site, city owned, co-owned (trees on a property line)

Pre-consultation Notes

Meeting: Wednesday September 1 @ 2pm

15) the TCR must list all trees on adjacent sites if they have a critical root zone that extends onto the development site

16) If trees are to be removed, the TCR must clearly show where they are, and document the reason they cannot be retained

17) All retained trees must be shown and all retained trees within the area impacted by the development process must be protected as per City guidelines available at Tree Protection Specification or by searching Ottawa.ca
    a) the location of tree protection fencing must be shown on a plan
    b) show the critical root zone of the retained trees
    c) if excavation will occur within the critical root zone, please show the limits of excavation

18) the City encourages the retention of healthy trees; if possible, please seek opportunities for retention of trees that will contribute to the design/function of the site.

19) For more information on the process or help with tree retention options, contact Mark Richardson mark.richardson@ottawa.ca or on City of Ottawa

LP tree planting requirements:

For additional information on the following please contact tracy.smith@Ottawa.ca

20) Minimum Setbacks
    a) Maintain 1.5m from sidewalk or MUP/cycle track.
    b) Maintain 2.5m from curb
    c) Coniferous species require a minimum 4.5m setback from curb, sidewalk or MUP/cycle track/pathway.
    d) Maintain 7.5m between large growing trees, and 4m between small growing trees. Park or open space planting should consider 10m spacing.
    e) Adhere to Ottawa Hydro's planting guidelines (species and setbacks) when planting around overhead primary conductors.

21) Tree specifications
    a) Minimum stock size: 50mm tree caliper for deciduous, 200cm height for coniferous.
    b) Maximize the use of large deciduous species wherever possible to maximize future canopy coverage
    c) Tree planting on city property shall be in accordance with the City of Ottawa's Tree Planting Specification; and include watering and warranty as described in the specification (can be provided by Forestry Services).
    d) Plant native trees whenever possible
    e) No root barriers, dead-man anchor systems, or planters are permitted.

f) No tree stakes unless necessary (and only 1 on the prevailing winds side of the tree)

22) Hard surface planting
   a) Curb style planter is highly recommended
   b) No grates are to be used and if guards are required, City of Ottawa standard (which can be provided) shall be used.
   c) Trees are to be planted at grade

23) Soil Volume
   a) Please ensure adequate soil volumes are met:

Tree Type/Size	Single Tree Soil Volume (m3)	Multiple Tree Soil Volume (m3/tree)
Ornamental	15	9
Columnar	15	9
Small	20	12
Medium	25	15
Large	30	18
Conifer	25	15

Please note that these soil volumes are not applicable in cases with Sensitive Marine Clay.

24) Sensitive Marine Clay
   a) Please follow the City's 2017 Tree Planting in Sensitive Marine Clay guidelines

Environment:

25) The previous Environmental Impact Statement may be used, however please update it to address the new proposal. The Tree Conservation Report will address any butternut trees that may be present.

26) Future site plan applications will need to address bird-safe design, in particular the mid to high rise parts of the proposal will need to review and incorporate bird safe design elements. Some of the risk factors include glass and related design traps such as corner glass and fly-through conditions, ventilation grates and open pipes, landscaping, light pollution. More guidance and solutions are available in the guidelines which can be found here: https://ottawa.ca/en/planning-development-and-construction/developing-property/development-application-review-process/development-application-submission/guide-preparing-studies-and-plans .

Pre-consultation Notes

Meeting: Wednesday September 1 @ 2pm

Rideau Valley Conservation Authority:

The RVCA has reviewed the documentation that was provided for in the pre-consultation as well as our notes on the previous file which were submitted by the same applicant. The RVCA offers the following comments for your consideration.

27) **Natural Hazards**

Conservation Authorities were delegated natural hazard responsibilities by the Minister of Natural Resources (now known as Ministry of Natural Resources and Forestry). This includes flood plain management, hazardous slopes, Great Lakes shorelines, unstable soils and erosion which are now encompassed by Section 3.1 "Natural Hazards" of the Provincial Policy Statement.

a) Floodplain

The subject site is adjacent the Rideau River. Very little of the property is within the 1:100 year floodplain due to the steep slope along the River. No development is being proposed within the floodplain.

b) Unstable Slopes

The slopes adjacent the Rideau River have been identified as Unstable Slopes in the City's Official Plan on Schedule K Environmental Constraints. The applicant had previously submitted a geotechnical report "Preliminary Geotechnical Assessment – Proposed Development, Hunt Club Road and Riverside Road, Ottawa, Ontario" dated March 2018, prepared by Golder Associates Ltd. The report had provided a slope stability analysis of the slope directly adjacent the river using the MNR Technical Guide for Natural Hazards. Based on the analysis, an 'Access Allowance' was not included. The Conservation Authority's position is that the 'Access Allowance" must be included in the limit of hazard lands. The report was also based on field observations completed in the year 2009. Given that the field observations were almost 10 years old, the RVCA will require that the slopes are investigated in the field by the consultant to ensure the conditions have not changed from those observations made in 2009.

We also note that the report did not delineate the location of the top of slope, stable slope allowance, erosion allowance, access allowance, 30 metres from the normal highwater mark and 15 metres from top of bank. Therefore, a plan that identifies all of the components of the limit of hazard lands and the setbacks required by the Official Plan will need to be provided.

The site is characterized by having two distinctive slopes. The first being the slope adjacent the river which was discussed above, the second being a sand ridge further from the river. The previous reports did not address the sand ridge

slope. Therefore, any report supporting the application for plan of subdivision will need to be amended to include the analysis of the sand ridge slope using the MNR Technical Guide for Natural Hazards and clearly delineate all of the required components (ie: limit of hazard lands, access allowance, erosion allowance, etc…).

Based on the concept plan provided, the proposed parcels look to be very close to the slope of the sand ridge. Please note that the RVCA will not support any parcels being created within the limit of hazard lands. As part of the proposed concept plan there is an area where the modifications to the slope are proposed to create more table land for development. The Conservation Authority typically does not support modifications to slopes to create more developable land. There has been some discussion with respect to the placement of pathways behind the residences along the upper most slope. All pathways will need to be located outside the limit of hazard lands.

Since 2018, the RVCA and the City of Ottawa have been studying landslides in the Ottawa area. In 2020, the RVCA and the City of Ottawa retained a third party expert (BGC Engineering Inc.) with expertise in landslide hazard and risk assessment to assist with the evaluation of Mosquito Creek in the City's south end. As part of the supporting documentation for this study, BGC Engineering Inc. prepared a background document regarding large landslides in sensitive marine clay in the Ottawa area. The work focused on large, rapid, retrogressive earth flows and spreads, which have the potential to occur suddenly, with little to no warning, and involve large areas (hundreds of metres or greater) of relatively flat terrain above slopes. While this study is still draft, there are some preliminary findings which can be observed from the report.

Based on the historical evidence within the Ottawa area, large landslides in creek valleys have generally been observed where the relief is 9 metres or greater, with the probability of a large landslide increasing as the relief increases. However, small landslides are abundant in creek valleys in the Ottawa area. These landslides can be characterized as being tens of metres but not more than 100 metres in width and length. These landslides are generally observed along slopes with a relief of 5 metres or higher. This site would meets some of the criteria which would normally trigger a landslide hazard or risk assessment. However, due to the original land use on site and the available records, the RVCA will be doing some additional screening before confirming whether a landslide hazard or risk assessment would be triggered.

28) **Natural Heritage**

a) <u>Environmental Impact Statement</u>

Pre-consultation Notes

Meeting: Wednesday September 1 @ 2pm

The applicant had originally submitted the EIS "Tree Conservation Report and Environmental Impact Statement – 3860 and 3930 Riverside Drive" dated January 2nd, 2018. The RVCA reviewed the report within the context of setbacks from the Rideau River. The report has concluded that the highly disturbed tablelands proposed for development do not provide any significant support for the features or functions of the Rideau River and adjacent corridor. The report has provided mitigation measures for during and after construction. We note that the proposed lots being created through the plan of subdivision will exceed 30 metres from the river.

29) **Stormwater Management**

The applicant had originally submitted a servicing report "Design Brief – Riverside Park, 3930 and 3960 Riverside Drive" dated March 2018, prepared by IBI Group. The report noted that the site falls within the drainage area for the existing Riverwalk Stormwater Management Facility (also known as the Kimberwick Stormwater Management Facility) which was constructed in the early 90's. Stormwater runoff for this site was accounted for as part of the revised stormwater management plan dated 1996 by Novatech Engineering. The stormwater from this site is proposed to be treated for water quality using the Kimberwick Stormwater Management Facility. While the report did not provide much detail as to the level of water quality treatment, it is acknowledged that some decisions were made as part of previous applications where the City and MOE (now MOECC) made a commitment that the developers would only be required to remediate and operate the pond as intended under the original MOE Certificate. It is our understanding that the applicant wishes to pursue a similar stormwater management plan for this application. However, should the City accept this approach, then a better understanding as to how water quality is being dealt with by the existing pond will be required.

While the RVCA acknowledges the commitments made, the situation is not ideal as the existing pond most likely does not meet current standards. Therefore the Conservation Authority will be strongly encouraging the use of LID design measures given the sandy soils present on the site to further promote improved water quality treatment.

30) **Conservation Authority Regulations**

A Significant portion of the property is within the RVCA's Regulation limit. The regulation limit in this area is due to the potential for unstable slopes. The written permission of the RVCA under Ontario Regulation 174/06 (or as amended) "Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation" made pursuant to Section 28 of the Conservation Authorities Act is required for the following:

- any development within the regulation limit

Pre-consultation Notes

Meeting: Wednesday September 1 @ 2pm

- Any alteration, straightening, changing, diverting or interfering in any way with any watercourse requires the prior written approval from the Conservation Authority (including watercourse crossings).

Planning:

25) The GM1 zoning designation includes apartment dwelling low rise, apartment dwelling mid rise, planned unit development, stacked dwelling, and townhouse dwelling as permitted residential uses. Single detached dwelling, semi detached dwelling, and apartment dwelling high rise are not specifically identified as permitted uses within this zoning district.

26) The pre-application consultation form identifies zoning amendment and plan of subdivision application. The addition of uses to a zoning district is considered a major zoning amendment.

27) Future site development may be subject to Site Plan Control applications.

28) Through the previous application review for this site, other considerations related to development of this site may include: installation and maintenance of the intersection signalization to access the site at Riverside Drive, location of the top of bank along Rideau River, multi-use pathway location, circulation of application with NCC due to proximity with Rideau River, over-sized services and location relative to Uplands-Riverside Park.

29) City of Ottawa Accessibility Design Standards: https://documents.ottawa.ca/sites/documents/files/documents/accessibility_design_standards_en.pdf

30) Please ensure that the Parking, Queuing and Loading Provisions are following and appropriate vehicle and bicycle parking is provided on-site (https://ottawa.ca/en/part-4-parking-queuing-and-loading-provisions-sections-100-114#bicycle-parking-space-rates-and-provisions-sec-111).

31) Please ensure that the Landscaping Provisions for Parking Lots are followed (https://ottawa.ca/en/part-4-parking-queuing-and-loading-provisions-sections-100-114#section-110-landscaping-provisions-parking-lots).

32) The Planning Rationale Terms of Reference may be found here.

33) For information on Applications, including fees, please visit: https://ottawa.ca/en/planning-development-and-construction/developing-property/development-application-review-process/development-application-submission/development-application-forms#site-plan-control

Pre-consultation Notes

Meeting: Wednesday September 1 @ 2pm

34) The application processing timeline generally depends on the quality of the submission. For more information on standard processing timelines, please visit: https://ottawa.ca/en/city-hall/planning-and-development/information-developers/development-application-review-process/development-application-submission/development-application-forms#site-plan-control

Engineering:

35) Attached as separate document.

Parks:

36) Attached as separate document.

Attachments:

- Engineering comments
- Parks comments
- Plan and study list
- Design Brief Terms of Reference

For any questions, please feel free to contact me at the information below. Please provide all submission documents electronically as paper copies of plans and reports are not being requested at this time.

Best regards,

Kelby Lodoen Unseth MCIP, RPP
Planner II | Urbaniste II
Development Review (South Services) | Examen des projets d'aménagement (services sud)
Planning, Infrastructure and Economic Development | Services de planification, d'infrastructure et de développement économique

City of Ottawa | Ville d'Ottawa
☎ 613.580.2424 ext./poste 12852
ottawa.ca/planning / ottawa.ca/urbanisme

Enc.

Appendix C Species at Risk Screening and Assessment

March 22, 2022 **Our File: TAGG 1299.2**

Management Biologist
Permissions and Compliance Section
Ontario Ministry of Environment, Conservation and Parks
10-1 Campus Drive
Kemptville, ON
K0G 1J0

Reference: Species at risk information request for 3930 and 3960 Riverside Drive in Ottawa, Ontario

To Whom it May Concern:

1.0 INTRODUCTION

This letter is a request for information relating to the potential presence of species at risk (SAR) for the proposed residential development of 3930 and 3960 Riverside Drive in Ottawa, Ontario. This letter includes a desktop review of SAR occurrence records using the resources and guidelines outlined in the draft document, *Client's Guide to Preliminary Screening for Species at Risk* (Ministry of the Environment, Conservation and Parks (MECP), 2019). We (Kilgour & Associates Ltd.; KAL) are seeking confirmation from MECP regarding the list of SAR that may occur on or near the project site. Potential impacts to SAR will be assessed via an Environmental Impact Study (EIS) that we will be preparing for our client. If impacts to SAR are anticipated, we will recommend that our client notifies MECP and engages in consultation to further consider potential impacts, avoidance and/or mitigation measures, and whether the project may require authorization under the *Endangered Species Act* (ESA).

1.1 Site Overview

The project involves the proposed development of 3930 and 3960 Riverside Drive as a residential subdivision. The site is approximately 8.15 ha in size and is adjacent to the Rideau River (Figure 1). The project area is be dominated by natural forested areas and open meadow communities. Roads border the property to the south and east. Residential infrastructure borders the site to the northeast, and commercial infrastructure borders the site to the south. The western edge of the property borders the Rideau River.

The centroid coordinates of the subject project area are:

Latitude: 45.336166°, Longitude: -75.695038°

Figure 1 Map showing the project area (outlined in red)

2.0 SPECIES AT RISK RESOURCES REVIEW AND RESULTS

We reviewed the following online resources to determine SAR occurrences on and/or nearby the site:

- Aquatic Species at Risk Map (DFO, 2019)
- Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry (MNDMNRF)
    - Natural Heritage Information Centre (MNDMNRF, 2022a)
    - Land Information Ontario Provincially Tracked Species Grid Detail (MNDMNRF, 2022b)
    - *Recovery Strategy for the Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*) and Tri-colored Bat (*Perimyotis subflavus*) in Ontario* (Humphrey & Fotherby, 2019)
    - *Recovery Strategy for the Eastern Small-footed Myotis (*Myotis leibii*) in Ontario* (Humphrey, 2017)
- Species at Risk in Ontario (MECP, 2022)

- Species at Risk Public Registry (Government of Canada, 2022)
- Atlas of the Breeding Birds of Ontario 2001-2005 (Bird Studies Canada et al., 2009)
- Herp Atlas (Ontario Nature, 2019)
- iNaturalist (California Academy of Sciences and National Geographic Society, 2022)
- eBird (Cornell Lab of Ornithology, 2022)
- Bumble Bee Sightings Map (Bumble Bee Watch, 2022)

The results of the SAR desktop review are indicated in Table 1. Note that occurrence data in Table 1 from the Natural Heritage Information Centre (MNDMNRF, 2022a), Land Information Ontario (MNDMNRF, 2022b), eBird (Cornell Lab of Ornithology, 2022), and iNaturalist (California Academy of Sciences and National Geographic Society, 2022) are occurrences within ~5 km of the site. SAR occurrence data from the Atlas of the Breeding Birds of Ontario (Bird Studies Canada et al., 2009) and Herp Atlas (Ontario Nature, 2019) are based on the 10 x 10 km Atlas square that the site falls in (18VR42).

Table 1 List of species at risk with potential to occur on or near the project site based on desktop review

Species Name (*Latin name*)	Information Source
Birds	
Bald Eagle (*Haliaeetus leucocephalus*)	Cornell Lab of Ornithology, 2022, California Academy of Sciences and National Geographic Society, 2022
Bank Swallow (*Riparia riparia*)	Bird Studies Canada et al., 2009, Cornell Lab of Ornithology, 2022
Barn Swallow (*Hirundo rustica*)	Bird Studies Canada et al., 2009, Cornell Lab of Ornithology, 2022
Black Tern (*Chlidonias niger*)	Cornell Lab of Ornithology, 2022
Bobolink (*Dolichonyx oryzivorus*)	Bird Studies Canada et al., 2009, MNDMNRF, 2022a, MNDMNRF, 2022b, Cornell Lab of Ornithology, 2022
Canada Warbler (*Cardellina canadensis*)	Cornell Lab of Ornithology, 2022
Chimney Swift (*Chaetura pelagica*)	Bird Studies Canada et al., 2009, Cornell Lab of Ornithology, 2022
Common Nighthawk (*Chordeiles minor*)	Bird Studies Canada et al., 2009, Cornell Lab of Ornithology, 2022, California Academy of Sciences and National Geographic Society, 2022
Eastern Meadowlark (*Sturnella magna*)	Bird Studies Canada et al., 2009, MNDMNRF, 2022a, MNDMNRF, 2022b
Eastern Wood-Pewee (*Contopus virens*)	Bird Studies Canada et al., 2009, Cornell Lab of Ornithology, 2022
Horned Grebe (*Podiceps auritus*)	Cornell Lab of Ornithology, 2022, California Academy of Sciences and National Geographic Society, 2022
Hudsonian Godwit (*Limosa haemastica*)	Cornell Lab of Ornithology, 2022

Species Name (*Latin name*)	Information Source
Least Bittern (*Ixobrychus exilis*)	MNDMNRF, 2022a
Loggerhead Shrike (*Lanius ludovicianus)*	MNDMNRF, 2022b
Peregrine Falcon (*Falco peregrinus*)	Bird Studies Canada et al., 2009, Cornell Lab of Ornithology, 2022, California Academy of Sciences and National Geographic Society, 2022, MNDMNRF, 2022a, MNDMNRF, 2022b
Rusty Blackbird (*Euphagus carolinus*)	Cornell Lab of Ornithology, 2022, California Academy of Sciences and National Geographic Society, 2022
Wood Thrush (*Hylocichla mustelina*)	Bird Studies Canada et al., 2009, MNDMNRF, 2022a
Mammals	
Little Brown Myotis (*Myotis lucifugus*)	Humphrey & Fotherby, 2019
Arthropods	
Gypsy Cuckoo Bumble Bee (*Bombus bohemicus*)	MNDMNRF, 2022a, MNDMNRF, 2022b
Monarch (*Danaus plexippus*)	California Academy of Sciences and National Geographic Society, 2022
Nine-spotted Lady Beetle (*Coccinella novemnotata*)	MNDMNRF, 2022b
Yellow-banded Bumble Bee (*Bombus terricola*)	MNDMNRF, 2022a, MNDMNRF, 2022b
Reptiles	
Blanding's Turtle (*Emydoidea blandingii*)	Ontario Nature, 2019, California Academy of Sciences and National Geographic Society, 2022, MNDMNRF, 2022b
Eastern Musk Turtle (*Sternotherus odoratus*)	Ontario Nature, 2019, MNDMNRF, 2022b
Northern Map Turtle (*Graptemys geographica*)	Ontario Nature, 2019
Snapping Turtle (*Chelydra serpentina*)	Ontario Nature, 2019, California Academy of Sciences and National Geographic Society, 2022, MNDMNRF, 2022a, MNDMNRF, 2022b
Vascular Plants	
Butternut (*Juglans cinerea*)	KAL observations, 2021, MNDMNRF, 2022a, MNDMNRF, 2022b

We note that observation records on eBird (Cornell Lab of Ornithology, 2022) and iNaturalist (California Academy of Sciences and National Geographic Society, 2022) are crowd-sourced and rely heavily on data submitted by volunteer citizen scientists that are not necessarily vetted by experts. As such, observation records from these sources are considered non-confirmed by KAL but are included in this preliminary SAR screening based on guidelines set forth by MECP (2019).

3.0 CLOSURE

Thank you for considering this SAR information request for 3930 and 3960 Riverside Drive in Ottawa, Ontario. We look forward to any comments you may have. Questions relating to the contents of this letter can be addressed to the undersigned.

Respectfully submitted,

KILGOUR & ASSOCIATES LTD.

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4.0 LITERATURE CITED

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Humphrey, C. 2017. Recovery Strategy for the Eastern Small-footed Myotis (*Myotis leibii*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario. vii + 76 pp.

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Assessment of Site SAR Potential

Species Name (*Taxonomic Name*)	Status under *Endangered Species Act* (ESA)	Status under Schedule 1 of the *Species at Risk Act* (SARA)	Observation Record Sources (within 10 km of the Site)	General Habitat Requirements	Site Suitability on or Adjacent (within 120 m) to the Site	Potential for Protected Elements[1]		Assessed Potential for Overall Negative Interactions with Protected Elements[2]
						Habitat	Individuals	
Birds								
Bald Eagle (*Haliaeetus leucocephalus*)	**Special Concern**	**Not at Risk**	Cornell Lab of Ornithology (2022); California Academy of Sciences and National Geographic Society (2022)	Nest in mature forests near open water. In large trees such as pine and poplar.	Mature forests on-site (adjacent to the Rideau River) may provide suitable habitat during both the breeding and non-breeding season.	Moderate	Moderate	Moderate
Bank Swallow (*Riparia riparia*)	**Threatened**	**Threatened**	Birds Canada et al. (2009); Cornell Lab of Ornithology (2022)	Colonial nester; burrows in eroding silt or sand banks, sand pit walls, and human-made sand piles. Often found on banks of rivers and lakes.	Although the Site contains a steep slope it does not have large areas of exposed sand.	Negligible	Moderate Transient occurrence should be anticipated.	Low The Site is unlikely to provide suitable habitat; however, as Bank Swallow occur in the area there is potential for them to occur on the Site.
Barn Swallow (*Hirundo rustica*)	**Threatened (Special Concern as of Jan 25, 2023)**	**Threatened**	Birds Canada et al. (2009); MNRF (2022a); Cornell Lab of Ornithology (2022)	Nests on barns and other structures. Forages in open areas for flying insects. Lives in close association with humans and prefers to nest on structures such as open barns, under bridges, and in culverts.	The overhanging roof of the pumphouse station on-site could provide nesting habitat, while the meadow, open woodland, and Rideau River could provide foraging habitat. The edge of the Rideau River and stormwater management pond (north of the Site) could provide additional foraging habitat. Further, buildings adjacent to the Site could provide suitable nesting habitat.	Moderate	Moderate	Moderate
Black Tern (*Chlidonias niger*)	**Special Concern**	**Not at Risk**	Cornell Lab of Ornithology (2022)	Build floating nests in loose colonies in shallow marshes with abundant emergent vegetation, especially in cattails.	The Site does not contain suitable habitat.	Negligible	Low Transient occurrence near the project area is possible.	Negligible
Bobolink (*Dolichonyx oryzivorus*)	**Threatened**	**Threatened**	Birds Canada et al. (2009); MNRF (2022a); MNRF (2022b); Cornell Lab of Ornithology (2022)	Breeds in hayfields, pastures, agricultural fields, and abandoned fields with tall grass that are ≥5 ha, and preferably >30 ha.	The meadow on-site may provide marginally suitable breeding habitat, as it is not grass dominated (it is a mix of grasses and forbs) and <2 ha.	Low	Moderate Transient occurrence should be anticipated.	Low

Species Name (*Taxonomic Name*)	Status under *Endangered Species Act* (ESA)	Status under Schedule 1 of the *Species at Risk Act* (SARA)	Observation Record Sources (within 10 km of the Site)	General Habitat Requirements	Site Suitability on or Adjacent (within 120 m) to the Site	Potential for Protected Elements[1]		Assessed Potential for Overall Negative Interactions with Protected Elements[2]
						Habitat	Individuals	
Canada Warbler (*Cardellina canadensis*)	**Special Concern**	**Threatened**	Cornell Lab of Ornithology (2022)	Prefers moist forests with dense shrub layers. Nests located on or near the ground on mossy logs or roots, along stream banks or on hummocks. Area-sensitive species that usually require a minimum of 30 ha of continuous forest for breeding habitat (OMNR, 2000).	The Site does not appear to contain suitable habitat.	Low	Low	Low
Chimney Swift (*Chaetura pelagica*)	**Threatened**	**Threatened**	Birds Canada et al. (2009); MNRF (2022a); Cornell Lab of Ornithology (2022)	Nests in traditional-style open brick chimneys (and rarely in hollow trees). Tends to stay close to water.	Hollow trees (living or dead) within the mature forests on-site may provide nesting/roosting habitat. The Site also contains suitable foraging habitat. Additionally, buildings adjacent to the Site may provide suitable nesting/roosting habitat; however, it is unknown if they have traditional-style, uncapped chimneys.	Moderate	Moderate	Moderate
Common Nighthawk (*Chordeiles minor*)	**Special Concern**	**Threatened**	Birds Canada et al. (2009); Cornell Lab of Ornithology (2022); California Academy of Sciences and National Geographic Society (2022)	Nests in a wide variety of open sites, including beaches, fields, and gravel rooftops with little to no ground vegetation. They also nest in cultivated fields, orchards, urban parks, mine tailings and along gravel roads/railways but tend to occupy more natural sites.	Open areas with very little ground cover on-site may provide suitable nesting habitat including the meadow, mature Sugar Maple forests, and the trial/hydro corridor. Open areas, particularly the Rideau River, would provide suitable foraging habitat.	Moderate	Moderate	Moderate
Eastern Meadowlark (*Sturnella magna*)	**Threatened**	**Threatened**	Birds Canada et al. (2009); MNRF (2022a); MNRF (2022b); Cornell Lab of Ornithology (2022)	Breeds in hayfields, pastures, agricultural fields, and abandoned fields with tall grass that are ≥5 ha, and preferably >30 ha.	The meadow on-site may provide marginally suitable breeding habitat, as it is not grass dominated (it is a mix of grasses and forbs) and <2 ha.	Low	Moderate Transient occurrence should be anticipated.	Low
Eastern Wood-Pewee (*Contopus virens*)	**Special Concern**	**Special Concern**	Birds Canada et al. (2009); Cornell Lab of Ornithology (2022)	Woodland species often found in the mid-canopy layer near clearings and edges of intermediate age and mature deciduous and mixed forests with little understory.	The mature Sugar Maple forest on-site may provide suitable habitat.	Moderate	Moderate	Moderate
Horned Grebe (*Podiceps auritus*)	**Special Concern**	**Special Concern**	Cornell Lab of Ornithology (2022); California Academy of	Nest in small ponds, marshes, and shallow bays that contain areas of open water and	The Site does not contain suitable habitat; however, the Rideau River	Negligible	Low	Negligible

Species Name (*Taxonomic Name*)	Status under *Endangered Species Act* (ESA)	Status under Schedule 1 of the *Species at Risk Act* (SARA)	Observation Record Sources (within 10 km of the Site)	General Habitat Requirements	Site Suitability on or Adjacent (within 120 m) to the Site	Potential for Protected Elements[1]		Assessed Potential for Overall Negative Interactions with Protected Elements[2]
						Habitat	Individuals	
			Sciences and National Geographic Society (2022)	emergent vegetation. Migrant only; no reported nests in Ottawa.	adjacent to the Site may provide suitable migratory stopover habitat.		Transient occurrence near the project area is possible.	
Hudsonian Godwit (*Limosa haemastica*)	**Threatened**	**No Status**	Cornell Lab of Ornithology (2022)	They use a wide variety of habitats during migration, such as freshwater marshes, saline lakes, flooded fields, shallow ponds, coastal wetlands, and mudflats. Migrant only; breeds in far north.	The Site does not contain suitable habitat and the section of the Rideau River adjacent to Site does not appear to provide migratory stopover habitat.	Negligible	Negligible	Negligible
Least Bittern (*Ixobrychus exilis*)	**Threatened**	**Threatened**	MNRF (2022a); Cornell Lab of Ornithology (2022)	Found in a variety of wetland habitats, but strongly prefers cattail marshes with a mix of open pools and channels. They prefer larger marshes >5 ha in size and are intolerant of loss of habitat and human disturbance (OMNR, 2000).	The Site does not contain suitable habitat; however, marginally suitable habitat may occur in the vicinity such as vegetated areas along the Rideau River and the stormwater management pond north of the Site.	Negligible	Moderate Transient occurrence should be anticipated.	Low
Loggerhead Shrike (*Lanius ludovicianus*)	**Endangered**	**Endangered**	MNRF (2022a); MNRF (2022b)	Prefers grazed pastures or other grasslands with scattered low trees and shrubs, especially hawthorns. Lives in fields or alvars (areas of exposed bedrock) with short grass, which makes it easier to spot prey.	The Site does not appear to contain suitable habitat as the meadow does not contain hawthorns or barbed wire fences.	Negligible	Negligible	Negligible
Peregrine Falcon (*Falco peregrinus*)	**Special Concern**	**Special Concern**	Birds Canada et al. (2009); Cornell Lab of Ornithology (2022); MNRF (2022a); MNRF (2022b); California Academy of Sciences and National Geographic Society (2022)	Nests on tall, steep cliff ledges close to large bodies of water. Urban peregrines raise their young on ledges of tall buildings, even in busy downtown areas.	The Site does not contain suitable habitat.	Negligible	Low Transient occurrence near the project area is possible.	Negligible
Rusty Blackbird (*Euphagus carolinus*)	**Special Concern**	**Special Concern**	Cornell Lab of Ornithology (2022); California Academy of Sciences and National Geographic Society (2022)	Prefers wet wooded or shrubby areas. Nests at edges of boreal wetlands and coniferous forests. These areas include bogs, marshes, and beaver ponds.	Swamps and riparian areas on-site would provide suitable habitat; although, as the Site is outside its main breeding range it may serve as migratory stopover habitat.	Moderate	Moderate	Moderate
Wood Thrush (*Hylocichla mustelina*)	**Special Concern**	**Threatened**	Birds Canada et al. (2009); MNRF (2022a); Cornell Lab of Ornithology (2022)	Lives in mature deciduous and mixed forests. They seek moist stands of trees with well-developed undergrowth and tall trees for singing and perching.	The mature Sugar Maple forest on-site may provide suitable habitat.	Moderate	Moderate	Moderate

Species Name (*Taxonomic Name*)	Status under *Endangered Species Act* (ESA)	Status under Schedule 1 of the *Species at Risk Act* (SARA)	Observation Record Sources (within 10 km of the Site)	General Habitat Requirements	Site Suitability on or Adjacent (within 120 m) to the Site	Potential for Protected Elements[1]		Assessed Potential for Overall Negative Interactions with Protected Elements[2]
						Habitat	Individuals	
				Prefers nesting in large forest mosaics, but will also use fragmented forests. Usually build nests in Sugar Maple or American Beech.				
Mammals								
Eastern Small-footed Myotis (*Myotis leibii*) Note: not screened in but considered regardless	**Endangered**	**Not Listed**	Humphrey (2017) – in region	In the spring and summer, Eastern Small-footed Myotis will roost in a variety of habitats, including in or under rocks, in rock outcrops, in buildings, under bridges, or in caves, mines, or hollow trees. Overwinters in caves and abandoned mines.	Forested habitats and the pumphouse on-site may provide suitable roosting habitat. While the buildings adjacent to the Site may provide additional roosting habitat. Forests (including corridors) and meadows may provide suitable foraging habitat. The edge of the Rideau River and stormwater management pond could provide additional foraging habitat.	Moderate	Moderate	Moderate
Little Brown Myotis (*Myotis lucifugus*)	**Endangered**	**Endangered**	Humphrey and Fotherby (2019) – in region	During the day they roost in trees and buildings. They often select attics, abandoned buildings, and barns for summer colonies where they can raise their young. They can squeeze through very tiny spaces (as small as six millimetres across) allowing them access to many different roosting areas.	Forested habitats and the pumphouse on-site may provide suitable roosting habitat. While the buildings adjacent to the Site may provide additional roosting habitat. The meadow and forest openings on-site may provide suitable foraging habitat. The edge of the Rideau River and stormwater management pond could provide additional foraging habitat.	Moderate	Moderate	Moderate
Northern Myotis / Northern Long-eared Bat (*Myotis septentrionalis*) Note: not screened in but considered regardless	**Endangered**	**Endangered**	Humphrey and Fotherby (2019) – in region	Associated with deciduous and mixed forests, choosing to roost under loose bark and in the cavities of trees. They forage along and within forests as well as in hayfields and pastures adjacent to mixed forests.	Forested habitats on-site may provide suitable roosting and foraging habitat. The meadow on-site may also provide suitable foraging habitat. The edge of the Rideau River and stormwater management pond could provide additional foraging habitat.	Moderate	Moderate	Moderate
Tri-colored Bat / Eastern Pipistrelle (*Perimyotis subflavus*) Note: not screened in but considered regardless	**Endangered**	**Endangered**	Humphrey and Fotherby (2019) – in region	Roosts mainly in trees during summer; overwinters in caves and mines along with other species, but often uses deeper parts of the hibernaculum. Foraging occurs in forested riparian areas, over water, and within gaps in forest canopies.	Forested habitats (particularly the mature Sugar Maple forest) on-site may provide suitable roosting habitat. The forested riparian areas and meadow on-site may provide suitable foraging habitat. The edge of the Rideau River and stormwater management pond could provide additional foraging habitat.	Moderate	Moderate	Moderate
Amphibians								

Species Name (*Taxonomic Name*)	Status under *Endangered Species Act* (ESA)	Status under Schedule 1 of the *Species at Risk Act* (SARA)	Observation Record Sources (within 10 km of the Site)	General Habitat Requirements	Site Suitability on or Adjacent (within 120 m) to the Site	Potential for Protected Elements[1]		Assessed Potential for Overall Negative Interactions with Protected Elements[2]
						Habitat	Individuals	
Western Chorus Frog (*Pseudacris triseriata*)	**Not Listed**	Great Lakes/ St. Lawrence population: **Threatened**	n/a	Inhabits forest openings around woodland ponds but can also be found in or near damp meadows, marshes, bottomland swamps, and temporary ponds in open country, or even urban areas.	Open, lowland habitats (in the Sugar Maple forest) and forest openings may contain vernal pools that that could provide suitable breeding habitat. Further, the swamps on-site may also provide suitable habitat.	Moderate	Moderate	Moderate
Reptiles								
Blanding's Turtle (*Emydoidea blandingii*)	**Threatened**	**Endangered**	Ontario Nature (2019); MNRF (2022a); MNRF (2022b); California Academy of Sciences and National Geographic Society (2022)	Quiet lakes, streams, and wetlands with abundant emergent vegetation. Also frequently occurs in adjacent upland forests.	The sandy shoreline of the Rideau River and meadow (MEMM3) may provide nesting habitat, while the river itself may provide overwintering habitat. Open, lowland habitats (in the Sugar Maple forest), forest openings with vernal pools, and swamps on-site could provide suitable staging habitat and/or act as a corridor during seasonal movements.	Moderate	Moderate	Moderate
Eastern Musk Turtle / Stinkpot (*Sternotherus odoratus*)	**Special Concern**	**Special Concern**	Ontario Nature (2019); MNRF (2022b)	Found in lakes, ponds, marshes, and rivers that are generally slow-moving, have abundant emergent vegetation, and muddy bottoms that they burrow into for winter hibernation.	The edge of the Rideau River does not appear to have enough vegetation to support Eastern Musk Turtles.	Low	Low	Low
Northern Map Turtle (*Graptemys geographica*)	**Special Concern**	**Special Concern**	Ontario Nature (2019); California Academy of Sciences and National Geographic Society (2022)	Lives in rivers and lakeshores where it basks on emergent rocks and fallen trees throughout the spring and summer. In winter, they hibernate on the bottom of deep, slow-moving sections of river.	The sandy shoreline of the Rideau River may provide nesting habitat, while the river itself may provide overwintering habitat.	Moderate	Moderate	Moderate
Snapping Turtle (*Chelydra serpentina*)	**Special Concern**	**Special Concern**	Ontario Nature (2019); MNRF (2022a); MNRF (2022b); California Academy of Sciences and National Geographic Society (2022)	Spend most of their lives in the water. Prefer shallow waters so they can hide under the soft mud and leaf litter with only their noses exposed to the surface to breathe.	The sandy shoreline of the Rideau River and meadow (MEMM3) may provide nesting habitat, while the river itself may provide overwintering habitat. Swamps on-site could provide habitat as a corridor during seasonal movements.	Moderate	Moderate	Moderate
Arthropods								
American Bumble Bee (*Bombus pensylvanicus*)	**No Status (Special Concern as of Jan 25, 2023)**	**No Status**	MNRF (2022a)	Habitat generalist. Requires a variety of habitat throughout it's life stages. Often found in or adjacent to open fields and meadows, grasslands, farmlands, and other	The open meadow on-site may provide suitable habitat.	Moderate	Moderate	Moderate

Species Name (*Taxonomic Name*)	Status under *Endangered Species Act* (ESA)	Status under Schedule 1 of the *Species at Risk Act* (SARA)	Observation Record Sources (within 10 km of the Site)	General Habitat Requirements	Site Suitability on or Adjacent (within 120 m) to the Site	Potential for Protected Elements[1]		Assessed Potential for Overall Negative Interactions with Protected Elements[2]
						Habitat	Individuals	
				undisturbed open habitats (Government of Canada, 2019).				
Gypsy Cuckoo Bumble Bee (*Bombus bohemicus*)	**Endangered**	**Endangered**	MNRF (2022a); MNRF (2022b)	Live in diverse habitats including open meadows, mixed farmlands, urban areas, boreal forest, and montane meadows. Host nests occur in abandoned underground rodent burrows and rotten logs.	Currently only known to occur in Pinery Provincial Park (MECP, 2019b).	None	None	None
Monarch (*Danaus plexippus*)	**Special Concern**	**Special Concern**	California Academy of Sciences and National Geographic Society (2022); Toronto Entomologists' Association (2022)	Milkweeds are the sole food plant for Monarch caterpillars. These plants predominantly grow in open and periodically disturbed habitats such as roadsides, fields, wetlands, prairies, and open forests.	The meadow and trail edge supporting milkweeds may provide suitable habitat.	Moderate	Moderate	Moderate
Nine-spotted Lady Beetle (*Coccinella novemnotata*)	**Endangered**	**No Status**	MNRF (2022a); MNRF (2022b)	Occurs within agricultural areas, suburban gardens, parks, coniferous forests, deciduous forests, prairie grasslands, meadows, riparian areas, and isolated natural areas.	There have been no records of this species in Ontario since the mid-1990s (MECP, 2019c).	None	None	None
Yellow-banded Bumble Bee (*Bombus terricola*)	**Special Concern**	**Special Concern**	MNRF (2022a); MNRF (2022b)	This species is a forage and habitat generalist, able to use a variety of nectaring plants and environmental conditions. Can be found in mixed woodlands, particularly for nesting and overwintering, as well as a variety of open habitat such as native grasslands, farmlands, and urban areas.	The mosaic of forests and meadow on the Site may provide suitable habitat.	Moderate	Moderate	Moderate
Vascular Plants								
Black Ash (*Fraxinus nigra*) Note: not screened in but considered regardless	**Endangered**	**No Status**	KAL (2021)	Predominantly a wetland species found in swamps, floodplains, and fens.	The Site contains suitable habitat. KAL biologists identified Black Ash on the edge of the mature White Pine forest close to the Rideau River.	High	High	High

Species Name (*Taxonomic Name*)	Status under *Endangered Species Act* (ESA)	Status under Schedule 1 of the *Species at Risk Act* (SARA)	Observation Record Sources (within 10 km of the Site)	General Habitat Requirements	Site Suitability on or Adjacent (within 120 m) to the Site	Potential for Protected Elements[1]		Assessed Potential for Overall Negative Interactions with Protected Elements[2]
						Habitat	Individuals	
Butternut (*Juglans cinerea*)	**Endangered**	**Endangered**	MNRF (2022a); MNRF (2022b); California Academy of Sciences and National Geographic Society (2022); KAL (2022)	Commonly found in riparian habitats but is also found on rich, moist, well-drained loams and well-drained gravels, especially those of limestone origin.	The Site contains suitable habitat. KAL biologists identified Butternut on the edge of the mature Sugar Maple forest on-site.	High	High	High

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1 The potential for occurrence of protected habitats and individuals within the project area is estimated based on the following considerations:

	Habitat	Individuals
None	It is not possible for the habitat of the species to occur in proximity to the project site	The species is documented as no longer occurring in the ecoregion or could not occur in proximity to the project area.
Negligible	The usage of the project site as habitat is possible but would be highly unlikely/unusual.	Transient occurrence near the project area is possible but is very unlikely.
Low	The project site includes areas that could be used by the species as habitat, but such usage is considered unlikely given the quality of the feature, a lack of individuals in the broader area, or other (relative) site considerations.	Transient occurrence near the project area possible, but the species would be unlikely to use or require the area.
Moderate	The project site includes areas that could reasonably be expected to provide confirmed or defined habitat within a time frame relevant to the project.	The species occurs in the vicinity and could actively use the site, or transient occurrence should be anticipated.
High	The project site includes areas confirmed to actively provide habitat or to constitute habitat based on official habitat description guidance documents.	The species is confirmed as present on, and actively using the site.

2 The potential for negative project interaction with species and/or their habitat is estimated considering both the likelihood of presence and the general details of the project (e.g., timing, extent), and following the definitions below. If the potential differs for habitat and individuals, the higher value is reported, unless otherwise justified

	Habitat	Individuals
None	It is not possible for the species to occupy the site area due to access barriers.	The species is documented as no longer occurring in the ecoregion
Negligible	Negligible habitat potential, or low habitat potential and the project would not be anticipated to alter the habitat.	Negligible occurrence potential for presence, or absence during the entire span of the project.
Low	Low habitat potential, or medium habitat potential and the project would not be anticipated to alter the habitat.	Low occurrence potential for presence, or the project design excludes individuals in a non-harassing manner by default.
Moderate	Medium habitat potential, or high habitat potential and the project would not be anticipated to alter the habitat (as expressed by MECP).	Medium occurrence potential for presence, or the project design excludes individuals in accordance with agency guidelines/directives by default (i.e., outside of mitigation measures prescribed in this report).
High	The project area will alter identified habitat.	The project will interact with individuals.

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Appendix D Tree Conservation Report and Tree Data

Tree Number	Species Name	Number of Stems	DBH	Trunk Health	Canopy Health	Decay class	Location	Latitude	Longitude	Altitude (m
1	White Cedar (Thuja occidentalis)	2	35	Fair: tree displays 15-40% deficiency/defect	Fair: tree displays 15-40% deficiency/defect	2: Declining live tree, part of canopy lost	45.338521°, -75.696312°	45.338521	-75.6963122	89.2
2	Weeping Willow (Salix babylonica)	1	59	Good: tree displays less than 15% deficiency/defect	Good: tree displays less than 15% deficiency/defect	1: Healthy, live tree	45.339121°, -75.695382°	45.33912133	-75.6953823	101.6
3	Weeping Willow (Salix babylonica)	1	31	Good: tree displays less than 15% deficiency/defect	Fair: tree displays 15-40% deficiency/defect	2: Declining live tree, part of canopy lost	45.339150°, -75.695455°	45.33915017	-75.6954545	88.4
4	Weeping Willow (Salix babylonica)	2	118	Good: tree displays less than 15% deficiency/defect	Good: tree displays less than 15% deficiency/defect	1: Healthy, live tree	45.339219°, -75.695340°	45.33921867	-75.6953403	84.5
5	Trembling Aspen (Populus tremuloides)	1	33	Good: tree displays less than 15% deficiency/defect	Good: tree displays less than 15% deficiency/defect	1: Healthy, live tree	45.339009°, -75.695629°	45.33900933	-75.6956293	86.7
6	Basswood (Tilia americana)	3	21	Good: tree displays less than 15% deficiency/defect	Fair: tree displays 15-40% deficiency/defect	2: Declining live tree, part of canopy lost	45.339016°, -75.695655°	45.33901617	-75.695655	87.8
7	Sugar Maple (Acer saccharum)	1	46	Good: tree displays less than 15% deficiency/defect	Good: tree displays less than 15% deficiency/defect	1: Healthy, live tree	45.339040°, -75.695756°	45.33904017	-75.6957558	85.2
8	White Birch (Betula papyrifera)	1	25	Fair: tree displays 15-40% deficiency/defect	Fair: tree displays 15-40% deficiency/defect	2: Declining live tree, part of canopy lost	45.338872°, -75.696100°	45.3388715	-75.6961	81.5
9	White Birch (Betula papyrifera)	1	25	Good: tree displays less than 15% deficiency/defect	Fair: tree displays 15-40% deficiency/defect	1: Healthy, live tree	45.338861°, -75.696134°	45.3388605	-75.6961342	83.8
10	White Cedar (Thuja occidentalis)	1	33	Fair: tree displays 15-40% deficiency/defect	Fair: tree displays 15-40% deficiency/defect	2: Declining live tree, part of canopy lost	45.338492°, -75.696245°	45.338492	-75.6962447	89.3
11	White Cedar (Thuja occidentalis)	1	37	Good: tree displays less than 15% deficiency/defect	Good: tree displays less than 15% deficiency/defect	2: Declining live tree, part of canopy lost	45.338482°, -75.696298°	45.338482	-75.6962978	92.9
12	White Cedar (Thuja occidentalis)	1	27	Good: tree displays less than 15% deficiency/defect	Good: tree displays less than 15% deficiency/defect	2: Declining live tree, part of canopy lost	45.338524°, -75.696322°	45.33852433	-75.6963222	90.7
13	White Willow (Salix alba)	3	75	Good: tree displays less than 15% deficiency/defect	Good: tree displays less than 15% deficiency/defect	1: Healthy, live tree	45.338357°, -75.696093°	45.338357	-75.6960927	87.8
14	White Willow (Salix alba)	1	71	Good: tree displays less than 15% deficiency/defect	Fair: tree displays 15-40% deficiency/defect	1: Healthy, live tree	45.338233°, -75.696067°	45.33823317	-75.6960673	93.9
15	Yellow Birch (Betula alleghaniensis)	1	42	Good: tree displays less than 15% deficiency/defect	Good: tree displays less than 15% deficiency/defect	1: Healthy, live tree	45.338078°, -75.695851°	45.33807783	-75.6958507	88.1

Tree Number	Species Name	Number of Stems	DBH	Trunk Health	Canopy Health	Decay class	Location	Latitude	Longitude	Altitude (m
16	Sugar Maple (Acer saccharum)	1	34	Good: tree displays less than 15% deficiency/defect	Good: tree displays less than 15% deficiency/defect	2: Declining live tree, part of canopy lost	45.338087°, -75.695858°	45.33808733	-75.6958578	98.3
17	Black Cherry (Prunus serotina)	1	92	Good: tree displays less than 15% deficiency/defect	Good: tree displays less than 15% deficiency/defect	1: Healthy, live tree	45.337977°, -75.695972°	45.33797733	-75.6959718	86.8
18	Basswood (Tilia americana)	2	40	Poor: tree displays greater than 40% deficiency/defect	Fair: tree displays 15-40% deficiency/defect	2: Declining live tree, part of canopy lost	45.337791°, -75.696046°	45.33779117	-75.6960463	91.5
19	White Birch (Betula papyrifera)	1	41	Fair: tree displays 15-40% deficiency/defect	Fair: tree displays 15-40% deficiency/defect	1: Healthy, live tree	45.337824°, -75.695952°	45.33782367	-75.6959517	92.3
20	Sugar Maple (Acer saccharum)	1	89	Good: tree displays less than 15% deficiency/defect	Good: tree displays less than 15% deficiency/defect	1: Healthy, live tree	45.337802°, -75.696123°	45.33780167	-75.6961232	84.4
21	White Birch (Betula papyrifera)	1	32	Good: tree displays less than 15% deficiency/defect	Good: tree displays less than 15% deficiency/defect	1: Healthy, live tree	45.337746°, -75.696159°	45.33774633	-75.696159	87.4
22	White Birch (Betula papyrifera)	2	35	Good: tree displays less than 15% deficiency/defect	Good: tree displays less than 15% deficiency/defect	3: Very recently dead, no live canopy, bark and branches intact	45.337680°, -75.696337°	45.33767983	-75.6963368	89.3
23	Trembling Aspen (Populus tremuloides)	1	29	Fair: tree displays 15-40% deficiency/defect	Fair: tree displays 15-40% deficiency/defect	1: Healthy, live tree	45.337202°, -75.695822°	45.33720183	-75.6958218	98.3
24	Trembling Aspen (Populus tremuloides)	2	27	Poor: tree displays greater than 40% deficiency/defect	Poor: tree displays greater than 40% deficiency/defect	2: Declining live tree, part of canopy lost	45.337176°, -75.695730°	45.337176	-75.6957302	93.5
25	White Willow (Salix alba)	7	32	Good: tree displays less than 15% deficiency/defect	Good: tree displays less than 15% deficiency/defect	1: Healthy, live tree	45.336919°, -75.695421°	45.3369185	-75.6954207	91.3
26	Eastern Cottonwood (Populus deltoides)	1	32	Fair: tree displays 15-40% deficiency/defect	Fair: tree displays 15-40% deficiency/defect	2: Declining live tree, part of canopy lost	45.336998°, -75.695319°	45.3369975	-75.6953192	94.1
27	Black Locust (Robinia pseudoacacia)	1	42	Fair: tree displays 15-40% deficiency/defect	Fair: tree displays 15-40% deficiency/defect	2: Declining live tree, part of canopy lost	45.336806°, -75.695297°	45.33680617	-75.6952965	91.8
28	Eastern Cottonwood (Populus deltoides)	1	43	Good: tree displays less than 15% deficiency/defect	Good: tree displays less than 15% deficiency/defect	1: Healthy, live tree	45.337035°, -75.695033°	45.33703467	-75.6950332	90.1
29	Eastern Cottonwood (Populus deltoides)	1	35	Good: tree displays less than 15% deficiency/defect	Good: tree displays less than 15% deficiency/defect	1: Healthy, live tree	45.337225°, -75.694581°	45.33722483	-75.694581	94.7

Tree Number	Species Name	Number of Stems	DBH	Trunk Health	Canopy Health	Decay class	Location	Latitude	Longitude	Altitude (m
30	Eastern Cottonwood (Populus deltoides)	1	27	Good: tree displays less than 15% deficiency/defect	Good: tree displays less than 15% deficiency/defect	1: Healthy, live tree	45.335629°, -75.694247°	45.33562933	-75.6942467	99
31	Eastern Cottonwood (Populus deltoides)	2	36	Good: tree displays less than 15% deficiency/defect	Fair: tree displays 15-40% deficiency/defect	1: Healthy, live tree	45.335615°, -75.695338°	45.335615	-75.6953375	90.4
32	Eastern Cottonwood (Populus deltoides)	1	42	Good: tree displays less than 15% deficiency/defect	Good: tree displays less than 15% deficiency/defect	1: Healthy, live tree	45.336134°, -75.695491°	45.3361335	-75.6954908	90.4

Appendix E RVCA Natural Hazards Review

Conservation Partners
Partenaires en conservation

Mississippi Valley Conservation Authority | Rideau Valley Conservation Authority | South Nation Conservation / Conservation de la Nation Sud

File: 23-GLO-SUB-0111

March 20th, 2023

City of Ottawa
Planning, Infrastructure and Economic Development Department
110 Laurier Avenue West, 4th Floor
Ottawa, ON K1P 1J1

Attention: Kelby Lodoen Unseth

Subject: St. Mary's Land Corporation
Plan of Subdivision Application D07-16-23-0001
3930 and 3960 Riverside Drive, City of Ottawa

Dear Mr. Lodoen Unseth:

The Conservation Partners Planning and Development Review Team has completed a review of the above noted application to develop a subdivision for 589 apartment dwelling units, 53 townhouses, and 24 detached dwellings.

We have undertaken our review within the context of Section 3.1 Natural Hazards of the 2020 Provincial Policy Statement issued under Section 3 of the *Planning Act*, functions, and responsibilities as a source protection authority under the *Clean Water Act*, 2006, and from the perspective of Conservation Authority regulations. The following comments are offered for your consideration.

Natural Hazards

Conservation Authorities were delegated natural hazard responsibilities by the Minister of Natural Resources (now known as Ministry of Natural Resources and Forestry). This includes flood plain management, hazardous slopes, Great Lakes shorelines, unstable soils and erosion which are now encompassed by Section 3.1 "Natural Hazards" of the Provincial Policy Statement.

3889 Rideau Valley Drive, P.O. Box 599
Manotick, Ontario, K4M 1A5
Tel: 613-692-3571
Fax: 613-692-0831

Floodplain

The subject site is adjacent to the Rideau River. Very little of the property is within the 1:100 year floodplain of the Rideau River due to the steep slope along the river. No development is proposed within the floodplain.

Slope Stability/Erosional Concerns

There are two slopes identified on this site, referred to as the lower slope and upper slope. The lower slope directly follows the river, while the upper slope follows the river at the southern portion of the property and gradually moves eastward further from the river at the northern portion of the site. As part of the application, the applicant has submitted the following reports:

- "*Draft Report, Geotechnical Assessment – Proposed Residential Development, 3930 and 3960 Riverside Drive, Ottawa, Ontario*" dated December 22nd, 2022, prepared by Golder Associates Ltd.
- "*Fluvial Geomorphic Assessment at subject area of the Rideau River to support proposed development at 3930 and 3960 Riverside Drive*" dated December 22nd, 2022, prepared by Golder Associates Ltd.

The review of the documents was completed by Terry K. Davidson, P.Eng., RVCA Director of Regulations and Engineering. The review has determined that the report has delineated the Limit of Hazard Lands for the site. Therefore, the development can proceed providing all the recommendations in the report are followed. While the report indicates that the Limit of Hazard Lands on figure 1 does not apparently impact on the current development plans, a final plan delineating the Limit of Hazard Lands (including the access allowance), and the proposed lot layout for the subdivision should be provided to ensure the proposed lots are entirely outside the Limit of Hazard Lands (including the access allowance).

It should be noted, that for the upper slope, the delineated Limit of Hazard Lands is based on site grading including consideration of a compacted engineered buttress fill slope 2.5H:1V used to adjust the slope crest location along cross sections F-F', G-G', H-H' and I-I'. Typically, the Conservation Authority does not support the alteration of a slope to accommodate development or to reduce the required geotechnical setbacks. It is our understanding that this portion of the upper slope has been identified as consisting of filled materials which have been placed on the property since the 1970's to reclaim the land for development. Therefore, it is on the basis that this upper slope is considerably man made that the Conservation Authority is accepting alterations to the upper slope to accommodate development. This should not be considered as a precedent.

In addition, because the proposed development is based on the alterations to the upper slope being undertaken, the details on the proposed alterations as well as the actual work will have to be completed prior to registration of the subdivision. These requirements can form a condition of draft approval.

In Section 6.4.5 Surface Drainage and Erosion Protection of the geotechnical assessment report, the report states "*The RVCA has previously expressed a preference to not have erosion protection installed along the slope toe adjacent to this site."* To clarify, the RVCA would always encourage that where erosion works are contemplated, that they be completed prior to development occurring. Therefore, we respectively request that this sentence be amended or deleted from the report to reflect the RVCA's position.

Pathways

Based on the documents provided, a MUP has been proposed adjacent to the upper slope. The geotechnical report has identified an access allowance of 6 metres for the upper slope. Based on the preliminary drawings provided, it appears that portions of the MUP would be within the 6 metre access allowance for the upper slope. The Conservation Authority is not opposed to this minor encroachment into the access allowance to accommodate a MUP, provided that the construction of the MUP does not change the grades within the access allowance. Details on the MUP should be provided at the detailed design stage.

Stormwater (Flooding/erosion)

The RVCA has reviewed the report "*Assessment of Adequacy of Public Services Report – 3930 and 3960 Riverside Drive*" dated December 22nd, 2022, prepared by Arcadis – IBI Group. The report was reviewed from a natural hazard perspective. The review was completed by Evelyn Liu, M.Sc., P.Eng., RVCA Water Resources Engineer. The review has identified some additional information that should be provided prior to this application moving forward to draft approval (see memo attached). We note that the City will need to take into account the very limited role of our review and ensure that the report is satisfactory in accordance with Provincial and City requirements.

Conservation Authority Regulations

Portions of the property are within the RVCA's regulation limit. The RVCA administers Ontario Regulation 174/06 "*Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation*" under Section 28 of the *Conservation Authorities Act* (or as amended). This regulation affects the property in the following manner:

- Any development within the floodplain of the Rideau River requires the prior written approval of the Conservation Authority.
- Any development within the regulation limit requires the prior written approval of the Conservation Authority.
- Any alteration, straightening, changing, diverting or interfering in any way with any watercourse requires the prior written approval from the Conservation Authority (including stormwater outlets).

A permit from the Conservation Authority will be required for the slope alterations to the upper slope. More detail will be required at the time of submission of a permit application.

Conclusion

In conclusion, the Conservation Partners recommend that this application be placed ON HOLD to allow the applicant sufficient time to appropriately address all the concerns raised in this letter and our technical memorandums. Please keep us informed of the status of this application. For any questions regarding the information contained in this letter, please feel free to contact me.

Respectfully,

Jamie Batchelor, MCIP, RPP
Planner, Planning and Watershed Science
Rideau Valley Conservation Authority
613-692-3571 ext. 1191
Jamie.batchelor@rvca.ca

Cc: Kyle Kazda: Taggart Construction
Matthew Hayley: City of Ottawa
Terry Davidson: RVCA
Eric Lalande: RVCA

Appendix F Butternut Health Expert Report

Ministry of the Environment,
Conservation and Parks

Butternut Health Expert's Report Template – Version 2022

Instructions to Butternut Health Experts (BHEs):

Please enter the 6-character BHE Report number: HAL546

BHE Report numbering format:
BHE Report numbers are to be assigned by the BHE using the first 3 letters of BHE's last name, followed by BHE's own 3-digit report numbering system. If the BHE's last name has fewer than 3 letters, use the full last name and numbers for the remaining characters.

  Disponible en français

BHE Report Number: HAL546

Cover letter to client:
Insert your cover letter to your client here and include the below list of enclosures.

Enclosures:

1. Information from the Ministry of the Environment, Conservation and Parks about Butternut and the *Endangered Species Act, 2007*
2. Butternut Health Expert's Report, including the completed Butternut Data Collection Form

Ministry of the Environment, Conservation and Parks

Species at Risk Branch
40 St. Clair Avenue West
14th Floor
Toronto ON M4V 1M2

Ministère de l'Environnement, de la Protection de la nature et des Parcs

Direction des espèces en péril
40, avenue St. Clair Ouest
14e étage
Toronto ON M4V 1M2

Information for the Property Owner (or person(s) who requested the enclosed Butternut Health Expert's Report):

The enclosed Butternut Health Expert's Report (BHE Report) documents the results of the Butternut health assessment that was conducted by the Butternut Health Expert (BHE) identified in the top section of the report. If there are other Butternut trees (of any size or age) at the site that may be impacted by a proposed activity that are not identified in the enclosed BHE Report, they too must be assessed by a BHE before commencing any actions that may impact those Butternut trees or their habitat.

Butternut (*Juglans cinerea*) is listed as an endangered species in Schedule 2 of Ontario Regulation (O. Reg.) 230/08 "the Species at Risk in Ontario List". As an endangered species, the *Endangered Species Act, 2007* (ESA) prohibits adversely impacting Butternut and its habitat. A permit or agreement under the ESA is required before engaging in an activity that is otherwise prohibited under the ESA. The activity may be eligible for the Butternut conditional exemption in Part V of O. Reg. 830/21, provided the requirements of the regulation are met.

If the proposed activity is eligible for the conditional exemption in Part V of O. Reg. 830/21, the next step is to submit the BHE Report and the Butternut Data Collection Form enclosed in this package to the Ministry of the Environment, Conservation and Parks (MECP).

If the enclosed BHE Report does not identify which Butternut tree(s) are proposed to be killed, harmed or taken and the reasons for doing so (e.g., if "unknown" is indicated in Table 1) or if the information in the last two columns of Table 1 has changed since the date this BHE Report was produced, **do not edit the BHE Report to update this information**. Instead, the report must be submitted together with a cover letter that identifies which Butternut tree(s) are proposed to be killed, harmed or taken (by referencing the tree identification numbers) when you submit the BHE Report to MECP.

The BHE Report must be submitted to MECP at least 30 days before registering an activity in respect of the Butternut conditional exemption. MECP may need to examine the Butternut trees subject to the report during this 30-day period. **Adversely impacting Butternut trees during this 30-day period or before registration is completed is prohibited by the ESA.** Further, the conditional exemption for Butternut does not apply unless the requirements of Part V of O. Reg. 830/21 are being followed.

If the proposed activity is eligible for the Butternut conditional exemption, you may register the proposed activity using the "**Notice of Butternut Impact**" form after the 30-day period has elapsed.

If the proposed activity is not eligible for a regulatory exemption, please contact MECP to determine whether the proposed activity would require a permit or agreement under the ESA in order to proceed.

Please retain this information and a copy of the BHE Report for your records, along with any other documentation you may receive from MECP should an examination of the trees occur.

This information should not be relied upon to determine legal obligations. To determine your legal obligations, consult the *Endangered Species Act, 2007* and the relevant regulations made thereunder. These may be found at www.ontario.ca/laws. If legal advice is required, consult a legal professional. In the event of an error on this template or a conflict between this template and any applicable law, the law prevails.

If you have any questions, please contact MECP at SAROntario@ontario.ca.

Butternut Health Expert's Report (BHE Report)

BHE Report Number: HAL546

Butternut Health Expert Contact Information

Name of Butternut Health Expert

Last Name	First Name
HALLETT	ROBERT

Mailing Address

Unit Number	Street Number	Street Name	PO Box
16	2285	ST. LAURENT BOULEVARD	

City/Town	Province	Postal Code
OTTAWA	ON	K1G 4Z6

Telephone Number	Email Address
613-260-5555	rhallett@kilgourassociates.com

Summary of qualifications as a Butternut Health Expert

a) expertise in relation to butternut

b) expertise, education, training and experience necessary to assess the health of butternut trees

Property Owner Contact Information

Name of Property Owner (or representative)

Last Name	First Name
Kazda; cc: Taggart Realty Management	Kyle

Mailing Address

Unit Number	Street Number	Street Name	PO Box
	225	Metcalfe Street	

Lot Number	Concession	Township	Rural Route

City/Town	Province	Postal Code
Ottawa	Ontario	K2P 1P9

Telephone Number	Email Address
	kyle.kazda@taggart.ca

Site Location

Unit Number	Street Number	Street Name	PO Box
	3930	Riverside Drive	

Lot Number	Concession	Township	Rural Route
5	2	Gloucester	

City/Town	Province	Postal Code
Ottawa	Ontario	K1V 0W7

Additional Site Location Information

Property includes both 3930 and 3960 Riverside Drive, Ottawa, ON, K1V 0W7.

Date(s) of Butternut health assessment

Start Date (yyyy/mm/dd) 2023/05/31

End Date (yyyy/mm/dd) 2023/05/31

Date BHE Report prepared (yyyy/mm/dd) 2023/07/12

Map datum used: ☑ NAD83 ☐ WGS84

Total number of trees assessed in this BHE Report 1

The assessed trees were numbered on site using White flagging tape

The numbers at the site correspond to the tree identification numbers referenced in this report.

This BHE Report includes the following tables:

- Table 1: Butternut trees assessed by the BHE
- Table 2: Trees determined by the BHE to be Butternut hybrids
- Table 3: Summary of Butternut health assessment results

Table 1: Butternut trees assessed by the BHE

Tree ID #	UTM coordinates	Accuracy (+/-)	Category[1] (1, 2 or 3)	Tree stem diameter[2] (cm)	Is tree stem shorter than 1.37 m? (Yes/No)	Cultivated? (Yes/No)	Proposed to be: (killed, harmed, taken, or unknown[3])	If tree is proposed to be killed, harmed or taken, indicate reason tree is to be killed, harmed or taken, if known
001	18N 445485 5020721	5m	1	62	No	No	harmed	Located in close proximity to a proposed residential development
002	18N 445471 5020651	5m	1	22	No	No	harmed	Located in close proximity to a proposed residential development
		m						

[1] Details regarding the extent to which the tree is affected by Butternut Canker is presented in the Butternut Data Collection Form that accompanies this BHE Report.

[2] Diameter of the tree stem rounded to nearest cm, measured in accordance with the Butternut Assessment Guidelines: Assessment of Butternut Tree Health for the Purposes of the *Endangered Species Act, 2007*

[3] In this column, "unknown" indicates that at the time of assessment and reporting, there are no proposals to kill, harm or take this tree that are known to the BHE.

Table 2: Trees determined by the BHE to be Butternut hybrids

Tree ID #	UTM coordinates	Method used (genetic testing or field identification)	Additional Comments on Method Used

Tree ID #	UTM coordinates	Method used (genetic testing or field identification)	Additional Comments on Method Used

Table 3: Summary of Butternut health assessment results

Result	Total number of trees in this category	Information for persons planning activities that may impact Butternut
Category 1	2	• Category 1 Butternut tree — the Butternut tree is affected by Butternut Canker to such an advanced degree that retaining the tree would not support the protection or recovery of Butternut trees in the area in which the tree is located.
		• If the proposed activity will kill, harm or take one or more Butternut trees of any category (including Category 1), the BHE Report must be submitted to MECP at SARontario@ontario.ca.
Category 2		• Category 2 Butternut tree — the Butternut tree is not affected by Butternut Canker or the Butternut tree is affected by Butternut Canker but the degree to which it is affected is not as advanced as a Category 1 Butternut tree and retaining the tree could support the protection or recovery of Butternut trees in the area in which the tree is located.
		• Activities that may kill, harm or take up to a **maximum of fifteen (15)** Category 2 trees may be eligible for the conditional exemption in Part V of Ontario Regulation 830/21. Refer to the regulation for eligibility conditions and requirements that must be fulfilled.
		• If the proposed activity will kill, harm or take more than fifteen (15) Category 2 trees, **contact MECP** for information on how to seek an ESA authorization (e.g., a permit).
Category 3		• Category 3 Butternut tree — the Butternut tree may be useful in determining sources of resistance to Butternut Canker.
		• Activities that may kill, harm or take up to a **maximum of five (5)** Category 3 trees may be eligible for the conditional exemption in Part V of Ontario Regulation 830/21. Refer to the regulation for eligibility conditions and requirements that must be fulfilled.
		• If the proposed activity will kill, harm or take more than five (5) Category 3 trees, contact MECP for information on how to seek an ESA authorization (e.g., a permit).

Result	Total number of trees in this category	Information for persons planning activities that may impact Butternut
Cultivated		• An activity that will kill, harm or take a cultivated Butternut tree that was required to be planted to fulfil a condition of an ESA permit or agreement, or a conditional exemption, is **not** eligible for the exemption for cultivated trees that is provided by subsection 25 (5) of O. Reg. 830/21. Refer to the regulation for eligibility conditions.
Hybrid		• Hybrid Butternut trees are not protected under the ESA but impacts to these trees may be subject to local municipal by-laws and other legislation.

Additional Information on Cultivated Tree Determination

Please note:

- A BHE Report that is submitted to MECP must include the completed Butternut Data Collection Form. As appropriate, please also ensure additional relevant documentation to support the assessment (e.g., completed Data Sheets for Field Identification of Butternut Hybrids, evidence that the Butternut was cultivated) and all relevant maps and photographs are provided.
- During the 30-day period that follows the submission of this BHE Report to MECP, no Butternut trees (of any category) may be killed, harmed or taken. MECP may need to examine the Butternut trees subject to the report during this 30-day period.

Butternut Health Expert's Comments
Note to BHEs: use this space to provide general comments.

Appendix G Summary of SWH Presence

Significant Wildlife Habitat	Presence on the Site	Presence within 120 m of the Site	Residual Impact
Waterfowl Stopover and Staging Areas (Terrestrial)	X	X	-
Waterfowl Stopover and Staging Areas (Aquatic)	X	**P**	-
Shorebird Migratory Stopover Area	X	X	-
Raptor Wintering Area	X	X	-
Bat Hibernacula	X	X	-
Bat Maternity Colonies	**P**	**P**	Limited numbers of bats present. Limited forest removal. No residual impacts
Turtle Wintering Areas	X	**P**	-
Reptile Hibernaculum	X	X	-
Colonially - Nesting Bird Breeding Habitat (Bank and Cliff)	X	X	-
Colonially - Nesting Bird Breeding Habitat (Tree/Shrubs)	X	X	-
Colonially - Nesting Bird Breeding Habitat (Ground)	X	X	-
Migratory Butterfly Stopover Areas	X	X	-
Landbird Migratory Stopover Areas	X	X	-
Deer Yarding Areas	X	X	-
Deer Winter Congregation Areas	X	X	-
Cliffs and Talus Slopes	X	X	-
Sand Barren	X	X	-
Alvar	X	X	-
Old Growth Forest	X	X	-
Savannah	X	X	-
Tallgrass Prairie	X	X	-
Other Rare Vegetation Communities	X	X	-
Waterfowl Nesting Area	X	X	-
Bald Eagle and Osprey Nesting, Foraging, and Perching Habitat	**P**	**P**	No bald eagle or osprey nests were observed on the Site and no individuals were detected during surveys.No raptors on Site. If Bald Eagle and/or Osprey did nest there, nests they would likely be located close to the Rideau River, and therefore would be undisturbed.

Significant Wildlife Habitat	Presence on the Site	Presence within 120 m of the Site	Residual Impact
Woodland Raptor Nesting Habitat	X	X	-
Turtle Nesting Areas	**P**	**P**	None, with site fenced
Seeps and Springs	X	X	-
Amphibian Breeding Habitat (Woodland)	X	X	-
Amphibian Breeding Habitat (Wetlands)	X	X	-
Woodland Area-Sensitive Bird Breeding Habitat	X	X	-
Marsh Breeding Bird Habitat	X	X	-
Open Country Bird Breeding Habitat	X	X	-
Shrub/Early Successional Bird Breeding Habitat	X	X	-
Terrestrial Crayfish	X	X	-
Special Concern and Rare Wildlife Species	**P**	**P**	No individuals were present. Regardless, suitable habitat also exists elsewhere within the vicinity of the Site.
Amphibian Movement Corridors	X	X	-
Deer Movement Corridors	X	X	-

X = Suitable SAR habitat is not present.
P = Suitable habitat is potentially present.
C = Suitable SAR habitat is present (confirmed).

Appendix H Urban Natural Area #147, Riverwood Park Woods

UNA 147: Riverwood Park Woods

DESCRIPTION:

- extensive woodland along sloping river bank by Rideau River, Hunt Club Woods, Ottawa.

SITE DETAILS

a) **Size**:
10.4 ha.

b) **Ownership**:
- City

EVALUATION SUMMARY

Area Evaluation Summary Urban Natural Area 147: Riverwood Park Woods					
Criteria	**Rating Assigned**				
	1	**2**	**3**	**4**	**5**
Connectivity				X	
Regeneration		X			
Disturbance	X				
Size and Shape				X	
Habitat Maturity			X		
Natural Communities		X			
Representative Flora				X	
Significant Flora and Fauna	X				
Wildlife Habitat			X		
Overall Rating for Site	**Moderate**				

ECOLOGICAL FUNCTIONS :

a) **Connectivity:**
- on Rideau River.

b) **Interior habitat:**
None

c) **Disturbance and condition:**
- Moderate to High native flora Co-efficient of Conservation rating (4.17), with fifteen (15) high-rated Coefficient of Conservation species;
- all of site within edge effect influence;
- forest cover fragmented by canopy cutting throughout;
- formal pathway crosses site at mid section (to stormwater ponds).

d) **Adjacent land use:**
- residential area development adjacent to natural area on east; stormwater management ponds constructed along western edge.

e) **Invasive plants:**
- Eight (8) species with severe impact:

Glossy Buckthorn (*Rhamnus frangula*) (5)
Manitoba Maple (*Acer negundo*) (3)
Tartarian Honeysuckle (*Lonicera tatarica*) (2)
European Highbush-cranberry (*Viburnum opulus* (*s. str.*)) (1)
Purple Loosestrife (*Lythrum salicaria*) (2) - along river edge
Lily-of-the-Valley (*Convallaria majalis*) (1)
Dame's Rocket (*Hesperis matronalis*) (1)
Moneywort (*Lysimachia nummularia*) (1)

NATIVE BIODIVERSITY:

a) Habitats (type and dominants):
- young Upland Mixed Forest (White Cedar, Green Ash, Sugar Maple, White Elm, with Trembling Aspen, White Birch) in moist, sandy substrate of upper slopes;
- submature Mixed Swamp Forest (White Cedar, Black Ash, Yellow Birch) over dense buckthorn infestation in thin organic substrate.

b) Representative flora/ fauna:
- Moderate native biodiversity (132 native plant species observed);
- see ***Appendix*** for list of native flora and fauna observed.

c) Significant features and species:
- Two Regionally Uncommon plant species in woodland habitat; [Regionally Rare *Carex urticulata* reported without comment in NOSS 2801 and unsubstantiated by vouchers; not included in present evaluation];
- component of Rideau River wildlife corridor;
- provides local stormwater control and enhanced Rideau River water quality.

ECOLOGICAL COMMENTS:

a) Management:
- maintenance of natural forest canopy required to suppress invasive plant development and maintain surface water quality contribution;
- vegetated buffer between adjacent development and woodland areas required to minimize edge effect.

b) Recommendations:

Research:
- n/a

Passive recreation opportunities:
- potential for gravel footpath along rivershore from public access off Kimberwick Street with development of interpretation themes, including wildlife corridor functions, woodland contribution to river water quality.

SITE INVESTIGATION DETAILS:

Date(s) and conditions: 18 November 2003 (clear and cold; tree leaves fallen); examined for Condition Only with other data from references cited.

Investigator(s): Daniel F. Brunton

OTHER COMMENTS: (field conditions, photographs taken, etc.)

- severely disturbed, scrubby riparian woodland offering limited intrinsic natural environment values but providing potentially ecological function contributions to Rideau River.

REFERENCES:

Brunton, D. F. 1995. *Natural environment assessment: Hunt Club Creek Watershed*. [Unpublished report for R. V. Anderson Associates Ltd.], Daniel Brunton Consulting Services, Ottawa.

Environmental Management Branch. 1998. [NOSS 2801] *Natural and Open Space overview report*, Department of Urban Planning and Public Works, City of Ottawa, Ottawa.

UNA Site 147 *Appendix:* Native biodiversity

a) Vascular flora observed:

(data from NOSS 2801, Environmental Management Branch (1998); on-site reconnaissance, 18 November 2003;)

Species	Sites/ status in Ottawa	Co-efficient of Conservation
Abies balsamea (L.) Mill.	Common	5
Acer pensylvanicum L.	Common (local)	7
Acer rubrum L.	Common	4
Acer saccharinum L.	Common	5
Acer saccharum Marsh.	Common	4
Acer spicatum Lam.	Common (local)	6
Achillea millefolium L.	Common	0
Acorus americanus Raf.	Uncommon	8
Actaea rubra (Ait.) Willd.	Common	5
Ageratina altissima (L.) King & Robins. (*Eupatorium rugosum* Houtt.)	Common	5
Alisma triviale Pursh	Common	3
Alnus incana (L.) Moench ssp. *rugosa* (Duroi) Clausen (*A. rugosa* (Du Roi) Spreng.)	Common	6
Anemone canadensis L.	Common	3
Apios americana Medic.	Uncommon [14]	6
Aralia nudicaulis L.	Common	4
Aralia racemosa L.	Uncommon	7
Arisaema triphyllum (L.) Schott	Common	5
Asclepias syriaca L.	Common	0
Aster lanceolatus Willd. (*s.str.*) (*A. simplex* Willd.; *Symphyotrichum lanceolatum* (Willd.) Nesom.)	Common	3
Aster lateriflorus (L.) Britt. (*Symphyotrichum lateriflorum* (L.) A. & D. Love)	Common	3
Aster novae-angliae L.. (*Virgulus novae-angliae* (L.) Rev. & Keen)	Common	2
Aster puniceus L.	Common	6
Athyrium filix-femina (L.) Roth var. *angustum* (Willd.) Lawson	Common	4
Betula alleghaniensis Britt.	Common	6
Betula papyrifera Marsh.	Common	2
Betula populifolia Marsh.	Common (local)	5

Bidens cernuus L.	Common	2
Bidens frondosus L.	Common	3
Carex blanda Dew.	Common	3
Carex communis Bailey	Common	6
Carex deweyana Schw.	Common	6
Carex hystericina Willd.	Common	4
Carex scabrata Schw.	Uncommon	8
Carex stipata Willd.	Common	3
Caulophyllum giganteum (Farw.) Loc. & Black. (*C. thalictroides var. giganteum* Farw.)	Common	6
Chelone glabra L.	Uncommon	7
Circaea lutetiana L. ssp. *canadensis* (L.) Asch. & Magnus	Common	3
Clematis virginiana L.	Common	5
Clintonia borealis (Ait.) Raf.	Common	7
Conyza canadensis (L.) Cronq.	Common	0
Cornus alternifolia L.f.	Common	6
Cornus rugosa Lam.	Common	6
Cornus sericea L. (*C. stolonifera* Michx.)	Common	2
Corylus cornuta Marsh.	Common	5
Cystopteris bulbifera (L.) Bernh.	Common	5
Doellingeria umbellata (Mill) Nees (= *Aster umbellatus* Mill.)	Common	6
Dryopteris carthusiana (Vill.) Fuchs (*D. spinulosa* (Muell.) Watt)	Common	5
Dryopteris cristata (L.) A. Gray	Uncommon	7
Dryopteris intermedia (Muhl.) A. Gray	Common	5
Elymus virginicus L.	Common	5
Epilobium ciliatum Raf. (*s.str.*) (*E. adenocaulon* Haussk.; *E. glandulosum*, auct.)	Common	3
Equisetum arvense L.	Common	0
Equisetum scirpoides Michx.	Common	7
Erigeron annuus (L.) Pers.	Common	0
Eupatorium maculatum L.	Common	3
Euthamia graminifolia (L.) Nutt. (*Solidago graminifolia* (L.) Salisb.)	Common	2
Fagus grandifolia Ehrh.	Common	6

Fragaria virginiana Duchesne	Common	2
Fraxinus nigra Marsh.	Common	7
Fraxinus pennsylvanica Marsh.	Common	3
Galium tinctorium L.	Uncommon [11]	5
Galium trifidum L.	Uncommon	5
Glyceria grandis S. Wats.	Common	5
Glyceria striata (Lam.) A. Hitchc.	Common	3
Gymnocarpium dryopteris (L.) Newm.	Common	7
Impatiens capensis Meerb.	Common	4
Juncus effusus L. (*s.str.*)	Common	4
Leersia oryzoides (L.) Sw.	Common	3
Lemna minor L.	Common	2
Lilium philadephicum L.	Uncommon	8
Lonicera canadensis Bart. ex Marsh.	Common	6
Ludwigia palustris (L.) Ell.	Common	5
Lysimachia ciliata L.	Common	4
Maianthemum racemosum (L.) Link (*Smilacina racemosa* (L.) Desf.)	Common	4
Matteuccia struthiopteris (L.) Todaro	Common	5
Mitella diphylla L.	Common	5
Muhlenbergia mexicana (L.) Trin.	Common	1
Oenothera biennis L.	Common ? [taxonomic problem]	0
Onoclea sensibilis L.	Common	4
Osmunda cinnamomea L.	Common	7
Osmunda regalis L.	Common	7
Oxalis stricta L. (*O. europea* Jord.; *O. fontana* Bunge)	Common	0
Parthenocissus vitacea (Knerr) Hitchc.	Common	3
Phegopteris connectilis (Michx.) Watt	Common (local)	8
Phryma leptostachya L.	Uncommon	6
Physalis heterophylla Nees	Common	3
Picea glauca (Moench) Voss	Common	6
Pinus strobus L.	Common	4
Poa palustris L.	Common	5

Polygonatum pubescens (Willd.) Pursh	Common	5
Populus balsamifera L.	Common	4
Populus deltoides Marsh.	Common	4
Populus tremuloides Michx.	Common	2
Prunus pensylvanica L.f.	Common	3
Prunus serotina Ehrh.	Common	3
Pteridium aquilinum (L.) Kuhn var. *latiusculum* (Desv.) Underw.	Common	2
Pyrola elliptica Nutt.	Common	5
Quercus macrocarpa Michx.	Common	5
Quercus rubra L.	Common	6
Ranunculus abortivus L.	Common	2
Ranunculus pensylvanicus L.f.	Uncommon	3
Rhus hirta (L.) Sudworth (*R. typhina* L.)	Common	1
Ribes americanum Mill.	Common	4
Ribes hirtellum Michx.	Uncommon	6
Rubus allegheniensis Porter	Common	2
Rubus odoratus L.	Common	3
Rubus pubescens Raf.	Common	4
Rubus strigosus Michx. (*R. idaeus* L. var. *strigosus* (Michx.) Max.)	Common	0
Sagittaria latifolia Willd.	Common	4
Salix bebbiana Sarg.	Common	4
Salix discolor L.	Common	3
Salix nigra Marsh.	Uncommon	6
Salix petiolaris Sm.	Common	3
Sambucus racemosa L. ssp. *pubens* (Michx.) House (*S. pubens* Michx.)	Common	5
Solidago canadensis L.	Common	1
Solidago rugosa Mill.	Common	4
Taxus canadensis Marsh.	Common	7
Thelypteris palustris (Salisb.) Schott	Common	5
Thuja occidentalis L.	Common	4
Tiarella cordifolia L.	Common	6

Tilia americana L.	Common	4
Toxicodendron rydbergii (Rydb.) Greene (*Rhus radicans* L. var. *rydbergii* (Sm.) McNeill)	Common	0
Trientalis borealis Raf.	Common	6
Trillium erectum L.	Common	6
Tsuga canadensis L.	Common	7
Typha latifolia L.	Common	3
Ulmus americana L.	Common	3
Urtica dioica L. ssp. *gracilis* (Ait.) Selander	Common	2
Viola pubescens Ait. (incl. *V. eriocarpa* Schwein.)	Common	5
Viola sororia Willd. (*s.str.*) (= *V. septentionalis*, auct.)	Common	4
Vitis riparia Michx.	Common	0
Waldsteinia fragarioides (Michx.) Tratt.	Common	5
	CC Aggregate:	552

Total Species	Regionally Significant (incl. Regionally uncommon)	High CC (>6)	Co-efficient of Conservation (average)	EI rating
132	2	15	4.17	High

b) Fauna observed:

n/a