Environmental Impact Study – LeBreton Flats Plan of Subdivision

Final Report

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Acronyms / Abbreviations

ANSI	Areas of Natural and Scientific Interest
C3	Nesting zone C: Lower Great Lakes/St. Lawrence Plain
CAA	Conservation Authorities Act, 1990
CC	Coefficient of Conservatism
CGL	Green land habitat type
CGL_2	Parkland
CIAR	Canadian Impact Assessment Registry
cm	centimetre
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CRZ	Critical root zone
CV	Constructed habitat type
CVI_1	Constructed (transportation) habitat type
DBH	Diameter at Breast Height
DFO	Fisheries and Oceans Canada
ECCC	Environment and Climate Change Canada
EEE	Evaluation of Environmental Effects

EIS	Environmental Impact Study
ELC	Ecological Land Classification
ESA	Endangered Species Act, 2007
ESA	Endangered Species Act (2007)
ESC	Erosion and sediment control
FLUDTA	Federal Land Use, Design and Transaction Approvals
FOCM6	Naturalized Coniferous Plantation
FODM11	Naturalized Deciduous Hedge-row Ecosite
FWCA	Fish and Wildlife Conservation Act (1997)
ha	Hectares
HADD	Harmful Alteration, Disruption or Destruction (of fish habitat)
HVA	Highly Vulnerable Aquifer
IAA	Impact Assessment Agency of Canada
IPZ	Intake Protection Zone
LRT	Light Rail Transit
m	metre
masl	Meters above sea level
MBCA	Migratory Birds Convention Act (1994)

MBR	Migratory Birds Regulation (2022)
MCP	Master Concept Plan
MECP	Ministry of Environment, Conservation and Parks
MEMM3	Dry - Fresh Mixed Meadow Ecosite
MEMM3 / CV	Dry - Fresh Mixed Meadow Ecosite / Constructed
MEMM3/CGL	Dry - Fresh Mixed Meadow Ecosite / Greenland
MEMM3/THDM2-1	Dry - Fresh Mixed Meadow Ecosite / Sumac Deciduous Shrub Thicket Type
MEMM3/THDM4	Dry - Fresh Mixed Meadow Ecosite / Dry - Fresh Deciduous Regeneration Thicket Ecosite
MNR	Ministry of Natural Resources
MNRF	Ministry of Natural Resources and Forestry
NCA	National Capital Act, 1985
NCC	National Capital Commission
NCR	National Capital Region
NHFA	Natural Heritage Features and Areas
NHIC	Natural Heritage Information Centre
NHRM	Natural Heritage Reference Manual (2010)
NHS	Natural Heritage System

NNL	No Net Loss
OA	Open Water
OP	Official Plan (the City Plan 2017)
OTCC	Ontario Turtle Conservation Centre
OWES	Ontario Wetland Evaluation System
PA	Planning Act (1990)
PPS	Provincial Policy Statement (2020)
PSW	Provincially Significant Wetland
RVCA	Rideau Valley Conservation Authority
SAR	Species at Risk
SARA	Species at Risk Act (2002)
SARO	Species at Risk in Ontario List
SOCC	Species of Conservation Concern
SWH	Significant Wildlife Habitat
SWHTG	Significant Wildlife Habitat Technical Guide (2000)
THDM2-1/MEMM3	Sumac Deciduous Shrub Thicket Type / Dry - Fresh Mixed Meadow Ecosite
THDM4	Dry - Fresh Deciduous Regeneration Thicket Ecosite

THDM4-1/CV	Native Deciduous Regeneration Thicket Type / Constructed
ToR	Terms of Reference
WODM4	Dry - Fresh Deciduous Woodland Ecosite

Glossary

Term	Definition
Subject Property	Lands associated with LeBreton Flats in Ottawa, Ontario (as depicted in Figure 1a, Appendix A).
Adjacent Lands	Lands within 120m of the Subject Property.
Study Area	The area used to consider potential impacts to natural heritage features, including the Subject Property and Adjacent Lands.
The Project	The proposed development on the Subject Property that have the potential to impact the natural heritage features within the Study Area.

1 Introduction

Stantec Consulting Ltd. (Stantec) was retained by the National Capital Commission (NCC) to complete an Environmental Impact Study (EIS) for the development of LeBreton Flats located in Ottawa, Ontario (Figure 1a, Appendix A). This EIS is in support of NCC's application for a Plan of Subdivision from the City of Ottawa (the City) for NCC's proposed development of LeBreton Flats (the Project).

In 2014, the NCC launched a competitive process seeking a development proposal for the entire LeBreton Flats site. With the cancellation of that process in 2019, the NCC chose to lead a new approach that would establish a comprehensive vision for LeBreton Flats, re-establishing the area as a Capital destination and a vibrant community. This resulted in a new Master Concept Plan (MCP) which has been adopted by the NCC's Board of Directors and has been embedded in the new City of Ottawa Official Plan Downtown West Secondary Plan.

A key guiding policy that applies to this project is as follows:

> *"The Master Concept Plan must be implemented in accordance with the Federal approval process managed by the NCC under sections 12 and 12.1 of the National Capital Act. Approval for Federal land use, design and real estate transaction must be obtained for any new land use, new work or real property transactions involving Federal lands. The achievement of objectives in the Master Concept Plan will be ensured through the Federal land use, design, and real estate transaction process; terms set out in land sales agreements; City of Ottawa policies; and design review." (NCC 2021a)*

LeBreton Flats is located on Federal lands and is therefore subject to Federal legislation, meaning the Project is subject to the following policy context:

- National Capital Act
- Plan for Canada's Capital, 2017-2067
- National Capital Core Area Sector Plan (2005)
- Ottawa River South Shore Riverfront Park Plan
- Capital Pathway Strategic Plan

The 2021 MCP has evolved through the successful public consultation and feedback that was first undertaken by the NCC in April 2016. The 2021 MCP consists of four districts including (NCC 2021a**;** Figure 1b, Appendix A):

- **Aqueducts District** - a cultural and entertainment district that includes two aqueducts. Located in the centre of LeBreton Flats.
- **Flats District** - predominantly a residential community located in the north portion of LeBreton Flats.

- **Albert District** - a mixed-use main street neighbourhood that will include a library, and potentially an event centre or major facility, homes, offices, shops, and services along Albert Street. Located in the south portion of LeBreton Flats.
- **Parks District** - a park district composed of Capital Park and Active Park that includes a large outdoor event space and pathway links to the other districts and Riverfront Park.

Over a total plan area of 29-hectares (ha), the 2021 MCP sets out the following development targets:

- 12.5 hectares of parks & open spaces
- 520,000 square metres (sqm) of gross floor area
- 430,000sqm of residential floorspace
- 65,000sqm of office space
- 25,000sqm of retail space
- 4,000 residential units
- 7,500 new residents
- 3,750 jobs, post construction

This EIS documents the Natural Heritage Features and Areas (NHFA) that are present in the direct footprint and work areas of the proposed Project (hereafter the Project Footprint) and within 120 metres (m) of the Project Footprint boundaries (hereafter Adjacent Lands). This EIS also assesses anticipated impacts to the present NHFA, the overall impact to the Natural Heritage System (NHS) and provides mitigation recommendations to address the potential impacts.

This EIS was scoped to satisfy the requirements of the City's *Environmental Impact Study Guidelines* (2023) (City of Ottawa 2023a). A Terms of Reference (ToR) for the EIS was prepared and submitted to the City and the NCC for review and comment. The final ToR that incorporates comments from these agencies is provided in Appendix B.

1.1 Location Description

1.1.1 Subject Property

LeBreton Flats (hereafter the Subject Property) is located on the unceded territory of the Algonquin Nation (Figure 1a, Appendix A). The Subject Property is directly connected to the Ottawa River (Kichi Sibi in the Algonquin Anishinaabe language) and its tributaries and lies to the west of Centretown and Downtown. Historically a working-class neighbourhood of Ottawa, the LeBreton Flats have a deep connection to the lumber mills and timber trade, as well as the electric power generation infrastructure stretched across the Ottawa River bridging between islands along what is now Booth Street.

LeBreton Flats is a 29-ha urban brownfield site anchored by two light rail transit (LRT) stations at Pimisi and Bayview, two aqueducts over the Fleet Street Tailrace, and the Ottawa River (includes Nepean Bay) (see photos in Appendix C). The Subject Property is bound to the north by Wellington Street and Kichi Zibi Mikan, to the east by Booth Street and Lett Street, to the south by Albert Street, and to the west by Trillium Pathway (Figure 1a, Appendix A).

1.1.2 Adjacent Lands

Adjacent Lands are lands occurring outside of the Subject Property but within 120 m of the Project Footprint boundaries (Figure 1a, Appendix A). Adjacent Lands are approximately 47 ha and generally include the Ottawa River and parkland to the north and built areas (e.g., infrastructure, commercial, residential, institutional) to the east, south, and west.

1.1.3 Study Area

The Study Area is approximately 76 ha and consists of the Project Footprint and Adjacent Lands. Potential direct and indirect impacts from the proposed Project will be evaluated within the Study Area (Figure 1a,Appendix A).

2 Relevant Natural Heritage Legislation and Policy

The following sections discuss the legislation and policy documents that establish the natural heritage context for the Subject Property. Legislation and policy are presented under separate headers for the federal, provincial, and municipal planning context.

2.1 Federal Context

2.1.1 Species at Risk Act

The *Species at Risk Act*, 2002 (SARA) provides a framework across Canada to prevent the extinction of wildlife species and to support actions for their recovery. Federal departments are responsible for preventing the disappearance of endangered or threatened species on their properties and to implement management plans to comply with the Act.

General SARA prohibitions include Section 32(1), which states that “no person shall kill, harm, harass, capture, or take an individual of a wildlife species that is listed as an extirpated species, an endangered species or a threatened species”, and Section 33, which states that “no person shall damage or destroy the residence of one or more individuals of a wildlife species that is listed as an endangered species or a threatened species, or that is listed as an extirpated species if a recovery strategy has recommended the reintroduction of the species into the wild in Canada.” In addition, critical habitat, defined as the habitat that is necessary for the survival or recovery of a listed wildlife species, may be defined and protected under Section 58. Only those species currently listed in Schedule 1 of SARA (i.e., those listed as extirpated, endangered, or threatened) are protected by the prohibitions of Sections 32 to 36 and 58 of SARA, and then only on federal lands, except for aquatic species and migratory birds which are protected throughout Canada by other acts and regulations. SARA-listed species designated as special concern are not protected by the prohibitions of Sections 32 to 36 or 58 of SARA; however, these species are protected under Section 79, which states that federal authorities must “identify adverse effects of the project on the listed wildlife species [including special concern species] and its critical habitat…and ensure that measures are taken to avoid or lessen adverse effects.” Furthermore, special concern species do require that provincial or regional management plans, including conservation measures, be developed to protect the species.

Under SARA, a Recovery Strategy must be developed by ECCC for species listed as threatened or endangered under Schedule 1 and a Management Plan must be developed for species listed as special concern under Schedule 1. The Recovery Strategy should include the identification of critical habitat and list examples of activities that are likely to result in its destruction.

2.1.2 Migratory Birds Convention Act

The *Migratory Birds Convention Act, 1994* (MBCA) prohibits the killing or capturing of migratory birds, as well as the damage, destruction, removal, or disturbance of their nests. Most bird species in Canada are protected under the MBCA, as defined by Article I, which names the families and subfamilies of birds protected, and provides clarification of which species are included.

The MBCA is the enabling statute for the Migratory Birds Regulations, which were updated in May 2022 (Migratory Birds Regulations, 2022; MBR) which further defines when nests of migratory bird species are protected, with special provisions in place for bird species that reuse their nests (e.g., Pileated Woodpecker, Great Blue Heron). Under the 2022 MBR, nests for 18 bird species (7 of which occur in Ontario) receive year-round protection for a prescribed length of time ranging from 24-36 months (Schedule 1), and all other nests of migratory birds are protected when they contain a live bird or viable egg (S. 5(2)(b)). If a nest of a species identified on Schedule 1 of the MBR is determined to be empty of live birds or viable eggs, then the nest can be registered under ECCC's Abandoned Nest Registry, at which point the prescribed period of inactivity can begin to be counted.

In southern Ontario, migratory birds generally nest between April 1 and August 31. Environment and Climate Change Canada (ECCC) can issue permits allowing the destruction of nests for scientific, agricultural, or health and safety purposes. New development and site alterations do not qualify as a permitted activity under the MBCA and failure to comply with the MBCA/MBR could result in a charge.

2.1.3 Fisheries Act

The *Fisheries Act*, 1985 protects fish and fish habitats (s34) within Canadian waters. Under the current fish and fish habitat protection provisions of the *Fisheries Act*, any works, undertaking or activity of a project must incorporate measures to avoid causing the death of fish and the harmful alteration, disruption, or destruction (HADD) of fish habitat. To assist proponents with determining if their project will comply with the fish and fish habitat provisions, DFO has outlined measures to protect fish and fish habitat (DFO 2023a) as well as several standards and codes of practices (DFO 2023b). If a project cannot completely implement the measures to protect fish and fish habitat and if the standards and codes of practice are not applicable to the project, DFO recommends that the proponent request a review of the project by DFO. If a project cannot avoid and/or mitigate impacts that will cause death of fish or the HADD of fish habitat, an Authorization under the *Fisheries Act* may be required (DFO 2022).

2.1.4 National Capital Act

The *National Capital* Act, 1985 established the National Capital Region (NCR) and the NCC and is an Act respecting the development and improvement of the NCR. The National Capital Act gave the NCC the mandate to "*prepare plans for and assist in the development, conservation and improvement of the National Capital Region (NCR) in order that the nature and character of the seat of the Government of Canada may be in accordance with its national significance*."

2.1.5 Impact Assessment Act

The *Impact Assessment Act, 2019* (IAA) replaced the Canadian Environmental Assessment Act and Section 82 states than an authority must not carry out a project on federal lands or exercise any power or perform any duty or function that would permit a project to be carried out, in whole or in part, on federal lands unless the authority first considers the likelihood of significant adverse environmental effects occurring as a result of carrying out the project. This project will require the development and implementation of site-specific mitigation and compensation measures; therefore, it will be considered a Non-Basic project, which requires documentation using an Evaluation of Environmental Effects (EEE) Form and posting on the Canadian Impact Assessment Registry (CIAR).

2.1.6 The Federal Policy on Wetland Conservation

The *Federal Policy on Wetland Conservation* (the Policy) promotes wetland conservation through the full range of federal decisions and responsibilities (Government of Canada 1991). The Policy is not a regulatory document however the federal Cabinet has directed that it should be applied to all policies, plans, programs, projects, and activities carried out by the federal government, as such the Policy commits all federal departments (including the NCC) to the goal of no net loss (NNL) of wetland function on federal land. In cases where impacts to wetlands on federal land are unavoidable, a wetland function assessment must be undertaken and a strategy to compensate for lost ecological functions is required elsewhere within the same watershed as the impacted wetland. Compensation requirements (function or area basis, type of wetland, geographic context, time frame) are dependant on the value of the wetland functions and feasibility of compensation within the same watershed.

In the context of this federal policy, a wetland is defined as :"…*land that is saturated with water long enough to promote wetland or aquatic processes as indicated by poorly drained soils, hydrophytic vegetation and various kinds of biological activities which are adapted to a wet environment. Wetlands include bogs, fens, marshes, swamps and shallow waters*" (National Wetlands Working Group 1997). There is no minimum size requirement to be considered a wetland under the federal Canadian Wetland Classification system (1997) classification framework, unlike the Ontario Wetland Evaluation System (OWES, MNRF 2022) framework which states that a wetland needs to be ≥ 0.5 ha to be mapped.

2.1.7 National Capital Commission

The NCC is a federal Crown corporation created by Canada's Parliament in 1959 under the *National Capital Act* (NCA). Its predecessors were the Federal District Commission, created in 1927, and the Ottawa Improvement Commission, created in 1899. The NCC functions more like a private sector corporation than a government department but is accountable to Parliament through the Minister of Public Services and Procurement Canada and respects federal policies and guidelines. The NCC is a major landholder, owning approximately 10% of all lands in the NCR.

2.1.7.1 Plan for Canada's Capital, 2017–2067

The *Plan for Canada's Capital, 2017–2067* (NCC 2017) was approved by the NCC Board of Directors in 2017. The *Plan for Canada's Capital, 2017–2067* is a document that guides the long-term planning of the Capital and provides the direction and future vision for federal lands in the region over a 50-year period. The plan serves as the foundation for all NCC planning work and consists of three main goals:

- *Inclusive and meaningful: A capital that preserves and cherishes national symbols, while respecting Indigenous heritage*
- *Picturesque and natural: A capital that values public green space, and promotes environmental sustainability*
- *Thriving and connected: A capital whose networks extend around the globe*

The plan provides a series of key policy directions for each of the three goals and sets out 17 milestone projects to be implemented by federal agencies between 2017 and 2067, including '*Development of LeBreton Flats and the islands sites'*.

2.1.7.2 National Capital Core Area Plan

The *National Capital Core Area Plan* (2005) (NCC 2005) has been the lead policy document governing the planning and development of major projects on federal lands in the capital's core area for the last twenty years. The plan is currently under review by NCC to adapt it to current needs and address new priorities and challenges. Completion of the LeBreton Flats mixed-use community redevelopment project is one of the major priorities identified in the *National Capital Core Area Plan.*

2.1.7.3 Ottawa River South Shore Riverfront Park Plan

The *Ottawa River South Shore Riverfront Park Plan* (NCC 2018) was approved by the NCC Board of Directors in June 2018. The *Ottawa River South Shore Riverfront Park Plan* aims to create a continuous riverfront park that comprises 220 ha of publicly owned lands along the southwest shores of the Ottawa River, between LeBreton Flats and Mud Lake. The entire corridor is under the NCC's stewardship and is part of the National Interest Land Mass (NILM). The *Ottawa River South Shore Riverfront Park Plan* will connect communities to the nine kilometres (km) of riverfront lands between LeBreton Flats and Mud Lake Conservation Area.

2.1.7.4 Capital Pathway Strategic Plan

The *Capital Pathway Strategic Plan, 2020* (NCC 2020) is a 10-year plan that provides a framework for long-term planning and day-to-day management of the Capital Pathway network in Canada's Capital Region for the NCC and its partners and stakeholders who share a common interest in the pathways of the NCR.

2.1.7.5 Federal Land Use, Design and Transaction Approval (FLUDTA)

The NCC is the federal planning and coordinating agency for Canada's NCR and has approval authority for projects that may affect the character and national significance of the Capital. The approval process, known as the FLUDTA, is a four-stage process, which provides NCC with information as a project develops. Projects that need NCC approval include those requiring work by federal departments and projects on federal lands or that pertain to federal buildings. Projects may be defined as those requiring any construction, rehabilitation, alteration, extension, or demolition of buildings or structures. An ecological review of the site is included as part of the approval process.

2.2 Provincial Context

2.2.1 Endangered Species Act

The Ontario *Endangered Species Act, 2007* (ESA) protects species designated as threatened, endangered, or extirpated on the Species at Risk in Ontario (SARO) list. The ESA prohibits the killing, harming, harassing, or possessing protected species, as well as prohibiting any damage or destruction to the habitat of the listed species. Listed species are referred to as species at risk (SAR) and are provided with general habitat protection under the ESA to protect areas that species depend on to carry out their life processes, such as reproduction, rearing, hibernation, migration or feeding. Some species are also protected by detailed habitat regulations that go beyond the general habitat protection to define the extent and character of protected habitats.

Activities that may impact a protected species or its habitat require the prior issuance of a permit from the Ministry of the Environment, Conservation and Parks (MECP), unless the activities are applicable under O. Reg. 242/08, O. Reg. 830/21, or O. Reg. 829/21. These regulations identify activities that are exempt from the permitting requirements of the ESA and are subject to rigorous controls outside the permit process, including registration of the activity and preparation of a mitigation plan. Activities that are not exempt under these regulations require a complete permit application process.

2.2.2 Fish and Wildlife Conservation Act

The Ontario *Fish and Wildlife Conservation Act, 1997* (FWCA) provides protection of wildlife in Ontario including fish, furbearing mammals, game wildlife and specially protected wildlife through regulations for hunting, trapping, and fishing practices. Game and specially protected mammals, birds, reptiles, amphibians, and invertebrates are listed on Schedules 1-11 of the FWCA. Definitions provided for hunting include capturing or harassing wildlife (Section 5) and would include activities that collect or handle wildlife for inventories or other scientific purposes, or to relocate wildlife out of harm's way (e.g., during construction activities), including individuals and eggs. Sections 7 and 8 also provide protection for nest and eggs of specified bird species including raptors, and dens of bears and furbearing animals, and beaver damns. Under the FWCA, the Minister of Natural Resources and Forestry has the authority to authorize activities that would otherwise be prohibited such as the safe capture of wildlife and removal of nests, dens, and dams, and impose conditions on an authorization.

2.2.3 Conservation Authorities Act

The *Conservation Authorities Act, 1990* (CAA) grants each of Ontario's 36 Conservation Authorities (CA) the authority to make regulations within the areas under their respective jurisdictions (S. 28). However, with the gradual implementation of the *More Homes Built Faster Act* (2022) and *Building Better Communities and Conserving Watersheds Act* (2017), several amendments are in the process of being applied to the legislative authority of CAs. These changes include a revocation of CAA S.28 and implementation of a new regulation for CAs across Ontario. The amendments will significantly impact the legislative authority of CA, including their capacity to comment on natural heritage features and impacts for permitting applications. Although this new regulation is not yet in force at the time of writing, of as of January 1, 2023, the limits of CA authority to comment on approval processes under the permitting applications were limited to natural hazards and flooding under the *More Homes Built Faster Act* (2022).

2.2.4 Planning Act

The Ontario *Planning Act* sets out the ground rules for land use planning in Ontario. It describes how land uses may be controlled, and who may control them. The purpose of the Act is to:

- *"provide for planning processes that are fair by making them open, accessible, timely and efficient*
- *promote sustainable economic development in a healthy natural environment within a provincial policy framework*
- *provide for a land use planning system led by provincial policy*
- *integrate matters of provincial interest into provincial and municipal planning decisions by requiring that all decisions be consistent with the Provincial Policy Statement and conform/not conflict with provincial plans*
- *encourage co-operation and coordination among various interests*
- *recognize the decision-making authority and accountability of municipal councils in planning."*

2.2.5 Provincial Policy Statement

The Provincial Policy Statement (PPS; MMAH 2020) was issued under Section 3 of the *Planning Act*, *1990* and came into effect in 1996, with the most recent revision in March 2020. The *Planning Act* requires that decisions made by planning authorities are consistent with the policy statements, such as the PPS, which includes policies on development and land use patterns, resources and public health and safety. Municipal official plans are the most important vehicle for implementation of the PPS (MMAH 2020). Section 2.1 of the PPS deals with natural heritage and requires that natural heritage systems be identified in certain ecoregions. This includes Ecoregion 6E, where the Subject Property is located.

Although the PPS provides direction on land use planning and development projects, the policies provide a useful framework for identifying and evaluating the significance of natural heritage features on other projects including Municipal Class EAs. According to Section 2.1.5 of the PPS, development and site alteration are not permitted in the following features unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions:

1. Significant Wetlands
2. Significant Woodlands
3. Significant Valley lands
4. Significant Wildlife Habitat (SWH)
5. Significant Areas of Natural and Scientific Interest (ANSI)
6. Coastal Wetlands

Development and site alterations are not permitted in the following features, except in accordance with provincial and federal requirements:

1. Significant portions of the habitat of endangered or threatened species
2. Fish Habitat

Development and site alteration are not permitted on lands that are adjacent to the natural heritage features and areas identified above unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions.

2.3 City of Ottawa

2.3.1 City of Ottawa Official Plan

The City of Ottawa *Official Plan* (OP) was adopted by Council on November 2021. Schedule C11 designates the Natural Heritage System and Schedule C12 designates Urban Greenspace.

Section 4.8.1 of the OP states that "*the Natural Heritage System and the features within it are subject to a higher standard of protection than features outside*" and defined natural heritage features as the following:

- significant wetlands
- significant woodlands
- significant valleylands
- significant wildlife habitat (SWH)
- habitat for endangered and threatened species
- areas of natural and scientific interest (ANSI)
- urban natural features
- natural environment areas
- natural linkage features and corridors
- groundwater features
- surface water features, including fish habitat

- landform features

Section 5.6.4.1 of the OP states that "*the City shall protect natural heritage features for their natural character and ecosystem services*" and that "*development and site alteration shall have no negative impact on the Natural Heritage System and Natural Heritage Features*" and "*shall be consistent with the conclusions and recommendations of an approved environmental impact study*".

Section 7.3 of the OP states that "*development and site alteration are prohibited in Urban Natural Features*" and that "*development and site alteration within 30 m of the boundary of an Urban Natural Feature must demonstrate no negative impacts on the natural features within the area or their ecosystem services*". An Urban Natural Feature is defined as a woodland, wetland, and vegetated ravine throughout the urban area, protected and managed primarily for their environmental values and do not form part of parkland dedication. Additionally, Section 7.3 states that "*development and site alteration within 120 m of the boundary of a Significant Wetland must demonstrate no negative impacts on the natural features or their ecosystem services within the area*" and that "*development and site alteration within 120 m of the boundary of a Natural Environment Area must demonstrate no negative impacts on the natural features or their ecosystem services within the area*".

The City's *Environmental Impact Study Guidelines* (2023) (City of Ottawa 2023a) defines Significant Woodlands in an urban area as "any treed area meeting the definition of woodlands in the *Forestry Act*, R.S.O.1990. c F.26 or forest in the Ecological Land Classification for Southern Ontario" that is 0.8 ha in size or larger, supporting woodland 60 years of age and older at the time of evaluation.

2.3.2 City of Ottawa Tree By-Law

The City's Tree Protection By-law (No. 2020-340) (City of Ottawa 2020) was developed in a response to community feedback and recommendations provided in the City's *Urban Forest Management Plan* (City of Ottawa 2017). As such the by-law aims to protect:

- all City-owned trees
- all trees ≥10-centimetre (cm) diameter at breast height (DBH) on private properties within the urban area that are subject to a *Planning Act* application for Site Plan, Plan of Subdivision or Plan of Condominium
- all trees ≥10 cm DBH on private properties with the urban area that over 1 hectare (ha) in size, and
- all distinctive trees on private properties 1 ha in size, where distinctive trees are defined as:
  - Trees measuring ≥30 cm DBH within the inner urban area (urban lands inside the Greenbelt)
  - Trees measuring ≥50 cm DBH within the suburban area (urban lands outside the Greenbelt)

As the Study Area is located within the suburban area of the City of Ottawa, trees on the Subject Property measuring ≥50 cm DBH would require a permit if they are proposed to be removed to facilitate redevelopment. Additionally, any trees located on City-owned lands that may be impacted (e.g., infilling, removal) by redevelopment of the Site may require a permit.

3 Methods

For this report, SAR includes the following:

- Species listed as *threatened, endangered or extirpated* on the SARO list as published in Ontario Regulation 230/08, under the ESA
- Species listed as *threatened, endangered or extirpated* on Schedule 1 of the federal SARA

Species listed as *threatened, endangered and/or extirpated* on the SARO list receive both individual and habitat protection under the ESA. Species listed as *threatened, endangered and/or extirpated* on Schedule 1 of the SARA receive both individual and habitat protection under the SARA on federal lands.

Provincial ranks (S-Ranks) are status rankings assigned for the province by the Ontario Ministry of Natural Resources and Forestry (MNRF) and are available in the Natural Heritage Information Centre database (NHIC; MNRF 2023a). S-Ranks are used by the NHIC to set protection priorities for rare species and vegetation communities. They are based on the number of occurrences in Ontario and are not legal designations. Provincially rare species are species with S-Ranks of S1, S2, or S3 (MNRF 2023a. S-Ranks are defined as follows (MNRF 2023a):

- S1 – Critically Imperiled, very high risk of extinction or extirpation; usually fewer than 5 occurrences
- S2 – Imperiled, high risk of extinction or extirpation; usually fewer than 20 occurrences
- S3 – Vulnerable; usually fewer than 100 occurrences
- S4 – Apparently secure; uncommon but not rare, usually more than 100 occurrences
- S5 – Secure, common, widespread, and abundant
- S? – An S-Rank followed by a “?” indicates the rank is still uncertain
- SNA – Introduced

The Natural Heritage Reference Manual (NHRM) was developed to provide technical guidance for implementing the natural heritage policies of the PPS (MNR, 2010). SWH includes the habitat of Species of Conservation Concern (SOCC).

For this report, SOCC includes the following:

- Provincially rare species (S1-S3)
- Species listed as *special concern* under the ESA
- Species listed as *special concern under the SARA or under consideration for addition and/or status change* under Schedule 1 of the SARA
- Species identified as nationally *threatened or endangered* by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC)

Although these SOCC do not receive legal protection under the ESA or SARA, their habitat is protected under the PPS (e.g., if it qualifies as SWH), and they may also be afforded protection under the MBCA or FWCA.

The potential for SAR and SOCC to occur on the Subject Property and Adjacent Lands were assessed using the following criteria:

- recent records of the species in the Study Area from background sources
- range overlap within the Study Area
- presence of suitable habitat in the Study Area

3.1 Agency Consultation

A ToR was circulated to the City and the NCC on May 25, 2023, for review and comment. The ToR described the scope of the EIS, including the methods for the background review, field investigations, analysis, and reporting. The City provided comments on June 6, 2023, to which Stantec responded to on June 6, 2023. The City did not offer comments in response to Stantec's reply on June 6, 2023. The NCC did not offer comments. The ToR and associated agency correspondence records are provided in Appendix C.

3.2 Background Review

The purpose of the background review was to identify SAR and SOCC that may occur within the Study Area and to inform the 2023 field surveys. A variety of background documents and sources of information were consulted during the preparation of this report, to identify surficial geology (Figure 2, Appendix A) and records of NHFA (Figure 3, Appendix A) and recent records (i.e., records from 2000 or later) of SAR and SOCC within the Study Area, including the following information sources:

- Fisheries and Oceans Canada (DFO) Aquatic Species at Risk Map (DFO 2023c)
- Ontario's Natural Heritage Information Centre (NHIC) database (MNRF 2023a)
- Land Information Ontario (LIO) On-line Natural Heritage Mapping and Natural Heritage Information Database (MNRF 2023b)
- Environment And Climate Change Canada's (ECCC) Species at Risk Public Registry (ECCC 2023a)
- iNaturalist Canada (iNaturalist 2023)
- eBird Canada (eBird 2023)
- Checklist of The Dragonflies and Damselflies of Ottawa-Gatineau (Bracken and Lewis 2008)
- Migratory Bird Sanctuaries (ECCC 2023b)
- Ontario Breeding Bird Atlas (Cadman et al. 2007)
- Ontario Butterfly Atlas (Macnaughton et al. 2023)

- Ontario Moth Atlas (Kaposi et al. 2023)
- Ontario Reptile and Amphibian Atlas (Ontario Nature 2020)
- Atlas of the Mammals of Ontario (Dobbyn 1994)
- Ontario Ministry of Environment, Conservation and Parks (MECP) Species at Risk in Ontario (SARO) List (MECP 2023a)
- Source Protection Information Atlas (MECP 2023b)
- Tree Atlas (MECP 2023)
- Rideau Valley Conservation Subwatershed and Catchment Basin Reports (RVCA 2016a; RVCA 2016b)
- City of Ottawa Official Plan (City of Ottawa 2021)
- City of Ottawa's Species List (City of Ottawa 2023b)
- City of Ottawa's GeoPortal (City of Ottawa 2023c)
- The Riverwatch Handbook (Ottawa Riverkeeper 2015)
- *LeBreton Flats Soil Excavation Area Wetland Assessment* (Geofirma 2018a)
- *Abbreviated Wetland Function Assessment* (Geofirma 2018b)

A list of SAR and SOCC with recent records (i.e., only records from 2000 or later) within the Study Area was compiled based on the background data review. Some of the desktop sources provide data at a scale of 10 x 10 kilometer (km), and a recent species record is not confirmation that the species may be present within the Study Area as suitable habitat may not occur. Therefore, SAR and SOCC desktop results were screened to assess their relevance to the Study Area. Species were removed from consideration if there was no potential habitat observed within the Study Area on satellite imagery (e.g., grassland species, marsh species) and/or if there were no recent records (i.e., records from 2000 or later) of the species in the area. SAR and SOCC that had the potential to occur within the Study Area (i.e., recent records and potential habitat) were carried forward to the Evaluation of Significance in Sections 3.4

Information regarding geological, topographic, and landscape ecology at the Subject Property was also collected during the background review and summarized in Sections 4.1.1 and 4.1.2 (see Figure 2, Appendix A).

3.3 Field Investigations

Field investigations were conducted in 2023 in order to confirm and supplement the background review described above.

Field investigations occurred on four dates in 2023, and included vegetation community survey and mapping, spring and summer botanical survey, Butternut and Black Ash survey, two breeding bird surveys, candidate bat maternity roost tree survey, wildlife habitat assessment, and an aquatic habitat assessment. The spring botanical survey, Butternut and Black Ash survey, candidate bat maternity roost tree survey, and wildlife habitat assessment were completed over two days; these surveys were completed in all areas except the west portion of the Study Area during the first site visit and in the west portion of the Study Area during the second site visit. Incidental wildlife observations were recorded during all sites visits. Table 3.1 summarizes the field survey dates for the 2023 investigations.

Table 3.1 Summary of 2023 Field Survey Dates

Type of Survey	Date	Surveyors
• Spring botanical survey • Butternut and Black Ash survey (all areas except west portion of Study Area) • Breeding bird survey #1 • Candidate bat maternity roost tree survey (all areas except west portion of Study Area) • Incidental wildlife observations • Wildlife habitat assessment (all areas except west portion of Study Area) • Aquatic habitat assessment	June 19, 2023	J. Mansell
• Spring botanical survey (west portion of Study Area) • Butternut and Black Ash survey (west portion of Study Area) • Candidate bat maternity roost tree survey (west portion of Study Area) • Incidental wildlife observations • Wildlife habitat assessment (west portion of Study Area)	June 21, 2023	V. Brouse
• Breeding bird survey #2 • Incidental wildlife observations	June 29, 2023	J. Mansell V. Brouse
• Vegetation community survey and mapping • Summer botanical survey • Incidental wildlife observations	September 11, 2023	A. Orr J. Mansell

3.3.1 Botanical Surveys

Vegetation surveys were conducted on June 19, June 21; and September 11, 2023, and included community delineation and classification using Ecological Land Classification for southern Ontario (ELC; Lee et al. (1998/2008)), and spring and summer botanical inventories.

The purpose of these surveys was to document plant species in the Study Area and describe the ELC vegetation communities present. Targeted searches were conducted for SAR, SOCC, and rare vegetation community types known to occur in the vicinity of the Study Area.

Vegetation communities were delineated on aerial imagery and verified in the field. The Study Area was systematically covered on foot to ensure a comprehensive inventory of flora species potentially impacted by the proposed works.

The identification and provincial status of all plant species and flora nomenclature for scientific accepted species names is based on the vascular plant list available on the NHIC database (MNRF 2023a) and VASCAN, the Database of Vascular Plants of Canada (Canadensys 2011), was used to verify synonyms of plant names where appropriate.

3.3.2 Butternut and Black Ash Survey

Stantec completed a dedicated search for Butternut and Black Ash trees within the Study Area by meandering on foot through areas of potentially suitable habitat on June 19 and June 21, 2023. Additionally, Stantec searched for Butternut and Black Ash concurrently during previous and subsequent wildlife and vegetation surveys within the Study Area during the Stantec's 2023 field program. Where permission to enter lands not owned by the NCC within the Study Area was not provided, the areas were searched from publicly accessible lands using binoculars.

3.3.3 Breeding Bird Surveys

Breeding bird surveys were conducted on June 19 and June 28, 2023, using area searches in the Study Area as described in the Ontario Breeding Bird Atlas (Cadman, et al. 2007), and by traversing the Study Area on foot and recording all species of birds that were heard or seen. The highest level of breeding evidence was recorded for each species using the codes in the Ontario Breeding Bird Atlas (Cadman, et al. 2007).

A summary of breeding bird survey dates, times and weather is provided in Table 3.2.

Table 3.2 Breeding Bird Survey Dates, Times, and Weather Conditions

Date	Time (24 hrs)	Temp (°C)	Wind (Beaufort)	Cloud (%)	Precipitation/ 24 hrs (mm)
June 19, 2023	0716 – 0916	15 – 16	2 –3	50	~1
June 28, 2023	0639 – 0912	15 – 16	3	100	~15

3.3.4 Candidate Bat Maternity Roost Tree Survey

ELC was used to document potential maternity roost habitat within the Study Area. Based on criteria in the *Survey Protocol for Species at Risk Bats Within Treed Habitats* (MNRF 2017), hedgerow, treed thicket and forest communities within the Study Area were considered potential bat maternity roost habitat. A survey was completed on June 19 and June 21, 2023, to identify potentially suitable roost trees with a DBH of 10 cm or greater within or immediately adjacent to the Project Footprint because these trees are most likely to be impacted by the proposed works.

The following were recorded for each assessed tree:

- Geographic coordinates (UTM)
- DBH
- Height/crown class (dominant, co-dominant, intermediate, and suppressed)
- Presence of cavity, loose bark, crack, or knot hole
- Decay class (1 – 6)

Snag trees suitable for little brown myotis and northern myotis were those trees in an early state of decay with loose bark, or at least one cavity, crack, knot, or leaf cluster. Roost trees suitable for tri-coloured bat were oak trees over 10 cm DBH, and sugar maple trees over 25 cm DBH or sugar maple trees over 10 cm DBH that also include a dead/dying leaf cluster. There is no minimum threshold for number of maternity roost trees per hectare for an ELC ecosite to be considered suitable maternity roost habitat for bat SAR.

3.3.5 Incidental Wildlife Observations

Observations of wildlife and signs of wildlife were recorded during field investigations, including species that were detected by sight and sound, dens, nests, burrows, browse, tracks, and scat. Surveyors searched areas where wildlife are likely to concentrate (e.g., in woodlands or thickets, and open foraging and basking habitat) to improve the likelihood of encountering wildlife and evidence of wildlife, and recorded species, their respective numbers/counts, and took notes on habitat and behavior.

3.3.6 Wildlife Habitat Assessment

A wildlife habitat assessment was conducted within the Study Area on June 19 and June 21, 2023. Natural environment features such as candidate snake hibernacula, vernal pools, seeps and springs, candidate turtle overwintering and nesting habitat, raptor nests, and terrestrial crayfish chimneys were recoded if encountered, and a description of the attributes and location of each feature identified was recorded.

3.3.7 Aquatic Habitat Assessment

A review of available background data and publicly available information sources was completed to determine the presence of aquatic features (e.g., wetlands, watercourses) within the Study Area.

An aquatic habitat assessment was conducted within the Study Area for the Nepean Inlet and Fleet Street Tailrace on June 19, 2023 (Figure 3, Appendix A). To confirm the presence and extent of the Nepean Inlet and Fleet Street Tailrace as well as to identify additional aquatic features that may not be mapped or are not large enough to be observed on aerial imagery, a survey was conducted on foot by completing meandering transects across the Study Area.

3.4 Evaluation of Significance

Natural environment features identified during the EIS were evaluated to determine significance using the definitions and criteria for NHFA, SAR or SOCC described below.

3.4.1 Species at Risk and Species of Conservation Concern

Based on Stantec's desktop review and field studies, a list of SAR and SOCC with the potential to occur within the Study Area was developed, along with the likelihood of occurrence and federal and provincial status for each species. The likelihood of occurrence of each species was ranked as nil, low, medium, high, or confirmed, based on field survey observations and presence of suitable habitat within the Study Area and were defined as follows:

- **Nil:** species with no suitable habitat observed in the Study Area.
- **Low**: species with no recent records within the Study Area and/or no to very limited suitable habitat in the Study Area were ranked as 'low likelihood of occurrence'.
- **Medium**: species with a recent record within the Study Area and suitable breeding/roosting habitat in the Study Area were ranked as 'medium likelihood of occurrence'.
- **High**: species with multiple recent records within the Study Area and/or an abundance of suitable habitat in the Study Area were ranked as 'high likelihood of occurrence'.
- **Confirmed**: species were observed in the Study Area during field surveys.

Species with a nil or low probability to occur in the Study Area were not carried forward for further assessment in the study. Mitigation measures and potential permitting requirements are discussed in Section 7 and Section 8 for species with a medium or high probability to occur and species that were confirmed (i.e., observed during field studies).

3.4.2 Natural Heritage Features and Areas

Natural heritage feature and areas (NHFA), if present, were identified during the desktop review within the Study Area and characterized during the ELC surveys if within the Study Area. Natural heritage features include ANSIs, Provincially Significant Wetlands (PSWs), unevaluated wetlands, municipal drains, ditches, creeks, fish nurseries, linkages and wildlife corridors, significant woodlands, and significant valleylands.

The potential significance of NHFA and associated ecological functions was evaluated in accordance with the *Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement* (MNR 2010) and the City of Ottawa Official Plan (City of Ottawa 2021) to determine Provincially Significant natural heritage features and associated ecological functions within the Study Area.

The *Significant Wildlife Habitat Technical Guide* (SWHTG) (MNR 2000) and Ecoregion Criteria Schedule for 6E (MNRF 2015a) provide standard provincial guidance and were used to identify SWH and assess their significance and sensitivity.

Habitats within the Study Area were assessed for candidate SWH using the Ecoregion 6E Criterion Schedule (MNRF 2015a). The presence of SWH was determined through desktop review (NHIC database) and, if present in the Subject Property, were characterized during field surveys.

Multi-year targeted species-use surveys are generally required to determine if candidate features qualify as confirmed SWH. Because multi-year targeted species-use surveys have not been conducted, SWH features identified during field investigations are considered candidate, unless they were confirmed through direct observations or background review.

The SWHTG defines four categories of SWH:

- Habitats of Seasonal Concentrations of Animals
- Rare Vegetation Communities or Specialized Habitats for Wildlife
- Habitats of Species of Conservation Concern
- Animal Movement Corridors.

3.4.2.1 Habitats of Seasonal Concentrations of Animals

Habitats of seasonal concentrations of animals are those sites where large numbers of a species gather together at one time of the year, or where several species congregate. These areas include deer yards, turtle overwintering areas, snake and bat hibernacula, bat maternity colonies, waterfowl staging areas, raptor roosts, bird nesting colonies, shorebird staging areas, and passerine migration concentrations. Only the best examples of these concentration areas are usually designated as SWH. Areas that support a SAR, or areas where a large proportion of the population may be lost if the habitat is destroyed, are examples of habitats of seasonal concentrations of animals which should be designated as significant (MNR 2000).

3.4.2.2 Rare Vegetation Communities or Specialized Habitats for Wildlife

Rare vegetation communities and specialized habitats for wildlife are two separate components. Rare vegetation communities are those with vegetation communities that are considered rare in the province (e.g., S1-S3). The SWHTG (MNR 2000) identifies many habitats that could be considered specialized habitats, such as habitat for area-sensitive species, forests providing a high diversity of habitats, amphibian woodland breeding ponds, turtle nesting habitat, highly diverse sites, as well as seeps and springs. High quality habitat features generally occur within interior landscapes where habitat is not influenced by edge effects and wildlife mortality that are associated with major roadways.

3.4.2.3 Habitat for Species of Conservation Concern

Habitat for SOCC includes four types of species: (a) those that are rare, (b) those whose populations are significantly declining, (c) those that have been identified as being at risk to certain common activities, and (d) those with relatively large populations in Ontario compared to the remainder of the globe. This category also includes nesting habitats for marsh, open country, shrub/early successional birds as well as terrestrial crayfish.

3.4.2.4 Animal Movement Corridors

Migration corridors are areas that are traditionally used by wildlife to move from one habitat to another, typically to access different seasonal habitat requirements. Corridors requiring consideration in Ecoregion 6E include Amphibian and Deer Movement Corridors and are identified once significant amphibian breeding or deer winter features are confirmed.

4 Results

The results of the background review and field studies, as described in Section 3 are outlined below. The species described in-text herein use provincial common names (MNRF 2023a). All common names and associated scientific names and species status are detailed in Appendix D and Appendix E.

4.1 Background Review

4.1.1 Geology and Topography

Regional physiography is influenced by the historic Ottawa River valley and varies from clay plain to sand plain with extensive drumlins to the south (Chapman and Putnam 1984). The surficial geology of the Subject Property consists primarily of stone-poor, sandy silt to silty sand-textured till on Paleozoic terrain (Figure 2, Appendix A) that is exposed in many areas (Photos 4 & 5, Appendix B) with a portion consisting of Paleozoic bedrock (Ontario Geological Survey 2023).

The Subject Property topography is variable and is defined by the Paleozoic bedrock. In areas where bedrock is exposed at the surface, elevation within the Subject Property reaches an approximate maximum of 63 meters above sea level (masl) with the lowest portion of the Subject Property (located in the southeast corner) at approximately 55 masl (Figure 2, Appendix A). Overall, the Subject Property is generally flat and comparatively consistent in elevation with surrounding landscape along the Ottawa River.

4.1.2 Landscape Ecology

The Study Area is situated within Ecoregion 6E in the Kemptville Ecodistrict (6E-12) within the Lake Simcoe-Rideau Ecoregion. This Ecodistrict is approximately 58% pasture/cropland, 26% deciduous forest (associated with the Eastern Temperate Deciduous Forest Vegetation Type and the Upper St. Lawrence Region of the Great Lakes-St. Lawrence Forest Region), 6% mixed forest, 6% other natural communities, and 4% other communities (Wester et al., 2018). Tree species associated with this Ecodistrict include Sugar Maple (*Acer saccharum*), American Beech (*Fagus grandifolia*), American Elm (*Ulmus americana*), Red Maple (*Acer rubrum*), Black Ash (*Fraxinus nigra*), Large-toothed Aspen (*Populus grandidentata*), Silver Maple (*Acer saccharinum*), Green Ash (*Fraxinus pennsylvanica*), and Bur Oak (*Quercus macrocarpa*) (Wester et al., 2018). The Study Area is located in an urban environment and the forest cover in urban environments may include native tree species associated with Ecodistrict 6E-12 as well as planted, non-native trees.

4.1.3 Designated Natural Features and Areas

Based on the results of the background review, the following designated natural features and areas have been previously identified within the Study Area:

- Schedule B1 (Downtown Core Transect) of the City of Ottawa Official Plan (City of Ottawa 2021) indicates the Parks District is located on lands designated as Greenspace. The remaining portions of the Subject Property are located on lands designated as Evolving Neighbourhood and Hub.
- Schedule C11C [Natural Heritage System (East)] and Schedule C12 (Urban Greenspace) of the City of Ottawa Official Plan (City of Ottawa 2021) indicate the Subject Property is located on lands designated as Open Space as part of the Natural Heritage System overlay.
- Schedule C15 (Environmental Constraints) of the City of Ottawa Official Plan (City of Ottawa 2021) and the MECP Source Protection Information Atlas (MECP 2023b) indicates the Subject Property is located on lands designated as Intake Protection Zone 2 (IPZ-2; Vulnerability Score 8) and Highly Vulnerable Aquifer (HVA; Vulnerability Score 6).
- The NHIC database (MNRF 2024) indicates woodlands are located on Adjacent Lands east of the Subject Property. The LIO database indicates a portion of these woodlands are designated as Significant Woodlands (MNRF 2023b; Figure 3, Appendix A). The woodlands do not meet the City of Ottawa's criteria for Significant Woodlands as outlined in the *Environmental Impact Study Guidelines* (2023) (City of Ottawa 2023a) and discussed in Section 2.3.1.
- The LIO database (MNRF 2023b) indicates the Subject Property is located on lands designated as the Lac Deschênes-Ottawa River Important Bird Area (IBA) (Figure 3, Appendix A).
- The NHIC database (MNRF 2024) indicates two Wildlife Concentrations Areas (Colonial Waterbird Nesting Area, Mixed Wader Nesting Colony) occur within NHIC squares overlaying the Subject Property.
- O. Reg 174/06 Regulated Areas – The Ottawa River in the Study Area are regulated by the RVCA under O. Reg. 174/06 of the CAA.
- According to the *LeBreton Flats Soil Excavation Area Wetland Assessment* (Geofirma 2018a), there are four wetland parcels within the Subject Property (Figure 4, Appendix A).

Aquatic features are discussed further in Section 4.1.5 below. There were no records of mapped ANSIs or PSWs identified for the Study Area.

4.1.4 Species at Risk and Species of Conservation Concern

A total of 25 SAR and 28 SOCC were identified during the background review with the potential to occur within the Study Area. Of these 25 SAR and 28 SOCC, 18 SAR and 15 SOCC were screened in with potential habitat within the Study Area based on a preliminary habitat assessment using satellite imagery. These species were carried forward to the field assessment. The final assessment of potential SAR and SOCC for the Study Area following field investigations is presented in Section 4.3 and Appendix E.

These 7 SAR and 13 SOCC had no recent records (i.e., records from 2000 or later) and/or no potential habitat within the Study Area:

SAR:

- Dense Blazing-star (*Liatris spicata*)
- Skillet Clubtail (*Gomphurus ventricosus*)
- Bank Swallow (*Riparia riparia*)
- Canada Warbler (*Cardellina canadensis*)
- Common Nighthawk (*Chordeiles minor*)
- Eastern Whip-poor-will (*Antrostomus vociferus*)
- Eastern Red Bat (*Lasiurus borealis*)

SOCC:

- Purple-margined Liverwort (*Reboulia hemisphaerica*)
- Blistered Jellyskin (*Leptogium corticola*)
- Cupped Fringe Lichen (*Heterodermia hypoleuca*)
- Honey Locust (*Gleditsia triacanthos*)
- Horn-leaved Riverweed (*Podostemum ceratophyllum*)
- Meadow Evening-primrose (*Oenothera pilosella*)
- Ebony Boghaunter (*Williamsonia fletcheri*)
- Swamp Darner (*Epiaeschna heros*)
- Bald Eagle (*Haliaeetus leucocephalus*)
- Common Gallinule (*Gallinula galeata*)
- Eastern Wood-pewee (*Contopus virens*)
- Peregrine Falcon (*Falco peregrinus*)
- Purple Martin (*Progne subis*)

4.1.5 Aquatic Features

4.1.5.1 Watercourses

There are two watercourses within the Study Area: Fleet Street Tailrace and the Ottawa River (includes Nepean Bay; Figure 3, Appendix A). The Fleet Street Tailrace is mapped as a permanent watercourse with an unknown thermal regime (MNRF 2023b). The Fleet Street Tailrace originates in the centre of the Subject Property and conveys flow from Nepean Bay and discharges back into the Ottawa River approximately 1.2 km northeast of the Subject Property. The Fleet Street Tailrace flows through open channels, underground pipes, two aqueducts, and the City of Ottawa's Fleet Street Generating Station (geoOttawa 2024).

The Ottawa River is a permanent watercourse with a warmwater thermal regime (MNRF 2023b) that conveys flow from Lake Timiskaming and discharges into Lake of Two Mountains and the St. Lawrence River approximately 1,271 km southeast of its origin. Based on results of the background review, the following designated aquatic features have been previously identified in the Ottawa River within the Study Area:

- DFO Aquatic Species at Risk Distribution for (DFO 2023c)
  - River Redhorse – Special Concern
  - Northern Brook Lamprey – Special Concern
  - Channel Darter – Special Concern
  - Hickorynut – Endangered
- Fish Nursery Area (MNRF 2023b)

Fish community data for the Ottawa River includes 30 species (Table 4.1), including two SAR [(Lake Sturgeon (Great Lakes - Upper St. Lawrence River population), American Eel] and three SOCC as previously mentioned (River Redhorse, Northern Brook Lamprey, Channel Darter). The remaining 24 fish species with records in the Ottawa River near the Study Area have S-Ranks of S4 or S5 and are common and widespread in Ontario.

Table 4.1 Fish Community Data for the Ottawa River Near the Study Area

Family [1]	Scientific Name [1]	Common Name [1]	S-Rank[2]	SARO Status[3]	COSEWIC Status[4]	SARA Status[5]	Source(s)
Acipenseridae	*Acipenser fulvescens pop. 3*	Lake Sturgeon (Great Lakes - Upper St. Lawrence River population)	S2	THR	THR	Not Listed	NHIC
Anguillidae	*Anguilla rostrata*	American Eel	S1S2	END	THR	Not Listed	NHIC, iNaturalist
Catostomidae	*Catostomus commersonii*	White Sucker	S5	Not Listed	Not Listed	Not Listed	LIO
Catostomidae	*Moxostoma carinatum*	River Redhorse	S2	SC	SC	SC	DFO
Catostomidae	*Moxostoma macrolepidotum*	Shorthead Redhorse	S5	Not Listed	Not Listed	Not Listed	LIO
Centrarchidae	*Ambloplites rupestris*	Rock Bass	S5	Not Listed	Not Listed	Not Listed	LIO
Centrarchidae	*Lepomis gibbosus*	Pumpkinseed	S5	Not Listed	Not Listed	Not Listed	LIO
Centrarchidae	*Micropterus dolomieu*	Smallmouth Bass	S5	Not Listed	Not Listed	Not Listed	LIO
Centrarchidae	*Pomoxis nigromaculatus*	Black Crappie	S4	Not Listed	Not Listed	Not Listed	LIO
Cottidae	*Cottus bairdii*	Mottled Sculpin	S5	Not Listed	Not Listed	Not Listed	LIO
Cottidae	*Cottus cognatus*	Slimy Sculpin	S5	Not Listed	Not Listed	Not Listed	LIO
Cyprinidae	*Cyprinella spiloptera*	Spotfin Shiner	S4	Not Listed	Not Listed	Not Listed	LIO
Cyprinidae	*Notropis heterolepis*	Blacknose Shiner	S5	Not Listed	Not Listed	Not Listed	LIO
Cyprinidae	*Rhinichthys cataractae*	Longnose Dace	S5	Not Listed	Not Listed	Not Listed	LIO
Cyprinidae	*Semotilus atromaculatus*	Creek Chub	S5	Not Listed	Not Listed	Not Listed	LIO
Esocidae	*Esox lucius*	Northern Pike	S5	Not Listed	Not Listed	Not Listed	LIO
Esocidae	*Esox masquinongy*	Muskellunge	S4	Not Listed	Not Listed	Not Listed	LIO
Gadidae	*Lota lota*	Burbot	S5	Not Listed	Not Listed	Not Listed	LIO
Ictaluridae	*Ameiurus nebulosus*	Brown Bullhead	S5	Not Listed	Not Listed	Not Listed	LIO
Ictaluridae	*Ictalurus punctatus*	Channel Catfish	S4	Not Listed	Not Listed	Not Listed	LIO
Ictaluridae	*Noturus flavus*	Stonecat	S4	Not Listed	Not Listed	Not Listed	LIO
Ictaluridae	*Noturus gyrinus*	Tadpole Madtom	S4	Not Listed	Not Listed	Not Listed	LIO

Family [1]	Scientific Name [1]	Common Name [1]	S-Rank[2]	SARO Status[3]	COSEWIC Status[4]	SARA Status[5]	Source(s)
Lepisosteidae	*Lepisosteus osseus*	Longnose Gar	S4	Not Listed	Not Listed	Not Listed	LIO
Percidae	*Etheostoma nigrum*	Johnny Darter	S5	Not Listed	Not Listed	Not Listed	LIO
Percidae	*Perca flavescens*	Yellow Perch	S5	Not Listed	Not Listed	Not Listed	LIO
Percidae	*Percina caprodes*	Logperch	S5	Not Listed	Not Listed	Not Listed	LIO
Percidae	*Percina copelandi pop. 3*	Channel Darter (St. Lawrence populations)	S3	SC	SC	SC	DFO
Petromyzontidae	*Ichthyomyzon fossor*	Northern Brook Lamprey	S3	SC	SC	Not Listed	DFO
Petromyzontidae	*Ichthyomyzon unicuspis pop. 1*	Silver Lamprey (Great Lakes - Upper St. Lawrence populations)	S3	SC	SC	SC	NHIC
Sciaenidae	*Aplodinotus grunniens*	Freshwater Drum	S5	Not Listed	Not Listed	Not Listed	LIO

[1]**Family, Scientific Name,** and **Common Name**: The family, scientific name, and English common name of a species as published by the Natural Heritage Information Centre hosted by the Ministry of Natural Resources and Forestry / Land Information Ontario.

[2]**OntarioS-Rank:** Subnational Rank (S-Rank) is the conservation status of a species or plant community within a particular province, territory, or state. In this scenario, it is the provincial level ranking system as published by the Natural Heritage Information Centre hosted by the Ministry of Natural Resources and Forestry / Land Information Ontario.

[3]**SARO Status:** Species at Risk in Ontario (Provincial Status as defined by the Endangered Species Act, 2007 as amended).

[4]**COSEWIC Status**: Status as defined by the Committee on the Status of Endangered Wildlife in Canada.

[5]**SARA Status:** Federal status as defined by the Species at Risk Act.

Endangered Species Act and Species at Risk Act Acronyms

END: Endangered

THR: Threatened

SC: Special Concern

Ontario Subnational Rankings (S RANK)

S1: Critically Imperiled – Critically imperiled in the province (often 5 or fewer occurrences)

S2: Imperiled – Imperiled in the province, very few populations (often 20 or fewer),

S3: Vulnerable – Vulnerable in the province, relatively few populations (often 80 or fewer)

S4: Apparently Secure – Uncommon but not rare

S5: Secure – Common, widespread, and abundant in the province

4.1.5.2 Wetlands

According to the *LeBreton Flats Soil Excavation Area Wetland Assessment* (Geofirma 2018a), there are four wetland parcels (Figure 4, Appendix A).

As described in Section 2.1.6, wetlands under federal jurisdiction are required to be compensated for based on the Policy goal of NNL of wetland function on all federal lands. However, wetland units that will be transferred under the re-development proposal to provincial jurisdiction do not meet the provincial minimum size threshold of 0.5 ha for mapping wetland types and would not require compensation. During the LeBreton Flats Soil Excavation Area Wetland Assessment, Geofirma concluded the total area of wetland loss on lands remaining under federal jurisdiction will be approximately 0.06 ha (Geofirma 2018a).

During the *Abbreviated Wetland Function Assessment* (Geofirma 2018b), Geofirma conducted an assessment of wetland functions within the Study Area to assess the appropriateness of compensating for the loss of a 0.06 ha wetland parcel which is to remain under federal jurisdiction. The assessment was based on existing site conditions, site setting, and origins of the wetland parcels on-site.

Geforima concluded the only function provided by the wetland parcels within the Study Area is stormwater retention capacity and compensation of the stormwater retention function provided by the small, 0.06 ha wetland parcel is not warranted (Geofirma 2018b).

In 2014, the NCC was concerned about wetlands developing and wildlife inhabiting the LeBreton Flats recently remediated site and was looking to drain these areas. A 0.15 ha wetland was identified during an environmental review triggered by an interim landscaping project proposed by the NCC to improve the appearance of the area until the site is developed. The transitional landscaping project entailed the removal of a wetland that formed on the exposed bedrock of the remediated area, and the wetland and its functions were characterized. The characterized wetland met the federal definition of a wetland and had ecological functions, as such, a wetland compensation plan was requested, prepared, submitted, reviewed, approved, eventually implemented and followed up.

The RVCA was approached in 2014 to assemble a wetland compensation proposal to compensate for the loss of the wetland feature within the Study Area. NCC had required a 0.15 ha wetland compensation that would consist of a shallow water basin wetland that would support amphibian breeding, bird foraging and act as a water supply for wildlife. A low-lying cattail area was therefore excavated in 2015 to provide a functional 0.15 ha wetland habitat feature in the Ottawa River watershed (NCC 2024).

4.2 Field Investigations

4.2.1 Vegetation Community Assessment

The vegetation community assessment was completed in June and September 2023 for the Subject Property. The vegetation assessment followed the ELC system for southern Ontario (Lee et al. 1998) and the update (2008) catalogue. The Subject Property consisted predominately of natural vegetation communities (17.49 ha) and represented deciduous hedgerows and woodlands, coniferous plantation, deciduous thickets, and mixed meadows (FOD, FOC, WOD, THD, MEM). Natural vegetation communities occurred in isolated pockets adjacent to road and rail infrastructure and were highly disturbed sites that contained fast colonizing plants, invasive plants species, and/or noxious weeds. Landscape features [i.e., parkland (CGL_2), green lands (CGL)] such as mowed lawn, manicured gardens, and planted trees and shrubs occupied 6.02 ha Constructed areas consisted of transportation corridors, parking lots, and multi-use pathways (CV, 4.58 ha). Open water (OA) areas occupied approximately 0.67 ha. ELC vegetation community types within the Study Area are mapped on Figure 4, Appendix A. All vegetation communities observed are common and widespread throughout Ontario (MNRF 2023c). Vegetation communities in the Study Area are described in Table 4.2 below.

Table 4.2 Vegetation Community Descriptions

ELC Type	Community Description	Area (ha)
FOREST COMMUNITIES		
FOCM6 Naturalized Coniferous Plantation	This forested community occurred near the west boundary on a sloped topography. The canopy was abundant with coniferous trees of Austrian Pine and Scots Pine (Photo 22, Appendix B).	0.79
FODM11 Naturalized Deciduous Hedge-row Ecosite	This vegetation community occurred in two locations in the Study Area and were both associated with transportation infrastructure. Each unit contained a narrow strip of deciduous trees adjacent to a road or rail feature. Tree species included that of Manitoba Maple, Crack Willow, and Trembling Aspen (Photo 23, Appendix B).	0.23
WOODLAND COMMUNITIES		
WODM4 Dry - Fresh Deciduous Woodland Ecosite	This woodland community was directly west of the open water feature. It contained a tree canopy abundant with Manitoba Maple, Willow species, American Elm, and Eastern Cottonwood. The understorey was abundant with Staghorn Sumac, as well as European Buckthorn and Glossy Buckthorn (no photos).	0.56
THICKET COMMUNITIES		
THDM2-1 / MEMM3 Sumac Deciduous Shrub Thicket Type / Dry - Fresh Mixed Meadow Ecosite	Sumac thickets were associated with meadow communities and dominated with Staghorn Sumac.	0.36

ELC Type	Community Description	Area (ha)
THDM4 Dry - Fresh Deciduous Regeneration Thicket Ecosite	This thicket community was commonly associated with meadow features. Species included White Sweet Clover, Russian Olive, Trembling Aspen, Willow Species, and American Elm (no photos).	0.38
THDM4-1/CV Native Deciduous Regeneration Thicket Type / Constructed	This community was associated with a recently disturbed area where concrete pavement was still present. However, tree and shrub species were recolonizing the site and contained species of Trembling Aspen, Willow species, and Eastern Cottonwood (Photos 4 – 6, 9, and 25, Appendix B).	5.32
MEADOW COMMUNITIES		
MEMM3 Dry - Fresh Mixed Meadow Ecosite	This meadow community abundant with forbs and grasses was the most common throughout the Study Area. Plant species ranged in abundance and composition, but most areas were abundant with Wild Carrot, Common Ragweed, Reed-canary Grass, Tall Goldenrod, Canada Thistle, Chicory, and Barnyard Grass to name a few (Photos 10 and 19, Appendix B).	4.57
MEMM3 / THDM2-1 Dry - Fresh Mixed Meadow Ecosite / Sumac Deciduous Shrub Thicket Type	Meadow community abundant with forbs and grasses associated with Sumac thickets. Species included Wild Carrot, Common Ragweed, Reed-canary Grass, Tall Goldenrod, Canada Thistle, Chicory, and Barnyard Grass (Photo 21, Appendix B).	0.87
MEMM3 / THDM4 Dry - Fresh Mixed Meadow Ecosite / Dry - Fresh Deciduous Regeneration Thicket Ecosite	Meadow community abundant with forbs and grasses associated with thicket community. Species included Wild Carrot, Common Ragweed, Reed-canary Grass, Tall Goldenrod, Canada Thistle, Chicory, Barnyard Grass, White Sweet Clover, Russian Olive, Trembling Aspen, Willow species, and American Elm (Photos 15 and 16, Appendix B).	2.64
MEMM3 / CGL Dry - Fresh Mixed Meadow Ecosite / Greenland	Meadow community abundant with forbs and grasses associated with green land areas. Species included Wild Carrot, Common Ragweed, Reed-canary Grass, Tall Goldenrod, Canada Thistle, Chicory, Barnyard Grass., and planted, mature trees (no photos).	0.39
MEMM3 / CV Dry - Fresh Mixed Meadow Ecosite / Constructed	Meadow community abundant with forbs and grasses with recently disturbed areas (Photos 1 and 3, Appendix B).	1.24
MARSH COMMUNITIES		
MASR1 Graminoid Bedrock Shallow Marsh Ecosite	This community is associated with pooling water on shallow bedrock previously exposed after remediation. Species primarily consisted of Trembling Aspen saplings, Cattail sp., invasive Common Reed, Soft-stemmed Bulrush and Northern Water Plantain (Photos 28, Appendix B).	0.15
AQUATIC COMMUNITIES		
OA Open Water	This open water community is referred to as the Fleet Street Tailrace. Manitoba Maple and Willow species occurred within the riparian zone/adjacent to the retaining walls (Photos 11, 12, and 14, Appendix B).	0.67

ELC Type	Community Description	Area (ha)
CONSTRUCTED TYPES		
CV Constructed	The constructed areas consisted of parking lots, pedestrian platforms and/or pathways, where little to no vegetation growth occurred (Photo 20, Appendix B).	0.35
CGL Green land	This feature represented areas with meadows that are maintained on an occasional basis to allow for public access (Photos 13 and 18, Appendix B).	15.94
CGL_2 Parkland	This feature represented areas with landscaped gardens and/or sculptures and are maintained on a regular basis (Photos 7 and 8, Appendix B).	0.94
CVI_1 Transportation	This community is associated with roads, pathways, railways, and parking lots (Photos 2 and 17, Appendix B).	4.23

4.2.1.1 Vascular Plant Species

A complete floristic survey was completed concurrently with the vegetation community survey in June and September 2023. The nomenclature of plant species was based on those published by the NHIC (MNRF 2023a). A detailed list with all scientific plant names and species statuses is provided in Appendix D.1. A summary of the floristic survey results is presented below:

- Thirty (30) plant families were observed within the Subject Property. Asteraceae (aster/ daisy/composite/sunflower) was the most abundant family (11 species) within the Subject Property, followed by Fabaceae (legume/pea/bean; 8 species) and Poaceae (grasses; 7 species).
- A total of 64 species of vascular plants were recorded. This total includes taxa identified to species, subspecies (ssp.) and variation (var.) level.
- Twenty-eight (28) of the recorded species are native to Ontario (44%), and 36 are exotic species not native to Ontario (56%).
- Twenty-three (23) native species have a provincial rank of S5, indicating they are common with a secure population in Ontario.
- Two (2) native species have a provincial rank of S4, indicating they are uncommon, but not rare in the province and populations are apparently secure.
- Two (2) native species are rare in Ontario with provincial ranks of S2 (Butternut, Heart-leaved Four O'clock). Heart-leaved Four O'clock is rare in Ontario however the observed individual within the Subject Property was determined to be a garden escapee and is therefore not considered provincially rare.
- In addition to S-ranks, Ontario identifies potentially sensitive native plant species based on their coefficient of conservatism (CC) value (Oldham and Sutherland 1995). This CC value, ranging from 0 (low) to 10 (high), is based on a species' tolerance of disturbance and fidelity, or ability to thrive in a specific natural habitat. Species with a CC value of 9 or 10 generally exhibit a high degree of fidelity to a narrow range of habitat parameters. No species with a CC of 9 or 10 were observed; however, one native species (Shrubby Cinquefoil) with a CC of 8 (i.e., highly sensitive native plant species) was observed in the Subject Property.

- One plant SAR was observed – Butternut, listed as endangered under SARO and SARA (Appendix A).

4.2.1.2 Butternut and Black Ash

Butternut are a member of the Walnut (Juglandaceae) family and are native to southern and eastern Ontario in mixed hardwood forest. Butternut cannot hybridize with native Black Walnut (*Juglans nigra*) but are known to hybridize with introduced walnut species, especially Japanese Walnut (*Juglans ailantifolia*), which are cultivated in Canada. Butternuts grow best on well-drained, fertile soils of stable slopes and bottomlands in small groups or individually and are not typically abundant. Butternut is a shade intolerant species that is generally associated with mid-successional forests, forest edges and hedgerows. Populations of Butternut are in decline due to the Butternut Canker (*Ophiognomonia clavigignenti-juglandacearum*), a fungus that is spreading throughout their range in Ontario (COSEWIC 2017, ECCC 2010).

Two Butternut trees (BH-01, BH-02) were observed on Adjacent Lands south of Slater Street (see Photos 26 and 27, Appendix B; Figure 4, Appendix A). Both Butternut trees are presumed to be located on private property where permission to access was not provided in support of this EIS. A Butternut Health Assessment as per the provincial *Butternut Assessment Guidelines: Assessment of Butternut Tree Health for the Purposes of the Endangered Species Act, 2007* (MNRF 2021) was not completed due to access considerations. As such, details related to the precise size and health conditions of both trees was not collected.

BH-01 was assessed to have a 45% live crown and a DBH of approximately ≥ 25 cm indicating that BH-01 is in ‘poor’ condition. BH-02 was assessed to have a 100% live crown and a diameter at breast height (DBH) of approximately ≥ 10 centimeters (cm) indicating that BH-02 is in ‘good’ condition. BH-02 appeared to be hybridized with an introduced Walnut species. Genetic testing would be required to determine if BH-02 contains genetic material of a Walnut species that is not native to Canada.

No Black Ash were observed within the Study Area during the field investigations.

4.2.1.3 Wetlands

Four wetland parcels identified in the *LeBreton Flats Soil Excavation Area Wetland Assessment* (Geofirma 2018a) during the background review were observed within the Study Area and classified as MASR1 communities (Figure 4, Appendix A). The wetland parcels were located within a chain-link fenced-in area where access was limited, as such, features within the fenced in area were assessed from outside of the chain-link fence. Based on what could be observed, there were no significant changes in the ecological functions of the wetland parcels since Geofirma’s wetland function assessment (Geofirma 2018b). The only function the wetland parcels appear to be providing is the retention of precipitation and stormwater flow events for the immediate soil excavated area. The wetland parcels do appear to have slightly increased in size and may provide additional habitat features for common plant and wildlife species typical of disturbed urban environments (e.g., Cattails, Common Reed, Soft-stemmed Bulrush, Northern Water Plantain, Spotted Sandpiper, Mallard).

4.2.2 Breeding Birds

Breeding bird surveys were completed in June 2023 during peak bird breeding season. There were 36 bird species recorded in the Study Area including Barn Swallow (listed as special concern under SARO and threatened under SARA) and Chimney Swift (listed as threatened under SARO and SARA), and 30 species listed on Schedule 1 of the MBCA (see Appendix D.2). All other native bird species observed in the Study Area have S-Ranks of S4 or S5 and are common and widespread in Ontario.

Two Barn Swallows were observed flying and foraging in the open green land (CGL) habitat within the Subject Property (Figure 4, Appendix A). Suitable nesting habitat for Barn Swallow was observed within the Subject Property the form of bridges; Barn Swallow uses the open habitat in the Study Area as foraging habitat.

Three Chimney Swifts were observed flying and foraging in the open mixed meadow / constructed (MEMM3 / CV) habitat within the Subject Property. Three additional Chimney Swifts were observed in the open mixed meadow / deciduous regeneration thicket (MEMM3 / THDM4) habitat flying and foraging within the Subject Property (Figure 4, Appendix A). No suitable roosting or nesting habitat for Chimney Swift occurs within the Subject Property; Chimney Swift use the open habitat in the Subject Property as foraging habitat.

Migratory birds and their nests are protected under the MBCA and are afforded protection on all lands. Structures and vegetation within the Study Area may provide nesting habitat for migratory birds including Barn Swallow and Chimney Swift. No bird nests were observed within the Study Area. Although there were no nests observed during the breeding bird surveys, there is potential for migratory bird species listed on Schedule 1 of the MBCA to occur on structures and in vegetation in the Study Area.

4.2.3 Candidate Bat Maternity Roost Trees

The candidate bat maternity roost tree survey identified one tree (Crack Willow) in the thicket / constructed (THDM4-1/CV) habitat within the Subject Property that represents a tree with the highest potential to be utilized by roosting bats (Figure 4, Appendix A). The candidate bat maternity roost tree was identified as highly suitable based on a combination of factors (large DBH, advanced state of decay, presence of cavities, open canopy, tall tree). The woodland (WODM4) and anthropogenic structures (e.g. bridges) may provide suitable maternity roosting habitat for bats (Figure 4, Appendix A).

This survey indicated that potential for bat roosting habitat is present on the Subject Property.

4.2.4 Incidental Wildlife Observations

In total, five incidental wildlife observations (wildlife not observed during targeted surveys) were recorded within the Study Area, including one insect (Monarch), two bird (Red-tailed Hawk, Black-billed Cuckoo), and two mammals (Eastern Gray Squirrel, Woodchuck). All five incidental observations have S-Ranks of S4 or S5 and are common and widespread in Ontario (see Appendix D.2). Monarch was observed in the mixed meadow (MEMM3) habitat and is listed as special concern under SARO and endangered under the SARA (Figure 4, Appendix A). The remaining four incidental observations are not SAR.

4.3 Species at Risk and Species of Conservation Concern

Based on the desktop review, preliminary habitat assessment within the Study Area using satellite imagery, and 2023 field survey results, a total of 18 SAR and 15 SOCC were carried forward to the SAR and SOCC habitat assessment (Appendix E). The SAR and SOCC habitat assessment used field survey results from vegetation community surveys and field surveys to assess the likelihood of occurrence for a SAR or SOCC that had the potential to occur. The 18 SAR included 2 plant, 1 mollusc, 1 invertebrate, 2 fishes, 2 herptiles, 6 birds, and 4 mammals (Appendix E.1).

A brief description of the habitat requirements, suitable habitat observed within the Study Area, and the likelihood of occurrence are presented in Appendix E. The following SAR were assessed as having a medium or high likelihood of occurrence, or were confirmed during the field surveys:

- Plant SAR: Butternut (confirmed)
- Invertebrate SAR: Monarch (confirmed)
- Fish SAR: Lake Sturgeon (Great Lakes - Upper St. Lawrence River population; high), American Eel (high)
- Herptile SAR: Blanding's Turtle (high)
- Bird SAR: Chimney Swift (confirmed), Barn Swallow (confirmed)
- Mammal SAR: Eastern Small-footed Myotis (high), Little Brown Myotis (high), Northern Myotis (medium), Tri-colored Bat (medium)

The following 13 SOCC were assessed as having a medium or high likelihood of occurrence during the field surveys (Appendix E.2):

- Plant SOCC: Wall Screw Moss (medium)
- Invertebrate SOCC: Cobra Clubtail (medium)
- Fish SOCC: Northern Brook Lamprey (high), Silver Lamprey (Great Lakes - Upper St. Lawrence populations) (high), River Redhorse (high), Channel Darter (St. Lawrence populations) (high)
- Herptile SOCC: Snapping Turtle (high), Midland Painted Turtle (high), Northern Map Turtle (high), Eastern Milksnake (high)
- Mammal SOCC: Silver-haired Bat (medium), Eastern Red Bat (high), Hoary Bat (high)

Potential Project effects, recommended mitigation measures, and potential permitting requirements are discussed in Section 7 and Section 8 for species with a medium or high probability to occur and species that were confirmed (i.e., observed during field studies).

4.4 Significant Wildlife Habitat

As part of the desktop review, the Study Area was assessed for potential SWH described by the *Significant Wildlife Habitat Criteria Schedule for Ecoregion 6E* (MNRF 2015a). The presence of the four categories of SWH described in Section 3.4.2 was assessed for the Study Area. A full SWH assessment is provided in Appendix F.

4.4.1 Habitats of Seasonal Concentrations of Animals

Colonially – nesting bird breeding habitat (bank and cliff/ trees and shrubs): A Colonial Waterbird Nesting Area was identified during the background; however, features were not observed within the Study Area during field surveys.

Colonially – nesting bird breeding habitat (ground): A Mixed Wader Nesting Colony was identified during the background; however, features were not observed within the Study Area during field surveys.

Turtle wintering area: No turtles were observed during field surveys; however, the open water (OA) community (Ottawa River) may provide candidate turtle wintering areas within the Subject Property (**Figure 5**, **Appendix A**).

4.4.2 Rare Vegetation Communities or Specialized Habitats for Wildlife

No rare vegetation communities or specialized habitats for wildlife were observed within the Study Area.

4.4.3 Habitat for Species of Conservation Concern

Species of Conservation Concern: No SOCC were observed during field studies. Candidate habitat for Wall Screw Moss was observed adjacent to the Fleet Street Tailrace and Ottawa River. Candidate habitat for Cobra Clubtail, Channel Darter (St. Lawrence populations), Northern Brook Lamprey, River Redhorse, and Silver Lamprey (Great Lakes - Upper St. Lawrence populations) was observed in the Fleet Street Tailrace and Ottawa River (**Figure 5**, **Appendix A**).

Candidate SWH for SOCC turtles (Midland Painted Turtle, Northern Map Turtle, Snapping Turtle) is considered through Turtle Wintering Area and Turtle Nesting Areas. Candidate SWH for SOCC snakes (Eastern Milksnake) is considered through Reptile Hibernacula.

Candidate SWH for SOCC bats (Silver-haired Bat, Eastern Red Bat, Hoary Bat) is considered through Bat Hibernacula and Bat Maternity Colonies. See Section 4.3 and Appendix E.2 for SOCC habitat suitability assessment.

4.4.4 Animal Movement Corridors

No animal movement corridors were observed within the Study Area.

4.5 Aquatic Habitat

During Stantec's aquatic habitat assessment, general fish habitat was observed within both the Ottawa River (Nepean Bay) and the Fleet Street Tailrace within the Study Area.

General habitat observed win the Ottawa River (Nepean Bay) within the Study Area is anticipated to support several species of known fish including the sunfish family (Centrarchidae). No significant habitat features (e.g., spawning habitat) were observed within the Ottawa River (Nepean Bay), however, it is anticipated that foraging and/or overwintering habitat is present.

The Fleet Street Tailrace is man-made feature that diverts flow from the Ottawa River through Nepean Bay that is intended to power the generators at the City of Ottawa's Fleet Street Generating Station. The Fleet Street Tailrace was constructed within the surrounding limestone and includes several closed portions between Nepean Bay and its confluence back with the Ottawa River downstream of the Chaudière Dam. Though fish species known to the Ottawa River, including SAR, have access to the Fleet Street Tailrace, this feature is not considered a significant fish habitat feature that is anticipated to support a fish community.

5 Natural Feature and Areas Summary

As noted in the background review (Section 4.1), the Study Area overlaps the following NHFA:

- Conservation Authority Regulation Limit (RVCA)
- Significant Woodlands (Provincial only)
- Lac Deschênes-Ottawa River IBA
- Wildlife Concentrations Areas (Colonial Waterbird Nesting Area, Mixed Wader Nesting Colony)
- IPZ-2
- HVA
- DFO Aquatic Species at Risk Distribution for River Redhorse, Northern Brook Lamprey, Channel Darter, and Hickorynut
- Fish Nursery Area
- Wetland parcels

Two bird SAR including Barn Swallow (listed as special concern under SARO and threatened under SARA) and Chimney Swift (listed as threatened under SARO and SARA) were recorded during targeted surveys for breeding birds within the Study Area. Two additional SAR (Butternut and Monarch) were observed during field surveys. No additional SAR or SOCC were observed during field surveys within the Study Area.

Although two Wildlife Concentrations Areas (Colonial Waterbird Nesting Area, Mixed Wader Nesting Colony) were identified during the background review, these features were not observed within the Study Area during field surveys.

A summary of natural heritage features that were confirmed or have the potential to be present within the Study Area is provided in Table 5.1.

Table 5.1 Summary of Natural Heritage Features Within the Study Area

Type	Species/Feature	Description
Conservation Authority Designation	Regulated Areas	RVCA regulation limits are present within the Study Area (see Section 4.1.3).
Significant Ecological Area	Significant Woodlands (Provincial only)	Significant Woodlands occur within the Study Area (see Section 4.1.3).
Important Bird Area	Lac Deschênes-Ottawa River IBA	The Lac Deschênes-Ottawa River IBA occurs within the Study Area (see Section 4.1.3).
Hazards Designation	Intake Protection Zone	The Study Area occurs in an IPZ-2 with a vulnerability score of 8 (see Section 4.1.3).
	Highly Vulnerable Aquifer	The Study Area occurs in a HVA with a vulnerability score of 6 (see Section 4.1.3).
Wetlands	Wetland parcels	Four wetland parcels occur within the Study Area in the MASR1 communities. No changes in the functions of these wetland parcels were observed (see Sections 4.1.5.2 and 4.2.1.3).
Breeding and Migratory Birds	Bird nests	Breeding birds and migratory bird species listed on Schedule 1 of the MBCA were confirmed within the Study Area (see Section 4.2.1.3 and Appendix D.2). There were no nests observed in the Study Area during field investigations, but new nests could be established in subsequent years.
SAR	• Butternut • Monarch • Barn swallow • Chimney swift	Two Butternut trees were observed south of Slater Street on Adjacent Lands. Monarch was observed in the mixed meadow (MEMM3) community within the Subject Property. The Subject Property is likely to be used by Monarch as nectaring habitat. Barn Swallow were observed flying and foraging in the open green land (CGL) habitat within the Subject Property. Suitable nesting habitat for Barn Swallow was observed within the Subject Property in the form of bridges. Chimney Swift were observed flying and foraging in the open mixed meadow / constructed (MEMM3 / CV) habitat and in the open mixed meadow / deciduous regeneration thicket (MEMM3 / THDM4) habitat within the Subject Property. There is no roosting or nesting habitat in the Subject Property (see Section 4.3 and Appendix E.1).

Type	Species/Feature	Description
Suitable habitat for SAR	• Hickorynut • Lake Sturgeon (Great Lakes - Upper St. Lawrence River population) • American Eel • Blanding's Turtle • Eastern Small-footed Myotis • Little Brown Myotis • Northern Myotis • Tri-colored Bat	The Fleet Street Tailrace and Ottawa River may provide suitable habitat for Hickorynut, Lake Sturgeon (Great Lakes - Upper St. Lawrence River population), American Eel, and Blanding's Turtle. One candidate bat maternity roost tree was identified in the thicket / constructed (THDM4-1/CV) habitat within the Subject Property. Eastern Small-footed Myotis and Little Brown Myotis may use the candidate bat maternity roost tree and/or bridges for roosting. The woodland (WODM4) may provide suitable maternity roosting habitat for bat SAR. Bat SAR may use Adjacent Lands and the open mixed meadow (MEMM) and thicket (THDM) habitat within the Subject Property for foraging (see Section 4.3 and Appendix E.1).
Suitable habitat for SOCC	• Eastern Milksnake • Midland Painted Turtle • Northern Map Turtle • Snapping Turtle • Silver-haired Bat • Hoary Bat	Suitable herptile habitat (overwintering, basking and movement) for Eastern Milksnake, Midland Painted Turtle, Northern Map Turtle, and Snapping Turtle was observed in the thicket (THDM) and mixed meadow (MEMM) communities. Suitable foraging and roosting habitat for Silver-haired Bat, Eastern Red Bat, and Hoary Bat was observed in the thicket (THDM), mixed meadow (MEMM), and woodland (WODM) communities (see Section 4.4.3 and Appendix F).
Significant Wildlife Habitat	Turtle wintering area	Candidate turtle wintering areas were observed in the Ottawa River in the open water (OA) habitat in the Study Area (see Section 4.4.1 and Appendix F).
	Habitat for SOCC • Wall Screw Moss • Cobra Clubtail • Channel Darter (St. Lawrence populations) • Northern Brook Lamprey • River Redhorse • Silver Lamprey (Great Lakes - Upper St. Lawrence populations)	Candidate habitat for Wall Screw Moss was observed adjacent to the Fleet Street Tailrace and Ottawa River. Candidate habitat for Cobra Clubtail, Channel Darter (St. Lawrence populations), Northern Brook Lamprey, River Redhorse, and Silver Lamprey (Great Lakes - Upper St. Lawrence populations) was observed in the Fleet Street Tailrace and Ottawa River (see Section 4.4.3 and Appendix F).

Type	Species/Feature	Description
Fish Habitat	• Warmwater habitat • DFO Aquatic SAR Distribution • Fish Nursery Area	The Ottawa River provides warmwater habitat for fish, Aquatic SAR (River Redhorse, Northern Brook Lamprey, Channel Darter, and Hickorynut), and a Fish Nursery Area (see Sections 4.1.5 and 4.5).
Fish Habitat	Unknown thermal regime	The Fleet Street Tailrace provides habitat for fish (see Sections 4.1.5 and 4.5).

6 Project Description

The proposed plan of subdivision for the Subject Property is provided in Appendix G and is shown in Figure 5, Appendix A. The plan comprises of six commercial blocks (Blocks 1 to 6), nine residential blocks (Blocks 7 to 15), two blocks associated with the Fleet Street Tailrace (Blocks 16 and 17), and two park blocks (Blocks 18 and 19).

According to the proposed plan of subdivision and the 2021 MCP Blocks 1 to 6 are associated with the Albert District which is intended to be a mixed-use main street neighbourhood (e.g., library, homes, offices, shops, services, and potentially an event centre or major facility) located north of Albert Street and west of Booth Street. Blocks 7 to 15 are associated with the Flats District which is predominantly a residential community located south of Wellington Street and west of Booth Street. Blocks 16 and 17 are associated with the Aqueducts District, which is associated with a cultural and entertainment district located adjacent to the Fleet Street Tailrace, between the Albert District and Flats District. Blocks 18 and 19 are associated with the Parks District located south of Kichi Zibi Mikan and intended to consist of Capital Park, Active Park, a large outdoor event space and pathway links.

A network of public roads, lanes, and sidewalks in a grid pattern is proposed to connect the proposed commercial blocks and residential blocks to Wellington Street (Public Road 1, 2, 5, Lanes 1, 2, 3, 4), Booth Street (Public Road 3, Lane 5), and Albert Street (Public Roads 4, 6, Lane 6, 7).

No in-water work or temporary vehicle crossings are required for the development of LeBreton Flats.

7 Impact Assessment

The impact assessment assesses potential impacts that may reasonably result from Project activities and the development of LeBreton Flats.

The assessment is divided into potential direct and indirect impacts. Direct impacts are those that are anticipated to happen within a short duration (i.e., during or directly following site preparation or construction) and distance from Project activities (i.e., within the Project Footprint) and the new development of LeBreton Flats. Indirect impacts may be harder to define and detect but are anticipated to occur outside of the Project Footprint (i.e., in Adjacent Lands) and/or to have a delayed onset after the catalyzing factor is introduced.

Site-specific and standard recommendations are identified to mitigate potential impacts to natural features and enhance the natural heritage system where appropriate. Site-specific measures are recommended to address the specific natural heritage features and functions identified for the Subject Property and Adjacent Lands, while standard measures address strategies that are typically required for construction such as erosion and sediment control.

7.1 Direct Impacts

The proposed development will result in a total permanent direct loss of approximately 13.06 ha of natural vegetation on the Subject Property (see Figures 4 and 5, Appendix A for details), including:

- 0.03 ha of deciduous forest (FODM11)
- 0.79 ha of coniferous forest (FOCM6)
- 0.44 ha of woodland (WODM4)
- 4.48 ha of thicket (THDM2-1, THDM4-1, THDM4)
- 7.17 ha of meadow (MEMM3)
- 0.15 ha of marsh (MASR1)

The results of the field surveys (Section 4.2) have determined that these features provide habitat for urban tolerant terrestrial species.

The proposed development will result in a total permanent direct loss of 4.25 ha of existing landscape features (CGL); however, the two proposed park blocks (Blocks 18 and 19) will result in 9.35 ha of new landscape features.

Direct impacts are anticipated in the direct footprint of the proposed development of LeBreton Flats, and in temporary construction and access locations (i.e., the Project Footprint). Impacts are anticipated to result from the following activities: vegetation removal, excavation, vehicle operation and maintenance, vegetation planting following completion of construction, and permanent constructed footprint including buildings, roads, lanes, and pathways.

Potential adverse impacts that will be addressed through mitigation or avoidance include loss of trees and vegetation, disturbance to migratory bird nests, introduction of invasive species, soil contamination, and disturbance of SAR and SOCC habitat.

The Fleet Street Tailrace and the Ottawa River within the Study Area may provide suitable habitat for Cobra Clubtail, Hickorynut, fish; the Ottawa River may provide suitable habitat for overwintering turtles. No development is proposed within 30 m of Fleet Street Tailrace or Ottawa River; therefore, no direct impacts to these species or their habitat, the Significant Woodlands (Provincial only), or Lac Deschênes-Ottawa River IBA are anticipated as a result of the proposed development.

No development is planned to occur within the critical root zones of the two Butternut trees observed on Adjacent Lands; therefore, no direct impacts to Butternut or their habitat is anticipated as a result of the proposed development.

The Subject Property is located on lands designated as IPZ-2 with a vulnerability score of 8 and HVA with a vulnerability score of 6. Based on these vulnerability scores, under the *Clean Water Act* (2006) list of prescribed drinking water threats, there are no activities associated with the proposed development that would result in a significant chemical and/or pathogen threat to the surface water supply (MOE 2021), no direct impacts to surface water supplies are anticipated.

A summary of potential direct impacts as a result of the proposed development is provided in Table 7.1.

Table 7.1 Summary of Direct Impact Assessment

Impact	Mitigation, Avoidance, or Enhancement
Loss of vegetation through clearing and grubbing for construction and development footprint	Implementation of vegetation removal best practices and construction boundary fencing; revegetation in temporary work areas and in the park blocks (see Sections 7.4.1 and 7.4.2).
Disturbance to insect SAR (Monarch) and their habitat through vegetation clearing during the site preparation phase	Avoid vegetation clearing within Milkweed patches during the Monarch breeding season (June 1 to September 30). If vegetation removal is scheduled to occur during the Monarch breeding season, a qualified biologist should inspect the Milkweed plants for Monarch immature life stages (i.e., egg, caterpillar or chrysalids) prior to vegetation removal. Revegetation plans will include only native species including nectar producing plants (see Section 7.4.3.1).
Potential disturbance to SOCC turtles/ Eastern Milksnake through clearing and grubbing for construction and development	If construction is planned within 35 m of the Fleet Street Tailrace and/or Ottawa River, and/or in areas where turtle and/or snake presence is observed or anticipated, an exclusion fence should be installed around the proposed work area to prevent turtles and/or snakes from entering the work area (see Section 7.4.3.2).
Disturbance to migratory bird nests and bird SAR (chimney swift, barn swallow) through vegetation clearing and during construction activities	Conduct vegetation clearing activities outside of the primary nesting period for migratory birds where possible, or conduct nest sweeps prior to vegetation removal; apply appropriate buffers to active bird nests (see Section 7.4.3.3).
Potential disturbance to potential bat maternity roost habitat and bat SAR/SOCC through tree clearing for site preparation	Tree clearing should be restricted to timing windows for bats; suitable maternity roost tree removal should be avoided where possible (see Section 7.4.3.4).

Impact	Mitigation, Avoidance, or Enhancement
Potential degraded water quality through soil erosion and sedimentation as a result of clearing and grubbing, excavations, vegetation removals; vehicle and equipment leaks and refueling	Install soil and erosion control measures such as sandbags, silt fencing, erosion mats, rip-rap, and mud mats; Refueling and maintenance to be done on impermeable surfaces and at least 30 m from watercourses and wetlands; regular maintenance and inspection of vehicles; stockpile and backfill management (see Sections 7.4.4 to 7.4.88).
Loss of wetlands	Replicate the wetland functions (i.e., retention of precipitation and stormwater flow events for the immediate soil excavated area) through the use of bioswales or compensation wetlands as directed by a water balance expert in the Detailed Design (see Section 7.4.5).
Potential soil contamination through vehicle and equipment leaks and refueling	Refueling and maintenance to be done on impermeable surfaces and at least 30 m from watercourses and wetlands; regular maintenance and inspection of vehicles; Management of stockpiles and backfill (see Section 7.4.88).
Potential invasive species introduction from all construction activities, carried in on equipment, vehicles, and workers	Implement strict invasive species management plan including proper cleaning and sanitizing of equipment entering or leaving the construction area (see Section 7.4.99).
Change to flora diversity from vegetation removal and planting plan, post-construction vegetation monitoring	Revegetation plans will include only native species and implementation of post-construction planting success thresholds will ensure invasive species are managed in planted areas (see Section 7.4.1010).

7.2 Indirect Impacts

Inadvertent encroachment of heavy equipment, siltation and / or spills of deleterious substances, noise, and dust migration into natural features were identified as potential indirect impacts on wildlife and wildlife habitat from construction. These impacts may alter species composition by compacting and smothering vegetation and introducing substances that could be harmful to vegetation and wildlife, such as fuel used by construction vehicles and introducing new invasive species. Additional disturbance may be required to facilitate spill clean-up activities. Where they occur, these impacts are expected to be localized to the construction area and adjacent areas.

Indirect impacts on fish and fish habitat may result from the potential for sediment transport from exposed soil surfaces, potential entry of construction debris (e.g., concrete slurry, dust, etc.) into the water and spills associated with refueling of equipment. Suspended sediments increase turbidity of the water column, which can impair vision and subsequent feeding by fish that are sight-hunters. Suspended sediments can also abrade gill membranes leading to physical stress, and change prey organisms' behaviour (i.e., avoidance, etc.). Heavier sediments can deposit on coarser substrates that may be used for spawning, incubation of juvenile fish, or food production, thereby impacting those habitat functions.

The City supplies drinking water within its urban limits (includes the Study Area) through municipal drinking water systems; however, some citizens may obtain their drinking water from drinking wells within the City's urban limits. Activities associated with the proposed development will not result in a significant chemical and/or pathogen threat to the surface water supply (MOE 2021).

The potential indirect impacts anticipated for the Project are common to various types of construction and can be controlled using standard mitigation measures for watercourses, fish and fish habitat, erosion and sediment control (ESC), control of deleterious substances, and during- and post-construction monitoring for vegetation establishment and soil containment (see Sections 7.4.4 to 7.4.109).

Indirect habitat loss is primarily associated with sensory disturbance. Sensory disturbance associated with construction and maintenance activities (e.g., noise from heavy equipment, lights) and operation (e.g., increased noise and vibrations due to increased vehicle traffic) has the potential to reduce habitat effectiveness and suitability. Wildlife species that reside near the Project may be deterred from using nearby habitat and result in wildlife displacement due to noise, vibrations, and increased human activity. Responses will vary by species and individuals and may affect breeding and rearing success for some wildlife species (Francis and Barber 2013, Singh et al. 2023). Potentially affected species may return after a period of acclimatization. SAR and wildlife near the Project are currently exposed to elevated levels of habitat degradation and anthropogenic disturbance (e.g., traffic on existing bridge roads, urban habitat) and expected to be acclimatized to high levels of disturbance in the area. Project-related indirect impacts to SAR and wildlife species are expected to be low due to the urban nature of the area and elevated levels of disturbance associated with the roads, LRT, parks, and urban landscape pre-construction.

7.3 Long-Term Impacts

Potential long-term impacts to features associated with residential development and increased human activity include:

- Light trespass into natural areas and associated disturbance to wildlife
- Increased presence of urban predators of breeding birds and other small wildlife such as domestics cats, Blue Jay, American Crows, Common Grackles, Virginia Opossum, Gray Squirrel, Striped Skunk, and Raccoon
- Introduction of non-native invasive plant species
- Dumping garbage, garden waste, trampling of ground cover, and damage to trees

While buffers can assist in the mitigation of some of these effects, additional protection can be provided by restricting access to natural areas and educating landowners on good stewardship practices.

7.4 Mitigation and Avoidance

7.4.1 Vegetation

Mitigation measures for vegetation communities within the Study Area include the following:

- Clearly mark the limits of vegetation removal to reduce the likelihood of disturbance beyond the proposed construction limits.
- Limit tree, shrub, and meadow vegetation clearing to the extent possible. Revegetate with native species as soon as possible upon completion of construction activities.

- Inspect vehicles and heavy equipment to check they are clean and free of weeds before entering and leaving the Study Area. Follow the Clean Equipment Protocol for Industry (Halloran et al. 2013) to prevent the spread of invasive species into the Study Area.
- Develop a project-specific invasive plant management plan once the Project design is complete and the limits of disturbance are known. Invasive species may require additional management measures to prevent their spread into newly disturbed areas following construction. The Ontario Invasive Plant Council provides best management practices including mechanical and chemical control options for several of the weeds observed (https://www.ontarioinvasiveplants.ca/resources/best-management-practices/).
- Develop a project-specific tree protection plan, general tree protection measures are provided in Section 7.4.2
- Follow wildlife protection measures regarding vegetation clearing, including seasonal timing windows for vegetation removal, as outlined in Section 7.4.1

7.4.2 Trees

Development of a project-specific tree protection plan for the Project is recommended once the design is final. The City of Ottawa *Tree Protection By-law (No. 2020-340)* (City of Ottawa 2020) does not apply on federally owned lands. General tree protection and compensation measures are recommended below and are based on the City of Ottawa By-law (unless otherwise noted); final compensation requirements will be determined by NCC:

- Where possible retain trees, especially healthy Distinctive trees, through adjustments to the project footprint during detailed site design.
- All trees 10 cm DBH or greater proposed for removal should be compensated at a 2:1 ratio (two trees planted for each tree removed). Trees 50 cm DBH or greater should be compensated at a 3:1 ratio. Ash trees and/or dead trees may be replaced at a 1:1 ratio.
- Replacement trees should be a minimum of 50 millimeters (mm) in caliper measured no less than 15 cm above ground level for deciduous trees, and no less than 200 cm in height as measured from ground level to midway between the tip of the leader and the uppermost whorl for coniferous trees.
- All compensation trees should be native (no hybrids or cultivars) and non-invasive species.
- Establish a buffer (i.e., 1.2 m high fencing) around the CRZ of trees to be retained that are adjacent to the construction area. The fence should be installed around the outer edge of the CRZ and remain in place until work is completed. The CRZ is defined as the area of land within a radius of 10 cm from the trunk of a tree for every 1 cm of trunk diameter. For trees with a DBH <10 cm, the CRZ is established as 1.5 m from the trunk (Appendix H).

- Monitor the health of trees adjacent to the construction area both during and after construction. Take photographs of the trees to be retained adjacent to the construction area, when the trees are in full leaf, if possible, to record their condition. If tree health declines, take immediate action and contact a Certified Arborist to provide recommendations for care of the damaged trees. Damage to trees may include but is not limited to physical damage on tree bark, broken branches, compaction of the root systems due to equipment and materials, cutting of the roots, and root exposure.
- Do not attach signs, notices, or posters to any tree.
- Do not damage the root system, trunk, or branches of any tree.
- Do not place any material or equipment within the CRZ of the tree.
- Do not raise or lower the existing grade within the CRZ. If re-grading is required within the CRZ, it should be performed by hand under the supervision of a Certified Arborist.
- Do not direct exhaust fumes from equipment towards any tree's canopy.
- Tunnel or bore when digging within the CRZ of any tree. All excavation within the CRZ should be by hand or hydro excavation. Roots that are exposed by construction activities should be covered with native topsoil immediately to lessen the likelihood of roots drying out or being further damaged.
- If necessary, prune limbs that overhang into the construction area on trees to be retained in a manner that lessens physical damage and promotes quick wound closure and regeneration. No more than one-third of the total branches should be removed during a single operation. The services of a Certified Arborist should be retained for this work.
- If root pruning is required, the services of a Certified Arborist or a Qualified Tree Worker under the supervision of a Certified Arborist should be retained.
- Once construction is completed, Stantec suggests that NCC assess the trees that were close to the construction for damage. If damage is found contact a Certified Arborist to review the trees and identify next steps.

7.4.3 Species at Risk and Wildlife

7.4.3.1 Monarch

The following recommendations are provided for Monarch:

- Monarch was uplisted to endangered in Schedule 1 of SARA in December of 2023. Critical habitat for the species has not yet been defined; however, Milkweed plants that are occupied by Monarch eggs, caterpillars or chrysalids should be considered a residence for the species and protected under SARA. Consultation with ECCC is recommended if activities are planned that may impact Monarchs or their residence (i.e., Milkweed plants).

- Milkweed patches in the Subject Property and Adjacent Lands were small (less than 100 plants) and are considered low quality reproductive habitat for Monarch. Avoid vegetation clearing within Milkweed patches during the Monarch breeding season, when eggs, caterpillars or chrysalids may be present (June 1 to September 30) (Layberry et.al., 1998; Holmes et.al., 1991).
  - In cases of limited vegetation clearing (e.g., small number of Milkweed plants) during the Monarch breeding season, a qualified biologist should inspect the Milkweed plants for Monarch immature life stages (i.e., egg, caterpillar or chrysalids) prior to removal.
  - If any Monarch immature life stages are observed on a Milkweed plant, a designated buffer will be delineated within which no vegetation clearing or construction activities will be allowed while the Monarch immature life stages remain on the Milkweed plant.
  - A qualified biologist is a person who has demonstrated experience in Monarch ecology and is skilled at visual identification of all Monarch life stages.
- Include nectar producing plants in the restoration seed mix(es) to provide habitat for Monarch.
- Avoid pesticide use in the Study Area and reduce application as much as possible.
- Monarch are migratory and do not overwintering in the Study Area; therefore, no winter mitigation measures are required.
- When possible, the following mitigation measures to reduce the likelihood of harm to insect SAR are recommended:
  - Limit vegetation clearing, especially in areas with flowering plants that insect SAR may forage on, to outside the active plant growing season when insect SAR may be present (i.e., clear outside of April 1 to September 30), to maintain insect foraging and refuge habitat.
  - In conjunction with the migratory bird breeding period, bat summer/maternity roost period, mammal breeding and overwintering period, and Monarch larvae period, schedule vegetation clearing, and ground disturbance activities between October 1 and October 15 where possible.

The mitigation measures listed for insect SAR will also provide some protection for insect non-SAR that may occupy the Study Area as most species share the same general active and overwintering periods.

To compensate for habitat that will be permanently lost due to the Project, the creation or enhancement of nectaring habitat within the Study Area is recommended. This can be done by actively managing meadows and wildflower habitat in the Study Area to enhance existing habitat and/or creating new habitat by implementing the following measures:

- Meadow habitat loss and degradation is often associated with community succession where a meadow is colonized by woody vegetation, dense forb growth, and tall herbaceous species which render the area unsuitable (Nature Canada 2019). Habitat degradation can be managed by mowing the fields periodically to reduce encroachment by woody vegetation, remove tall herbaceous species, and open the meadow habitat and promote wildflower growth.
- Mowing or prescribed burns should be scheduled in the early fall (i.e., between October1 and October 15) to avoid the migratory bird breeding period and peak Monarch larvae period.

- Do not implement active management (i.e., mowing) in all meadow habitat at the same time (i.e., treat one third or less of meadow habitat per year) to maintain refuge habitat for insects during treatment.
- Invasive plant species can alter meadow habitat and make it unsuitable for insect SAR. European swallowwort (also called dog-strangling vine) is a perennial herb in the Milkweed family (*Apocynaceae*) that is recognized as a noxious weed in Ontario that is 'restricted' under the *Invasive Species Act* and noxious under the *Weed Control Act*. European swallowwort is an ecological sink for Monarch as they will lay eggs on the plant, but the larvae will not survive (Anderson 2012a). European swallowwort is an invasive species in Ottawa and the control and eradication of the plant should be prioritized should it appear on the Subject Property in the future. Options for control and eradication are provided in *Invasive Dog-strangling Vine (Vincetoxicum rossicum) Best Management Practices in Ontario* (Anderson 2012b).
- Incorporate pollinator gardens in the Study Area that contain native pollinating flowers and native Milkweed into the planning design. Recovering populations of Milkweed are essential as Monarch caterpillars feed exclusively on the leaves of Milkweed. Native wildflowers such as goldenrod and aster are common to open habitats in the Ottawa area and provide a good food source for Monarch (Brunton 2005, Ottawa Field-Naturalists' Club 2018).

7.4.3.2 Reptile SOCC

The mitigation measures outlined below will reduce the likelihood of direct or indirect impacts to Eastern Milksnake and SOCC turtles that may pass through the Study Area. Recommended mitigation measures for reptiles include the following:

- The active season for turtles occurs from March 15 and October 31. Turtles may pass through the Subject Property during the active season, especially in the spring or fall as turtles move from overwintering habitat to summer habitat. No pre-construction surveys are required; but if a turtle is observed at the Subject Project, it should be allowed to leave the area without being harassed.
- Reptiles are vulnerable in upland habitat (i.e., slow moving) and may be killed if struck by a vehicle or heavy equipment. Contractors should be aware of the potential for reptiles within the Study Area and be prepared to stop. Allow the reptile to leave the area on its own accord.
- Vehicle and equipment drivers should be alert for reptiles on the road and be prepared to stop. A speed limit of 30 km/h hour is recommended to reduce the likelihood of a reptile being struck while crossing, basking, and/or nesting on the roads within the Study Area.
- If a reptile is encountered on the road, the vehicle should stop and allow the reptile to cross and/or leave the road.
- If a turtle is struck and/or an injured turtle is found, the Ontario Turtle Conservation Centre (OTCC) (contact number 705-741-5000) should be contacted. The injured turtle should be placed in a well-ventilated container with a secure lid and no water. The OTCC will coordinate a Turtle First Response Centre to provide assistance. Even if the turtle is dead, the OTCC should be contacted because eggs can be harvested from recently deceased female turtles.

- If a reptile enters the construction work area, suspend all work within 30 m and allow the turtle to leave the area without being harassed.
- Install ESC as outlined in Section 7.4.7 when working near watercourse habitat.

7.4.3.3 Migratory Birds and Bird Species at Risk

The General Nesting Period (i.e., breeding season) for migratory birds in the Study Area (zone C3, Ottawa) is between April 1 and August 31 (ECCC 2023c) and the following mitigation measures are recommended to reduce the likelihood of harm to nesting birds:

- Schedule vegetation removal and construction activities to occur outside the migratory bird breeding season (i.e., schedule vegetation clearing and construction activities between April 1 and August 31 (ECCC 2023c) when possible.
- Bird nest sweeps are not considered adequate mitigation in large and/or complex environments such as this Study Area. Therefore, nest sweeps conducted by a qualified biologist can only be used in cases of limited clearing (i.e., small area, small number of trees); otherwise clearing must be done outside of the breeding bird season.
  - A qualified biologist is a person with demonstrated experience in bird ecology and is skilled at visual and auditory identification of birds and at recognizing behavioral cues that indicate the presence of a nest.
  - If a nest is located, a designated buffer will be delineated within which no vegetation clearing or construction activities will be allowed while the nest is active. The radius of the buffer will be determined by a qualified biologist and is established on a case-by-case basis. The qualified biologist will consider the species (e.g., sensitive, or rare), alert and flush distance (e.g., the distance at which the bird alerts to human presence and the distance at which the bird flushes from the nest), and the proposed activities (e.g., intensity, noise, duration) (ECCC 2023c) when establishing the buffer.
  - Once the nest is found to be inactive (e.g., the young have fledged the nest), clearing and other activities in the area may proceed.
  - The nest search should be completed within 48 hours of the start of the planned activities due to the potential for birds to quickly establish nests (i.e., a bird may establish a nest after the survey is completed if the survey occurs more than 48 hours prior to planned activities).

It is recommended that the *NCC Bird-Safe Guidelines* (NCC 2021) and *Bird-Safe Design Guidelines* (City of Ottawa 2022a) are consulted when creating building plans to reduce the likelihood of negative impacts to birds within the Study Area. In particular, the *NCC Bird-Safe Guidelines* should be reviewed as the property is located on NCC property. The guidelines offer many suggestions for bird safe building designs including lighting and visual markers. The main recommendations that are applicable to the construction of the LeBreton Flats Development are:

- When buildings are located close to natural areas, the building and windows should be oriented in a way as to limit reflection of habitat (trees, shrubs, hedges, water, and wetlands) on glass surfaces and to limit fly-through conditions, whereby birds can see the habitat on the other side of a building through two panes of glass.
- To reduce the likelihood of bird collisions, eliminate the use of large expanses of undistinguished glass, parallel or angled glass elements where birds can see through to the other side of the building, open-topped atriums, glass balustrades, transparent wind and sound barriers, and free-standing glass architectural elements.
- Visual markers must be applied to the first surface (outside) of the glass and must be at least 4 mm in diameter and spaced no further than 50 mm apart.
- All ventilation grates must have a porosity of no more than 20 mm × 20 mm or 40 mm × 10 mm, and vents and pipes with an opening greater than 400 mm^2 must be covered with a screen or cap.
- In cases where interior lighting is visible from the outside of buildings, it should be reduced from sunset to sunrise using motion detectors and/or timers to automatically extinguish lights in unoccupied spaces, installing blackout shades or blinds that can be drawn at night, and installing dimmer switches to reduce light intensity in occupied spaces.
- To reduce over-lighting and limit blue light transmissions, all outdoor lights should have a colour temperature of no more than 3,000 Kelvin and ideally, LED lighting should be amber, not white, and full cut-off fixtures should be used to limit spill light.

7.4.3.4 Bats

Bats are vulnerable to disturbance during the summer roosting (April 1 through October 1) and maternity season (June 1 through July 31). The following mitigation measures are recommended to reduce the likelihood of harm to roosting bats during construction:

- Schedule tree removal/trimming and construction activities within or adjacent to potential roosting habitat may destroy or disturb summer/maternity roosting habitat (i.e., trees ≥10 cm DBH, buildings) outside of the summer/maternity roosting season (i.e., scheduled between October 2 and March 31).
- If limited tree clearing (individual trees) is needed during the summer/maternity roosting season, a search for active roosts is recommended following the methods outlined in the *Survey Protocol for Species at Risk Bats within Treed Habitats* (MNRF 2017).
  - The surveys should be completed immediately prior to planned activities as bats frequently change roosting locations. Bats are especially vulnerable between June 1 and July 31 when females have young and are lactating. Pups are immobile and are cared for in maternity roosts. Females may move their young to a different maternity roosting location every few days (MNRF 2015b).

- If a bat is observed to be using a tree or building as summer/maternity roosting habitat, tree removal should not be scheduled between April 1 through October 1 (summer/maternity roost season).
- NCC should consult with ECCC to determine if a permit is required under SARA if a SARA-listed bat is observed.

Suitable roosting and foraging habitat for SARA-listed bat species is present within the Study Area. Targeted bat surveys are recommended to determine if and how bat SAR are using the Study Area. If bats are absent, a SARA permit will not be required.

7.4.3.5 General Wildlife Protection

Construction activities should follow best management practices as outlined in the *City of Ottawa Protocol for Wildlife Protection during Construction* (2022b). Key mitigation measures to reduce potential impacts to wildlife during planned construction activities are listed below:

- Inform on-site personnel of the potential presence of wildlife, wildlife habitat, and SAR within the Study Area and obligations under SARA, recommended mitigation measures, and actions in the event of an encounter.
- If wildlife is observed within the work area, suspend activities within 30 m and allow it to leave on their own accord. If a SAR is observed, immediately inform NCC. Depending on the SAR (i.e., if the SAR is a SARA-listed species), NCC may have to contact ECCC to determine if additional permits or mitigation measures are required. SAR may not be harassed, handled, or moved in any way unless they are in immediate danger.
- If a mammal den, burrow, or nest is observed, suspend construction activities within 30 m and contact NCC. NCC should contact a qualified biologist to assess the feature and provide additional mitigation measures. The dens, burrows, and nests of some mammals are protected in Ontario under the FWCA.
- The general wildlife breeding period occurs between March and August and the general wildlife overwintering period occurs between mid-October and March (City of Ottawa 2022b). Schedule vegetation clearing and ground disturbance activities outside of the breeding and overwintering period for wildlife to the extent possible (i.e., schedule between September 15 and October 15). In general, wildlife young are reared and mobile and individuals have not started overwintering in the period between September and mid-October; therefore, most wildlife is able to leave the area (i.e., relocate) when vegetation clearing, or ground disturbance activities begin. If vegetation clearing and/or ground disturbance must occur during the breeding and overwintering period, refer to Sections 7.4.3.1 through 7.4.3.4 for additional recommendations for insects, herptiles, migratory birds and mammals.
- Prior to vegetation clearing or other construction activities, pre-stress the area to encourage wildlife to move away. Pre-stressing can include having one or more person(s) walk through the area while talking loudly or playing music. Allow wildlife observed during pre-stressing to leave the area on their own accord. See Section 7.4.3.2 for additional step if a turtle is observed.

- During the active wildlife period (March – November), contractors should conduct a visual search of the work area, vehicles, and heavy equipment before work commences each day. Visual searches should include inspection of machinery and equipment left in the work area overnight prior to starting equipment. Snakes and other small mammals may be attracted to equipment as a heat source, be sure to carefully inspect all equipment prior to starting the engines. Allow wildlife to leave the area on their own accord.
- Contractors should not feed, harass, or otherwise disturb wildlife.
- Food waste and other garbage should be disposed of in wildlife-proof containers.

7.4.4 Watercourses

To reduce the likelihood of indirect impacts to watercourse habitat, the Project should avoid construction activities within 30 m of watercourse habitat, where possible. If construction activities including vegetation clearing and ground disturbance are required within 30 m of a wetland or watercourse, it is recommended that NCC consult with RVCA and a permit under Ontario Regulation 41/24 could apply. In addition, mitigation measures for sedimentation, erosion, and dust control should be implemented to prevent sediment and dust from entering wetlands and watercourses (see Sections 7.4.76 and 7.4.87).

7.4.5 Wetlands

Site design should replicate the retention of precipitation and stormwater flow provided by the existing wetland parcels through the incorporation of bioswales or compensation wetlands, as determined by a water balance expert in the Detailed Design.

7.4.6 Fish and Fish Habitat

If construction activities are to occur within 30 m of fish habitat, DFOs *Measures to Protect Fish and Fish Habitat* (DFO 2023a) should be implemented to avoid risks to fish and fish habitat including but not limited to:

- Maintain riparian vegetation
  - Maintain an undisturbed vegetated buffer zone between areas of on-land activity and the high water mark of any water body
  - use existing trails, roads or cut lines wherever possible
  - avoid tree removal
  - use methods to prevent soil compaction, such as swamp mats or pads
- Avoid-in-water work
- Ensure proper sediment and erosion control (see Section 7.4.6)
- Prevent entry of deleterious substances in water (see Section 7.4.7)

7.4.7 Erosion and Sediment Control

The primary principles associated with sedimentation and erosion protection measures are to:

- Reduce the duration of soil exposure
- Retain existing vegetation, where feasible
- Encourage re-vegetation
- Divert runoff away from exposed soils
- Keep runoff velocities low
- Trap sediment as close to the source as possible

To address these principles, mitigation measures recommended for implementation during construction are described below.

- Development of a Project-specific Erosion and Sediment Control (ESC) Plan
- Reduce disturbance of ground vegetation outside to the extent possible to limit destabilization of soils near the work area.
- Install silt fencing and/or barriers such as sediment logs along all work zones where there is potential for sedimentation of wetlands, or inadvertent encroachment of construction vehicles into trees or natural areas.
- Do not permit equipment to enter natural areas beyond the barrier fencing.
- Avoid unnecessarily compacting soil by using soils or similar to distribute the weight of heavy equipment.
- Stockpiled materials will be isolated using silt fencing to contain the material and prevent it from entering natural areas.
- Stabilize all exposed soil areas (native seed mixes; sourced locally if possible) and revegetate through the placement of seed and mulching or seed and an erosion control blanket, promptly upon completion of construction activities.
- In addition to any specified requirements, extra silt fence and/or silt logs will be available on site, prior to grading operations, to provide a contingency supply in the event of an emergency.
- Monitor sediment and erosion controls regularly and properly maintain them as required. Controls are to be removed only after the soils of the construction area have been stabilized and adequately protected or until cover is re-established.
- Fence the limits of construction adjacent to natural features to be retained prior to construction and monitor during operations (along with sediment and erosion control measures) to be sure that the limits are maintained with respect to vehicular traffic and soil or equipment stockpiling.

7.4.8 Control of Deleterious Substances

The potential contamination impacts associated with the Project are in part from deleterious substances associated with vehicle leaks and refueling leading to soil contamination and degraded water quality. These impacts can be mitigated with regular vehicle maintenance and refueling management, including:

- Activities associated with vehicles, including maintenance procedures, will be controlled to prevent the entry of Petroleum products, debris, rubble, concrete, or other deleterious substances into the water.
- Vehicular refueling and maintenance will be conducted a minimum of 30 m from any aquatic resources to avoid potential impacts in the even that an accidental spill occurs.
- Fuel spill equipment will be available to manage emergency spill of deleterious substances.

7.4.9 Invasive Species Management

Potential impacts associated with the Project include invasive species introduction and spread by construction activities through transfer by equipment and/or workers. To prevent the introductions and spread of invasive species to new areas, the following measures will be implemented:

- Standard construction phase mitigation measures for ESC (Section 7.4.7) will reduce substrate disturbance to the extent possible and revegetate disturbed areas with desirable species as soon as possible following disturbance.
- Equipment, vehicles, and clothing (e.g., boots) coming on site will be inspected inside and out prior to entering the site for debris such as mud or accumulation of dirt, plant material or snow/ice. Vehicles will be inspected as close to the site entrance as possible.
- Equipment, vehicles clothing and boots with debris noted above will be cleaned in an area where risk of contamination is low, ideally on a mud free hard surface, at least 30 m away from watercourses or other drainage features, wetlands, or other natural areas. Where risk of runoff is high, cleaning stations should be contained by sediment fence as per standard erosion and sediment control specifications.
- Large, accumulated debris may be removed using a compressed air device, high pressure hose or other device as necessary. Clean the top of equipment and vehicles first and work down, with particular attention to the undersides, wheels, wheel arches, guards, chassis, engine bays, grills, and other attachments. Clean inside vehicles by sweeping, vacuuming, or using a compressed air device, including the floor, foot wells, pedals, seats and under the seats.
- Cleaning is complete when no accumulations of dirt or snow/ice are visible on the vehicle exterior, radiators, and grills, and the vehicle interior is free of dirt, plant material and snow/ice.
- Avoid driving or walking through any wastewater when exiting the cleaning site.
- Implement post-restoration monitoring to track vegetation establishment and implement actions to remove new invasive species if present.

7.4.10 Revegetation and Monitoring

Disturbed areas will be restored as soon as possible following constructions using native species that are suited to the site conditions. Naturalization in the park blocks and adjacent to existing natural features where possible is recommended. Plantings will incorporate a variety of native herbaceous and woody plants, including seed mixes and rooted material where appropriate. Plant material will be sourced locally if possible. Vegetation inspection will be completed during construction to document compliance with the planting plans (e.g., correct species and quantities were planted), and three-years of post-construction monitoring will occur to track vegetation establishment, including cover and species composition, and to recommend remedial actions. Remedial actions may be triggered by poor survival of planted material, insufficient vegetation cover, and presence of invasive species in planted areas. Actions may include supplemental plantings and/or control of unacceptable species.

8 Authorization Requirements

Potential permit requirements for the Project are outlined in the section below for federal, provincial, and municipal permits. Permit requirements are dependent on jurisdiction and if construction work occurs on federal or provincial land. The permits discussed below are potential permits that may be required in relation to SAR, SAR habitat, and tree clearing. The final permit requirements will depend on the proposed development and NCC should engage in consultation with both the federal and provincial governments to determine final permit requirements. Additionally, it unknown at this time when construction will begin, and the status of some species may change before construction is scheduled to occur. It is recommended that NCC confirm the status of SAR closer to construction and confirm if additional SAR need to be included in permit requests and if permitting requirements and/or obligations under permits have changed.

8.1 Federal

Project-related activities will have direct and indirect impacts to federal SAR and/or SAR habitat as discussed in Section 7. Authorization under the SARA may be required for threatened or endangered species, as listed under Schedule 1 of SARA, and/or their habitat. It is recommended that NCC consult with ECCC to determine mitigation and permitting requirements under SARA for the following SAR that are known to occur or have the potential to occur in the Study Area:

- Monarch (endangered under Schedule 1)
- Chimney Swift (threatened under Schedule 1)
- Barn Swallow (threatened under Schedule 1)
- Little Brown Myotis, Northern Myotis, and Tri-colored Bat (all listed as endangered under Schedule 1)

Additionally, the following species are under consideration to be added to Schedule 1 or have their status changed, and may be listed as threatened or endangered under Schedule 1 by the time the Project is scheduled to begin:

- Hoary Bat, Sliver-haired Bat, Eastern Red Bat (all listed as endangered under COSEWIC)

Species listed as special concern under Schedule 1 of SARA do not require authorization, but are protected under Section 79, and potential adverse effects of the Project must be identified and mitigated to the extent possible. Special concern species that are known to occur or have the potential to occur in the Study Area include the following:

- Snapping Turtle (special concern under Schedule 1)
- Midland Painted Turtle (special concern under Schedule 1)
- Northern Map Turtle (special concern under Schedule 1)
- Eastern Milksnake (special concern under Schedule 1)

Mitigation measures for SAR are presented in Section 7.

Per the MBCA, the damage, destruction, removal, or disturbance of migratory bird nests is prohibited along with the killing or capturing of migratory birds. Permitting is generally not available under the MBCA. As such, compliance with the MBCA is achieved through avoidance of impacts. Mitigation measures for potential impacts to migratory birds are provided in Section 7.4.3.3.

8.2 Provincial

Project-related activities will have direct and indirect impacts to provincial SAR and SAR habitat as discussed in Section 7. Authorization under the ESA may be required for work that could affect the habitat of a threatened or endangered wildlife species as listed on the SARO list. If NCC decides to proceed with consultation with MECP to determine permitting requirements under the ESA, the following terrestrial SAR that are known to occur or have the potential to occur within the Study Area:

- Chimney Swift (threatened under SARO)
- Eastern Small-footed Myotis (listed as endangered under SARO)
- Little Brown ,Myotis, Northern Myotis, and Tri-colored Bat (all listed as endangered under SARO)

The MECP may request that an Information Gathering Form be submitted to provide additional information about Project-related impacts to species and habitat of species protected under the ESA. Mitigation measures for SAR are presented in Section 7.

8.2.1 Conservation Authorities Act

The Study Area is located within RVCA Regulated Area (O.Reg. 174/06). Prior to any new development or site alteration, including the placement or removal of fill material, grading activities, and the erection of any buildings or structures within the regulated area, and/or the alteration of regulated features, the proponent will require written approval (i.e., a Permit or a Letter of Permission) from the RVCA.

8.3 Municipal

A permit for tree removal may be required under the City's Tree Protection By-law (Nº. 2020-340) (City of Ottawa 2020).

9 Summary and Conclusion

This report was prepared to document natural features that require consideration through the development application process and may pose constraints to development, including features that are protected by the City of Ottawa's OP (City of Ottawa 2021) and other relevant legislation and policy.

The results of the background review and field investigations documented the following protected natural features within the Project Footprint shown in Figure 5, Appendix A:

- SAR and their habitat (Monarch, Chimney Swift, Barn Swallow)
- Potential bat SAR and their habitat (Eastern Small-footed Myotis, Little Brown Myotis, Northern Myotis, Tri-colored Bat)

Recommendations were provided to protect the natural features including measures to mitigate potential impacts to natural and enhance the natural heritage system where appropriate, detailed in Section 7.4. These measures include:

- Timing restrictions to avoid wildlife during sensitive periods, such as breeding birds and maternity roosting bats
- Standard measures for construction
- Measures to reduce long-term effects of increased residential use and human activity, such as the promotion of good stewardship practices
- Enhancement plantings in the disturbed areas and naturalization in the park blocks and adjacent to existing natural features, where possible
- Environmental monitoring

Targeted bat surveys are recommended to determine if, and how bat SAR are using the Study Area. Consultation with the MECP and ECCC is recommended to determine mitigation and authorization requirements for SAR.

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Appendices

Appendix A Figures

Stantec

Legend

- Subject Property
- Study Area (120 m)

0 100 200 m

1:5,000 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 18N
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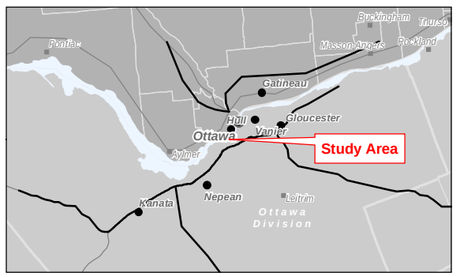

Project Location
City of Ottawa

160401780 REV1
Prepared by BF on 2024-07-25
Technical Review by SPE on 2024-02-28

Client/Project
NATIONAL CAPITAL COMMISSION (NCC)
LEBRETON FLATS PLAN OF SUBDIVISION
ENVIRONMENTAL IMPACT STUDY

Figure No.
1a

Title
Study Area

Figure 65 | Master Concept Plan – Alternative Option: District

Stantec

0 100 200 m

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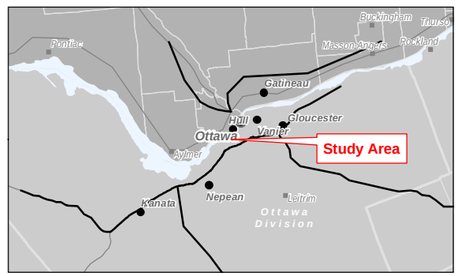
Notes
1. Coordinate System: NAD 1983 UTM Zone 18N
2. Image taken from the Lebreton Flats Master Concept Plan is property of the National Capital Commission. Obtained from https://ncc-website-2.s3.amazonaws.com/documents/LeBreton-Flats-Master-Concept-Plan-1.pdf?mtime=20210422120531&focal=none.



Project Location
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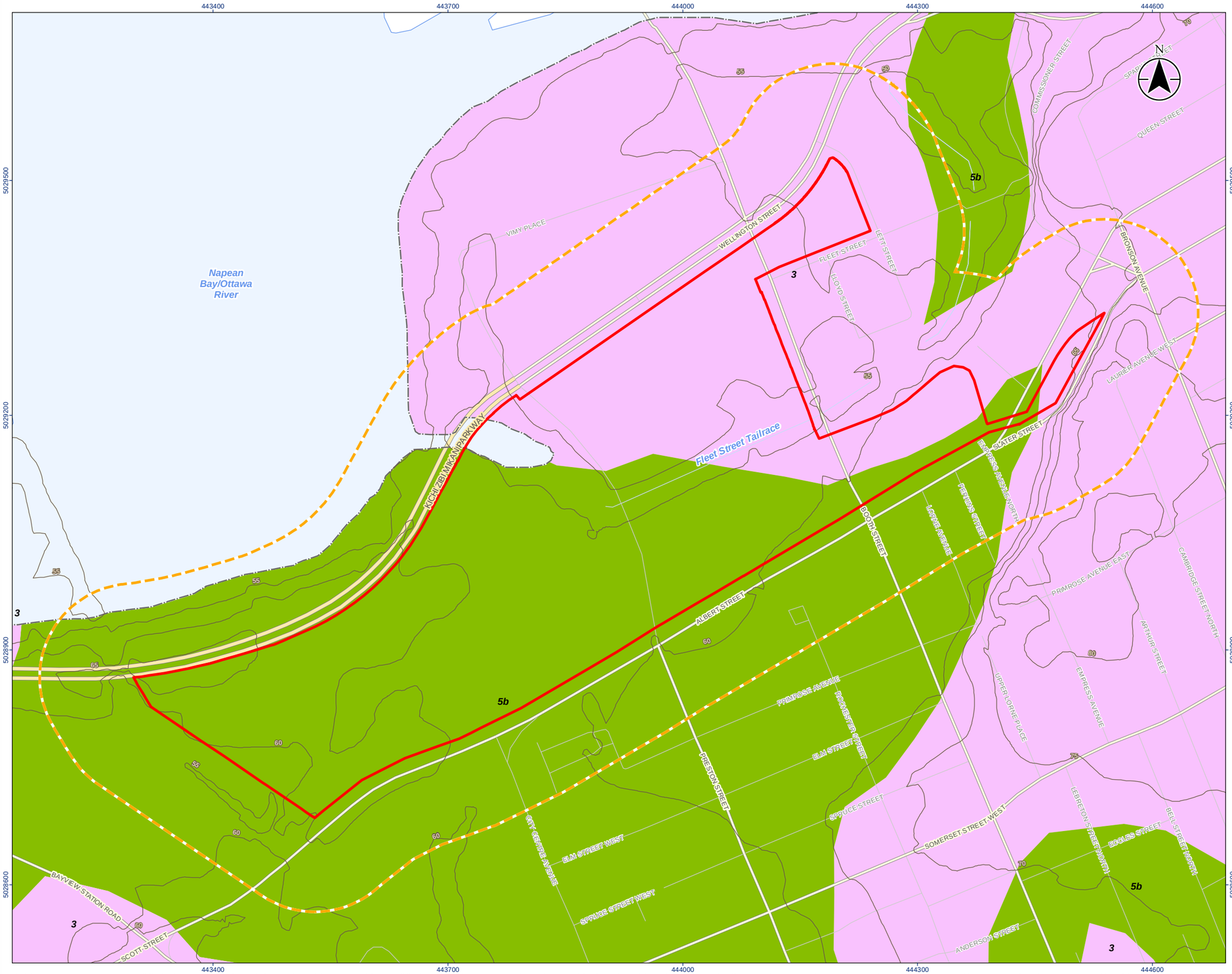
Client/Project
NATIONAL CAPITAL COMMISSION (NCC)
LEBRETON FLATS PLAN OF SUBDIVISION
ENVIRONMENTAL IMPACT STUDY

Figure No.
1b

Title
Four Main Districts of Lebreton Flats



Stantec

Legend

- Subject Property
- Study Area (120 m)
- Ground Topographic Contour (mAMSL)
- Expressway / Highway
- Major Road
- Minor Road
- Watercourse
- Waterbody

Surficial Geology

- 5b: Stone-poor, carbonate-derived silty to sandy till
- 3: Paleozoic bedrock

0 100 200 m

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Notes

1. Coordinate System: NAD 1983 UTM Zone 18N
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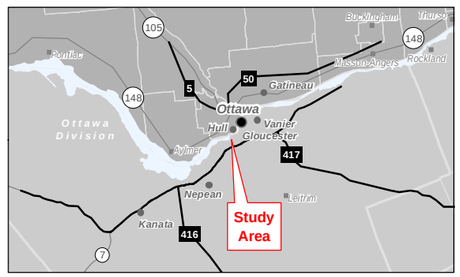
3. Ontario Geological Survey 2010. Surficial geology of Southern Ontario; Ontario Geological Survey, Miscellaneous Release--Data 128-REV ISBN 978-1-4435-2483-4



Project Location
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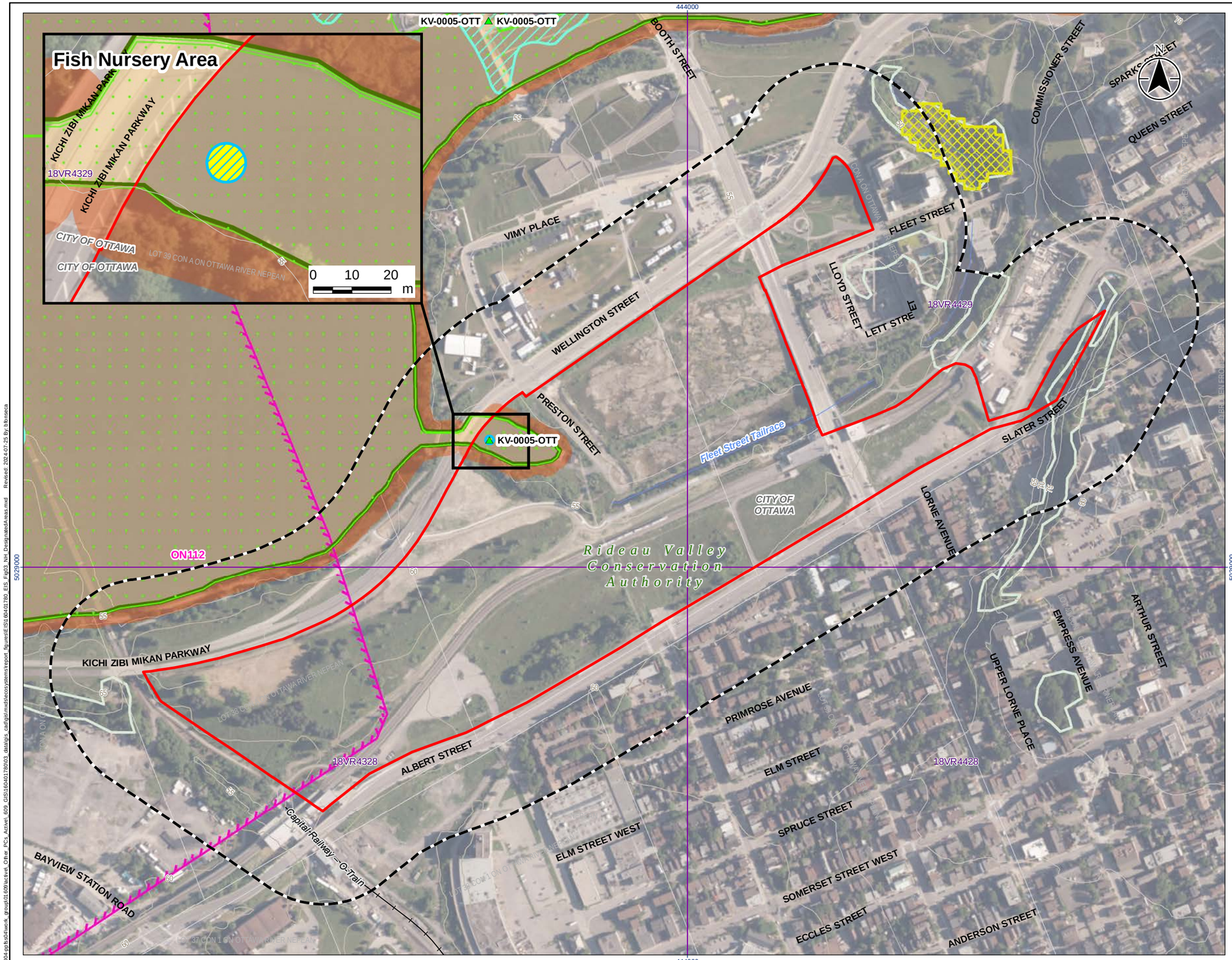
Client/Project
NATIONAL CAPITAL COMMISSION (NCC)
LEBRETON FLATS PLAN OF SUBDIVISION
ENVIRONMENTAL IMPACT STUDY

Figure No.
2

Title
Surficial Geology



Stantec

Legend

- Subject Property
- Study Area (120 m)
- Fish Survey Point (ARA)
- Railway
- Watercourse (Permanent)
- Aquatic Species at Risk Distribution
- Conservation Authority Administrative Boundary
- Fish Nursery Area
- Important Bird Area
- Lot
- RVCA Regulation Area Limits (RVCA, 2022)
- Significant Woodlands
- Thermal Regime, Warm
- Wetland, Unevaluated
- Wooded Area
- 1 km UTM Grid

0 100 200 m

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Notes

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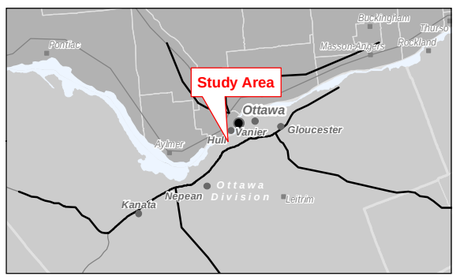

Project Location
City of Ottawa

160401780 REV2
Prepared by BF on 2024-07-25
Technical Review by SPE on 2024-02-28

Client/Project
NATIONAL CAPITAL COMMISSION (NCC)
LEBRETON FLATS PLAN OF SUBDIVISION
ENVIRONMENTAL IMPACT STUDY

Figure No.
3

Title
Natural Heritage Designated Areas

Stantec

Legend

- Subject Property
- Study Area (120 m)
- Butternut Tree Critical Root Zone
- Butternut Protection Zone (25 m)
- Ecological Land Classification (ELC) Community
- LeBreton Flats Soil Excavation Area Wetland Assessment (Geofirma 2018a)

Observed Species at
- Barn Swallow
- Chimney Swift
- Monarch

Potential Species at Risk Habitat
- Candidate Bat Maternity Roost Tree
- Potential Nesting Habitat for Barn Swallow
- Potential Maternity Roosting Habitat for Bats

Butternut Tree
- Good Condition
- Poor Condition

ELC Description
- CGL (Green Lands)
- CGL (Green Lands), CVC (Commercial and Institutional), CVI_1 (Transportation)
- CGL (Green Lands), FODM11 (Naturalized Deciduous Hedge-row Ecosite)
- CGL_2 (Parkland)
- CV (Constructed)
- CV (Constructed), CGL (Green Lands)
- CVI (Transportation and Utilities)
- CVI_1 (Transportation)
- CVR (Residential)
- CVR (Residential), CVC (Commercial and Institutional), CGL (Green Lands)
- CVR (Residential), CVC (Commercial and Institutional), CVI (Transportation and Utilities)
- CVR_2 (High Density Residential)
- FOCM6 (Naturalized Coniferous Plantation)
- FODM11 (Naturalized Deciduous Hedge-row Ecosite)
- FODM4-5 (Dry - Fresh Manitoba Maple Deciduous Forest Type)
- MASR1 (Graminoid Bedrock Shallow Marsh Ecosite)
- MEMM3 (Dry - Fresh Mixed Meadow Ecosite)
- MEMM3 (Dry - Fresh Mixed Meadow Ecosite), CGL (Green Lands)
- MEMM3 (Dry - Fresh Mixed Meadow Ecosite), CV (Constructed)
- MEMM3 (Dry - Fresh Mixed Meadow Ecosite), THDM2-1 (Sumac Deciduous Shrub Thicket Type)
- MEMM3 (Dry - Fresh Mixed Meadow Ecosite), THDM4 (Dry - Fresh Deciduous Regeneration Thicket Ecosite)
- OA (Open Water)
- OAO (Open Aquatic)
- THDM2-1 (Sumac Deciduous Shrub Thicket Type), MEMM3 (Dry - Fresh Mixed Meadow Ecosite)
- THDM4 (Dry - Fresh Deciduous Regeneration Thicket Ecosite)
- THDM4-1 (Native Deciduous Regeneration Thicket Type), CV (Constructed)
- WODM4 (Dry - Fresh Deciduous Woodland Ecosite)
- WODM5-3 (Fresh - Moist Manitoba Maple Deciduous Woodland Type)
- WOMM3 (Dry - Fresh Mixed Woodland Ecosite)

0 100 200 m

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Notes
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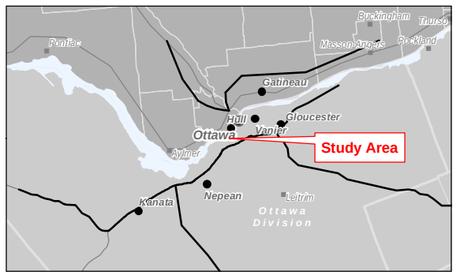


Project Location
City of Ottawa

160401780 REV1
Prepared by BF on 2024-08-01
Technical Review by SPE on 2024-02-28

Client/Project
NATIONAL CAPITAL COMMISSION (NCC)
LEBRETON FLATS PLAN OF SUBDIVISION
ENVIRONMENTAL IMPACT STUDY

Figure No.
4

Title
Existing Conditions

Stantec

Legend

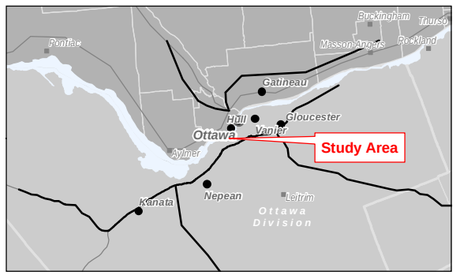
- Subject Property
- Study Area (120 m)
- Candidate Species of Conservation Concern Habitat
- Candidate Turtle Wintering Area

0 100 200 m

1:5,000 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 18N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2023.
3. Orthoimagery © City of Ottawa, 2024. Imagery Date, 2022.



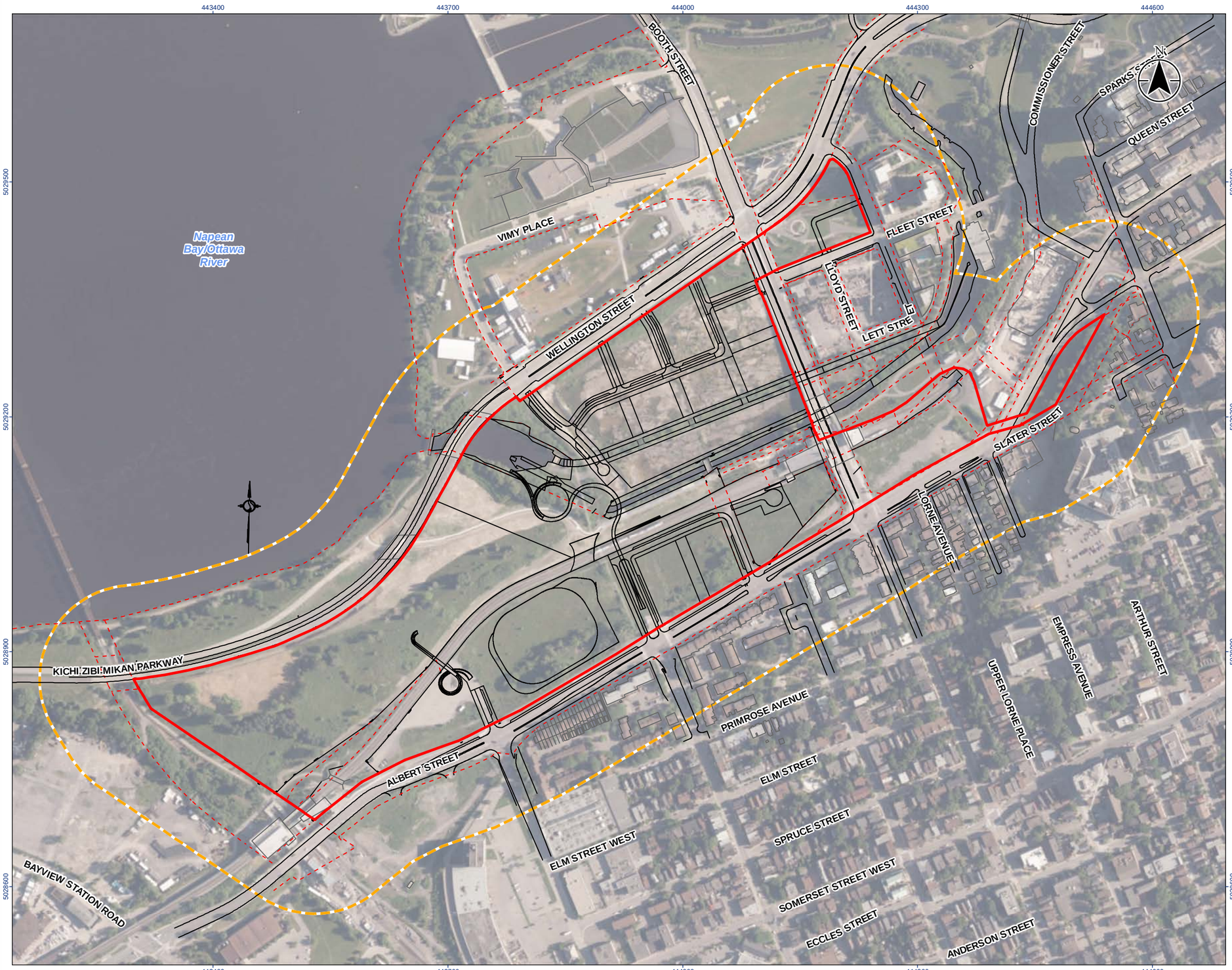
Project Location
City of Ottawa

160401780 REV2
Prepared by BF on 2024-08-01
Technical Review by SPE on 2024-02-28

Client/Project
NATIONAL CAPITAL COMMISSION (NCC)
LEBRETON FLATS PLAN OF SUBDIVISION
ENVIRONMENTAL IMPACT STUDY

Figure No.
5

Title
Significant Wildlife Habitat



Stantec

Legend

- Subject Property
- Study Area (120 m)

Draft Plan (Stantec,

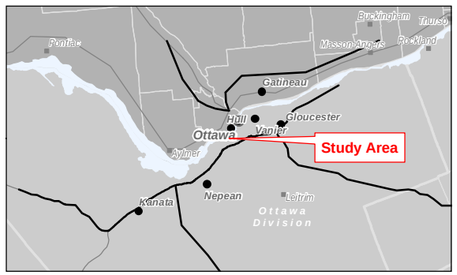
- Proposed Development
- Existing Infrastructure
- NCC Current Land

0 100 200 m

1:5,000 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 18N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2023.
3. Orthoimagery © City of Ottawa, 2024. Imagery Date, 2022.



Project Location
City of Ottawa

160401780 REV1
Prepared by BF on 2024-07-25
Technical Review by SPE on 2024-02-28

Client/Project
NATIONAL CAPITAL COMMISSION (NCC)
LEBRETON FLATS PLAN OF SUBDIVISION
ENVIRONMENTAL IMPACT STUDY

Figure No.
6

Title
Proposed Development

Appendix B Photographic Record

Photo 1: MEMM3/CV (Dry - Fresh Mixed Meadow / Constructed) north of Albert Street. Facing northwest.

Photo 2: LRT east of Pimisi station and Booth Street in CVI_1, facing northwest.

Photo 3: MEMM3/CV (Dry - Fresh Mixed Meadow / Constructed) east of Booth Street, facing southeast.

Photo 4: THDM4-1/CV (Native Deciduous Regeneration Thicket/ Constructed) west of Booth Street, facing northwest.

Photo 5: Exposed bedrock in THDM4-1/CV west of Booth Street, facing west.

Photo 6: General site conditions in THDM4-1/CV at corner of Fleet Street and Booth Street, facing southwest.

Photo 7: CGL_2 (Parkland) in Pindigen Park facing northeast.

Photo 8: CGL_2 (Parkland) in Pindigen Park along Kichi Zibi Mikan, facing northeast.

Photo 9: THDM4-1/CV (Native Deciduous Regeneration Thicket/ Constructed) at Broad Street and Kichi Zibi Mikan, facing south.

Photo 10: MEMM3 (Dry - Fresh Mixed Meadow) at Albert Street, facing north.

Photo 11: Fleet Street Tailrace in OA (Open Water), facing east.

Photo 12: Aqueduct deck surface over Fleet Street Tailrace in OA (Open Water), facing north.

Photo 13: CGL (Green land) adjacent to aqueduct, facing east.

Photo 14: Fleet Street Tailrace at Nepean inlet in OA (Open Water) community, facing south.

Photo 15: MEMM3/THDM4 (Dry - Fresh Mixed Meadow / Dry - Fresh Deciduous Regeneration Thicket) south of LRT, facing southwest.

Photo 16: MEMM3/THDM4 north of Albert Street, facing north.

Photo 17: Preston Street at Kichi Zibi Mikan in CVI_1, facing south.

Photo 18: CGL (Green land) between LRT and Kich Zibi Mikan, facing north.

Photo 19: MEMM3 (Dry - Fresh Mixed Meadow) between LRT and Albert Street, facing northeast.

Photo 20: CV (Constructed) between LRT and Albert Street, facing northeast.

Photo 21: MEMM3 / THDM2-1 (Dry - Fresh Mixed Meadow / Sumac Deciduous Shrub Thicket) at west site boundary, facing northeast.

Photo 22: General site conditions showing FOCM6 (Naturalized Coniferous Plantation) in the distance, facing northwest.

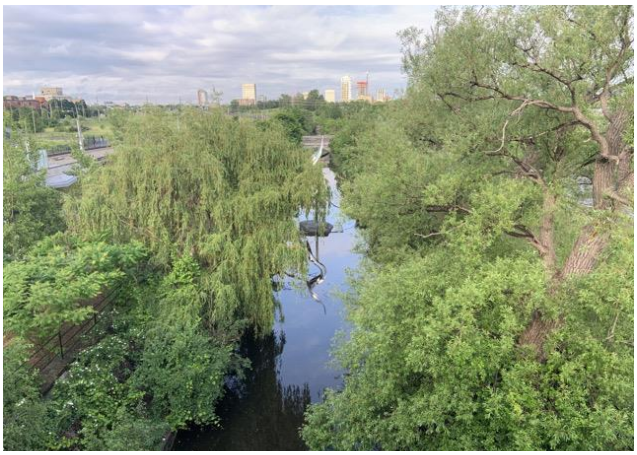


Photo 23: FODM11 (Naturalized Deciduous Hedge-row) adjacent to aqueduct, facing west.

Photo 24: Ottawa River located north of the Subject Project within the Study Area, facing north.

Photo 25: Candidate bat maternity roost tree in THDM4-1/CV, facing southeast.

Photo 26: Butternut tree located south of Slater Street on Adjacent Lands.

Photo 27: Potential hybridized butternut tree located south of Slater Street on Adjacent Lands.

Photo 28: MASR1 community within the Study Area.

Appendix C Terms of Reference and Agency Response

Stantec

Memo

To:	Stephen Willis Stantec Consulting Ltd.	From:	Josh Mansell Stantec Consulting Ltd.
Project/File:	160401780	Date:	May 25, 2023

Reference: National Capital Commission – Lebreton Flats Plan of Subdivision – Environmental Impact Study Terms of Reference

In support of the National Capital Commission's (NCC) Lebreton Flats Plan of Subdivision project (the Project), Stantec Consulting Ltd. (Stantec) has developed the following Terms of Reference (ToR) that outlines the scope of the proposed Environmental Impact Study (EIS) to address impacts towards natural heritage features within, and adjacent to (120 metres), the Project's Subject Lands located in the Lebreton Flats district in Ottawa, Ontario (~18T 444078E, 5029177N; **Attachment A**).

The purpose of the ToR is to allow the NCC, the City of Ottawa, and other applicable planning authorities, to review and comment on the proposed EIS' scope of work prior to the implementation of the 2023 field program.

Task	Task Description	Proposed Dates
Background Data Review/ Terms of Reference	**Background Review** – Compile and review available background information and records of natural heritage features and species. Sources will include the Natural Heritage Information Center (NHIC) database, Land Information Ontario (LIO) database, wildlife atlases, and online data sources. **Terms of Reference (ToR)** – Submission of the EIS scope of work to the NCC, the City of Ottawa, and other applicable planning authorities, to review and comment prior to the implementation of the 2023 field program.	May/June 2023
Field Program	**SAR Bat Maternity Roost Tree Assessment (1 survey)** – Complete a survey to identify suitable roost trees for endangered bats using best available provincial guidance; roost trees will be identified within the Project's Subject Lands (excluding adjacent lands).	May/June 2023
	Vegetation Characterization/Wildlife Habitat Assessment (2 surveys) – Complete vegetation community surveys using Ecological Land Classification (ELC) for southern Ontario, including documentation of dominant species by community type, identification of candidate Significant Wildlife Habitat, and suitable habitat for species (SAR) and other species of conservation concern (SOCC). **Flora Inventory (2 surveys)** – Complete a two-season inventory of vascular plants targeting forest ecosite, including searches for potential SAR vegetation (e.g., butternut).	May/June/July 2023
	Breeding Bird Surveys (3 surveys) – Complete area-searches using the *Ontario Breeding Bird Atlas: Instructions for General Atlassing* (OBBA, 2021) as a guide.	June/July 2023
	Incidental Wildlife Observations (all surveys) – Document and record observed wildlife (mammals, amphibians, reptiles, non-	May/June/July 2023

Reference: National Capital Commission – Lebreton Flats Plan of Subdivision – Environmental Impact Study Terms of Reference

	breeding birds, insects) and evidence of wildlife (scat, tracks, carcasses, dens, etc.).	
Data Analysis	**Evaluation of Significance** – Significant natural heritage features will be identified using the Provincial Policy Statement, Municipal Official Plans, and relevant guidance documents such as the *Natural Heritage Reference Manual* (MNR 2010). **Habitat Assessment for Potential Species at Risk** – The likelihood for potential species at risk will be determined using field data, survey results, and information describing preferred habitat for each species. **Significant Wildlife Habitat Assessment** – Candidate and confirmed Significant Wildlife Habitat features will be identified using the *Significant Wildlife Habitat Technical Guide* (MNR 2000) and the *Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E* (MNR 2015). **Significant Woodland Assessment and Determination of Setback Requirements –** Determine using the relevant municipal Official Plans.	September/October 2023

Please do not hesitate to contact the undersigned directly if you have any further questions or concerns related to the above ToR prior to the implementation of Stantec's 2023 field program.

If required, Stantec will need adequate notice if an additional survey requirement is identified by the NCC, the City of Ottawa, or other applicable planning authority.

Sincerely,

STANTEC CONSULTING LTD.

Digitally signed by Mansell, Josh
Date: 2023.05.25 08:37:41 -04'00'

Josh Mansell OCAD, Can-CISEC
Senior Biologist, Technical Area Coordinator (Terrestrial Ecosystems)
Phone: (613) 355-5493
josh.mansell@stantec.com

Google Earth

Wenborn, Kimberly

From: Mansell, Josh
Sent: Tuesday, June 6, 2023 2:42 PM
To: O'Connell, Erin
Cc: Nguyen, Hieu; Willis, Stephen; Atkins, Jake; Wagar, Barrett; Hayley, Matthew; Brouse, Vanessa; Mueller, Laura
Subject: RE: NCC - LeBreton Flats Plan of Subdivision - EIS ToR
Attachments: mem_ncc_lebreton_subdivision_eis_tor_20230525_fnl.pdf

Hello Erin,

Thank you for providing the City's comments related to the LeBreton Flats Plan of Subdivision EIS Terms of Reference.

Please see my responses/comments and proposed actions below in red.

If required, I would be happy to have a quick call with yourself and/or Matthew to confirm details/approach.

Thanks,

Josh

Josh Mansell OCAD; Can-CISEC
Senior Biologist, Technical Area Coordinator (Terrestrial Ecosystems)

Direct: 613 355-5493
Josh.Mansell@stantec.com

Stantec
300-1331 Clyde Avenue
Ottawa ON K2C 3G4

From: O'Connell, Erin <Erin.OConnell@ottawa.ca>
Sent: Tuesday, June 6, 2023 10:46 AM
To: Mueller, Laura <Laura.Mueller@ncc-ccn.ca>
Cc: Nguyen, Hieu <hieu.nguyen@ncc-ccn.ca>; Willis, Stephen <Stephen.Willis@stantec.com>; Atkins, Jake <jake.atkins@stantec.com>; Wagar, Barrett <barrett.wagar@stantec.com>; Mansell, Josh <Josh.Mansell@stantec.com>; Hayley, Matthew <Matthew.Hayley@ottawa.ca>
Subject: RE: NCC - LeBreton Flats Plan of Subdivision - EIS ToR

Hi Laura,

Staff comments on the EIS ToR:

a. In addition to Provincial Natural Heritage (NHIC) databases, they should be including federal depositories of natural heritage information and consulting with either Canadian Wildlife Services or Environment Canada (or both) for background information and any regulation updates. Please elaborate and revise. Noted. Stantec's background reviews to support an EIS typically include consulting appropriate federal sources such as the ECCC, DFO and NCC to obtain available natural heritage information and will be included during the Background Review stage for the LeBreton Flats Plan of Subdivision EIS. **ToR Action Recommended**: None Anticipated

b. Most of their attention is focused on terrestrial habitat and ecosystems, which is appropriate however we know that Species at Risk (SAR) inhabit the waters around this property and the EIS should be investigating those waters or moving forward with the premise that the aquatic habitats are significant habitats for threatened or endangered species. Please elaborate and revise. Noted. Stantec's LeBreton Flats Plan of Subdivision EIS will include a section related to aquatic resources. Stantec is moving forward with the premise that the aquatic habitats present in the Study Area are significant habitats for threatened or endangered species (as identified by DFO) and a habitat suitability assessment for aquatic species at risk will be provided in the LeBreton Flats Plan of Subdivision EIS. **ToR Action Recommended**: None Anticipated

c. A major component of the EIS is to describe the proposed project. The EIS can borrow relevant information and figures from other documents, it must describe and illustrate the proposal in a manner that identifies the proposals potential conflicts and/or implications on the natural environment. Please include and revise. Noted. Stantec did not provide a Table of Contents proposed for the LeBreton Flats Plan of Subdivision EIS in the Terms of Reference, however, the LeBreton Flats Plan of Subdivision EIS will discuss the proposed development envelope's potential conflicts and/or implications on the natural environment. **ToR Action Recommended**: None Anticipated

d. The last major component of the EIS is to inform design and mitigate negative impacts. The assessment section is helpful (and necessary) but the required outcome of the EIS is to demonstrate "no negative impacts". As such, the findings from the assessment section should be informing the proposal's design – in this case, appropriate lot layout and boundaries – and to prescribe measures to mitigate negative impacts. Please include and revise. Noted. Stantec did not provide a Table of Contents proposed for the LeBreton Flats Plan of Subdivision EIS in the Terms of Reference, however, the LeBreton Flats Plan of Subdivision EIS will aim to inform the proposed development envelope's design and identify avoidance and mitigation measures in an attempt to demonstrate 'No Negative Impacts'. **ToR Action Recommended**: None Anticipated

If you or the project team have any questions, feel free to reach out to Matthew.Hayley@ottawa.ca

Thanks,

Erin O'Connell, MCIP RPP
Planner III
Development Review Central
Planning, Real Estate and Economic Development
110 Laurier Avenue West, 4th Floor, Ottawa, ON K1P 1J1
City of Ottawa | Ville d'Ottawa
613-868-9191

From: Mueller, Laura <Laura.Mueller@ncc-ccn.ca>
Sent: May 25, 2023 1:17 PM
To: O'Connell, Erin <Erin.OConnell@ottawa.ca>
Cc: Nguyen, Hieu <Hieu.Nguyen@ncc-ccn.ca>; Willis, Stephen <Stephen.Willis@stantec.com>; Atkins, Jake <jake.atkins@stantec.com>; Wagar, Barrett <barrett.wagar@stantec.com>; Mansell, Josh <josh.mansell@stantec.com>
Subject: RE: NCC - LeBreton Flats Plan of Subdivision - EIS ToR

Excellent, thank you!
L

From: O'Connell, Erin <Erin.OConnell@ottawa.ca>
Sent: Thursday, May 25, 2023 1:06 PM
To: Mueller, Laura <Laura.Mueller@ncc-ccn.ca>
Cc: Nguyen, Hieu <Hieu.Nguyen@ncc-ccn.ca>; Willis, Stephen <Stephen.Willis@stantec.com>; Atkins, Jake <jake.atkins@stantec.com>; Wagar, Barrett <barrett.wagar@stantec.com>; Mansell, Josh <josh.mansell@stantec.com>
Subject: RE: NCC - LeBreton Flats Plan of Subdivision - EIS ToR

Hello Laura,

Thanks for looping us in. Staff will take a look and if we have any comments, I'll get them to you within a week or so.

Erin

From: Mueller, Laura <Laura.Mueller@ncc-ccn.ca>
Sent: May 25, 2023 12:28 PM
To: O'Connell, Erin <Erin.OConnell@ottawa.ca>
Cc: Nguyen, Hieu <Hieu.Nguyen@ncc-ccn.ca>; Willis, Stephen <Stephen.Willis@stantec.com>; Atkins, Jake <jake.atkins@stantec.com>; Wagar, Barrett <barrett.wagar@stantec.com>; Mansell, Josh <josh.mansell@stantec.com>
Subject: FW: NCC - LeBreton Flats Plan of Subdivision - EIS ToR

Hello Erin,

I am very pleased to let you know that we have kicked off our subdivision plan process with Stantec! We will be looking to book an early pre-consultation meeting to ensure we are on the right track – I'll be in touch soon to discuss.

In the meantime, Stantec's teams will be starting on fieldwork, so we are hoping you can facilitate review of the attached terms of reference for EIS fieldwork. Please see Steve's request below, and the proposed ToR attached.

Feel free to be in touch directly with Stantec's team (copied) to discuss and refine the ToR (please keep Hieu and I copied).

Thank you for your support on this file!

Regards,
Laura

Laura Mueller
she/elle
Chief, Planning and Engagement, Building LeBreton
Real Estate and Development Branch
Chef, planification et engagement, Bâtir LeBreton
Direction immobilière et développement
laura.mueller@ncc-ccn.ca

343-575-1624

National Capital Commission
Commission de la capitale nationale

Canada

From: Willis, Stephen <Stephen.Willis@stantec.com>
Sent: Thursday, May 25, 2023 8:47 AM
To: Mueller, Laura <Laura.Mueller@ncc-ccn.ca>
Cc: Nguyen, Hieu <Hieu.Nguyen@ncc-ccn.ca>
Subject: [EXT] FW: [EXT] FW: NCC - Lebreton Flats Plan of Subdivision - EIS ToR

Laura:

Please see the attached proposed scope of work for the ecology programme for LeBreton Flats.

To manage our timelines on the field work, we recommend that you share this memo with Erin O'Connell at the City and ask if she can have Nick Stow's team look at it. It would be helpful if we can quickly verify that we are capturing what they want to see before we go on site.

Please feel free to contact me if you have any questions.

Steve

Stephen Willis, MCIP, RPP, PLE
Discipline Lead for Urban Planning / Leader de discipline, Aménagement urbain, Canada
Community Development/Développement urbain
Stantec
400-1331 ave Clyde Ave
Ottawa, ON, K2C 3G4
Mobile (613) 762-0640

Working on the traditional unceded, unsurrendered territory of the Algonquin Anishinaabe People.

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Atención: Este correo electrónico proviene de fuera de Stantec. Por favor, tome precauciones adicionales.

Appendix D Observed Species List

D.1 Plant Observations Within the Subject Property During 2023 Field Surveys

Appendix D.1 Plant Observations Within the Subject Property During 2023 Field Surveys

Family [1]	Scientific Name [1]	Common Name [1]	S-Rank [2]	SARO Status [3]	COSEWIC Status [4]	SARA Status [5]	Coefficient of Conservatism [6]	Coefficient of Wetness [7]
Alismataceae	*Alisma triviale*	Northern Water-plantain	S5	Not Listed	Not Listed	Not Listed	1	-5
Anacardiaceae	*Rhus typhina*	Staghorn Sumac	S5	Not Listed	Not Listed	Not Listed	1	3
Apiaceae	*Daucus carota*	Wild Carrot	SNA	Not Listed	Not Listed	Not Listed		5
Apocynaceae	*Asclepias syriaca*	Common Milkweed	S5	Not Listed	Not Listed	Not Listed	0	5
Asteraceae	*Achillea millefolium*	Common Yarrow	SNA	Not Listed	Not Listed	Not Listed		3
Asteraceae	*Anaphalis margaritacea*	Pearly Everlasting	S5	Not Listed	Not Listed	Not Listed	3	3
Asteraceae	*Cichorium intybus*	Wild Chicory	SNA	Not Listed	Not Listed	Not Listed		5
Asteraceae	*Cirsium arvense*	Canada Thistle	SNA	Not Listed	Not Listed	Not Listed		3
Asteraceae	*Leucanthemum vulgare*	Oxeye Daisy	SNA	Not Listed	Not Listed	Not Listed		5
Asteraceae	*Matricaria discoidea*	Pineappleweed	SNA	Not Listed	Not Listed	Not Listed		3
Asteraceae	*Solidago canadensis*	Canada Goldenrod	S5	Not Listed	Not Listed	Not Listed	1	3
Asteraceae	*Symphyotrichum ericoides*	White Heath Aster	S5	Not Listed	Not Listed	Not Listed	4	3
Asteraceae	*Symphyotrichum novae-angliae*	New England Aster	S5	Not Listed	Not Listed	Not Listed	2	-3
Asteraceae	*Tanacetum vulgare*	Common Tansy	SNA	Not Listed	Not Listed	Not Listed		5
Asteraceae	*Taraxacum officinale*	Common Dandelion	SNA	Not Listed	Not Listed	Not Listed		3
Boraginaceae	*Echium vulgare*	Common Viper's Bugloss	SNA	Not Listed	Not Listed	Not Listed		5
Caprifoliaceae	*Dipsacus fullonum*	Common Teasel	SNA	Not Listed	Not Listed	Not Listed		3
Caryophyllaceae	*Silene vulgaris*	Bladder Campion	SNA	Not Listed	Not Listed	Not Listed		5
Cupressaceae	*Thuja occidentalis*	Eastern White Cedar	S5	Not Listed	Not Listed	Not Listed	4	-3
Cyperaceae	*Schoenoplectus tabernaemontani*	Soft-stemmed Bulrush	S5	Not Listed	Not Listed	Not Listed	5	-5
Fabaceae	*Lotus corniculatus*	Garden Bird's-foot Trefoil	SNA	Not Listed	Not Listed	Not Listed		3
Fabaceae	*Medicago sativa*	Alfalfa	SNA	Not Listed	Not Listed	Not Listed		5
Fabaceae	*Melilotus albus*	White Sweet-clover	SNA	Not Listed	Not Listed	Not Listed		3
Fabaceae	*Melilotus officinalis*	Yellow Sweet-clover	SNA	Not Listed	Not Listed	Not Listed		3
Fabaceae	*Securigera varia*	Purple Crown-vetch	SNA	Not Listed	Not Listed	Not Listed		5

Family [1]	Scientific Name [1]	Common Name [1]	S-Rank [2]	SARO Status [3]	COSEWIC Status [4]	SARA Status [5]	Coefficient of Conservatism [6]	Coefficient of Wetness [7]
Fabaceae	*Trifolium pratense*	Red Clover	SNA	Not Listed	Not Listed	Not Listed		3
Fabaceae	*Trifolium repens*	White Clover	SNA	Not Listed	Not Listed	Not Listed		3
Fabaceae	*Vicia cracca*	Tufted Vetch	SNA	Not Listed	Not Listed	Not Listed		5
Fagaceae	*Quercus macrocarpa*	Bur Oak	S5	Not Listed	Not Listed	Not Listed	5	3
Juglandaceae	*Juglans cinerea*	Butternut	S2?	END	END	END	6	3
Lamiaceae	*Leonurus cardiaca*	Common Motherwort	SNA	Not Listed	Not Listed	Not Listed		5
Nyctaginaceae	*Mirabilis nyctaginea*	Heart-leaved Four-o'clock*	S2	Not Listed	Not Listed	Not Listed		5
Oleaceae	*Fraxinus pennsylvanica*	Red Ash	S4	Not Listed	Not Listed	Not Listed	3	-3
Onagraceae	*Oenothera biennis*	Common Evening-primrose	S5	Not Listed	Not Listed	Not Listed	0	3
Pinaceae	*Picea glauca*	White Spruce	S5	Not Listed	Not Listed	Not Listed	6	3
Pinaceae	*Pinus nigra*	Austrian Pine	SNA	Not Listed	Not Listed	Not Listed		5
Pinaceae	*Pinus sylvestris*	Scots Pine	SNA	Not Listed	Not Listed	Not Listed		3
Plantaginaceae	*Plantago major*	Common Plantain	SNA	Not Listed	Not Listed	Not Listed		3
Poaceae	*Bromus inermis*	Smooth Brome	SNA	Not Listed	Not Listed	Not Listed		5
Poaceae	*Dactylis glomerata*	Orchard Grass	SNA	Not Listed	Not Listed	Not Listed		3
Poaceae	*Digitaria ischaemum*	Smooth Crabgrass	SNA	Not Listed	Not Listed	Not Listed		3
Poaceae	*Phalaris arundinacea*	Reed Canarygrass	S5	Not Listed	Not Listed	Not Listed	0	-3
Poaceae	*Phleum pratense*	Common Timothy	SNA	Not Listed	Not Listed	Not Listed		3
Poaceae	*Phragmites australis*	Common Reed	SU	Not Listed	Not Listed	Not Listed	0	-3
Poaceae	*Poa pratensis*	Kentucky Bluegrass	S5	Not Listed	Not Listed	Not Listed	0	3
Polygonaceae	*Rumex crispus*	Curled Dock	SNA	Not Listed	Not Listed	Not Listed		0
Rhamnaceae	*Frangula alnus*	Glossy Buckthorn	SNA	Not Listed	Not Listed	Not Listed		0
Rhamnaceae	*Rhamnus cathartica*	European Buckthorn	SNA	Not Listed	Not Listed	Not Listed		0
Rosaceae	*Aruncus dioicus*	Common Goatsbeard	SNA	Not Listed	Not Listed	Not Listed		3
Rosaceae	*Dasiphora fruticosa*	Shrubby Cinquefoil	S5	Not Listed	Not Listed	Not Listed	8	-3
Rosaceae	*Prunus pensylvanica*	Pin Cherry	S5	Not Listed	Not Listed	Not Listed	3	3
Rubiaceae	*Galium asprellum*	Rough Bedstraw	S5	Not Listed	Not Listed	Not Listed	6	-5

Family [1]	Scientific Name [1]	Common Name [1]	S-Rank [2]	SARO Status [3]	COSEWIC Status [4]	SARA Status [5]	Coefficient of Conservatism [6]	Coefficient of Wetness [7]
Salicaceae	*Populus deltoides*	Eastern Cottonwood	S5	Not Listed	Not Listed	Not Listed	4	0
Salicaceae	*Populus tremuloides*	Trembling Aspen	S5	Not Listed	Not Listed	Not Listed	2	0
Salicaceae	*Salix euxina*	Crack Willow	SNA	Not Listed	Not Listed	Not Listed		0
Sapindaceae	*Acer negundo*	Manitoba Maple	S5	Not Listed	Not Listed	Not Listed	0	0
Sapindaceae	*Acer platanoides*	Norway Maple	SNA	Not Listed	Not Listed	Not Listed		5
Sapindaceae	*Acer rubrum*	Red Maple	S5	Not Listed	Not Listed	Not Listed	4	0
Scrophulariaceae	*Verbascum thapsus*	Common Mullein	SNA	Not Listed	Not Listed	Not Listed		5
Solanaceae	*Solanum dulcamara*	Bittersweet Nightshade	SNA	Not Listed	Not Listed	Not Listed		0
Ulmaceae	*Ulmus americana*	White Elm	S5	Not Listed	Not Listed	Not Listed	3	-3
Ulmaceae	*Ulmus pumila*	Siberian Elm	SNA	Not Listed	Not Listed	Not Listed		3
Vitaceae	*Parthenocissus quinquefolia*	Virginia Creeper	S4?	Not Listed	Not Listed	Not Listed	6	3
Vitaceae	*Vitis riparia*	Riverbank Grape	S5	Not Listed	Not Listed	Not Listed	0	0

Notes:

[1]**Family, Scientific Name,** and **Common Name**: The family, scientific name, and English common name of a species as published by the Natural Heritage Information Centre hosted by the Ministry of Natural Resources and Forestry / Land Information Ontario.

[2]**S-Rank:** Subnational Rank is the conservation status of a species within a particular province, territory, or state. In this scenario, it is the provincial level ranking system as published by the Natural Heritage Information Centre hosted by hosted by the Ministry of Natural Resources and Forestry / Land Information Ontario.

[3]**SARO Status:** Species at Risk in Ontario (Provincial Status as defined by the Endangered Species Act, 2007 as amended).

[4]**COSEWIC Status:** Status as defined by the Committee on the Status of Endangered Wildlife in Canada.

[5]**SARA Status:** Federal status as defined by the Species at Risk Act.

[6]**Coefficient of Conservatism:** as published by the Natural Heritage Information (Oldham, M.J., Bakowsky, W.d., Surtherland, D.A. 1995. Floristic Quality Assessment System for Southern Ontario. Natural Heritage Information Centre, Ontario Ministry of Natural Resources, Peterborough, Ontario. 69 pp.)

[7]**Coefficient of Wetness:** Coefficient of Wetness reflects a species' affinity for wet soil conditions as published by the Natural Heritage Information hosted by the Ministry of Natural Resources and Forestry / Land Information Ontario.

* Observed individual was determined to be garden escapee and is not considered to be provincially rare

Endangered Species Act and Species at Risk Act Acronyms

END: Endangered

THR: Threatened

SC: Special Concern

EXT: Extirpated

NAR: Not at Risk

Subnational Rankings (S RANK)

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

?: Indicates uncertainty in the assigned rank

S1: Critically Imperiled – Critically imperiled in the province (often 5 or fewer occurrences)

S2: Imperiled – Imperiled in the province, very few populations (often 20 or fewer),

S3: Vulnerable – Vulnerable in the province, relatively few populations (often 80 or fewer)

S4: Apparently Secure – Uncommon but not rare

S5: Secure – Common, widespread, and abundant in the province

D.2 Wildlife Observations Within the Study Area Durning 2023 Field Surveys

Appendix D.2 Wildlife Observations Within the Study Area During 2023 Field Surveys

NHIC Class	Family [1]	Scientific Name [1]	Common Name [1]	S-Rank[2]	SARO Status[3]	COSEWIC Status[4]	SARA Status[5]	MBCA[6]
Insect	Nymphalidae	*Danaus plexippus*	Monarch	S2N,S4B	SC	END	END	N/A
Bird	Accipitridae	*Buteo jamaicensis*	Red-tailed Hawk	S5	NAR	NAR	No Status	No
Bird	Anatidae	*Anas platyrhynchos*	Mallard	S5	No Status	No Status	No Status	Yes
Bird	Anatidae	*Branta canadensis*	Canada Goose	S5	No Status	No Status	No Status	Yes
Bird	Apodidae	*Chaetura pelagica*	Chimney Swift	S3B	THR	THR	THR	Yes
Bird	Ardeidae	*Ardea herodias*	Great Blue Heron	S4	No Status	No Status	No Status	Yes
Bird	Ardeidae	*Nycticorax nycticorax*	Black-crowned Night-heron	S3B,S2N,S4M	No Status	No Status	No Status	Yes
Bird	Bombycillidae	*Bombycilla cedrorum*	Cedar Waxwing	S5	No Status	No Status	No Status	Yes
Bird	Cardinalidae	*Cardinalis cardinalis*	Northern Cardinal	S5	No Status	No Status	No Status	Yes
Bird	Cathartidae	*Cathartes aura*	Turkey Vulture	S5B,S3N	No Status	No Status	No Status	No
Bird	Charadriidae	*Charadrius vociferus*	Killdeer	S4B	No Status	No Status	No Status	Yes
Bird	Columbidae	*Columba livia*	Rock Pigeon	SNA	No Status	No Status	No Status	Yes
Bird	Columbidae	*Zenaida macroura*	Mourning Dove	S5	No Status	No Status	No Status	Yes
Bird	Corvidae	*Corvus brachyrhynchos*	American Crow	S5	No Status	No Status	No Status	No
Bird	Cuculidae	*Coccyzus erythropthalmus*	Black-billed Cuckoo	S4S5B	No Status	No Status	No Status	Yes
Bird	Fringillidae	*Haemorhous mexicanus*	House Finch	SNA	No Status	No Status	No Status	Yes
Bird	Fringillidae	*Spinus tristis*	American Goldfinch	S5	No Status	No Status	No Status	Yes
Bird	Hirundinidae	*Hirundo rustica*	Barn Swallow	S4B	SC	THR	THR	Yes
Bird	Hirundinidae	*Petrochelidon pyrrhonota*	Cliff Swallow	S4S5B	No Status	No Status	No Status	Yes
Bird	Hirundinidae	*Stelgidopteryx serripennis*	Northern Rough-winged Swallow	S4B	No Status	No Status	No Status	Yes
Bird	Icteridae	*Agelaius phoeniceus*	Red-winged Blackbird	S5	No Status	No Status	No Status	No
Bird	Icteridae	*Quiscalus quiscula*	Common Grackle	S5	No Status	No Status	No Status	No
Bird	Laridae	*Larus delawarensis*	Ring-billed Gull	S5	No Status	No Status	No Status	Yes
Bird	Mimidae	*Dumetella carolinensis*	Gray Catbird	S5B,S3N	No Status	No Status	No Status	Yes
Bird	Paridae	*Poecile atricapillus*	Black-capped Chickadee	S5	No Status	No Status	No Status	Yes

NHIC Class	Family [1]	Scientific Name [1]	Common Name [1]	S-Rank[2]	SARO Status[3]	COSEWIC Status[4]	SARA Status[5]	MBCA[6]
Bird	Parulidae	*Setophaga pensylvanica*	Chestnut-sided Warbler	S5B	No Status	No Status	No Status	Yes
Bird	Parulidae	*Setophaga petechia*	Yellow Warbler	S5B	No Status	No Status	No Status	Yes
Bird	Parulidae	*Setophaga ruticilla*	American Redstart	S5B	No Status	No Status	No Status	Yes
Bird	Passerellidae	*Melospiza melodia*	Song Sparrow	S5	No Status	No Status	No Status	Yes
Bird	Passeridae	*Passer domesticus*	House Sparrow	SNA	No Status	No Status	No Status	No
Bird	Phalacrocoracidae	*Nannopterum auritum*	Double-crested Cormorant	S5B,S4N	NAR	NAR	No Status	No
Bird	Picidae	*Colaptes auratus*	Northern Flicker	S5	No Status	No Status	No Status	Yes
Bird	Picidae	*Dryobates pubescens*	Downy Woodpecker	S5	No Status	No Status	No Status	Yes
Bird	Scolopacidae	*Actitis macularius*	Spotted Sandpiper	S5B	No Status	No Status	No Status	Yes
Bird	Sturnidae	*Sturnus vulgaris*	European Starling	SNA	No Status	No Status	No Status	No
Bird	Turdidae	*Turdus migratorius*	American Robin	S5	No Status	No Status	No Status	Yes
Bird	Tyrannidae	*Tyrannus tyrannus*	Eastern Kingbird	S4B	No Status	No Status	No Status	Yes
Bird	Vireonidae	*Vireo gilvus*	Warbling Vireo	S5B	No Status	No Status	No Status	Yes
Bird	Vireonidae	*Vireo olivaceus*	Red-eyed Vireo	S5B	No Status	No Status	No Status	Yes
Mammal	Sciuridae	*Marmota monax*	Woodchuck	S5	No Status	No Status	No Status	N/A
Mammal	Sciuridae	*Sciurus carolinensis*	Eastern Gray Squirrel	S5	No Status	No Status	No Status	N/A

Notes:

[1]**Family, Scientific Name,** and **Common Name**: The family, scientific name, and English common name of a species as published by the Natural Heritage Information Centre hosted by the Ministry of Natural Resources and Forestry / Land Information Ontario.

[2]**S-Rank:** Subnational Rank is the conservation status of a species within a particular province, territory, or state. In this scenario, it is the provincial level ranking system as published by the Natural Heritage Information Centre hosted by hosted by the Ministry of Natural Resources and Forestry / Land Information Ontario.

[3]**SARO Status:** Species at Risk in Ontario (Provincial Status as defined by the Endangered Species Act, 2007 as amended).

[4]**COSEWIC Status:** Status as defined by the Committee on the Status of Endangered Wildlife in Canada.

[5]**SARA Status:** Federal status as defined by the Species at Risk Act.

[6]**MBCA:** Bird species protected under Article I of the Migratory Birds Convention Act, 1995 (MBCA).

Endangered Species Act and Species at Risk Act Acronyms

END: Endangered

THR: Threatened

SC: Special Concern

UC: Under consideration for addition and/or status change to Schedule 1 of SARA

NAR: Not at Risk

Ontario Subnational Rankings (S RANK)

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

S#S#: Range Rank – A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species

?: Indicates uncertainty in the assigned rank

S1: Critically Imperiled – Critically imperiled in the province (often 5 or fewer occurrences)

S2: Imperiled – Imperiled in the province, very few populations (often 20 or fewer),

S3: Vulnerable – Vulnerable in the province, relatively few populations (often 80 or fewer)

S4: Apparently Secure – Uncommon but not rare

S5: Secure – Common, widespread, and abundant in the province

B: Breeding: Conservation status refers to the breeding population of the species in the nation or state/province

N: Non-breeding: Conservation status refers to the non-breeding population of the species in the nation or state/province

M: Migrant: Migrant species occurring regularly on migration at particular staging areas or concentration spots where the species might warrant conservation attention. Conservation status refers to the aggregating transient population of the species in the nation or state/province

Appendix E Species at Risk and Species of Conservation Concern

E.1 Species at Risk Habitat Suitability Assessment

Appendix E.1 Species at Risk Habitat Suitability Assessment

Scientific Name[1]	Common Name[1]	SARO[2]	COSEWIC[3]	SARA[4]	S-Rank[5]	Source(s)	Habitat Description	Likelihood of Occurrence (Nil, Low, Medium, High, or Confirmed)	
								Subject Property	Adjacent Lands
PLANTS									
Fraxinus nigra	Black Ash	END	THR	UC	S4	MECP 2023	Black Ash are a deciduous tree which prefer wetter soils with organic content, and are often found in alkaline soils in swamps, floodplains and fens but can also grow in lower densities in moist upland forests (COSEWIC 2018a).	Nil – No Black Ash trees were observed within the Study Area during 2023 targeted surveys.	Nil – No Black Ash trees were observed within the Study Area during 2023 targeted surveys..
Juglans cinerea	Butternut	END	END	END	S2?	NHIC, iNaturalist	Butternut are a member of the walnut (Juglandaceae) family and are native to southern and eastern Ontario in mixed hardwood forest. They grow best on well-drained, fertile soils of steady slopes and bottomlands in small groups or individually and are not typically abundant. Butternut are a shade intolerant species that are generally associated with mid-successional forests, forest edges and hedgerows. Populations of Butternut trees are in decline due to the Butternut Canker (*Ophiognomonia clavigignenti-juglandacearum*), a fungus that is spreading throughout their range in Ontario (COSEWIC 2017).	Nil – No Butternut trees were observed within the Subject Property during 2023 targeted surveys.	**Confirmed**– One Butternut tree and one potential hybridized Butternut tree were observed on Adjacent Lands during 2023 targeted surveys.
MOLLUSCS									
Obovaria olivaria	Hickorynut	END	END	END	S1?	DFO	Typically found in large, wide, and deep (>2-3m) rivers with a moderate to strong current on sandy substrates. (COSEWIC 2011a).	**High** – The Subject Property occurs within DFO mapped habitat for Hickorynut. The Ottawa River may provide suitable habitat for Hickorynut. No targeted mussel surveys were completed as part of the field program.	**High** – Adjacent Lands occur within DFO mapped habitat for Hickorynut. The Ottawa River may provide suitable habitat for Hickorynut within Adjacent Lands.
INSECTS									
Danaus plexippus	Monarch	SC	END	END	S2N,S4B	OBA	Adult Monarchs feed on nectar from wildflowers in a variety of habitats, while larvae are confined to meadows and open areas with Milkweed plants (COSEWIC 2016a).	**Confirmed** – Monarch was observed in the mixed meadow (MEMM3) within the Subject Property. The Subject Property is likely to be used by Monarch as nectaring habitat and possibly as breeding habitat (i.e., Milkweed).	**High** – Adjacent Lands are likely to be used by Monarch as nectaring and possibly as breeding habitat.
FISHES									
Acipenser fulvescens pop. 3	Lake Sturgeon (Great Lakes - Upper St. Lawrence River population)	THR	THR	No Status	S2	NHIC	Lake Sturgeon are typically associated with large lakes and rivers, similar to the St. Lawrence River. They are found at depths ranging between 5-10 m but are consistently found in deeper waters in other areas of their range. Spawning sites are typically in fast flowing waters up to 5m in depth over either hardpan clay, sand, gravel, rubble, cobble or boulders and are typically found beneath obstructions (i.e., dams) or restrictions (e.g., rapids) within a system (COSEWIC 2006).	**High** – Multiple records in the Ottawa River. The Ottawa River may provide suitable habitat for Lake Sturgeon. No targeted fish community surveys were completed as part of the field program.	**High** – Multiple records in the Ottawa River. The Ottawa River may provide suitable habitat for Lake Sturgeon within Adjacent Lands.

Scientific Name[1]	Common Name[1]	SARO[2]	COSEWIC[3]	SARA[4]	S-Rank[5]	Source(s)	Habitat Description	Likelihood of Occurrence (Nil, Low, Medium, High, or Confirmed)	
								Subject Property	Adjacent Lands
Anguilla rostrata	American Eel	END	THR	No Status	S1S2	NHIC, iNaturalist, NCC 2024	American Eel are known to most drainage systems along the eastern seaboard of North America where they are habitat generalists and have been found in eutrophic, highly-vegetated wetlands to large open-water river systems – similar to the St. Lawrence River. They are an ambush predator, where they hide in rock crevices or other cover sources and wait for prey to swim by (COSEWIC 2012).	**Confirmed** – Multiple records in the Ottawa River and confirmed presence in the Fleet Street Aqueduct Pumping Station and the open aqueduct. The Fleet Street Tailrace and Ottawa River provide habitat for American Eel. No targeted fish community surveys were completed as part of the field program.	**Confirmed** – Multiple records in the Ottawa River and confirmed presence in the Fleet Street Aqueduct Pumping Station and the open aqueduct. The Fleet Street Tailrace and Ottawa River provide habitat for American Eel. No targeted fish community surveys were completed as part of the field program.
HERPTILES									
Emydoidea blandingii	Blanding's Turtle	THR	END	END	S3	Ottawa Riverkeeper	Blanding's Turtles are largely aquatic and inhabit shallow lakes, ponds, slow moving creek, and wetlands with soft organic substrates with abundant submergent vegetation. Upland habitats are used as travel corridors between summer, winter, breeding, and nesting habitats, and adults regularly travel several km between habitats. Blanding's Turtles nest in open habitat with low vegetation cover and loose, sandy and/or gravelly soil above the waterline in natural and developed habitats (COSEWIC 2016b).	**High** – Multiple records in the Ottawa River. No turtles were observed during 2023 field surveys; however, there is potential for turtles to overwinter in the Ottawa River and nest in the thicket (THDM) and mixed meadow (MEMM) communities within the Subject Property. Turtles may use the Subject Property for basking and travel (Fleet Street Tailrace). No targeted turtle basking or nesting surveys were completed as part of the field program.	**High** – Multiple records in the Ottawa River. No turtles were observed during 2023 field surveys; however, there is potential for turtles to overwinter in the Ottawa River and nest within Adjacent Lands. Turtles may use Adjacent Lands for basking and travel (Fleet Street Tailrace and Ottawa River).
Pseudacris maculata pop. 1	Western Chorus Frog - Great Lakes - St. Lawrence - Canadian Shield population	NAR	THR	THR	S4	Ottawa Riverkeeper	Western Chorus Frogs are a lowland terrestrial species that are found in marshes, meadows, and forest habitat near water. Breeding ponds are small, shallow wetlands that usually dry out in the late summer and contain no fish (e.g., predators). Adults forage in upland habitat generally within 250 to 300 m of the breeding pond and overwinter under rocks, leaf litter, loose soil, or old animal burrows (COSEWIC 2008). Adults have limited movement capabilities and generally do not disperse more than 750 m to find new breeding ponds (COSEWIC 2008).	Low – The Ottawa River and adjacent meadow and forest habitats provide suitable habitat for Western Chorus Frog; however, the only vernal pools (i.e., MASR1) with the Study Area are hydraulically isolated from other surface water features including the Ottawa River, and do not provide suitable breeding ponds. No frogs were observed within the Study Area. No targeted breeding amphibian surveys were completed as part of the field program.	Low – The Ottawa River and adjacent meadow and forest habitats provide suitable habitat for Western Chorus Frog; however, the only vernal pools (i.e., MASR1) with the Study Area are hydraulically isolated from other surface water features including the Ottawa River, and do not provide suitable breeding ponds. No frogs were observed within the Study Area. No targeted breeding amphibian surveys were completed as part of the field program.
BIRDS									
Chaetura pelagica	Chimney Swift	THR	THR	THR	S3B	NHIC, iNaturalist, OBBA, eBird	Chimney Swift is an aerial insectivorous bird that has adapted to human altered landscapes and preferentially nest on/in anthropogenic structures in sheltered areas with vertical surfaces that it can grip, including chimneys, barns, and wells. Before European settlement, Chimney Swifts used large hollow trees (COSEWIC 2018b).	**Confirmed** – Chimney Swift were observed flying and foraging in the open mixed meadow / constructed (MEMM3/CV) and in the open mixed meadow / deciduous regeneration thicket (MEMM3/THDM4) habitat within the Subject Property. There is no roosting or nesting habitat in the Subject Property (see Section 4.3 and Appendix E.1).habitat within the Subject Property. There is no roosting or nesting habitat for Chimney Swift in the Subject Property.	**High**– Chimney Swift were observed flying and foraging in the Subject Property. It is likely Adjacent Lands provide suitable roosting and/or nesting habitat in the form of anthropogenic structures.

Scientific Name[1]	Common Name[1]	SARO[2]	COSEWIC[3]	SARA[4]	S-Rank[5]	Source(s)	Habitat Description	Likelihood of Occurrence (Nil, Low, Medium, High, or Confirmed)	
								Subject Property	Adjacent Lands
Chordeiles minor	Common Nighthawk	SC	SC	THR	S4B	NHIC, OBBA	Common Nighthawk breed in a wide variety of open habitats where bare ground is available for nesting. Nesting habitat includes clear cuts, burns, rock outcrops, rocky areas, sandy costal habitats, and flat gravel rooftops. Nests are built on the ground in well-drained areas near shade (COSEWIC 2018c).	Nil – No Common Nighthawk were observed during the 2023 targeted surveys.	Low –No Common Nighthawk were observed during the 2023 targeted surveys; however, Adjacent Lands may provide suitable nesting habitat in the form of flat gravel rooftops.
Dolichonyx oryzivorus	Bobolink	THR	THR	THR	S4B	NCC 2024	Bobolink is a grassland obligate species that nests in a variety of open grassland habitats in Ontario including pastures, savannahs, alvar grasslands, and hayfields. They are mostly found in agricultural habitats (i.e., hayfields, pastures, fallow cropfields) in Ontario due to the loss of native grassland habitats. Sites with a higher ratio of grasses to forbs, abundant litter cover, and moderately dense vegetation cover with a low proportion of woody vegetation (e.g., shrubs, trees) are preferred for breeding (COSEWIC 2010).	Nil – No Bobolink and no suitable habitat for Bobolink were observed during the 2023 targeted surveys.	Nil – No Bobolink and no suitable habitat for Bobolink were observed during the 2023 targeted surveys.
Hirundo rustica	Barn Swallow	SC	THR	THR	S4B	NHIC, iNaturalist, OBBA	Barn Swallow is an aerial insectivorous bird that has adapted to human altered landscapes and preferentially nests on/in anthropogenic structures (e.g., bridges, culverts, buildings, sheds). Before European settlement, Barn Swallows used caves, holes, crevices, and rocky cliff faces for nesting (COSEWIC 2011b).	**Confirmed** – Barn Swallow were observed flying and foraging in the open green land (CGL) habitat within the Subject Property. Suitable nesting habitat for Barn Swallow was observed within the Subject Property in the form of bridges.	**High**– Chimney Swift were observed flying and foraging in the Subject Property. It is likely Adjacent Lands provide suitable nesting habitat in the form of anthropogenic structures and foraging habitat.
Ixobrychus exilis	Least Bittern	THR	THR	THR	S4B	Ottawa Riverkeeper	Least Bittern nest in freshwater and brackish marshes with dense, tall emergent vegetation (usually cattails (Typha spp.)). Marshes >5 ha with relatively stable water levels <1 m deep and approximately 50% open water are preferred (COSEWIC 2009).	Nil – No Least Bittern were observed during the 2023 targeted surveys.	Nil – No Least Bittern were observed during the 2023 targeted surveys.
Riparia riparia	Bank Swallow	THR	THR	THR	S4B	OBBA, eBird	Bank Swallows nest in natural and artificial banks including riverbanks, gravel pits, roadcuts, and soil stockpiles. Nest burrows are usually in vertical or near-vertical banks and the availability of suitable vertical banks is generally a limiting factor. Adults tend to forage within 200-500 m of the colony and are aerial insectivores (COSEWIC 2013a).	Nil – no nests or Bank Swallow were observed during 2023 targeted surveys.	Nil – no nests or Bank Swallow were observed during 2023 targeted surveys.

Scientific Name[1]	Common Name[1]	SARO[2]	COSEWIC[3]	SARA[4]	S-Rank[5]	Source(s)	Habitat Description	Likelihood of Occurrence (Nil, Low, Medium, High, or Confirmed)	
								Subject Property	Adjacent Lands
MAMMALS									
Myotis leibii	Eastern Small-footed Myotis	END	No Status	No Status	S2S3	AMO	Eastern Small-footed Myotis are aerial insectivores that can be found in a variety of habitats including forests, in rocky habitats, near waterbodies and wetlands, and in urban areas. Maternity roost sites occur in cracks and crevices in rock faces, cliffs, and rock barrens, and less commonly in buildings (attics, abandoned buildings, barns). Overwintering habitat includes caves and abandoned mines (Humphrey 2017).	**High** – One candidate bat maternity roost tree was identified in the thicket / constructed (THDM4-1/CV) habitat within the Subject Property. Eastern Small-footed Myotis may use the candidate bat maternity roost tree, bridges, and /or the woodland (WODM4) community for maternity roosting. Bats may use open habitat within the Subject Property for foraging. No targeted bat acoustic surveys were completed as part of the field program.	**High** – The Study Area occurs within the Atlas of the Mammals of Ontario (AMO) species range for Eastern Small-footed Myotis. Adjacent Lands may provide suitable roosting habitat for eastern-small footed myotis in the form of mature trees with loose bark or cavities and anthropogenic structures as well foraging habitat.
Myotis lucifugus	Little Brown Myotis	END	END	END	S3	AMO	Little Brown Myotis is an aerial insectivore that can be found in a variety of habitats including forests, hay fields, pastures, near waterbodies, and in urban areas. Maternity roost sites occur in buildings (attics, abandoned buildings, barns), rock crevices, exfoliating tree bark, and cavities and crevices in trees. Overwintering habitat includes caves and abandoned mines (Humphrey 2019).	**High** – One candidate bat maternity roost tree was identified in the thicket / constructed (THDM4-1/CV) habitat within the Subject Property. Little Brown Myotis may use the candidate bat maternity roost tree, bridges, and /or the woodland (WODM4) community for maternity roosting. Bats may use open habitat within the Subject Property for foraging. No targeted bat acoustic surveys were completed as part of the field program.	**High** – The Study Area occurs within the AMO species range for Little Brown Myotis. Adjacent Lands may provide suitable roosting habitat for Little Brown Myotis in the form of mature trees with loose bark or cavities and anthropogenic structures as well foraging habitat.
Myotis septentrionalis	Northern Myotis	END	END	END	S3	AMO	Northern Myotis are aerial insectivores that will also glean prey. Northern Myotis are commonly found in forests and adjacent fields. Maternity roost sites occur in mature trees with loose bark or cavities, and rarely in buildings. Overwinter in caves and mines (Humphrey 2019).	**Medium** – One candidate bat maternity roost tree was identified in the thicket / constructed (THDM4-1/CV) habitat within the Subject Property; however, Northern Myotis prefer to roost in mature trees with loose bark or cavities in forested habitat. Northern Myotis may use the woodland (WODM4) community within the Subject Property for foraging. Bats may use open habitat within the Subject Property for foraging. No targeted bat acoustic surveys were completed as part of the field program.	**Medium** – The Study Area occurs within the AMO species range for Northern Myotis. Adjacent Lands may provide suitable roosting habitat for Northern Myotis in the form of mature trees with loose bark or cavities and foraging habitat.
Perimyotis subflavus	Tri-colored Bat	END	END	END	S3?	AMO	Tri-colored Bats are aerial insectivores that can be found in a variety of forested habitats. Maternity roost sites occur in older forests with live or dead leaf clusters and occasionally in buildings. This species is strongly associated with forest watercourses and streamside vegetation. Overwinter in caves and mines (Humphrey 2019).	**Medium** – One candidate bat maternity roost tree was identified in the thicket / constructed (THDM4-1/CV) habitat within the Subject Property; however, Tri-colored Bats prefer to roost in tree cavities in forest stands. Tri-colored Bats may use the woodland (WODM4) community for maternity roosting. Bats may use open habitat within the Subject Property for foraging. No targeted bat acoustic surveys were completed as part of the field program.	**Medium** – The Study Area occurs within the AMO species range for Tri-colored Bats. Adjacent Lands may provide suitable roosting habitat for Tri-colored Bats in the form of tree cavities and foraging habitat.

Notes:

[1]**Scientific Name** and **Common Name**: The scientific name, and English common name of a species as published by the Natural Heritage Information Centre hosted by the Ministry of Natural Resources and Forestry / Land Information Ontario.

[2]**SARO Status:** Species at Risk in Ontario (Provincial Status as defined by the Endangered Species Act, 2007 as amended).

[3]**COSEWIC Status**: Status as defined by the Committee on the Status of Endangered Wildlife in Canada.

[4]**SARA Status:** Federal status as defined by the Species at Risk Act.

[5]**S-Rank:** Subnational Rank (S-Rank) is the conservation status of a species or plant community within a particular province, territory, or state. In this scenario, it is the provincial level ranking system as published by the Natural Heritage Information Centre hosted by the Ministry of Natural Resources and Forestry / Land Information Ontario.

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COSEWIC. 2013a. COSEWIC assessment and status report on the Bank Swallow Riparia riparia in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 48 pp.

COSEWIC. 2016a. COSEWIC assessment and status report on the Monarch Danaus plexippus in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiii + 59 pp.

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Endangered Species Act and Species at Risk Act Acronyms

END: Endangered

THR: Threatened

SC: Special Concern

NAR: Not at Risk

UC: Under Consideration for Addition and/or Status Change under Schedule 1 of SARA

Subnational Rankings (S RANK)

S#S#: Range Rank – A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species

?: Indicates uncertainty in the assigned rank

S1: Critically Imperiled – Critically imperiled in the province (often 5 or fewer occurrences)

S2: Imperiled – Imperiled in the province, very few populations (often 20 or fewer),

S3: Vulnerable – Vulnerable in the province, relatively few populations (often 80 or fewer)

S4: Apparently Secure – Uncommon but not rare

S5: Secure – Common, widespread, and abundant in the province

B: Breeding: Conservation status refers to the breeding population of the species in the nation or state/province

N: Non-breeding: Conservation status refers to the non-breeding population of the species in the nation or state/province

M: Migrant: Migrant species occurring regularly on migration at particular staging areas or concentration spots where the species might warrant conservation attention. Conservation status refers to the aggregating transient population of the species in the nation or state/province

E.2 Species of Conservation Concern Habitat Suitability Assessment

Appendix E.2 Species of Conservation Concern Habitat Suitability Assessment

Scientific Name[1]	Common Name[1]	SARO[2]	COSEWIC[3]	SARA[4]	S-Rank[5]	Source(s)	Habitat Description	Likelihood of Occurrence (Nil, Low, Medium, High, or Confirmed)	
								Subject Property	Adjacent Lands
PLANTS									
Tortula muralis	Wall Screw Moss	No Status	No Status	No Status	S2	iNaturalist	Commonly found in urban areas on concrete, brick walls, soil, rocks, or trees.	**Medium** – Potential habitat to support this species was observed within the Subject Property. The species was not observed during targeted surveys; however, this species may occur adjacent to the Fleet Street Tailrace and/or Ottawa River where access was limited.	**Medium** – Potential habitat to support this species was observed on Adjacent Lands.
INSECTS									
Catocala innubens	Betrothed Underwing Moth	No Status	No Status	No Status	S3	OMA	Occurs in forests, especially deciduous forests. Larvae of most species feed on foliage of deciduous trees.	Low – Deciduous trees were observed within the Subject Property; however, this species prefers to inhabit forests. The species was not observed during field surveys. No targeted insect surveys were completed as part of the field program.	Low – Potential habitat to support this species was observed on Adjacent Lands in the form of deciduous trees. The species was not observed during field surveys.
Catocala minuta	Little Underwing Moth	No Status	No Status	No Status	S3	OMA	Occurs in forests, especially deciduous forests. Larvae of most species feed on foliage of deciduous trees.	Low – Deciduous trees were observed within the Subject Property; however, this species prefers to inhabit forests. The species was not observed during field surveys. No targeted insect surveys were completed as part of the field program.	Low – Potential habitat to support this species was observed on Adjacent Lands in the form of deciduous trees. The species was not observed during field surveys.
Catocala palaeogama	Oldwife Underwing Moth	No Status	No Status	No Status	S3	OMA	Occurs in forests, especially deciduous forests. Larvae of most species feed on foliage of deciduous trees.	Low – Deciduous trees were observed within the Subject Property; however, this species prefers to inhabit forests. The species was not observed during field surveys. No targeted insect surveys were completed as part of the field program.	Low – Potential habitat to support this species was observed on Adjacent Lands in the form of deciduous trees. The species was not observed during field surveys.
Gomphurus vastus	Cobra Clubtail	No Status	No Status	No Status	S2	OOA	Breeds in streams, rivers, or lakes.	**Medium** – Potential habitat to support this species was observed within the Fleet Street Tailrace and Ottawa River in the Subject Property. The species was not observed during field surveys. No targeted insect surveys were completed as part of the field program.	**Medium** – Potential habitat to support this species was observed on Adjacent Lands in the Fleet Street Tailrace and Ottawa River. The species was not observed during field surveys.
FISHES									
Ichthyomyzon fossor	Northern Brook Lamprey	SC	SC	No Status	S3	DFO	Northern Brook Lamprey occurs in the St. Lawrence/Ottawa River basin. Larval Northern Brook Lampreys burrow in silty substrate in rivers and streams. Adults remain within their home stream (COSEWIC 2020).	**High** – Multiple records in the Ottawa River. The Fleet Street Tailrace and/or Ottawa River may provide suitable habitat for Northern Brook Lamprey. No targeted fish surveys were completed as part of the field program.	**High** – Multiple records in the Ottawa River. The Fleet Street Tailrace and/or Ottawa River may provide suitable habitat for Northern Brook Lamprey within Adjacent Lands.
Ichthyomyzon unicuspis pop. 1	Silver Lamprey (Great Lakes - Upper St. Lawrence populations)	SC	SC	SC	S3	NHIC	Silver Lamprey occurs in the Ottawa River and in creeks and rivers that feed into Ontario Great Lakes. Larval Silver Lampreys burrow in silty substrate in rivers and streams. Juvenile Silver Lamprey require clear water. Adult Silver Lamprey migrate downstream to large river or lake systems and feed as parasites. At maturity, they migrate back upstream to spawn. Silvery lamprey spawn in riffle areas that feature unidirectional, swift-flowing current, and are composed of sand and gravel (COSEWIC 2020).	**High** – Multiple records in the Ottawa River. The Fleet Street Tailrace and/or Ottawa River may provide suitable habitat for Silver Lamprey. No targeted fish surveys were completed as part of the field program.	**High** – Multiple records in the Ottawa River. The Fleet Street Tailrace and/or Ottawa River may provide suitable habitat for Silver Lamprey within Adjacent Lands.

Scientific Name[1]	Common Name[1]	SARO[2]	COSEWIC[3]	SARA[4]	S-Rank[5]	Source(s)	Habitat Description	Likelihood of Occurrence (Nil, Low, Medium, High, or Confirmed)	
								Subject Property	Adjacent Lands
Moxostoma carinatum	River Redhorse	SC	SC	SC	S2	DFO	Occurs in river and lake environments with riverine spawning habitat (moderate to swift current, riffle-run habitat, and clean coarse substrates). Outside of the spawning period, River Redhorse may be found in deeper run/pool habitats (COSEWIC 2006)	**High** – The Subject Property occurs within DFO mapped habitat for River Redhorse. The Fleet Street Tailrace and/or Ottawa River may provide suitable habitat for River Redhorse. No targeted fish surveys were completed as part of the field program.	**High** – Adjacent Lands occur within DFO mapped habitat for River Redhorse. The Fleet Street Tailrace and/or Ottawa River may provide suitable habitat for River Redhorse within Adjacent Lands.
Percina copelandi pop. 3	Channel Darter (St. Lawrence populations)	SC	SC	SC	S3	DFO	Occurs in river and lake habitats. Adult Channel Darter typically live in small to large rivers with moderate current and coarse bed material. In lakes, the Channel Darter is predominantly found on sand and gravel beaches with moderate wave action (COSEWIC 2016).	**High** – The Subject Property occurs within DFO mapped habitat for Channel Darter. The Fleet Street Tailrace and/or Ottawa River may provide suitable habitat for Channel Darter. No targeted fish surveys were completed as part of the field program.	**High** – Adjacent Lands occur within DFO mapped habitat for Channel Darter. The Ottawa Fleet Street Tailrace and/or Ottawa River may provide suitable habitat for Channel Darter within Adjacent Lands.
HERPTILES									
Chelydra serpentina	Snapping Turtle	SC	SC	SC	S4	NHIC, iNaturalist, ORRA	Snapping Turtle inhabit a wide range of wetland habitats including ponds, sloughs, streams, rivers, and shallow bays that are characterized by slow moving water, soft bottoms, and dense aquatic vegetation. Adults will use streams to move between waterbodies especially during the mating season. Nesting sites are in open habitat with sandy or gravelly substrate and are often found in road shoulders (COSEWIC 2008).	**High** – Multiple records in the Ottawa River. No turtles were observed during 2023 field surveys; however, there is potential for turtles to overwinter in the Ottawa River and nest in the thicket (THDM) and mixed meadow (MEMM) communities within the Subject Property. Turtles may use the Subject Property for basking and travel (Fleet Street Tailrace). No targeted turtle basking or nesting surveys were completed as part of the field program.	**High** – Multiple records in the Ottawa River. No turtles were observed during 2023 field surveys; however, there is potential for turtles to overwinter in the Ottawa River and nest within Adjacent Lands. Turtles may use Adjacent Lands for basking and travel (Fleet Street Tailrace and Ottawa River).
Chrysemys picta marginata	Midland Painted Turtle	No Status	SC	SC	S4	NHIC	Midland Painted Turtle inhabit slow moving, relatively shallow and well-vegetated wetlands including swamps, marshes, ponds, fens, bogs, lakes, rivers, and creaks with abundant basking sites and organic substrate. Nesting habitat is usually within 1,200 m of aquatic habitat and in an open, south-facing area with sandy-loamy and/or gravely substrate (COSEWIC 2018).	**High** – Multiple records in the Ottawa River. No turtles were observed during 2023 field surveys; however, there is potential for turtles to overwinter in the Ottawa River and nest in the thicket (THDM) and mixed meadow (MEMM) communities within the Subject Property. Turtles may use the Subject Property for basking and travel (Fleet Street Tailrace). No targeted turtle basking or nesting surveys were completed as part of the field program.	**High** – Multiple records in the Ottawa River. No turtles were observed during 2023 field surveys; however, there is potential for turtles to overwinter in the Ottawa River and nest within Adjacent Lands. Turtles may use Adjacent Lands for basking and travel (Fleet Street Tailrace and Ottawa River).
Graptemys geographica	Northern Map Turtle	SC	SC	SC	S3	iNaturalist, ORAA	Northern Map Turtle are largely aquatic and inhabit rivers, lakes, and streams that are well-oxygenated and contain suitable basking sites. Nesting sites are generally within 35 m of water and characterized by soft sand or soil in open habitat (COSEWIC 2012).	**High** – Multiple records in the Ottawa River. No turtles were observed during 2023 field surveys; however, there is potential for turtles to overwinter in the Ottawa River and nest in the thicket (THDM) and mixed meadow (MEMM) communities within the Subject Property. Turtles may use the Subject Property for basking and travel (Fleet Street Tailrace). No targeted turtle basking or nesting surveys were completed as part of the field program.	**High** – Multiple records in the Ottawa River. No turtles were observed during 2023 field surveys; however, there is potential for turtles to overwinter in the Ottawa River and nest within Adjacent Lands. Turtles may use Adjacent Lands for basking and travel (Fleet Street Tailrace and Ottawa River).

Scientific Name[1]	Common Name[1]	SARO[2]	COSEWIC[3]	SARA[4]	S-Rank[5]	Source(s)	Habitat Description	Likelihood of Occurrence (Nil, Low, Medium, High, or Confirmed)	
								Subject Property	Adjacent Lands
Lampropeltis triangulum	Eastern Milksnake	NAR	SC	SC	S4	INaturalist, ORAA	Eastern Milksnake are habitat generalists, but prefer open areas such as pastures, meadows, prairies, rock outcrops, rights-of-way, and agricultural land near forest habitat. They commonly feed around old buildings and barns, where rodent populations are high. Milksnake hibernate in mammal burrows, old building foundations, old wells, hollow logs, and rock crevices (COSEWIC 2014).	**High** – No snakes were observed during 2023 field surveys; however, exposed bedrock in the thicket (THDM) and mixed meadow (MEMM) communities within the Subject Property may provide suitable overwintering habitat for snakes. No targeted snake surveys were completed as part of the field program.	**High** – No snakes were observed during 2023 field surveys; however, exposed bedrock within the Study Area may provide suitable overwintering habitat for snakes.
MAMMALS									
Lasionycteris noctivagans	Silver-haired Bat	Not Listed	END	UC	S4	AMO	Silver-haired Bats are aerial insectivores that are most closely associated with coniferous, mixed coniferous and deciduous forests, especially in old growth forests. They form maternity colonies almost exclusively in tree cavities or small hollows. Silver-haired bats are migratory and fly south for the winter to avoid sub-zero temperatures (IUCN 2022, Bat Conservation International 2022).	**Medium** – One candidate bat maternity roost tree was identified in the thicket / constructed (THDM4-1/CV) community within the Subject Property; however, Silver-haired Bats prefer to roost in mature trees with loose bark or cavities in old growth forests. Bats may use open habitat within the Subject Property for foraging. No targeted bat acoustic surveys were completed as part of the field program.	**Medium** – The Study Area occurs within the Atlas of the Mammals of Ontario (AMO) species range for Silver-haired Bats. Adjacent Lands may provide suitable roosting habitat for Silver-haired Bats in the form of mature trees with cavities or small hollows and foraging habitat.
Lasiurus borealis	Eastern Red Bat	Not Listed	END	UC	S4	AMO	Eastern Red Bats are aerial insectivores that roost in the foliage of deciduous or sometimes evergreen trees. They are migratory and fly south for the winter to avoid sub-zero temperatures (IUCN 2022, Bat Conservation International 2022).	**High** – One candidate bat maternity roost tree was identified in the thicket / constructed (THDM4-1/CV) community within the Subject Property. Eastern Red Bats may use the candidate bat maternity roost tree and/or the woodland (WODM4) community for maternity roosting. Bats may use open habitat within the Subject Property for foraging. No targeted bat acoustic surveys were completed as part of the field program.	**High** – The Study Area occurs within the AMO species range for Eastern Red Bats. Adjacent Lands may provide suitable roosting habitat for Eastern Red Bats in the form of tree foliage and foraging habitat.
Lasiurus cinereus	Hoary Bat	Not Listed	END	UC	S4	AMO	Hoary Bats are aerial insectivores that roost solitarily in tree foliage and prefer maple, oak, ash, elder, and hemlock. They are migratory and fly south for the winter to avoid sub-zero temperatures (IUCN 2022, Bat Conservation International 2022).	**High** – One candidate bat maternity roost tree was identified in the thicket / constructed (THDM4-1/CV) community within the Subject Property. Hoary Bats may use the candidate bat maternity roost tree and/or the woodland (WODM4) community for maternity roosting. Bats may use open habitat within the Subject Property for foraging. No targeted bat acoustic surveys were completed as part of the field program.	**High** – The Study Area occurs within the AMO species range for Hoary Bats. Adjacent Lands may provide suitable roosting habitat for hoary bats in the form of tree foliage and foraging habitat.

Notes:

[1]**Scientific Name** and **Common Name**: The scientific name, and English common name of a species as published by the Natural Heritage Information Centre hosted by the Ministry of Natural Resources and Forestry / Land Information Ontario. Where species name is not provided on NHIC, species name was obtained from Nature Serve Explorer.

[2]**SARO Status:** Species at Risk in Ontario (Provincial Status as defined by the Endangered Species Act, 2007 as amended).

[3]**COSEWIC Status**: Status as defined by the Committee on the Status of Endangered Wildlife in Canada.

[4]**SARA Status:** Federal status as defined by the Species at Risk Act.

[5]**S-Rank:** Subnational Rank (S-Rank) is the conservation status of a species or plant community within a particular province, territory, or state. In this scenario, it is the provincial level ranking system as published by the Natural Heritage Information Centre hosted by the Ministry of Natural Resources and Forestry / Land Information Ontario.

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S3: Vulnerable – Vulnerable in the province, relatively few populations (often 80 or fewer)

S4: Apparently Secure – Uncommon but not rare

S5: Secure – Common, widespread, and abundant in the province

Appendix F Significant Wildlife Habitat Within the Study Area

Appendix F Significant Wildlife Habitat within the Study Area

Type	Habitat Type (MNRF 2015)	Criteria	Candidate SWH
Habitats of Seasonal Concentrations of Animals	Deer wintering congregation areas and deer yards	Deer yards are mapped by MNRF.	Absent: No deer wintering areas identified by MNRF (MNRF 2023a).
	Colonially – nesting bird breeding habitat (bank and cliff)	Eroding banks, sandy hills, steep slopes, rock faces or piles. Cliff faces. Does not include disturbed soil areas such as berms, embankments, oil, or aggregate stockpiles.	Absent: A Colonial Waterbird Nesting Area was identified during the background; however, features were not observed within the Study Area during field surveys.
	Colonially – nesting bird breeding habitat (trees/shrubs)	Dead trees in large marshes and lakes, flooded timber, and shrubs, with nests of Great Blue Heron, Great Egret, Green Heron, or Black-crowned Night-Heron.	Absent: A Colonial Waterbird Nesting Area was identified during the background; however, features were not observed within the Study Area during field surveys.
	Colonially – nesting bird breeding habitat (ground)	Rock islands and peninsulas in a lake or large river.	Absent: A Mixed Wader Nesting Colony was identified during the background; however, features were not observed within the Study Area during field surveys.
	Waterfowl stopover and staging areas	Terrestrial habitat – fields with evidence of annual spring flooding from meltwater or runoff. Aquatic habitat – ponds, marshes, lakes, bays, and watercourses used during migration, including large marshy wetlands.	Absent: Features were not observed during field surveys and feature not identified during background data review.
	Shorebird migratory stopover area	Muddy and unvegetated shorelines, beach areas, bars.	Absent: Features were not observed during field surveys or identified on satellite imagery.
	Raptor wintering areas	Combination of fields and woodland (>20 ha).	Absent: Large fields in combination with woodland communities are absent.
	Bat hibernacula	Abandoned mine shafts, underground foundations, caves, and crevices.	Absent: Features were not observed during fall field surveys or identified during background data review.
	Bat maternity colonies	Mature mixed and deciduous forests and swamps with >10 ha large diameter dead or dying trees (>25 cm diameter breast height) with cavities.	Absent: Features were not observed during field surveys or identified on satellite imagery.

Type	Habitat Type (MNRF 2015)	Criteria	Candidate SWH
Habitats of Seasonal Concentrations of Animals	Reptile hibernacula	Rock piles, fissured rocks or slopes, stone fences, crumbling foundations.	Absent: Suitable habitat for reptile hibernacula was observed in the exposed bedrock in the thicket (THDM) and mixed meadow (MEMM) communities within the Subject Property; however, the Subject Property is an urban brownfield site heavily surrounded by anthropogenic activity. The suitable habitat for reptile hibernacula would not qualify as SWH. No snakes were observed during field surveys. No additional features identified during background data review.
	Turtle wintering area	Permanent waterbodies and large wetlands with sufficient dissolved oxygen that do not freeze to the bottom with soft substrates; man-made ponds are not considered SWH.	**Candidate** Potential suitable habitat for overwintering turtles was observed in the Ottawa River in the open water (OA) community. No turtles were observed during field surveys. No additional features identified during background data review.
	Migratory butterfly stopover area	Fields and forests that are a minimum of 10 ha and are located within 5 km of Lake Ontario.	Absent: Study Area is > 5 km from Lake Ontario.
	Land bird migratory stopover area	Woodlands of a minimum size of 10 ha located within 5 km of Lake Ontario.	Absent: Study Area is > 5 km from Lake Ontario.
Rare Vegetation Communities	Cliffs and talus slopes	Cliff and talus ELC Community Classes, and other areas of exposed bed rock and patchy soil development, near vertical exposed bedrock and slopes of rock rubble.	Absent: Communities were not observed during field surveys.
	Sand barren and alvar	Sand barren and alvar ELC Community Classes >0.5 ha.	Absent: Communities were not observed during field surveys.
	Prairie and savannah	Open canopy habitats (tree cover < 60%) dominated by prairie species.	Absent: Communities were not observed during field surveys.
	Old growth forest	Relatively undisturbed, structurally complex; dominant trees > 100 years' old.	Absent: Features were not observed during field surveys.
	Other rare vegetation communities	Vegetation communities ranked S1-S3 by the NHIC.	Absent: Features were not observed during field surveys.

Type	Habitat Type (MNRF 2015)	Criteria	Candidate SWH
Specialized Habitats for Wildlife	Waterfowl nesting areas	Upland habitat located adjacent to shallow marsh, meadow marsh, and swamp habitat.	Absent: No suitable wetland communities observed during field surveys.
	Bald Eagle and Osprey nesting, foraging and perching habitat	Treed communities adjacent to rivers, lakes, ponds, and other wetlands with stick nests of Bald Eagle or Osprey.	Absent: Features were not observed during field surveys. No stick nests, Bald Eagle, or Osprey were observed using the Study Area during field surveys.
	Woodland raptor nesting habitat	Stick nests in forested ELC communities >30 ha with 10 ha of interior habitat.	Absent: There are no large forest communities >30 ha.
	Turtle nesting areas	Exposed soil, including sand and gravel in open sunny areas <100 m to wetland habitat.	Absent: Suitable habitat for turtle nesting areas was observed in (open area with sandy soil adjacent to Ottawa River) in the thicket (THDM) and mixed meadow (MEMM) communities; however, the Subject Property is an urban brownfield site heavily surrounded by anthropogenic activity. The suitable habitat for turtle nesting areas would not qualify as SWH. No turtle nests or nesting turtles were observed during field surveys. It is possible nests were present but not detected due to the level of difficulty with finding undisturbed nests.
	Seeps and springs	Any forested area with groundwater at surface within the headwaters of a stream or river system.	Absent: No seeps or springs were observed during field surveys.
	Amphibian breeding habitat (woodland and wetland)	Treed uplands with vernal pools, and wetland ecosites.	Absent: Features were observed (Ottawa River, MASR1); however, no breeding amphibians were observed during field surveys and feature not identified during background data review.
	Woodland area sensitive breeding bird habitat	Large mature forest stands, woodlots >30 ha with interior forest habitat (i.e., at least 200 m from edge).	Absent: There are no large forest communities >30 ha present.
Habitat for Species of Conservation Concern (SOCC)	Open country bird breeding habitat	Large grasslands and fields (>30 ha) with two or more of the following species: Upland Sandpiper, Grasshopper Sparrow, Vesper Sparrow, Northern Harrier, Savannah Sparrow OR with nesting Short-eared Owls.	Absent: There are no grasslands or fields >30 ha present.

Type	Habitat Type (MNRF 2015)	Criteria	Candidate SWH
Habitat for Species of Conservation Concern (SOCC) cont.	Shrub/early successional bird breeding habitat	Large shrub and thicket habitats (>10 ha) with: At least one Brown Thrasher or Clay-colored Sparrow breeding, OR At least two of Field Sparrow, Black-billed Cuckoo, Eastern Towhee and Willow Flycatcher OR Nesting Yellow-breasted Chat or Golden-winged Warbler.	Absent: There are no shrub and thicket habitats >10 ha present.
	Marsh bird breeding habitat	Wetlands with shallow water and emergent aquatic vegetation with American Bittern, Virginia Rail, Sora, Common Moorhen, American Coot, Pied-billed Grebe, Marsh Wren, Sedge Wren, Common Loon, Sandhill Crane, Green Heron, Trumpeter Swan, Black Tern, or Yellow Rail	Absent: No suitable wetland habitat to support marsh breeding birds.
	Terrestrial Crayfish	Wet meadows and edges of shallow marshes with burrows or chimneys.	Absent: No suitable habitat observed during field studies.
	Species of Conservation Concern	Records of the following SOCC occur near the Study Area: <u>Plants</u> • Wall Screw Moss <u>Insects</u> • Betrothed Underwing Moth • Cobra Clubtail • Little Underwing Moth • Oldwife Underwing Moth <u>Fishes</u> • Channel Darter (St. Lawrence populations) • Northern Brook Lamprey • River Redhorse • Silver Lamprey (Great Lakes - Upper St. Lawrence populations) <u>Herptiles</u> • Eastern Milksnake • Midland Painted Turtle • Northern Map Turtle • Snapping Turtle	**Candidate** [Wall Screw Moss, Cobra Clubtail, Channel Darter, River Redhorse, Northern Brook Lamprey and Silver Lamprey (Great Lakes - Upper St. Lawrence populations)]

Type	Habitat Type (MNRF 2015)	Criteria	Candidate SWH
Habitat for Species of Conservation Concern (SOCC) cont.		<u>Mammals</u> • Hoary Bat • Silver-haired Bat However, suitable habitat for Betrothed Underwing Moth, Little Underwing Moth, and Oldwife Underwing Moth is limited in the Study Area and the species have a low likelihood of occurrence. Candidate habitat for Wall Screw Moss, Cobra Clubtail, Channel Darter, River Redhorse, Northern Brook Lamprey and Silver Lamprey (Great Lakes - Upper St. Lawrence populations) was observed in the Study Area. Candidate SWH for SOCC turtles (Midland Painted Turtle, Northern Map Turtle, Snapping Turtle) is considered through Turtle Wintering Area and Turtle Nesting Areas. Candidate SWH for SOCC snakes (Eastern Milksnake) is considered through Reptile Hibernacula. Candidate SWH for SOCC bats (Hoary Bat, Silver-haired Bat) is considered through Bat Hibernacula and Bat Maternity Colonies. See **Section 4.3** and **Appendix E.2** for SOCC habitat suitability assessment.	
Animal Movement Corridors	Amphibian movement corridors	Associated with confirmed amphibian breeding habitat.	Absent: No suitable amphibian breeding habitat present so no corridors identified.
	Deer movement corridors	Associated with confirmed deer wintering habitat. Corridors should be unbroken by roads and residential areas, >200 m wide with gaps <20 m.	Absent: No suitable deer wintering habitat present so no corridors identified.

Appendix G Design Drawings

KEY PLAN (NOT TO SCALE)

PART OF LOTS 38, 39 AND 40
CONCESSION A (OTTAWA FRONT)
PART OF THE BED OF THE OTTAWA RIVER
IN FRONT OF LOT 38 & LOT 39,
CONCESSION A (OTTAWA FRONT)
PART OF DUCK ISLAND
IN FRONT OF LOT 38,
CONCESSION A (OTTAWA FRONT)
PART OF PRESTON STREET
(CLOSED BY BY-LAW OC1899021)
(GEOGRAPHIC TOWNSHIP OF NEPEAN)
PART OF BLOCKS A, B & C
PART OF MILL STREET
(CLOSED BY BY-LAW CR588682)
PART ENGINE HOUSE AREA
REGISTERED PLAN 60
LOTS 1 & 2 AND PART OF LOTS 3, 4 & 5
IN BLOCK E
PART OF LOTS 1, 2 & 3
IN BLOCK F
LOTS 2 TO 12 (BOTH INCLUSIVE)
IN BLOCK G
LOTS 2, 4, 6, 8, 10 & 11 AND PART OF LOTS 3, 5, 7, 9 & 12
IN BLOCK H
LOT 4 AND PART OF LOTS 1, 2 & 3
IN BLOCK S
LOTS 1 & 4 AND PART OF LOTS 2 & 3
IN BLOCK T
PART OF LOTS 4, 5, 6, 7, 8 & 9
IN BLOCK R
PART OF THE LANE AT REAR OF BLOCK S
(CLOSED BY BY-LAW LT1243121)
THE LANE AT REAR OF BLOCK T
(CLOSED BY BY-LAW LT1243121)
PART OF BROAD STREET
(CLOSED BY BY-LAW LT1243121)
PART OF BROAD STREET
(CLOSED BY BY-LAW LT1243121)
PART OF FLEET STREET
(FORMERLY QUEEN STREET)
(CLOSED BY BY-LAW LT1243127)
PART OF OTTAWA STREET
(CLOSED BY BY-LAW LT1243127)
PART OF SHERWOOD STREET
(CLOSED BY BY-LAW LT1243127)
PART OF SHERWOOD STREET
(CLOSED BY BY-LAWS CR2280019)
REGISTERED PLAN 2
LOTS A, B, C & D
REGISTERED PLAN 31129
CITY OF OTTAWA

Scale 1:1000
0 20 40 60 METRES

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

ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51 OF THE PLANNING ACT.

(A)-AS SHOWN ON DRAFT PLAN
(B)-AS SHOWN ON DRAFT PLAN
(C)-AS SHOWN ON DRAFT AND KEY PLANS
(D)-
(E)-AS SHOWN ON DRAFT PLAN
(F)-AS SHOWN ON DRAFT PLAN
(G)-AS SHOWN ON DRAFT PLAN
(H)-
(I)-
(J)-AS SHOWN ON DRAFT PLAN
(K)-
(L)-AS SHOWN ON DRAFT PLAN

LAND USE

AREA OF DEVELOPMENT BLOCKS (1-17) =	9.488 Ha
AREA OF PARKS (BLOCKS 18-19)=	9.315 Ha
AREA OF LANES (7) =	0.668 Ha
AREA OF PUBLIC ROADS (6) =	2.013 Ha
TOTAL AREA OF SUBDIVISION =	21.484 Ha

OWNER'S CERTIFICATE
I HEREBY AUTHORIZE STANTEC GEOMATICS LTD. TO SUBMIT THIS DRAFT PLAN OF SUBDIVISION ON MY BEHALF

DATE

I HAVE THE AUTHORITY TO BIND THE CORPORATION

SURVEYOR'S CERTIFICATE
I HEREBY CERTIFY THAT THE BOUNDARIES OF THE SUBJECT LANDS AND THEIR RELATIONSHIP TO ADJOINING LANDS HAVE BEEN ACCURATELY AND CORRECTLY SHOWN.

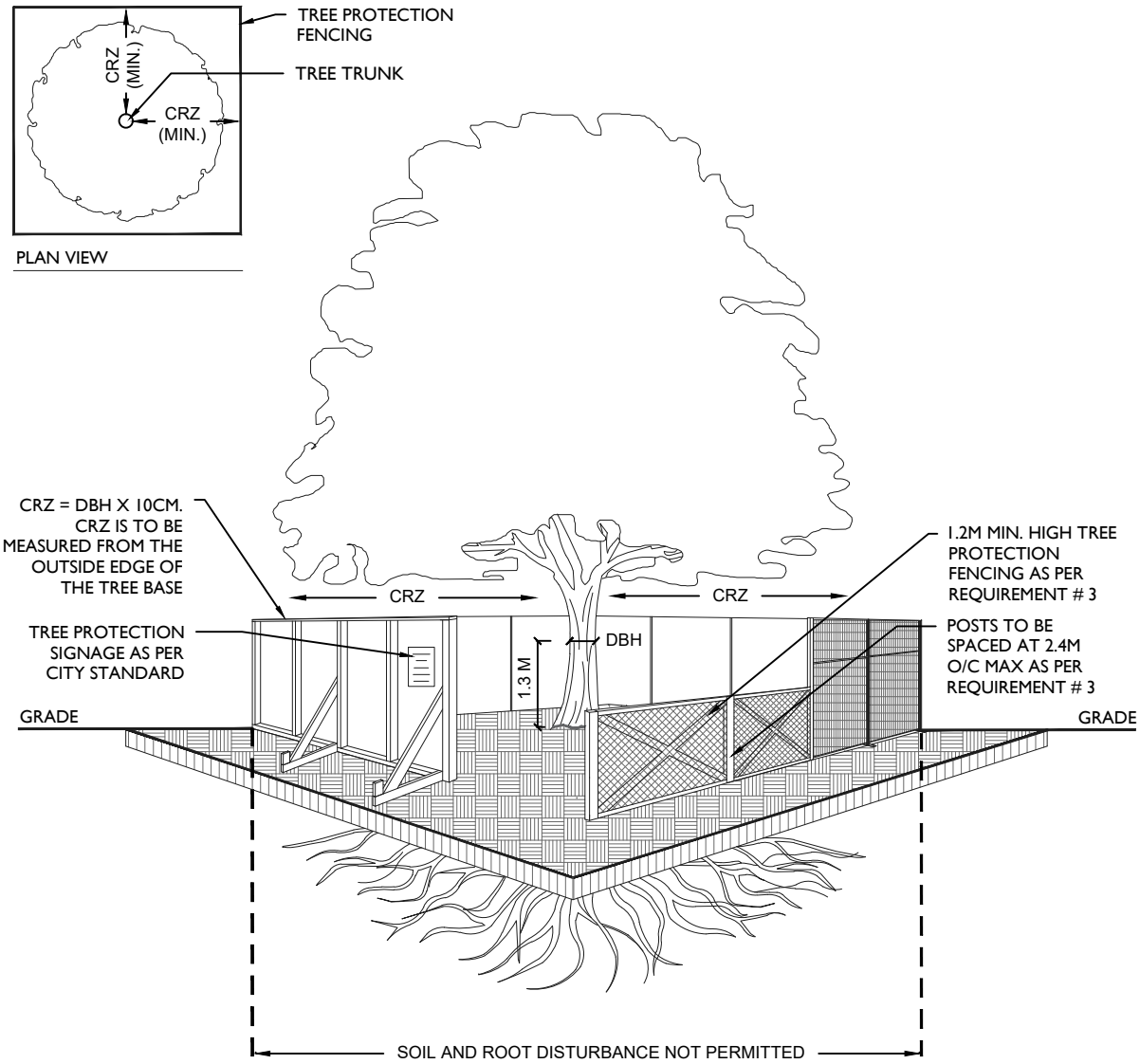
DATE

FRANCIS LAU
ONTARIO LAND SURVEYOR

Stantec
Stantec Geomatics Ltd.
CANADA LANDS SURVEYORS
ONTARIO LAND SURVEYORS
1331 CLYDE AVENUE, SUITE 300
OTTAWA, ONTARIO, K2C 3G4
TEL: 613.722.4420
stantec.com

DRAWN: ME	CHECKED: *	DATE: January 4, 2024	PROJECT NO.: 160401780-112

Appendix H Tree Protection Specification



TREE PROTECTION REQUIREMENTS:

1. PRIOR TO ANY WORK ACTIVITY WITHIN THE CRITICAL ROOT ZONE (CRZ = 10 X DIAMETER) OF A TREE, TREE PROTECTION FENCING MUST BE INSTALLED SURROUNDING THE CRITICAL ROOT ZONE, AND REMAIN IN PLACE UNTIL THE WORK IS COMPLETE.
2. UNLESS PLANS ARE APPROVED BY CITY FORESTRY STAFF, FOR WORK WITHIN THE CRZ:
   - DO NOT PLACE ANY MATERIAL OR EQUIPMENT - INCLUDING OUTHOUSES;
   - DO NOT ATTACH ANY SIGNS, NOTICES OR POSTERS TO ANY TREE;
   - DO NOT RAISE OR LOWER THE EXISTING GRADE;
   - TUNNEL OR BORE WHEN DIGGING;
   - DO NOT DAMAGE THE ROOT SYSTEM, TRUNK, OR BRANCHES OR ANY TREE;
   - ENSURE THAT EXHAUST FUMES FROM ALL EQUIPMENT ARE NOT DIRECTED TOWARD ANY TREE CANOPY.
   - DO NOT EXTEND HARD SURFACE OR SIGNIFICANTLY CHANGE LANDSCAPING
3. TREE PROTECTION FENCING MUST BE AT LEAST 1.2M IN HEIGHT, AND CONSTRUCTED OF RIGID OR FRAMED MATERIALS (E.G. MODULOC - STEEL, PLYWOOD HOARDING, OR SNOW FENCE ON A 2"X4" WOOD FRAME) WITH POSTS 2.4M APART, SUCH THAT THE FENCE LOCATION CANNOT BE ALTERED. ALL SUPPORTS AND BRACING MUST BE PLACED OUTSIDE OF THE CRZ, AND INSTALLATION MUST MINIMISE DAMAGE TO EXISTING ROOTS. (SEE DETAIL)
4. THE LOCATION OF THE TREE PROTECTION FENCING MUST BE DETERMINED BY AN ARBORIST AND DETAILED ON ANY ASSOCIATED PLANS FOR THE SITE (E.G. TREE CONSERVATION REPORT, TREE INFORMATION REPORT, ETC). THE PLAN AND CONSTRUCTED FENCING MUST BE APPROVED BY CITY FORESTRY STAFF PRIOR TO THE COMMENCEMENT OF WORK.
5. IF THE FENCED TREE PROTECTION AREA MUST BE REDUCED TO FACILITATE CONSTRUCTION, MITIGATION MEASURES MUST BE PRESCRIBED BY AN ARBORIST AND APPROVED BY CITY FORESTRY STAFF. THESE MAY INCLUDE THE PLACEMENT OF PLYWOOD, WOOD CHIPS, OR STEEL PLATING OVER THE ROOTS FOR PROTECTION OR THE PROPER PRUNING AND CARE OF ROOTS WHERE ENCOUNTERED.

THE CITY'S TREE PROTECTION BY-LAW, 2020-340 PROTECTS BOTH CITY-OWNED TREES, CITY-WIDE, AND PRIVATELY-OWNED TREES WITHIN THE URBAN AREA. PLEASE REFER TO WWW.OTTAWA.CA/TREEBYLAW FOR MORE INFORMATION ON HOW THE TREE BY-LAW APPLIES.

ACCESSIBLE FORMATS AND COMMUNICATION SUPPORTS ARE AVAILABLE, UPON REQUEST

Ottawa

TREE PROTECTION SPECIFICATION

TO BE IMPLEMENTED FOR RETAINED TREES, BOTH ON SITE AND ON ADJACENT SITES, PRIOR TO ANY TREE REMOVAL OR SITE WORKS AND MAINTAINED FOR THE DURATION OF WORK ACTIVITIES ON SITE.

SCALE:	NTS
DATE:	MARCH 2021
DRAWING NO.:	1 of 1