Environmental Impact Statement
6150 Thunder Road, Ottawa

Report

December 16, 2020

Submitted To:

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List of Acronyms and Abbreviations

°C – degrees Celsius
AOO – Algonquins of Ontario
cm – centimetres
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 Statement
ELC – Ecological Land Classification
ESA – *Endangered Species Act*
ESC – Erosion and Sediment Control
FWCA – *Fish and Wildlife Conservation Act*
i.e. – *id est*

GIS – Geographic Information System
ha – hectare
KAL – Kilgour & Associates Ltd.
km – kilometre
LIO – Land Information Ontario
m – metre
MBCA – *Migratory Birds Convention Act*
MECP – Ministry of Environment, Conservation and Parks
MNR – Ministry of Natural Resources
MNRF – Ministry of Natural Resources and Forestry
NHIC – Natural Heritage Information Centre
OBBA – Ontario Breeding Bird Atlas
OP – Official Plan
PPS – Provincial Policy Statement
PSW – Provincially Significant Wetland
SNCA – South Nation Conservation Authority
SAR – Species at risk
SARA – *Species at Risk Act*
SARO – Species at Risk in Ontario
SWH – Significant Wildlife Habitat

1.0 INTRODUCTION

This Environmental Impact Statement (EIS) was prepared by Kilgour & Associates Ltd. (KAL; Appendix A) on behalf of Avenue 31 Inc. in support of their proposed re-zoning application and official plan amendment to rezone the lands from Rural Countryside (RU) to Rural General Industrial (RG) at 6150 Thunder Road in the east end of Ottawa (herein "the Site", Figure 1). The Site (Gloucester Concession 9 of Part North Lot 1, RP 5R12400 Part 1, Pin: 043240354) is approximately 16.7 hectares (ha) in area. The Official Plan Amendment seeks to add the Employment Land Use overlay to clarify the permissions for warehouse / employment use in the general rural area.

In the City of Ottawa (hereafter referred to as "the City"), an EIS is required when development or site alteration is proposed in or adjacent to natural heritage features (City of Ottawa, 2015a). The purposes of this EIS are to 1) identify natural heritage features on or adjacent to the Site, 2) identify potential impacts of the proposed development to those features, and 3) identify mitigation measures to minimize or eliminate those impacts. The Site is adjacent to and includes areas identified by the City as being potentially part of the Natural Heritage System per Schedule L of the City's Official Plan (OP; City of Ottawa, 2020b; Figure 1). This EIS will examine potential impacts to the Natural Heritage System and to species at risk (SAR) that may potentially occur on or adjacent to the Site.

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* (1990). The current PPS came into effect on May 1, 2020. Natural features are afforded protections under Section 2.1 of the PPS. 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. woodlands, wetlands, wildlife 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 *Manual for Natural Heritage Policies of the Provincial Policy Statement* (Ministry of Natural Resources (MNR), 2010). This manual recommends the approach and technical criteria for protecting natural heritage features and areas in Ontario.

2.2 City of Ottawa Official Plan

The City of Ottawa OP (2020b) provides direction for future growth in the City of Ottawa and is a policy framework to guide physical development to 2031. The OP was first approved in 2003 and is updated every five years.

2.3 *Species at Risk Act*, 2002

The federal *Species at Risk Act*, 2002 (SARA) 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

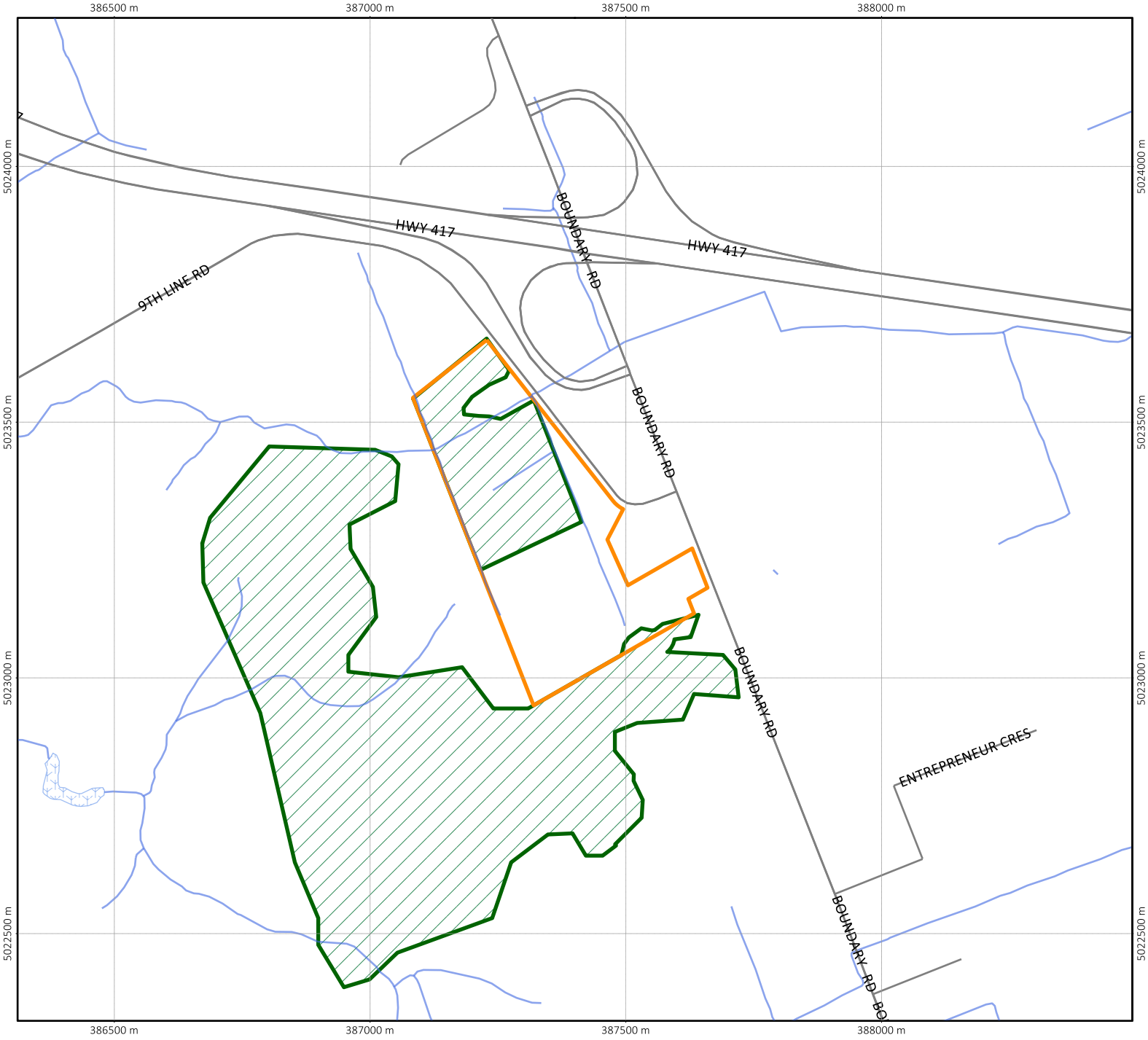

Figure 1 Site context

Legend

- Property Boundary

Surface Water Features

- Wetland
- Channel

- Schedule L

N

0 250 m

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MTM Zone 9
(NAD 83)
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of the SARA is to prevent populations of wildlife from becoming Extirpated, Endangered, or Threatened, provide recovery strategies for Endangered and 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*, 1994 (MCBA) and listed as Endangered, Threatened, or Extirpated under Schedule 1 of SARA are protected wherever they occur in Canada, regardless of land ownership.

2.4 *Endangered Species Act*, 2007

The provincial *Endangered Species Act*, 2007 (ESA) is administered by the Ministry of Environment, Conservation, and Parks (MECP) and provides protection for SAR and their habitat. The Act prohibits killing, harming, harassing, possessing, transporting, buying, or selling Extirpated, Endangered, and Threatened species. 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,* 1985 is administered by Fisheries and Oceans Canada (DFO) and provides protections to fish, fish habitat, and fisheries. Specifically, the *Fisheries Act* provides:

- Protection for all fish and fish habitat;
- Prohibition against the "harmful alteration, disruption or destruction of fish habitat"; and
- Prohibition against causing "the death of fish by means other than fishing".

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

2.6 *Migratory Birds Convention Act*, 1994

The MBCA is legislation administered by the ECCC that provides protection for migratory birds listed in the Act. The disturbance, destruction, take and killing of migratory birds, their eggs, and their nests are prohibited in the Act. The “incidental take” and work 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) are prohibited.

2.7 *Fish and Wildlife Conservation Act,* 1997

The provincial *Fish and Wildlife Conservation Act*, 1997 (FWCA) 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.

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*, 1990. The Act provides mechanisms to regulate works and site alterations that have a potential to affect erosion, flooding, land conservation, and 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*.

3.0 METHODS

3.1 Desktop and Background Data Review

3.1.1 Agency Consultation

The Site is located within the jurisdictions of the Ottawa District of the MECP and South Nation Conservation (SNC). A request for confirmation of SAR potential related to the Site was submitted to the MECP on November 11, 2020 (Appendix B). A response was not yet received at the time of writing this report.

No request for information was submitted to Fisheries and Oceans Canada (DFO) for this specific project as the proposed project will be setback from and will be planned and implemented to prevent impacts to fish-bearing waters located on the Site. A pre-consultation meeting regarding development options for the Site was held with the City of Ottawa and SNC on January 29, 2020.

3.1.2 Records Review

The descriptions of the existing natural environment on and adjacent to the Site are based on field investigations and desktop reviews of previously completed studies and information available on publicly accessible databases, including:

- City of Ottawa Urban Natural Areas Environmental Evaluation Study (Muncaster Environmental Planning Inc. and Brunton Consulting Services, 2005).

Online databases queried for SAR, provincially rare species, and natural heritage features included the following:

- Ontario MNRF:
    - Natural Heritage Information Centre (NHIC; MNRF, 2020a)
    - Land Information Ontario (LIO) Provincially Tracked Species Grid Detail (MNRF, 2020b)
    - Species at Risk in Ontario (SARO) List (MNRF, 2020c)
- SARA, Schedule 1 (Government of Canada, 2020)

- Ontario Breeding Bird Atlas (OBBA; Bird Studies Canada *et al*., 2006)
- Ontario Reptile and Amphibian Atlas (Ontario Nature, 2019)
- Atlas of the Mammals of Ontario (AMO; Dobbyn, 1994)
- South Nation Conservation Mapping Geoportal (SNC, 2020)
- City of Ottawa:
    - Official Plan Schedules (City of Ottawa, 2020b)
    - geoOttawa mapping database (City of Ottawa, 2020a)

3.2 Field Surveys

3.2.1 Vegetation

KAL Biologist, Terry Hams, completed an initial tree inventory and an ecological land classification (ELC) of the Site on June 20, 2018. Vegetation cover on the Site was described following standard ELC methods, including the collection of soil samples (Lee *et al*., 1998).

As the south half of the Site was cleared and partially regraded in 2019, the ELC for the Site and the tree information for the remaining stands were updated by Ed Malindzak (October 15, 2020) and Anthony Francis (on October 18, 2020). The updated tree survey identified the size and species distributions of trees within forested areas of the Site.

3.2.2 Wildlife

Anurans

Site amphibian (anuran) surveys were conducted and lead by KAL biologists, Rob Hallett and Liza Hamilton, following protocols set forth by the Marsh Monitoring Program (Bird Studies Canada *et al.*, 2008). Three surveys are completed to identify early, mid, and, late-season breeding amphibian species generally in April, May, and June, respectfully, though survey dates are temperature dependent. Surveys are completed on nights of calm weather with temperatures above 5 degrees Celsius (°C), 10°C, and 17°C for each of the three respective survey periods. Surveys begin a half-hour after sunset and are finished by midnight with a five-minute recording period at each survey station. Amphibian species are recorded at each point along with the estimated distance from observers, calling code, an estimate of the number of individuals, and estimated directions of calling anurans.

Amphibian surveys were performed on April 23, May 30, and June 21, 2018 (Table 2). Three stations were surveyed in wetland and aquatic habitats (F1 through F3; Figure 2). Station F3 was located at the north end of the Site with the observers facing south. Stations F1 and F2 were the same point located near the southwestern corner of the Site, but with one observer facing south (F1) and one facing north (F2).

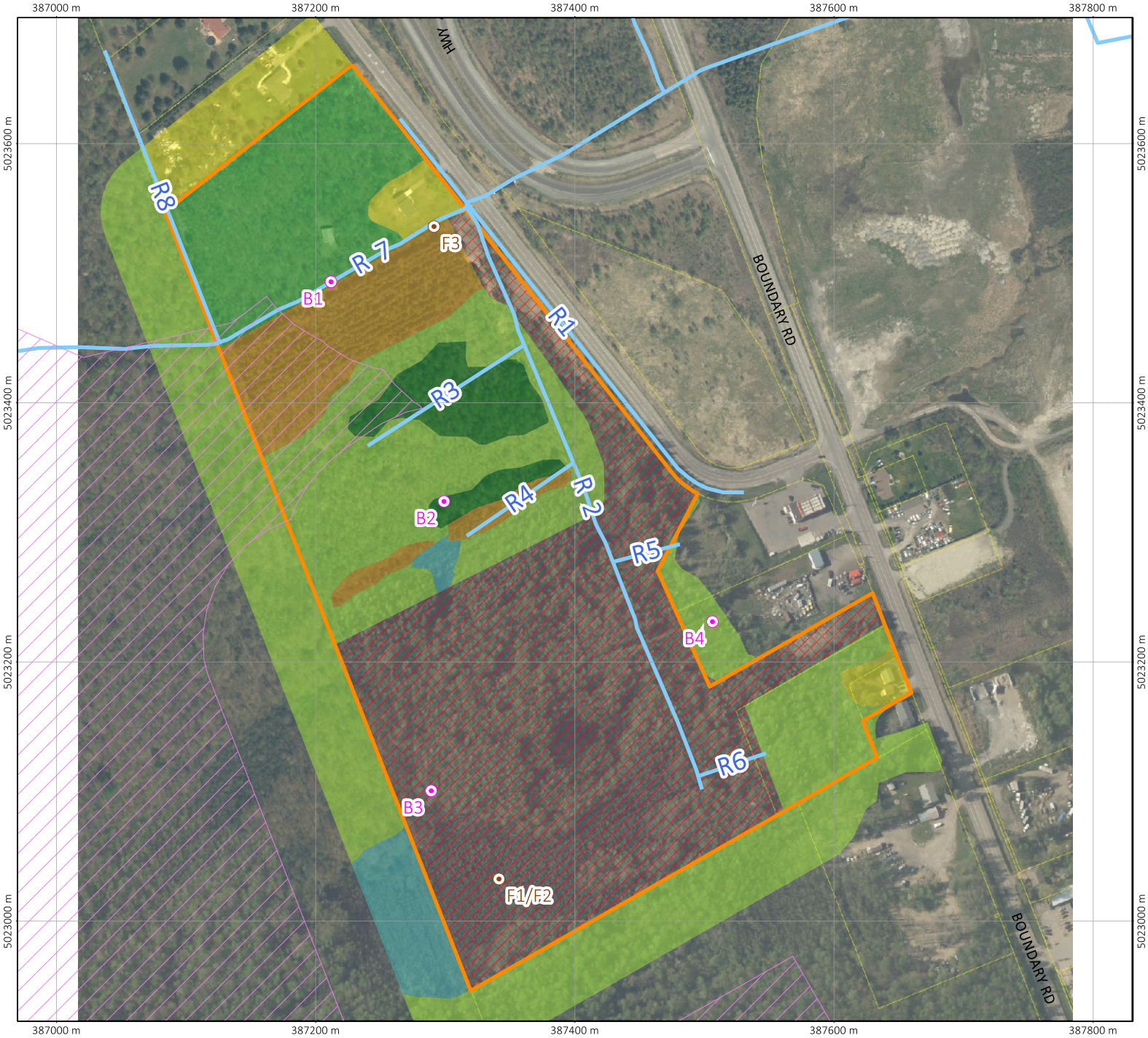

Figure 2 Existing Site conditions

Legend

Property Boundary

Wildlife Surveys

Bird Station

Frog Station

ELC

Residential

FOD7

FOD8-2

FOMM10-2

TAGM1

SWT2

Cleared

Interior Forest

Surface Water Features

N

0 100 m

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Table 1 Summary of frog survey times and weather conditions

Survey Date	Temperature (°C)	Weather conditions	Wind speed (km/hour)
23-Apr-18	10*	Clear	4
30-May-18	21*	Mostly Cloudy	11-14
21-Jun-18	17**	Clear	7 - 10

* Temperatures on these nights were warmer than the preceding nights, with evening temperatures just above 5°C and 10°C, respectively, within a few days of the surveys. Frogs for the period would still be expected to be calling regardless.
** Temperatures on this night just reached the minimum required temperature but had been were warmer the preceding nights, with evening temperatures above 17°C. Frogs for the period would still be expected to be calling regardless.

Birds

Two rounds of breeding bird surveys were completed on the Site in 2018 by Terry Hams. All surveys followed point count guidelines by the Ontario Breeding Bird Atlas (Bird Studies Canada *et al*., 2001). According to these guidelines, breeding bird surveys are to be completed from survey stations that, combined, provide suitable viewing of all habitats on-site on calm weather days with light wind (less than 19 km/hr) and no precipitation. Surveys must take place between sunrise and five hours after sunrise between May 24 and July 10. Surveys were conducted from four survey stations (B1 through B4; Figure 2). The point counts were conducted for at least five minutes at each station on each survey date (Table 2).

Table 2 Summary of breeding bird survey times and weather conditions

Survey Date	Start Time	Temperature (°C)	Precipitation (mm)	% Cloud Cover	Wind speed (km/hour)
20-Jun-2018	06:59	12	0	30	0
05-Jul-2018	06:00	22	0	0	0

3.2.3 Aquatic Habitat

Headwater channels on the Site were investigated three times in 2018 following *Evaluation, Classification and Management of Headwater Drainage Features Guidelines* (Toronto and Region Conservation Authority and Credit Valley Conservation, 2014) to document their hydrological and riparian and terrestrial habitat. On April 12, 2018 (i.e. during the spring freshet), KAL biologists Liza Hamilton and Tyler Peat identified and described seven channelized features on the Site (reaches R1 through R8; Figure 2), noting the channel dimensions, substrate, form, and riparian vegetation. On June 1, 2018, KAL biologists Rob Hallett and Tyler Peat conducted an electrofishing survey of R1, R3, R4, and a portion of R2 north of R4. These channels were deemed at the time to be sufficiently wet to potentially support fish, whereas R2, R5, and R6 were dry at the time of electrofishing surveys and therefore not able to support fish. R7, a permanent stream, was not fished as the project does not propose to alter or build within 30 m of that feature. As a permanently flowing channel connected to larger creeks downstream, R7 is considered to directly support fish regardless. R8 is channel located along the western property line north of R7. As no development is currently planned for this section of the Site, no studies were conducted on this reach.

3.3 Species at Risk

Per the *Client's Guide to Preliminary Screening for Species at Risk* (MECP, 2019), publicly available records of SAR observations in the vicinity of the Site were collected based on data sources identified within

Section 3.1.2. A request for a SAR screening for the Site was filed with the MECP on November 11, 2020 (Appendix B), to confirm the completeness of our SAR records search for the area. The MECP had not responded to that request by the date of this report. Regardless, the full list of 71 SAR currently known to occur within the region of the City of Ottawa was reviewed to identify the potential for SAR presence on and adjacent to the Site (Appendix C).

4.0 PROPERTY INFORMATION

4.1 Previous and Current Land Use/Land Cover

The entire Site was under active agriculture in 1976 according to the geoOttawa aerial imagery (City of Ottawa, 2020a). Land to the south at that time was well forested and was similarly covered in 1965, indicating that forest cover adjacent to the Site is more mature (> 50 years old) than that of the Site (less than 45 years old). By 1991, most of the central portion of the Site had been re-ploughed and planted as a conifer plantation. A large portion of the south half of the Site was subject to some sort of excavation through the 1990s (City of Ottawa, 2020a). Following the late 1990s and through the early 2000s, the excavated area showed some signs of tree re-growth and re-naturalization, with more-deeply excavated portions taking on apparent wetland characteristics (City of Ottawa, 2020a). This portion of the Site was fully cleared and partially regraded in 2019. It currently consists of bare earth. The north half of the site is currently forested (Figure 2) with a mix of coniferous plantation and young, early-successional forest.

4.2 Landforms, Soils and Geology

Soil mapping shows the entire property is underlain by medium/fine sand deposits (Marshall et al., 1979). Soils in the north half of the cleared area are from the Manotick formation and are underlain by fine-textured marine clay. Soils on the remainder of the Site (i.e. the north half and the southern most end) are part of the Uplands formation (Marshall et al., 1979). The sand layer here is deeper, with no apparent clay layer within 1.2 metres (m) of the surface based on soil cores dug for the ELC analysis. Soil mottles in the remaining forested areas were evident at depths of > 75 centimetres (cm), indicating fresh-moist but not wetland conditions.

4.3 Vegetation Cover

The northern end of the site – north of R7 – is a Fresh-Moist Poplar Deciduous Forest (FOD8-2). The ecosite is co-dominated by Balsam Poplar (*Populus balsamifera*) and Trembling Aspen (*Populus tremuloides*). These trees have a diameter at breast height (DBH) that ranges from 10 to 35 cm. Other tree species present in small numbers include Red Maple (*Acer rubrum*), European Birch (*Betula pendula*), Eastern Cottonwood (*Populus deltoids*) and Green Ash (*Fraxinus pennsylvanica*). This is the oldest contiguously wooded area on site, though it is still no more than 45 years old (City of Ottawa, 2020a).

Immediately south of R7, the Site is spanned by a Coniferous Plantation (TAGM1) composed primarily of White Spruce (*Picea glauca*), with subordinate species of Jack Pine (*Pinus banksiana*) and Red Pine (*Pinus resinosa*). These conifers, growing in a linear orientation, are generally similar in size ranging from 30-35 cm DBH. Air photos from 1991 suggest that most of the area between R7 and R4 (which corresponds approximately with the northern limit of the Site clearing conducted in 2019) were planted with this type of plantation. The bulk of the TAG1 plantation, however, is currently limited to a ~75 m band south of R7 with two other narrow bands remaining near R4. The remainder of this original plantation area has grown

over with species of trees common to the older forested areas south and west of the Site, with most of those areas now consisting of Fresh – Moist Lowland Deciduous Forest (FOD7). This ecosite consists of a mix of Red Maple and Green Ash, with subordinate species of Black Ash (*Fraxinus nigra*), American Elm (*Ulmus americana*), European Birch, Balsam Poplar, Largetooth Aspen (*Populus grandidentata*), Trembling Aspen, and Manitoba Maple (*Acer negundo*). A small number of the Red Maple, Trembling Aspen, and Balsam Poplar in the FOD7 ecosite are as large as 30 cm DBH, but most of the area is composed of smaller trees and saplings, representing a regenerating forest habitat that may be recovering from tree loss to due to occasional beaver-induced flooding. Common Buckthorn (*Rhamnus cathartica*) is also common in the understory. Within the re-naturalizing area of the FOD7 ecosite, some pockets have retained sufficient numbers of White Spruce and to make up a Fresh – Moist White Spruce – Hardwood Mixed Forest (FOMM10-2) inclusions.

In the centre of the Site, immediately adjacent to the cleared area, a small (0.7 ha) depression forms a Willow Mineral Deciduous Thicket Swamp (SWT2) ecosite, dominated by a mix of Bebb's Willow (*Salix bebbiana*) and Speckled Alder (*Alnus incana*) with some buckthorn. Ground cover here includes sedge (*Carex* sp.) and rush (*Juncus* sp.) species.

4.4 Surface Water and Fish Habitat

Seven headwater features (R1 through R7; Figure 2) occur on the Site. R1 is a roadside ditch along Thunder Road. The other channels on Site had all been located within wooded areas in 2018, but R5, R6, and the upper half of R2 are currently surrounded by a cleared area.

R7 is a permanent stream. R3, R4, and the north half of R2 all contained some water (< 15 cm) until mid-summer in 2018, but only did so because of the presence of beaver dams on R7, which had backed up water onto the Site. Beaver dams have been consistently removed from the Site and neighbouring properties since that time; those channels now dry shortly after the spring freshet.

R5, R6 and the upper half of R2 are ephemeral and were found to dry very quickly after the freshet, even when the beaver dams were present. Fish were observed in all areas below R5. Reaches above R5, being dry, did not have fish. With the beaver dams having been removed since mid 2018, only R7 will likely have sufficient water post-freshet to provide fish habitat.

The closest provincially significant wetland (PSW) is Mer Bleue, located >5 kilometres (km) to the northwest. Forested areas to the west may include some wetland habitat but have not been formally evaluated. These lands are part of a recent land-treaty settlement with, and are subject to development plans by, the Algonquins of Ontario (AOO). Those areas will not be reviewed further by parties not directly associated with AOO

4.5 Wildlife

4.5.1 Anurans

From station F3 (i.e. covering the north half of the site), the only frog heard was a single Spring Peeper (*Pseudacris crucifer*) during the second anuran survey.

Choruses (i.e. Calling Code 3) from both Spring Peepers and Wood Frogs (*Lithobates sylvaticus*) were heard on the first survey date from station F1/F2 from the wooded areas beyond the western edge of the site. Seven American Toads calling from scattered points around the southern half of the property were the only anurans observed from station F1/F2 on the second visit. No anurans were heard anywhere on the property during the third round of surveys.

Based on the presence of large numbers of two different anuran species, wooded areas southwest of the Site may be considered Significant Wildlife Habitat (SWH; MNR, 2015) for frog breeding The Site itself does not directly support large numbers of any anuran species and so does not constitute SWH. The lack of any calling frogs from the wooded areas west of the Site after the first frog visit suggests the forest there may be too dry following the spring freshet to provide suitable wetland habitat.

4.5.2 Birds

Overall, 32 bird species were observed on or adjacent to the Site during the two rounds of surveys (Table 3). All of the birds observed are common species in the Ottawa region. Song Sparrow (*Melospiza melodia*) was the most abundant species on site followed by Common Grackle (*Quiscalus quiscula*) and Cedar Waxwing (*Bombycilla cedrorum*).

None of the birds observed occurring directly on the Site are species protected under the ESA or SARA. Two observed species – Eastern Wood-pewee (*Contopus virens*) and Wood Thrush (*Hylocichla mustelina*) – are listed as Special Concern. Only a single individual of each species was noted during bird surveys, both from station B3. Both birds were noted at the edge of audible detection during both surveys and were placed as occurring over 100 m to the southwest (Eastern Wood-pewee) and to the southeast (Wood Thrush). These locations are situated within the more mature forest areas to the south of the property. Those forested areas thus constitute SWH for Special Concern and Rare Wildlife Species. As neither species was noted to occur directly within the younger forest features on the Site, the SWH designation does not extend onto the Site.

Table 3 Birds observed during field surveys, 2018

Common Name	Scientific Name	Breeding Potential	Common Name	Scientific Name	Breeding Potential
American Crow	*Corvus brachyrhynchos*	Likely	Least Flycatcher	*Empidonax minimus*	Likely
American Goldfinch	*Spinus tristis*	Likely	Mourning Dove	*Zenaida macroura*	Likely
American Redstart	*Setophaga ruticilla*	Likely	Northern Cardinal	*Cardinalis cardinalis*	Likely
American Robin	*Turdus migratorius*	Likely	Ovenbird	*Seiurus aurocapilla*	Likely
Black-and-white Warbler	*Mniotilta varia*	Likely	Purple Finch	*Haemorhous purpureus*	Likely
Black-capped Chickadee	*Poecile atricapillus*	Likely	Red-eyed Vireo	*Vireo olivaceus*	Likely
Blue Jay	*Cyanocitta cristata*	Likely	Red-winged Blackbird	*Agelaius phoeniceus*	Likely
Canada Goose	*Branta canadensis*	Probable	Song Sparrow	*Melospiza melodia*	Likely
Cedar Waxwing	*Bombycilla cedrorum*	Likely	Swamp Sparrow	*Melospiza georgiana*	Likely
Common Grackle	*Quiscalus quiscula*	Likely	Veery	*Catharus fuscescens*	Likely
Common Yellowthroat	*Geothlypis trichas*	Likely	Warbling Vireo	*Vireo gilvus*	Likely
Downy Woodpecker	*Picoides pubescens*	Likely	White-breasted Nuthatch	*Sitta carolinensis*	Likely
Eastern Wood-pewee *	*Contopus virens*	Likely	White-throated Sparrow	*Zonotrichia albicollis*	Likely
Gray Catbird	*Dumetella carolinensis*	Likely	Wood Thrush *	*Hylocichla mustelina*	Likely
Hairy Woodpecker	*Leuconotopicus villosus*	Likely	Yellow-bellied Sapsucker	*Sphyrapicus varius*	Likely
House Wren	*Troglodytes aedon*	Likely	Northern Flicker	*Colaptes auratus*	Likely

* = Special Concern under the ESA and SARA
Breeding Potential = Likely: Breeding behaviour was observed and preferred nesting habitat occurs on Site, Probable: potential breeding habitat occurs on Site.

4.6 Species at Risk

Based on our review of existing information records, our ELC delineations of the Site to characterize potential habitat areas, and our field surveys (Appendix C), four species were considered to have some probability of transient presence.

Two bird species, Eastern Wood-pewee and Wood Thrush, were noted a single time each in the mature forest areas to the southwest of the Site. These birds, however, were not observed on the Site and the mix of young, scrubby forest and coniferous plantation present there provides only marginally suitable habitat by comparison. While it is possible both species could occur there transiently, the forested portions of the Site are not considered to be suitable habitat areas for these species.

One bat species listed as Endangered, Tri-coloured Bat (*Perimyotis subflavus*), has some potential to occur transiently on the property based on City of Ottawa SAR occurrence records (Appendix C). The young forests of the Site include no oak trees, no larger maple trees (MNRF, 2017) and few snags typical of roosting trees. As such, they are unlikely to provide significant nursery habitat. The sand soils of the area do not include cave-supporting geology for potential hibernacula.

Snapping Turtles (*Chelydra serpentina*) commonly occur in the general vicinity and tend to live and breed in close proximity to permanent watercourse features (MNR, 2012). Watercourse feature R7 has some potential to support the species, though no individuals have previously been noted here. Areas of the Site beyond R7 or its immediate riparian corridor lack any permanent water features and are not considered as potential habitat. As the species is listed as Special Concern, its habitat is not specifically protected under the ESA regardless.

4.7 Other Significant Natural Features

The Site includes areas identified by the City as part of the Natural Heritage System per Schedule L of the City's Official Plan (OP; City of Ottawa, 2020b; Figure 1). Areas flagged under Schedule L are considered to be, or to have some potential to be, significant natural heritage features per the OP (City of Ottawa, 2020b) and/or the *Natural Heritage Reference Manual* (MNR, 2010).

4.7.1 Significant Woodlands

The forest ecosites of the Site are contiguous with an expansive forested area to the west, covering an extended area of >120 ha. Based on the size alone, the extended wooded areas constitute Significant Woodland under the *Natural Heritage Reference Manual* (MNR, 2010). Since the forest cover directly on the Site is contiguous with these wooded areas, it is part of this Significant Woodland. However, the forest cover on the Site forms the youngest portion of the adjacent Significant Woodland, with the oldest parts on Site <40 years old and the youngest parts only ~20 years old. Interior forest habitat (i.e. forested area more than 100 m from a forest edge) covers 1.2 ha of the Site, most of which corresponds with the TAGM1 coniferous plantation ecosite (Figure 2).

5.0 DESCRIPTION OF THE PROPOSED PROJECT

The proposed development consists of a zoning bylaw amendment and an official plan amendment to allow for large format warehouse and employment uses in the general rural area. A concept

demonstration plan has been included in support of the application to demonstrate the types of uses that could be accommodated on the Site. A Site Plan Control application would be required for individual development applications as they would be put forward to the City of Ottawa (Figure 3). Anticipated design concepts reflecting future development phases are indicated within this EIS (Figure 3) for context for the rezoning application. Future development proposals within would be subject to Site Plan Control applications and may require a separate or updated EIS based on detailed design, including detailed stormwater and grading design.

Site preparation development within the Phase 1 area is proposed to begin in the summer or fall of 2021, with construction to be completed by the fall of 2022. Site preparation for Phase 1 would require the removal of 4.1 ha of the existing forest cover on the Site. A 60 m wide swath of forest would be retained between the development area within Phase 1 and the permanent watercourse of R7. Otherheadwater features on the Site would be replaced by naturalized swale features around the perimeterof the Site with a stormwater management (SWM) pond facility at the north end of the Phase 1 area forfinal quality control. The swale features would be created within a 15 m wide treed buffer along the south and west sides of the Site. The buffer would add 0.8 ha of new forest cover to be planted along thecleared lands of the southwest corner, re-establishing a natural buffer to the older forest feature to thesouth and west. Trees species planted within the buffer would be of comparable species to the adjacent FOD7 ecosite.

6.0 IMPACT ASSESSMENT

6.1 Aquatic Habitat

Construction of the Phase 1 area will require the removal of 756 m of shallow swales, 52% of which are currently located on fully cleared lands. The swales are considered too shallow and dry too quickly to provide direct fish habitat. The features do convey Site surface water runoff to the east end of R7 while adding allochthonous material. Canopy over the lower end of these features can be anticipated to provide some shading to limit solar heating of the channel waters.

These features would be replaced with a new 819 m long swale, situated adjacent to the existing forest to the west, with a 15 m wide, naturally-vegetated riparian border to the east. The existing TAG1 forest cover within the 60 m border would be fully retained. The new swale will be ~8% longer than features being replaced, and will include adjacent forest cover along its full length. As such, the new swale will provide improved allochthonous inputs and shading. The new swale system will feed through a 3700 m^2 SWM pond providing additional quality control for Site runoff, which will still be directed the east end of R7.

All development the Site can be situated ≥ 30 m from the top of bank of R7.

Forested areas to the west of the Site may contain some wetland cover. These lands, however, were part of a recent land-treaty settlement with the AOO. We did not complete wetland assessments on their territory. The swale system around the perimeter of the property will be designed to capture Site runoff to protect the forest feature there and any wetland it may include. Site surface water runoff will be directed through the Site SWM pond for quality control before being release to R7 to resume its westward flow.

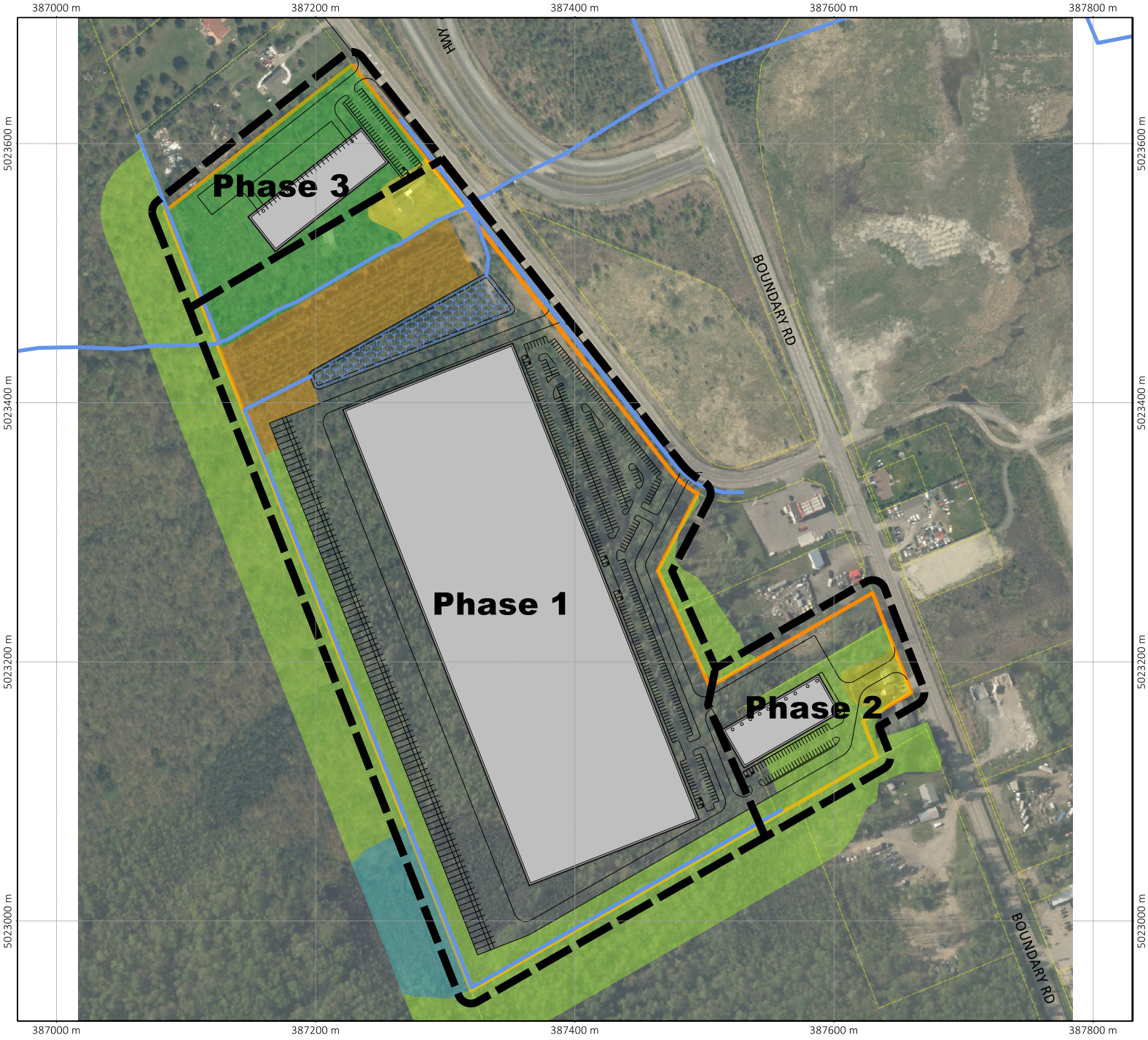

Figure 3 Proposed development

Legend

Property Boundary

ELC Post

- Residential
- FOD7
- FOD8-2
- TAGM1
- SWT2

Surface Water Features

- SWM Pond
- Channel

Site Plan Concept

- Block Lines
- Commercial Buildings

Developement Phases

N

0 100 m

Project: AVE1118
Created By: AF
MTM Zone 9
(NAD 83)
Printed on: 2020-12-03

KILGOUR & Associates

6.2 Vegetation, Trees and Significant Woodland

A 4.1 ha forest area consisting of a mix of young (<30 years old) deciduous forest and coniferous plantation, and 0.8 ha pocket of thicket swamp, will be removed under the proposed development plan for Phase 1. While these wooded areas are part of a Significant Woodland, they are part of small area of regrowth on former farm fields extending out from the main, more mature forest block to the west. The area to be cleared represents 3% of the broader forested area. The proposed Phase 1 development retains/re-establishes 15 m of forest cover between the commercial development and mature forest beyond the western property line. As such, impacts anticipated to the Significant Woodland are considered to be minor.

6.3 Species at Risk

Based on our SAR assessment (Appendix C), no protected SAR are considered to have potential to interact with the proposed development directly as individuals (i.e. possibly present at some point during or subsequent to construction) nor do any SAR have protected habitat directly on the Site. Construction on the Site will follow standard best practices to avoid conflicts with area wildlife (Section 7.4), thereby mitigating impacts to possible transient SAR occurrences. Therefore, no negative impacts are anticipated to SAR or SAR habitat.

6.4 Significant Wildlife Habitat

The wooded area to the southwest of the Site supports sufficient numbers and species of anurans in the early spring to be considered SWH. This area will remain untouched by the proposed development and will be buffered by a 15 m wide treed buffer along a naturalized swale to be constructed around the periphery of the Site. The Site itself does not constitute SWH. No negative impacts are anticipated to the ability of the adjacent forest area to support early-breeding frog species. No mid- or late-breeding-season anurans were noted there.

7.0 MITIGATION

7.1 Aquatic Habitat

The realignment of existing headwater channels on Site to form the proposed perimeter swale system can only be completed under a permit to alter a waterway issued by SNC. No alteration of the existing channels will be completed prior the issuance of a permit to alter a waterway; all such works must then be completed in accordance with the conditions of that permit. At minimum, all construction works will require standard erosion and sediment control (ESC) mitigation measures to protect waters in the broadervicinity including:

- a multi-facetted approach to provide erosion and sediment control;
- retention of existing vegetation and stabilization of exposed soils with vegetation where possible;
- limiting the duration of soil exposure and phase construction;
- 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 any watercourse;
- maintaining overland sheet flow and avoid concentrated flows; and
- storing/stockpiling all soil away (e.g. greater than 30 m) from watercourses, drainage features and tops of steep slopes.

7.2 Vegetation / Trees

Existing trees within retained natural areas adjacent to R7 must be maintained. Existing trees along the perimeter buffer will be removed to establish Site grading and the swale immediately adjacent to the property line. The swale corridor, however, must be replanted with native trees species consistent with those present in the adjacent FOD7 ecosite. The swale itself is to be seeded with a wetland grass mix to improve natural filtration along the channel length.

To minimize impacts to trees adjacent to the Site, the following general protection measures are recommended as necessary during construction:

- Tree removal on Site should be limited to that which is necessary to accommodate construction.
- To minimize impact to trees adjacent to the Site during construction:
- Erect a fence beyond the critical root zone (CRZ; i.e. 10x the DBH) of trees. The fence should be highly visible (orange construction fence) and paired with erosion and sediment 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 towards any tree's canopy.

This report does not constitute permission to remove any trees from the Site. Removal of trees can only be undertaken following appropriate consultation with City planning staff.

7.3 Species at Risk

As no SAR habitat exists on the Site and no SAR are anticipated to occur on the Site, no SAR-specific mitigation measures are required beyond standard best practices of ESC (Section 7.1) and general wildlife management (Section 7.4).

7.4 General Wildlife Management

Common wildlife species may occur on Site. The following mitigation measures shall be implemented during construction of the project to generally protect wildlife:

- Areas shall not be cleared during sensitive times of the year for wildlife (i.e. breeding season, which for species potentially occurring on the Site is April 15th to August 15th); unless mitigation measures are implemented and/or the habitat has been inspected by a qualified Biologist within five days of clearing (City of Ottawa, 2015).
- Do not harm, feed, or unnecessarily harass wildlife.
- Manage waste to prevent attracting wildlife to the Site. Effective mitigation measures include litter prevention and keeping all trash secured in wildlife-proof containers and promptly removing it from the Site, especially during warm weather.
- Drive slowly and avoid hitting wildlife.
- Manage stockpiles and equipment on 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.
- Check the entire work site for wildlife prior to beginning work each day.
- Inspect protective fencing and/or other installed wildlife exclusion measures daily and after each rain event to ensure their integrity and continued function.
- Monitor construction activities to ensure compliance with the project-specific protocol (where applicable) or any other requirements.
- If SAR are encountered on the worksite, immediately stop all work in the vicinity of the observation and contact the MECP.

8.0 SUMMARY AND RECOMMENDATIONS

It is our professional opinion that no significant negative impacts are anticipated to species-at-risk and/or SWH present in the broader vicinity under the proposed project if all mitigation recommendations provided within this report are followed. Mitigation measures include standard ESC measures, general wildlife management for construction sites (City of Ottawa, 2015), and tree planting, the latter of which is to be detailed in the Site landscape plan. Impacts to the broader Significant Woodland under future development of the Site are anticipated to be minor; the impacted area represents the youngest portion of the extended feature, which includes no uncommon vegetation coverage and does not provide functionality as SWH. Subsequent EIS reviews of each phase as part of the Site Plan application process for individual buildings will be developed at the time of detailed design.

9.0 CLOSURE

This report was prepared for exclusive use by Avenue 31 Inc. and may be distributed only by or in accordance with the express instructions of Avenue 31 Inc. Questions relating to the data and interpretation can be addressed to the undersigned.

Respectfully submitted,

KILGOUR & ASSOCIATES LTD.

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Project Director

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Biologist

Ed Malindzak, MSc
Senior Biologist

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Appendix A – Qualifications of report authors

Katherine Black, MSc

Ms. Black is a Biologist with over six years of comprehensive field, laboratory, and report-writing experience. She has worked in a variety of research settings, including technical laboratories, greenhouses, construction sites, and remote fly-in field sites. Katie's background is predominantly in terrestrial ecology; she has performed vegetation and wildlife surveys in a variety of natural and disturbed environments, including wetland, tundra, field, and forest environments. She has also worked on projects in aquatic ecology, ecohydrology, and biostatistics. Katie joined Kilgour & Associates Ltd. in January of 2019 and has since contributed to numerous Environmental Impact Statements (EIS), Tree Conservation Reports (TCR), Headwater Drainage Feature Assessments (HDFA), Integrated Environmental Reviews (IER), Constraints Analyses, Existing Conditions Reports, delineation of natural heritage features, species at risk (SAR) monitoring, erosion and sediment control inspections, water quality monitoring, fish dissections, and sorting and identification of aquatic macroinvertebrates. Ms. Black is certified in the Ontario Wetland Evaluation System protocol, Ontario Reptile and Amphibian Survey methods, and Butternut Health Assessment (BHA #731).

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, 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.

In the Ottawa area Dr. Francis helps clients work their way through the land development process by producing key supporting studies such Environmental Impact Statements, Integrated Environmental Reviews, and by obtaining various permits and approvals from local regulatory agencies including the conservation authorities and Ministries of Environment and Natural Resources. Dr. Francis is our local in-house geomatics specialist, capable of carrying out detailed and complex analyses of geospatial data of plant and animal distribution. He often utilizes his skills to carry out constraint studies prior to a client purchasing or planning a development for a property.

Ed Malindzak, MSc

Ed is a Senior Biologist with a background in fisheries science and species at risk and is an International Society of Arboriculture Certified Arborist. Ed has experience in conducting environmental surveys, habitat assessments, and inventories for Environmental Assessments (EA), Environmental Impact Statements (EIS), ecological risk assessments, and environmental baseline studies in many industry sectors, including energy, mining, and transportation. Ed has diverse technical experience that includes several areas of the natural sciences (e.g. aquatic environments, terrestrial wildlife, trees/vegetation). He has extensive experience completing fauna/flora inventories and habitat assessments on urban, rural, and remote environments in coastal, in-land, and mountain regions of North America and the Caribbean. He is experienced in the use and interpretation of descriptive, inferential, and non-parametric statistical analysis of biotic and abiotic data. He is very knowledgeable in federal, provincial, and regional regulations and associated permitting requirements for the *Fisheries Act*, *Species at Risk Act*, *Endangered Species Act*, *Fish and Wildlife Conservation Act*, *Migratory Birds Convention Act, Navigation Protection Act, Conservation Authorities Act*, and the *National Parks Act*.

Appendix B – Preliminary species at risk screening letter sent to the Ministry of Environment, Conservation and Parks

Appendix C – Regional SAR Screening

Species Name (*Taxonomic Name*)	**Status under Ontario *Endangered Species Act* (ESA)**	**Status under federal *Species at Risk Act* (SARA) - Schedule 1**	**Habitat Description**	**Ottawa Regional Occurrence (*Observation records in the vicinity*)**	**Potential to Occur in the Project Area (Yes / No)**	**Probability of Interaction with the Project (None, Low, Moderate, High)**
Birds						
Bald Eagle (*Haliaeetus leucocephalus*)	**Special Concern**	**No Status**	Nest in mature forests near open water. In large trees such as Pine and Poplar.	Confirmed nest at Shirley's Bay since 2012.	No	None. No suitable nesting or feeding areas and no observations of the species on or near subject site.
Bank Swallow (*Riparia riparia*)	**Threatened**	**Threatened**	Colonial nester; burrows in eroding silt or sand banks, sand pit walls, and human-made settings, which are often found on banks of rivers and lakes.	12 confirmed, 2 probable and 8 possible nests in recent OBBA. *(OBBA)*	No	None. No suitable nesting or feeding areas and no observations of the species on or near subject site. OBBA observations are only within 10 km.
Barn Swallow (*Hirundo rustica*)	**Threatened**	**Threatened**	Nests on barns and other structures; forages in open areas for flying insects. Live in close association with humans and prefer to nest in structures such as open barns, under bridges, and in culverts.	33 confirmed, 2 probable and 3 possible nests during recent OBBA. (*OBBA*)	No	None. No suitable nesting areas and no observations of the species on or near subject site. OBBA observations are only within 10 km.
Black Tern (*Chlidonias niger*)	**Special Concern**	**No Status**	Build floating nests in loose colonies in shallow marshes, especially cattails.	Four confirmed nests in recent OBBA.	No	None. No suitable nesting or feeding areas on subject site and no observations of the species near by.
Bobolink (*Dolichonyx oryzivorus*)	**Threatened**	**Threatened**	Live in tall grass prairie and other open meadows. With major clearing of prairies, Bobolink are moving to hayfields. Build nests on the ground in dense grasses.	Widespread; confirmed or probable nests found in 39 out of 40 local atlas squares during recent OBBA. (*LIO, OBBA, NHIC*)	No	None. No suitable nesting or feeding areas and no observations of the species on subject site.
Canada Warbler (*Cardellina canadensis*)	**Special Concern**	**Threatened**	Prefers wet forests with dense shrub layers. Nests located on or near the ground on mossy logs or roots, along stream banks or on hummocks.	One confirmed nest, two probable and six possible reported in recent OBBA. No critical habitat identified.	No	None. Suitable habitat is present but there are no observations of the species on or near subject site.
Cerulean Warbler (*Setophaga cerulea*)	**Threatened**	**Endangered**	Prefers mature deciduous forests with an open under storey.	Unlikely but within range (found on Gatineau side)	No	None. No suitable habitat and outside of known range.
Chimney Swift (*Chaetura pelagica*)	**Threatened**	**Threatened**	Nests in traditional-style open brick chimneys (and rarely in hollow trees). Tend to stay close to water	Confirmed nests in 3 squares, 2 probable and 11 possible reported in recent	No	None. No suitable nesting areas on subject site.

				OBBA. No critical habitat identified. (*OBBA*)		
Common Nighthawk (*Chordeiles minor*)	**Special Concern**	**Threatened**	Nests in 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.	Six probable and five possible nests reported in recent OBBA. No critical habitat identified.	No	None. Habitat suitability is limited and no individuals have been observed in the immediate vicinity.
Eastern Meadowlark (*Sturnella magna*)	**Threatened**	**Threatened**	Typically nest in tall grasslands (pastures/hayfields) but also found in alfalfa fields, weedy borders of croplands, roadsides, orchards, airports, shrubby overgrown fields, or other open areas. Often use trees, shrubs, or fence posts to elevate song perches.	22 confirmed, 11 probable and 3 possible nests during recent OBBA. (*LIO, NHIC, OBBA*)	No	None. Habitat potential in cleared areas is limited and there are no observations of the species on the subject site.
Eastern Whip-poor-will (*Antrostomus vociferus*)	**Threatened**	**Threatened**	Nests on the ground in open deciduous or mixed woodlands with little underbrush.	Seven squares with probable nests and 10 with possible nests reported in recent OBBA. Critical habitat tentatively identified in 4 squares in western Ottawa.	No	None. Dense, young, scrubby forest cover provides low habitat suitability and the species is not identified as present in the vicinity.
Eastern Wood-pewee (*Contopus virens*)	**Special Concern**	**Special Concern**	Woodland species, often found in the mid-canopy layer near clearings and edges of deciduous and mixed forests.	4 possible, 15 probable and 19 confirmed nests in recent OBBA. (*NHIC, OBBA*)	Yes	Low. Presence is possible, but the young forest cover of the subject site provides low habitat suitability. The species was noted off site in more mature forest areas to the west, which provide greater habitat suitability.
Golden Eagle (*Aquila chrysaetos*)	**Endangered**	**No Status**	Nest in remote, undisturbed areas, usually building their nests on ledges on a steep cliff/riverbank or large trees if needed. Most hunting is done near open areas such as large bogs or tundra.	Migrant only; no reported nests.	No	None. Not identified in the vicinity.
Golden-winged Warbler (*Vermivora chrysoptera*)	**Special Concern**	**Threatened**	Ground nesting in areas of young shrubs surrounded by mature forest. Often areas that have recently been disturbed such as field edges, hydro or utility right-of-ways, or logged areas.	One confirmed nest, one probable nest reported during recent OBBA. Critical habitat identified in Québec (adjacent to northwestern Ottawa).	No	None. Not identified in the vicinity.
Grasshopper Sparrow (*Ammodramus savannarum*)	**Special Concern**	**Special Concern**	Lives in open grassland areas with well-drained sandy soil. Will also nest in hayfields and pastures, as well as alvars, prairies and occasionally grain crops such as barley. It prefers areas that are sparsely vegetated and its nests are well hidden in the field,	4 confirmed, 5 probable and 2 possible nests in recent OBBA.	No	None. No suitable nesting or feeding areas on subject site.

			woven from grasses in a small cup-like shape.			
Evening Grosbeak (*Coccothraustes vespertinus*)	**Special Concern**	**Special Concern**	Nest in trees or large shrubs; prefer mature coniferous forests but will also use deciduous forests, parklands and orchards.	Five confirmed nests, six probable and eight possible during recent OBBA (mostly in west).	No	Low. Forest habitat of the site is not the preferred habitat and the replacement of the cottage with a house would not alter the overall suitability of the site regardless.
Henslow's Sparrow (*Ammodramus henslowii*)	**Endangered**	**Endangered**	Tends to avoid fields that have been grazed or are crowded with trees and shrubbs. Prefers extensive, dense, tall grasslands where it can more easily conceal its small ground nest.	No nests reported during recent OBBA. (*LIO*)	No	None. No suitable habitat and not identified in the vicinity.
Horned Grebe (*Podiceps auritus)*	**Special Concern**	**No Status**	Nest in small ponds, marshes and shallow bays that contain areas of open water and emergent vegetation.	Migrant only; no reported nests.	No	None. No suitable habitat and not identified in the vicinity.
Least Bittern (*Ixobrychus exilis*)	**Threatened**	**Threatened**	Found in a variety of wetland habitats, but strongly prefers cattail marshes with a mix of open pools and channels.	Confirmed nesting in 1 square, 3 probable and 4 possible reported during recent OBBA. (*OBBA*)	No	None. No suitable nesting or feeding areas on subject site.
Loggerhead Shrike (*Lanius ludovicianus*)	**Endangered**	**Endangered**	The Loggerhead prefers pasture or other grasslands with scattered low trees and shrubs. Lives in fields or alvars (areas of exposed bedrock) with short grass, which makes it easier to spot prey.	One possible nest reported in recent OBBA. Critical habitat identified in Montague Township. (*LIO*)	No	None. No suitable habitat and not identified in the vicinity.
Olive-sided Flycatcher (*Contopus cooperi*)	**Special Concern**	**Threatened**	Found along natural forest edges and openings. Will use forests that have been logged or burned, if there are ample tall snags and trees to use for foraging perches.	One probable and one possible nest reported in recent OBBA. No critical habitat identified.	No	None. Habitat is suitable, though not optimal, but the species has not been observed in the vicinity.
Peregrine Falcon (*Falco peregrinus*)	**Special Concern (as of January 2013)**	**Special Concern**	Nest 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.	One confirmed nest (101 Lyon) in recent OBBA. Second nest (875 Heron) established in 2011.	No	None. No suitable nesting or feeding areas on subject site.
Red Knot (*Calidris canutus rufa*)	**Endangered**	**Endangered**	Prefer open beaches, mudflats, and coastal lagoons, where they feast on molluscs, crustaceans, and other invertebrates.	Migrant only; Ottawa River shores, area lagoons, etc.	No	None. No suitable nesting or feeding areas on subject site.
Red-headed Woodpecker (*Melanerpes erythrocephalus*)	**Special Concern**	**Threatened**	Lives in open woodland and woodland edges, and is often found in parks, golf courses, and cemeteries. These areas typically have many dead trees, which the birds use for nesting and perching.	One confirmed nest, one probable and two possible during recent OBBA.	No	None. Habitat has only limited suitability and the species has not been observed in the vicinity.
Rusty Blackbird (*Euphagus carolinus*)	**Special Concern**	**Special Concern**	Prefers wet wooded or shrubby areas (nests at edges of boreal wetlands and coniferous forests). These areas include bogs, marshes and beaver ponds.	No nests reported during recent OBBA. Primarily occurs during migration.	No	None. Habitat is suitable but the species has not been observed in the vicinity.

Short-eared Owl (*Asio flammeus*)	**Special Concern**	**Special Concern**	Lives in open areas such as grasslands, marshes and tundra where it nests on the ground and hunts for small mammals.	One confirmed nest, two probable and two possible nests reported during recent OBBA.	No	None. No suitable nesting or feeding areas on subject site.
Wood Thrush (*Hylocichla mustelina*)	**Special Concern**	**Threatened**	Lives in mature deciduous and mixed (conifer-deciduous) forests. They seek moist stands of trees with well-developed undergrowth and tall trees for singing and perches. Usually build nests in sugar maple or American beech.	5 possible, 15 probable and 16 confirmed nests in recent OBBA. (*NHIC, OBBA*)	Yes	Low. Presence is possible, but the young forest cover of the subject site provides low habitat suitability. The species was noted off site in more mature forest areas, which provide greater habitat suitability.
Fish						
American Eel (*Anguilla rostrata*)	**Endangered**	**No Status**	Primarily nocturnal, hiding in soft substrate or submerged vegetation during the day.	Ottawa, Mississippi, Carp (including Poole Creek), South Nation and Rideau Rivers (including Rideau Canal)	No	None. No suitable habitat.
Bridle Shiner (*Notropis bifrenatus*)	**Special Concern**	**Special Concern**	Prefers clear water with abundant vegetation over silty or sandy substrate.	Rideau River	No	None. No suitable habitat.
Channel Darter (*Percina copelandi*)	**Special Concern**	**Threatened**	Prefers clean streams and lakes with moderate current over sandy or rocky substrate.	Ottawa River	No	None. No suitable habitat.
Lake Sturgeon (*Acipenser fulvescens*)	**Endangered**	**No Status**	Only found in large lakes and rivers. Forages in cool water, 4-9 m deep over soft substrate; spawns in shallower, fast-flowing areas over rocks or gravel.	Ottawa River	No	None. No suitable habitat.
Northern Brook Lamprey (*Ichthyomyzon fossor*)	**Special Concern**	**Special Concern**	Non-parasitic species; prefers shallow areas with warm water. Larvae live in burrows in soft substrate for up to 7 years.	Ottawa River	No	None. No suitable habitat.
Northern Sunfish (*Lepomis peltastes*)	**Special Concern**	**No Status**	Lives in shallow vegetated areas of quiet, slow flowing rivers and streams, as well as warm lakes and ponds, with sandy banks or rocky bottoms.	Ottawa River	No	None. No suitable habitat.
River Redhorse (*Moxostoma carinatum*)	**Special Concern**	**Special Concern**	Prefers fast-flowing, clear rivers over rocky substrate.	Ottawa and Mississippi Rivers; unconfirmed reports from Rideau River	No	None. No suitable habitat.
Silver Lamprey (*Ichthyomyzon unicuspis*)	**Special Concern**	**Special Concern**	Require clear water for they can find fish hosts, relatively clean stream beds of sand and organic debris for larvae to live in, and unrestricted migration routes for spawning. Larvae live 4-7 years in burrows (prefer soft substrates); filter-feed on plankton.	Ottawa River and mouths of tributaries from Rideau Canal east (downstream)	No	None. No suitable habitat.
Molluscs						
Hickorynut (*Obovaria olivaria*)	**Endangered**	**Endangered**	Live on sandy beds in large, wide, deep rivers. Usually more than two or three	Ottawa River	No	None. No suitable habitat.

			metres deep. Larval host believed to be Lake Sturgeon.			
Mammals						
Algonquin Wolf (*Canis sp.*)	**Threatened**	**Special Concern**	Not restricted to any specific habitat type but typically occurs in deciduous and mixed forest landscapes.	Occasional reports	No	None. Presence is unlikely.
Eastern Cougar (*Puma concolor*)	**Endangered**	**No Status**	Live in large, undisturbed forests or other natural areas where there is little human activity	Occasional reports	No	None. No suitable habitat.
Eastern Small-footed Myotis (*Myotis leibii*)	**Endangered**	**No Status**	In the spring and summer, eastern small-footed bats 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.	Historical record in downtown Ottawa	No	None. No suitable habitat and the species is not known to occur in the vicinity.
Gray Fox (*Urocyon cinereoargenteus*)	**Threatened**	**Threatened**	Live in deciduous forests and marshes. Their dens are usually found in dense shrubs close to a water source but they will also use rocky areas, hollow trees, and underground burrows dug by other animals.	Recent reports to south and west of Ottawa (2016 COSEWIC status report).	No	None. Habitat is suitable but the species is not known to occur in the vicinity.
Little Brown Myotis (*Myotis lucifugus*)	**Endangered**	**Endangered**	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.	Various sites in central and western parts of City; no critical habitat (hibernacula) identified in Ottawa to date.	No	None. Young forest areas provide only marginal habitat suitability and the species is not generally known to occur in the east end of Ottawa.
Northern Myotis / Northern Long-eared Bat (*Myotis septentrionalis*)	**Endangered**	**Endangered**	Associated with boreal forests, choosing to roost under loose bark and in the cavities of trees.	Historical record in downtown Ottawa, more recent sites to east (Orleans, Clarence- Rockland); no critical habitat (hibernacula) identified in Ottawa to date.	No	None. No suitable habitat. Coniferous trees within the plantation areas are too small and healthy to replicate boreal forest conditions or provide suitable nesting snags.
Tri-coloured Bat / Eastern Pipistrelle (*Perimyotis subflavus*)	**Endangered**	**Endangered**	Roosts mainly in trees during summer; overwinters in caves and mines along with other species, but often uses deeper parts of the hibernaculum.	Unknown; historical records from sites in urban Ottawa, Lanark County. No critical habitat (hibernacula) identified in Ottawa to date.	Yes	Low. Young forest areas with few large snags provide limited habitat suitability. Transient presence on the Site is possible if roosting in mature forest to the west, but the Site is not considered to provide important habitat.
Amphbians						
Western Chorus Frog (*Pseudacris triseriata*)	**No Status**	**Threatened**	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.	Scattered throughout, with numerous sites in western half of City. Critical habitat identified in several	No	None. No individuals observed during frog surveys.

				atlas squares in western Ottawa. (*Ontario Nature*)		
Reptiles						
Blanding's Turtle (*Emydoidea blandingii*)	**Threatened**	**Threatened**	Quiet lakes, streams and wetlands with abundant emergent vegetation; also frequently occurs in adjacent upland forests.	Scattered throughout, with numerous sites in western half of City. Critical habitat present in Ottawa. (*Ontario Nature*)	No	None. Limited suitable aquatic channels (most are too small and dry (R7 lacks an organic substrate) and no observations of the species on or near subject site. Ontario Nature observations are within 10 km.
Eastern Musk Turtle / Stinkpot (*Sternotherus odoratus*)	**Special Concern**	**Special Concern**	Found in ponds, lakes, marshes, and rivers that are generally slow-moving have abundant emergent vegetation and muddy bottoms that they burrow into for winter hibernation.	Scattered	No	None. No suitable habitat.
Eastern Ribbonsnake (*Thamnophis sauritus*)	**Special Concern**	**Special Concern**	Found in marshy edges of wetlands and watercourses. Livebearer (does not lay eggs).	Few reported; mostly from northwestern Ottawa	No	None. No suitable habitat.
Milksnake (*Lampropeltis triangulum*)	**No Status**	**Special Concern**	Found in variety of open, scrubby or edge habitats, including pastures.	Scattered throughout the northern half of the City	No	Not applicable as this species is not protected on private lands.
Northern Map Turtle (*Graptemys geographica*)	**Special Concern**	**Special Concern**	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.	Ottawa River, Rideau River (Burritt's Rapids area), South Nation River (LIO, NHIC, Ontario Nature)	No	None. No suitable habitat.
Snapping Turtle (*Chelydra serpentina*)	**Special Concern**	**Special Concern**	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.	Widespread and abundant *(LIO, NHIC, Ontario Nature)*	No	None. No suitable habitat.
Spiny Softshell (*Apalone spinifera*)	**Endangered**	**Threatened**	Found primarily in rivers and lakes but also in creeks, ditches and ponds near rivers. Habitat requirements are open sand or gravel nesting areas, shallow muddy or sandy areas to bury in, deep pools for hibernation, areas for basking, and suitable habitat for crayfish and other food species.	Few historical records along Ottawa River, outside of Ottawa. No critical habitat identified in Ottawa.	No	None. No suitable habitat.
Spotted Turtle (*Clemmys guttata*)	**Endangered**	**Endangered**	Semi-aquatic and prefers ponds, marshes, bogs, and even ditches with slow-moving, unpolluted water and an abundant supply of aquatic vegetation.	Few reported (locations confidential). Critical habitat present in Ottawa	No	None. No suitable habitat.
Wood Turtle (Glyptemys insculpta)	**Endangered**	**Threatened**	The wood turtle prefers clear rivers, streams, or creeks with a slight current and sandy or gravelly bottom. Wooded areas are essential habitat for the Wood Turtle, but they are found in other habitats, such as wet meadows, swamps, and fields.	Few historical records in NHIC, NESS7 (may have been extirpated locally). No regulated habitat identified in Ottawa. Critical habitat	No	None. No suitable habitat.

				may be present to northwest.		
Plants						
American Chestnut (*Castanea dentata*)	**Endangered**	**Endangered**	Typical habitat is upland deciduous forests on sandy acidic soils, occuring with red oak, black cherry, sugar maple and beech.	One population reported along Dolman Ridge Road (federal property); may have been extirpated.	No	None. Does not occur in the vicinity.
American Ginseng (*Panax quinquefolius*)	**Endangered**	**Endangered**	Grows in rich, moist, but well-drained, and relatively mature, deciduous woods dominated by Sugar Maple, White Ash, and American Basswood.	Various (locations confidential) Critical habitat broadly identified in Ottawa area.	No	None. No suitable habitat.
Butternut (*Juglans cinerea*)	**Endangered**	**Endangered**	Commonly found in riparian habitats, but is also found on rich, moist, well-drained loams, and well-drained gravels, especially those of limestone origin.	Widespread	No	None. While the area may generally be suitable, no individuals were observed on or adjacent to the site.
Eastern Prairie Fringed-orchid (Platanthera leucophaea)	**Endangered**	**Endangered**	Populations are found in three main habitat types: fens (peat-forming wetlands fed by groundwater), tallgrass prairie, and moist old fields	Richmond Fen (2 locations)	No	None. No suitable habitat.
Lichens						
Flooded Jellyskin (*Leptogium rivulare*)	**No Status**	**Threatened**	It grows in seasonally flooded habitats, typically on the bark of deciduoud trees and rocks along the margins of seasonal ponds and on rocks along shorelines and stream/riverbeds.	Stony Swamp, Marlborough Forest	No	None. No suitable habitat.
Pale-bellied Frost Lichen (*Physconia subpallida*)	**Endangered**	**Endangered**	Typically grows on the bark of hardwood trees such as White ash, Black walnut, and American elm. Could also be found growing on fence posts and boulders.	Historical records in downtown area (extirpated locally). No critical or regulated habitat identified in Ottawa.	No	None. No longer known to occur in Ottawa.
Insects						
Bogbean Buckmoth (Hemileuca sp. 1)	**Endangered**	**Endangered**	Restricted to open, chalky, low shrub fens containing large amounts of bogbean, an emergent wetland flowering plant.	Richmond Fen (2 locations)	No	None. No suitable habitat.
Gypsy Cuckoo Bumble Bee (*Bombus bohemicus*)	**Endangered**	**Endangered**	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.	Historic occurrences only; no known recent occurrences.	No	None. No suitable habitat.
Monarch butterfly (*Danaus plexippus*)	**Special Concern**	**Special Concern**	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.	Widespread	No	None. No suitable habitat.
Mottled Duskywing (*Erynnis martialis*)	**Endangered**	**No Status**	Requires host plants such as the New Jersey Tea and the Prairie Redroot. These	Constance Bay area, Burnt Lands Alvar	No	None. No suitable habitat.

			plants grow in dry, well-drained soils or alvar habitat within oak woodland, pine woodland, roadsides, riverbanks, shady hillsides and tall grass prairies.			
Nine-spotted Lady Beetle (*Coccinella novemnotata*)	**Endangered**	**No Status**	Occur within agricultural areas, suburban gardens, parks, coniferous forests, deciduous forests, prairie grasslands, meadows, riparian areas and isolated natural areas.	Unknown – historically present, but COSSARO reports no Ontario records since mid-1990s	No	Low. Habitat is suitable, presence is possible, but as a habitat generalist, no portion of the Site provides necessary habitat.
Rapids Clubtail (*Gomphus quadricolor*)	**Endangered**	**Endangered**	Inhabit a wide variety of riverine habitats ranging in size from the St. Lawrence River to small creeks Larvae are typically found in microhabitats with slow to moderate flow and fine sand or silt substrates where they burrow into the stream bed. Adults disperse from the river after emerging and feed in the forest canopy and other riparian vegetation.	None known. No regulated habitat identified in Ottawa.	No	None. No suitable habitat.
Rusty-patched Bumble Bee (*Bombus affinis*)	**Endangered**	**Endangered**	Can be found in open habitat such as mixed farmland, urban settings, savannah, open woods, and sand dunes.	Historic records only from scattered sites in Ottawa and Gatineau.	No	None. No suitable habitat.
Transverse Lady Beetle (*Coccinella transversoguttata*)	**Endangered**	**Special Concern**	Able to live in a wide range of habitats, including agricultural areas, suburban gardens, parks, coniferous forests, deciduous forests, prairie grasslands, meadows and riparian areas.	Unknown – historically present, but COSSARO reports no southern Ontario records since 1985.	No	None. Not identified in the vicinity.
West Virginia White butterfly (*Pieris virginiensis*)	**Special Concern**	**No Status**	Lives in moist, deciduous woodlots. Requires a supply of toothwort, a small, spring-blooming plant that is a member of the mustard family, since if it the only food source for larvae.	Unknown; no records in NESS or NHIC	No	None. Not identified in the vicinity.
Yellow-banded Bumble Bee (*Bombus terricola*)	**Special Concern**	**Special Concern**	Forage and habitat generalist, able to use a variety of nectaring plants and environmental conditions.	Sporadic sightings submitted throughout	No	None. No suitable habitat.