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Environmental Impact Statement
Proposed Zoning Amendment
2095 Dilworth Road
Ottawa, Ontario

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Submitted to:

Dilworth Development Inc.
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Environmental Impact Statement
Proposed Zoning Amendment
2095 Dilworth Road
Ottawa, Ontario

July 18, 2024
Project: 65007.01

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EXECUTIVE SUMMARY

GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) was retained by Dilworth Development Inc. to complete an Environmental Impact Statement (EIS) for the property located at 2095 Dilworth Road, Ottawa, Ontario. This EIS has been completed in support of a proposed zoning amendment to permit future commercial development and was completed in accordance with all federal, provincial and municipal policies and guidelines, as applicable.

In support of this EIS a desktop review and a series of field investigations were completed to identify the presence or absence of natural heritage features and species at risk (SAR) on-site. Field investigations were completed beginning in fall 2019, throughout spring and summer 2020, spring 2021 and spring 2024. The focus of the site investigations was to describe, in general, the natural and physical setting of the subject property with a focus on confirming the presence or absence of natural heritage features and potential SAR or their habitat as identified in the desktop review.

Following completion of the desktop review and site investigations the following natural heritage features were identified on-site or within the study area: provincially significant wetlands, local wetlands and fish habitat, significant woodlands, significant valleylands (floodplain), significant wildlife habitat for waterfowl nesting areas (*candidate*), turtle overwintering areas (*confirmed*), and special concern and rare wildlife habitat (barn swallow, eastern wood-pewee, olive-sided flycatcher, snapping turtle and bridle shiner). The following SAR and their habitat were identified as having a potential to occur on-site: Blanding's turtle, butternut, eastern small-foot myotis, little brown myotis and tri-colored bat. Regulated Category 1, 2 and 3 habitat was identified on-site for Blanding's turtles. No butternut trees were observed on-site.

Potential impacts to the natural heritage features were primarily associated with indirect impacts to provincially significant wetlands, local wetlands, species at risk habitat, significant wildlife habitat and fish habitat. No loss of significant woodlands is anticipated to occur as a result of future development on-site. Impacts to significant and local wetlands, significant wildlife habitat and fish habitat are primarily associated with alterations to water quality through increased nutrient and sediment loading. Impacts to Blanding's turtles are limited to transient turtles as Category 1 and Category 2 habitats are protected by implementation of a wetland and watercourse setback. As regulated habitat is present on-site, completion and submission of an Information Gathering Form for Ministry of Environment, Conservation and Parks (MECP) is required to determine the necessary approvals under the *Endangered Species Act, 2007.*

Potential impacts to natural heritage features on-site are to be mitigated through the implementation of development setbacks from wetland and surface water features. For the protection of the on-site provincially significant wetland and associated fish habitat and significant wildlife habitat a 50 m setback from the PSW is recommended. To further protect fish habitat and

local wetlands on-site, a 30 m setback from all local wetlands and watercourses on-site is recommended.

Additionally, to provide protection to potential SAR and their habitat on-site, permanent turtle exclusion fencing should be installed around all development footprints prior to any development or further site alteration. Should any SAR be discovered throughout the course of any development on-site , operations should stop and the species at risk biologist with the local MECP district should be contacted immediately for further direction. Furthermore, to ensure compliance with applicable legislation, all best management practices and adherence to vegetation clearing for birds and bats, outlined in Section 7 should be followed to ensure no negative impacts occur to natural heritage features on-site.

The proposed zoning amendment and potential future development complies with the natural heritage policies of the Provincial Policy Statement and the City of Ottawa Official Plan. No negative impacts to identified natural heritage features or their ecological functions are anticipated as a result of the proposed development as long as all mitigation measures in Section 7 are enacted and best management practices followed.

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1.0 INTRODUCTION

GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) was retained by Dilworth Development Inc. to complete an Environmental Impact Statement (EIS) for the property located on Part of Lot 35, Concession 3 (North Gower), City of Ottawa, Ontario (hereafter referred to as "the subject property"). The property is municipally addressed as 2095 Dilworth Road. The location of the subject property is illustrated on Figure A.1 in Appendix A.

1.1 Purpose

The property owner is seeking to rezone a portion of the existing 35 hectare (ha) property from rural to highway commercial. It is further understood that a severance application has been previously submitted to the City of Ottawa for the approximately 2 ha parcel located on the east side of the watercourse associated with the Rideau River and the Cranberry Creek Provincially Significant Wetland (PSW). The severance application was supported by an EIS completed by GEMTEC under separate cover, dated October 4, 2021. Accordingly, this EIS report addresses only the rezoning of the western portion of the site.

Based on the natural heritage policies of the City of Ottawa Official Plan (Ottawa, 2022) an EIS is required showing that the proposed zoning amendment will not negatively impact potential natural heritage features which may be present within the study area. The study area is defined as the property boundary and the adjacent lands encompassing an area of 120 m beyond the property boundary. The subject project and the extents of the study area are illustrated on Figure A.2 in Appendix A.

1.2 Objective

The 2020 Provincial Policy Statement (MMAH, 2020) issued under Section 3 of the Planning Act states that "development and site alteration shall not be permitted in: habitats of species at risk, significant wetlands, significant woodlands and significant wildlife habitat unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions." Similarly, the 2020 Provincial Policy Statement dictates that 'development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements."

The objective of the work presented herein is twofold; 1) to identify and evaluate the significance of any natural heritage features, as defined in the Provincial Policy Statement (MMAH, 2020), on the subject property and within the broader study area and; 2) to assess the potential impacts from the proposed zoning amendment on any natural heritage features identified and to recommend appropriate and defensible mitigation measures to ensure the long-term protection of any natural heritage features identified.

To meet these objectives, the EIS presented herein has been completed in accordance with the following provincial and municipal regulations, policies and guidelines:

- Provincial Policy Statement (MMAH, 2020);
- Endangered Species Act (Ontario, 2007);
- Conservation Authorities Act (Ontario, 1990);
- Natural Heritage Reference Manual (OMNR, 2010);
- City of Ottawa Official Plan (Ottawa, 2022); and
- City of Ottawa EIS Guidelines (Ottawa, 2023).

1.3 Physical Setting

The subject property is located on Part of Lot 35, Concession 3 (North Gower), and is municipally addressed as 2095 Dilworth Road. The subject property currently consists of a mosaic of deciduous and coniferous woodlands, deciduous swamps, fallow fields, and marsh habitats. Pre-existing residential development occurs in the central portion of the property, fronting to Dilworth Road. The subject property is bound by Dilworth Road to the south, and by Lot 36, Concession 4 to the north. To the east the site is bound by the Cranberry Creek PSW. To the west the property is bound by Highway 416.

1.3.1 Land Use Context

The subject property is situated within a larger rural agricultural area. The existing land use designation from the City of Ottawa Official Plan is Rural Countryside and Greenspace per Schedule B9 – Rural Transect. The easterly portion of the subject property features a Natural heritage System Core Area Overlay and Significant Wetlands per Schedule C11-B – Natural Heritage Systems (South). The City of Ottawa zoning by-law is rural countryside zone (RU) and environmental protection (EP3). Portions of the northern, eastern and western extents of the subject property are subject to floodplain as identified by Rideau Valley Conservation Authority (RVCA).

2.0 METHODOLOGY

2.1 Desktop Review

A desktop information gathering exercise was completed to aid in the scoping of field investigations and to gather information relating to natural heritage features which may be present on the subject project or within 1 km of the subject property. An additional component of the desktop review was to assess the potential presence of SAR to occur on the subject property or within the study boundary based on a review of publicly accessible occurrence records and a review of SAR habitat requirements and range maps.

Information regarding the potential presence of natural heritage features and SAR within the vicinity of the site was obtained from the following sources:

- Make a Map: Natural Heritage Areas (OMNRF, 2014a)
- City of Ottawa Official Plan (City of Ottawa, 2022)

- Ontario Geological Survey (OGS, 2024);
- Fisheries and Oceans Canada SAR Maps (DFO, 2024);
- Breeding Bird Atlas of Ontario (Cadman et al., 2007)
- Atlas of Mammals of Ontario (Dobbyn, 1994); and
- Ontario Reptile and Amphibian Atlas (Ontario Nature, 2019).

2.2 Field Investigations

Field investigations were undertaken to describe in general, the natural and physical setting of the subject property with a focus on identifying natural heritage features and any potential SAR or their habitat that may exist at the subject property.

Field investigations completed in support of this EIS are outlined in Table 2.1 below. Photographs of site features taken during field investigations are provided in Appendix B.

Table 2.1 Summary of Field Investigations

Date	Time	Weather	Surveys Conducted
October 30, 2019	14:00-16:00	9°C, overcast, no precipitation, Beaufort 3	Preliminary Site Assessment, Bat Maternity Roost Survey,
April 29, 2020	13:45-15:30	19°C, no precipitation, overcast, Beaufort 4	Turtle Basking Survey, Hibernacula Survey,
May 1, 2020	23:10-00:00	6°C, no precipitation, clear, Beaufort 0	Amphibian Breeding Survey
May 14, 2020	13:00-14:35	18°C, no precipitation, sunny with cloud, Beaufort 2	Turtle Basking Survey, Hibernacula Survey
May 21, 2020	15:30-17:00	19°C, no precipitation, sunny (1/10 cloud cover), Beaufort 3	Turtle Basking Survey, Hibernacula Survey
May 21, 2020	22:45 – 23:40	16°C, no precipitation, clear skies (1/10 cloud cover), Beaufort 2	Amphibian Breeding Survey
May 28, 2020	08:45-10:30	22°, no precipitation, cloudy (8.10 cloud cover), Beaufort 4	Turtle Basking Survey, Hibernacula Survey
June 3, 2020	05:05-06:45	13°C, no precipitation, overcast (10/10 cloud cover), Beaufort 1	Breeding Bird Survey, Ecological Land Classification
June 8, 2020	10:55-12:30	16°C, no precipitation, partly sunny (4/10 cloud cover), Beaufort 3	Turtle Basking Survey, Hibernacula Survey
June 17, 2020	04:30-06:10	14°C, no precipitation, clear skies (1/10 cloud cover), Beaufort 1	Breeding Bird Survey, Ecological Land Classification
June 19, 2020	20:00-21:15	27°C, no precipitation, clear skies (1/10 cloud cover), Beaufort 0	Amphibian Breeding Survey, Bat Acoustic Survey
June 25, 2020	08:40-10:00	18°C, no precipitation, cloudy (8/10 cloud cover), Beaufort 3	Breeding Bird Survey
June 1, 2021	07:00-08:00	18°C, no precipitation, cloudy (10/10 cloud cover), Beaufort 1	Breeding Bird Survey

Date	Time	Weather	Surveys Conducted
June 18, 2021	08:32-08:57	17°C, no precipitation, cloudy (7/10 cloud cover), Beaufort 3	Breeding Bird Survey
June 29, 2021	07:32-08:02	20°C, no precipitation, cloudy (6/10 cloud cover), Beaufort 2	Breeding Bird Survey
April 30, 2024	13:00-14:35	7°C, light precipitation, cloudy (10/10 cloud cover), Beaufort 1	Ecological Land Classification

2.2.1 Ecological Land Classification

Vegetation communities on the subject property were delineated during the desktop review stage of this EIS using publicly available air photos and confirmed in the field on June 3 and June 17, 2020, and again in 2024 following site alterations associated with the RVCA approved floodplain cut/fill. Assessment was undertaken following the Ecological Land Classification System for Southern Ontario (Lee, et al., 2008). Vegetation communities were confirmed in the field by employing the random meander methodology while documenting dominant vegetation species within the various vegetation community forms and the dominant soil types within each community.

2.2.2 Breeding Bird Surveys

Breeding bird surveys were conducted on three occasions at five point count locations; breeding bird survey locations are provided on Figure A.3. Breeding bird surveys followed protocols from the Canadian Breeding Bird Surveys (Downes and Collins, 2003) and the Ontario Breeding Bird Atlas (Cadman, et al. 2007). Point count locations were established in representative habitats on-site and were generally spaced approximately 250 m apart in effort to minimize double counting. Surveys were conducted no earlier than 30 minutes before sunrise and were completed within 5 hours of sunrise, to encompass peak song bird activity. Breeding bird surveys consisted of 5 minutes of passive listening in which all birds heard or seen within the survey period were recorded, including species, sex and breeding behaviour, if possible.

To aid in assessing the possibility of marsh habitat on-site to provide significant wildlife habitat and to aid in confirming the presence and absence of species at risk on-site, breeding marsh bird surveys were completed at breeding bird survey location 1. Breeding marsh bird surveys followed the methodologies outlined in the Marsh Monitoring Program (Bird Studies Canada, 2009) for the purpose of detecting secretive marsh birds. Marsh breeding bird surveys consisted of five minutes of passive listening, followed by a five-minute call broadcast to illicit a response from secretive marsh birds.

A list of all avian species identified on-site is provided in Table C.1 in Appendix C. Breeding bird survey locations are illustrated on Figure A.3 in Appendix A.

2.2.3 Basking Turtle Surveys

In order to address the potential for the site to provide turtle overwintering, turtle nesting and the presence or absence of Blanding's turtle, a species at risk, a series of five turtle basking surveys were conducted following the approved protocol for Blanding's turtles established by the MNRF (2015).

2.2.4 Reptile Hibernacula Surveys

In order to address the potential for the site to provide reptile hibernacula significant wildlife habitat, a series of five reptile basking surveys were conducted following the guidance provided in the Survey Protocol for Ontario's Species at Risk Snakes. Potential hibernacula on-site is illustrated on Figure A.3 in Appendix A.

2.2.5 Breeding Amphibian Surveys

Breeding amphibian surveys were conducted on three occasions at five point count locations; breeding amphibian survey locations are provided on Figure A.3. Breeding amphibian surveys followed protocols from the Marsh Monitoring Program (Bird Studies Canada, 2008). Surveys were conducted no earlier than one half-hour after sunset and concluded by midnight, to encompass peak amphibian calling activity. The first survey was conducted when night air temperatures were minimum 5°C, the second survey was conducted when night air temperatures were a minimum of 10°C, and the third when night air temperatures were a minimum of 17°C. Breeding amphibian surveys consisted of 3 minutes of passive listening, in which all amphibians heard within the survey period were recorded, along with an estimation of abundance. A list of all amphibian species identified on-site is provided in Table C.1 in Appendix C. Breeding amphibian survey locations are illustrated on Figure A.3 in Appendix A.

2.2.6 Bat Maternity Roost Surveys

Potential bat maternity roosting sites were surveyed for in each forested ecosite on-site on October 30, 2019, following the protocol for identifying candidate maternity roosts outlined in the MNRF (2011) Bats and Bat Habitats: Guidelines for Wind Power Projects.

2.2.7 Bat Acoustic Survey

During the final amphibian survey on-site, a handheld ultrasonic acoustic module, the Echo Meter Touch Pro and its auto-ID feature was used to aid in identifying potential bat species on-site. The auto-ID feature of the echo meter touch pro uses recordings from the module and suggests 1-2 of the most likely species present for each recording. However, because bats vary their echolocation calls in response to a wide variety of needs, no automated call identification can achieve 100% accuracy in species identification. Species detected during the deployment of the bat acoustic survey are provided in Table C.1 in Appendix C.

2.2.8 Headwater Drainage Feature Assessment

A headwater drainage feature assessment (HDFA) was conducted to aid in the assessment of potential fish habitat on-site. Field data collection of headwater drainage features on-site followed the protocol outlined in Section 4: Module 11, "Unconstrained Headwater Sampling" from the Ontario Stream Assessment Protocol (Stanfield, 2017).

2.3 Data Analysis

An evaluation of the significance of natural heritage features, the sensitivity of identified flora and fauna and the potential impacts posed by the proposed development was undertaken through an analysis of desktop and field investigation data using the approaches and criteria outlined in the following documents:

- Natural Heritage Reference Manual (OMNR, 2010);
- Significant Wildlife Habitat Technical Guide (OMNR, 2000);
- Significant Wildlife Habitat Ecoregion Criterion Schedules (OMNRF, 2015a);
- Significant Wildlife Habitat Mitigation Support Tool (OMNRF, 2014b); and
- Evaluation, Classification and Management of Headwater Drainage Feature Guidelines (TRCA/CVC, 2014).

3.0 EXISTING ENVIRONMENT

3.1 Ecoregion

The site is situated Ecoregion 6E-11 (Lake Simcoe-Rideau), which extends from Lake Huron in the west to the Ottawa River in the east. The climate of Ecoregion 6E is categorized as humid, high to moderate temperate ecoclimate with a mean annual temperature range of 4.9°C to 7.8°C with annual precipitation range between 759 mm to 1,087 mm (Crins et al., 2009).

The eastern portion of the Ecoregion, which the subject property is located, is underlain by glaciomarine deposits as a result of the brief post-glacial incursion of salt water from the Champlain Sea along the St. Lawrence Valley. This Ecoregion falls with Rowe's (1972) Great Lakes – St. Lawrence Forest Region, including its Huron-Ontario and Upper St. Lawrence sections, and a small part of the Middle Ottawa Forest section (Crins et al., 2009).

3.2 Landforms, Soils and Bedrock Geology

The topography of the site is relatively flat; there is a gentle downward slope from the southwest corner north towards the local wetland and east across the fallow field towards Cranberry Creek. The site has a topographical high of 94 mASL and a topographical low of 86 mASL.

Two topographic landforms, as mapped by Chapman and Putman (1984) are described on the subject property, sand plains and drumlins of the Edwardsburg Sand Plain physiographic region.

Drumlins occur in the extreme southwest corner of the property, sand plains occur throughout the remainder of the property.

The Ontario Geological Survey (OGS, 2019) identifies three surficial soil units on the subject property, till, organic deposits and coarse-textured glaciomarine deposits. Organic deposits composed of peat, muck and marl, underlay the east side of the property and correspond with Cranberry Creek PSW. Till, comprised of stone-poor, sandy silt to silty sand-textured till on Paleozoic terrain underlies the southwestern, northcentral and southeastern portions of the property. The remainder of the property is underlain by coarse-textured glaciomarine deposits consisting of foreshore and basinal deposits, composed of sand, gravel, minor silt and clay. A bedrock escarpment is mapped on the east side of the property, along the boundary of organic deposits and coarse-textured glaciomarine deposits, following the boundary of the Cranberry Creek PSW.

Bedrock on-site is consists of the Beekmantown Group, composed of dolostone and sandstone.

3.3 Surface Water, Groundwater and Fish Habitat

Surface water on the subject property consists of Cranberry Creek and the Cranberry Creek PSW, as well as local wetlands associated with Cranberry Creek PSW and two un-named watercourses and a headwater drainage feature.

A fisheries assessment was not conducted as part of this EIS. However, Cranberry Creek and Cranberry Creek PSW are assumed to provide fish habitat. Similarly, the unnamed watercourse flowing north to south over the western portion of the property is assumed to provided direct fish habitat for warm-water tolerant small bodied fish.

Groundwater investigations were not completed in support of this EIS.

3.3.1 Headwater Drainage Feature Assessment

A headwater drainage feature assessment was conducted for the un-named ephemeral watercourse on-site. The headwater drainage feature is labelled as HDF1 on Figure A.2 in Appendix A.

HDF1 originates within the local wetland in the northwest corner of the property and flows in a easterly direction for approximately 140 m where it meets a permanent waterbody. The permanent watercourse turns to flow in a south-southeast direction before exiting the property along the southern property boundary, crossing Dilworth Road, before turning east and flowing for approximately 500 m before discharging into Cranberry Creek and eventually the Rideau River.

The methodologies and results of the Headwater Drainage Feature Assessment are provided in Appendix D. A brief summary of the results is discussed in Section 4.6.

3.4 Vegetation Communities

Vegetation communities on-site were confirmed by GEMTEC in 2024, following protocols utilized in the Southern Ontario Ecological Land Classification System (Lee et al., 2008). Vegetation at the site represents a mosaic of coniferous woodlands, deciduous swamps and cultural thickets. Table 3.1 below provides a summary of the various vegetation communities identified on-site while Figure A.4 in Appendix A provides an illustration of the various vegetation communities.

Table 3.1 Vegetation Communities On-Site

ELC Community Type	Description	Size (ha)
Fresh – Moist Cultural Thicket (CUT)	This community was dominated by saplings of eastern white cedar (*Thuja occidentalis*), trembling aspen (*Populus tremuloides*), red maple (*Acer rubrum*) and red-osier dogwood (*Cornus stolonifera*) and common buckthorn (*Rhamnus cathartica*). Herbacoues vegetation consisted of bull thistle (*Cirsium vulgare*), common mullein (*Verbascum thapsus*), raspberry (*Rubrus spp.*) and goldenrod (*Solidago spp.*).	6.67
Dry-Fresh Cultural Meadow (CUM)	Located between the existing residential development and the cattail mineral shallow marsh is an expansion cultural meadow representative of newly fallowed fields. This community was dominated by herbaceous vegetation including red clover (*Trifolium pratense*), cow's vetch (*Vicia cracca*), tall buttercup (*Ramunculus acris*), dandelion (*Taraxacum officinale*) and various grasses.	15.19
Green Ash Mineral Swamp (SWD2-2)	Occurring in the eastern portions of the property, adjacent to the cattail mineral marsh, is a green ash mineral swamp. This community was dominated by green ash, large-tooth aspen, trembling aspen and red maple. The subcanopy was primarily populated by saplings of the major constituents along with green alder (*Alnus viridis*), and common buckthorn (*Rhamnus cathartica*). Herbaceous layer included sensitive fern (*Onoclea sensibilis*) and various sedges.	2.90
Reed-canary Grass Graminoid Mineral Meadow Marsh (MAM2-2)	Located in the northwest corner of the property is a reed-canary grass mineral meadow marsh. This community was dominated almost entirely by reed-canary grass (*Phalaris arundinacea*).	2.14
Cattail Mineral Shallow Marsh (MAS2-1)	Located in the eastern portion of the property is a cattail mineral shallow marsh. This community was dominated almost entirely by cattail (*Typha* sp.) and to a lesser extent reed-canary grass and common reed (*Phragmites australis australis*). This community	4.23

ELC Community Type	Description	Size (ha)
	corresponds with the Cranberry Creek Provincially Significant Wetland.	
Rural Residential (CVR_4)	This community encompasses the southeast portion of the property and includes the existing residential development.	1.81

3.5 Wildlife

Wildlife observed on-site and within the study area during the field investigations are summarized in Table C.1 in Appendix C.

3.6 Wildland Fire Assessment Screening

In accordance with the City of Ottawa EIS Guidelines (Ottawa, 2023), provincial wildland fire hazard mapping available through geoOttawa and Land Information Ontario was reviewed and assessed.

As outlined in the City of Ottawa EIS Guidelines, forest types associated with high or extreme wildland fire hazard (as mapped by Land Information Ontario) within 100 m of the project, must be identified and assessed. Current mapping indicates that the majority of the site is covered by forest type C5 and C6 which corresponds to *pine – needs evaluation* and a small patch of C3 forest type which corresponds to a *high* wildland fire hazard. It should be noted that the available mapping does not reflect current site conditions; the area of *high* wildland fire hazard was cleared sometime between 2021 and 2024, and the remainder of the site is predominantly non-forested.

Woodlands surrounding the periphery of the site are identified in available mapping as forest type C5 and C6 which corresponds to *pine – needs evaluation,* which in accordance with the EIS guidelines does not require further assessment of wildland fire hazards.

4.0 NATURAL HERITAGE FEATURES

Natural heritage features are defined in the PPS as “features and areas, including *significant wetlands, significant coastal wetlands, fish habitat, significant woodlands* south and east of the Canadian Shield, *significant valleylands* south and east of the Canadian shield, *significant habitats of endangered species and threatened species, significant wildlife habitat* and *significant areas of natural and scientific interest*, which are important for their environmental and social values as a legacy of the natural landscape of an area”.

4.1 Significant Wetlands

As described in the Natural Heritage Reference Manual (OMNR, 2010), wetlands mean “lands that are seasonally or permanently covered by shallow water, as well as lands where the water table is close to or at the surface.” While *significant* in regards to wetlands means “an area

identified as provincially significant by the Ontario Ministry of Natural Resources and Forestry using evaluation procedures established by the Province, as amended from time to time."

A portion of the Cranberry Creek PSW is located on the eastern portion of the property. Additionally, local wetlands occur throughout the northwestern and eastern portions of the property. No other PSWs were identified on-site during the desktop review, nor were they identified on-site. Impacts to PSWs and local wetlands from the proposed project are discussed in Section 6.

4.2 Significant Woodlands

Significant woodlands are defined in the natural heritage reference manual (OMNR, 2010) as "an area which is ecologically important in terms of features such as species composition, age of trees and stand history; functionally important due to its contribution to the broader landscape because of its location, size or due to the amount of forest cover in the planning area; or economically important due to site quality, species composition, or past management history."

At the local scale, significant woodlands are defined and designated by the local planning authority. Generally, most planning authorities have defined significant woodlands as any woodland that contains any of the four criteria listed in Section 7.2 of the natural heritage reference manual (OMNR, 2010), including: woodland size, ecological functions, uncommon characteristics and economic and social functional values. Furthermore, the City of Ottawa provides a supplementary document *Significant Woodland: Guidelines for Identification, Evaluation, and Impact Assessment* (Ottawa, 2022) to evaluate woodlands and ensure compliance with the city's policies.

As outlined in *Significant Woodlands: Guidelines for Identification, Evaluation and Impact Assessment* (Ottawa, 2022), rural area woodlands are to be identified and evaluated using all the natural heritage resource manual (OMNR, 2010) criteria. Table C.2 in Appendix C, presents the screening rationale for significant woodlands applied in this EIS. For comparison of woodland criteria used in Table C.2, the woodland coverage within the planning area (City of Ottawa – Rural Planning Area – Lower Rideau River) is 38% of the land area (Ottawa, 2022). Therefore the minimum woodland size for determining significance is 50 ha or greater, based on the guidance outlined in the natural heritage reference manual (OMNR, 2010).

Following review of Table C.2 in Appendix C, woodlands in the northeast corner of the property are considered significant due to their proximity to other significant natural heritage features (i.e. Cranberry Creek PSW). Significant woodlands are illustrated on Figure A.4 in Appendix A. Impacts to significant woodlands from the proposed development are discussed in Section 6.

4.3 Significant Valleylands

Valleylands are defined in the natural heritage reference manual (OMNR, 2010) as 'a natural area that occurs in a valley or other landform depression that has water flowing through or standing for some period of time". The identification and evaluation of significant valleys lands in Ontario is based on the recommended criteria from the MNRF and is the responsibility of local planning authorities.

In Southern Ontario, conservation authorities have identified valleylands as part of their regulation mapping (i.e., floodplain mapping); however, where valleys lands have not been defined, their physical boundaries are generally determined as the 'top-of-bank' or 'top-of-slope' associated with a watercourse. For less well-defined valleys, the physical boundary may be defined by riparian vegetation, flooding hazard limits, ordinary high water marks or the width of the stream meander belt (OMNR, 2010).

Table C.3 in Appendix C presents the screening rationale for significant valleylands applied in this EIS and a brief rationale as to why they are or are not discussed further in this EIS.

As discussed in Section 1.3, the City of Ottawa and RVCA have identified portions of the property as floodplain for the Rideau River. Following review of Table C.3 in Appendix C, the floodplain is considered significant valleyland due to its surface water functions, landform prominence, degree of naturalness and habitat value. Areas of the significant valleyland that contribute to the degree of naturalness and habitat value are confined to areas of the valleyland that coincide with woodland and wetland habitat on-site; the fallow fields do not contribute to the degree of naturalness or habitat value of the valleylands. Significant valleylands on-site are confined to the floodplains identified by the City of Ottawa and RVCA and are illustrated on Figure A.5.

4.4 Significant Areas of Natural and Scientific Interest

The MNRF identifies two types of areas of natural and scientific interest (ANSI) in Ontario: life sciences ANSIs typically represent significant segments of Ontario's biodiversity and natural landscapes, while earth science ANSIs typically represent significant examples of bedrock, fossils or landforms in Ontario (OMNR, 2010).

No ANSI have been identified on-site or adjacent to the site during the desktop review or during site investigations. Therefore, ANSI are not discussed or evaluated further in this EIS.

4.5 Significant Wildlife Habitat

The natural heritage reference manual (OMNR, 2010), in combination with the significant wildlife habitat technical guide (MNRF, 2000) and the significant wildlife habitat ecoregion criterion schedules (MNRF, 2015) were used to identify and evaluated potential significant wildlife habitat on-site. The significant wildlife habitat is broadly categorized as habitats of seasonal concentration of animals, rare vegetation communities, specialized habitats for wildlife, habitats

of species of conservation concern and animal movement corridors. Table C.4, C.5, C.6 and C.7 in Appendix C, provide the screening rationale for each category of significant wildlife habitat, respectively.

4.5.1 Habitats of Seasonal Concentrations of Animals

Seasonal concentration areas are habitats where large numbers of species congregate at one particular time of the year. The significant wildlife habitat technical guides (OMNR, 2000) and significant wildlife habitat ecoregion criterion schedules (OMNRF, 2015a) identify 11 types of seasonal concentration habitats that may be considered significant wildlife habitat. These 11 types of seasonal habitat are presented in Table C.4 in Appendix C, including a brief description of the rationale as to why they are or are not assessed further in this EIS.

Following review of Table C.4 in Appendix C, twohabitats of seasonal concentrations of animals have been identified on-site; turtle wintering area and reptile hibernaculum.

4.5.1.1 Turtle Wintering Area

Candidate turtle wintering area SWH was identified on-site within the Cranberry Creek PSW that occurs on-site.

To evaluate the potential for the cattail marsh to provide turtle wintering area SWH, a series of turtle basking surveys were conducted. Turtle wintering areas provide protection for turtle species from winter elements, and typically consists of permanent water bodies, large wetlands, bogs or fens, with adequate dissolved oxygen, soft substrates and deep water. The defining criteria for confirmed turtle wintering area SWH is the presence of 5 over-wintering midland painted turtles, one or more northern map turtle or one or more snapping turtles within a wetlands (OMNRF, 2015a). Wintering areas may be identified by searching basking areas for congregations of turtles on warm, sunny days during the spring or fall (OMNRF, 2015a). A total of five basking turtle surveys were conducted for the subject property. Table 4.1 below provides a summary of the basking turtle survey results.

Table 4.1 Summary of Turtle Basking Surveys

Location	Species / Highest Number Observed / Date	Confirmed SWH
MAS2-1	Midland painted turtle / 1 / May 21 Snapping turtle / 1 / May 21 & June 8, 2020	Yes

Following review of Table 4.1 above, the Cranberry Creek PSW (illustrated on Figure A.5) does provide *confirmed* turtle overwintering habitat due to the presence of one snapping turtle. Significant turtle overwintering habitat corresponds with the Cranberry Creek PSW illustrated on

Figure A.4 in Appendix A. Potential impacts to *confirmed* turtle wintering area SWH due to the proposed development are discussed in Section 6.

4.5.1.2 Reptile Hibernaculum

Candidate reptilian hibernaculum SWH was identified on-site within the CUM community, a series of reptile basking surveys were conducted. Reptile hibernaculum provides protection to reptile species from winter elements and typically consists of sites located below frost lines in burrows, rock crevices and other natural or naturalized locations; it may be found in any ecosite except for extremely wet ones. Rock piles or slopes, old stone fences, and abandoned crumbling foundations may assist with identifying SWH (OMNRF, 2015a). The defining use criteria for confirmed reptile hibernaculum is the presence of five or more individuals of a single snake species or individuals of two or more snake species.

Hibernaculum may be identified by searching habitat surrounding potential hibernacula on warm, sunny days during the spring or fall (OMNRF, 2015a). Candidate reptile hibernacula is illustrated on Figure A.3, surveys targeted open areas surrounding the identified rock piles as well as adjacent meadow habitat. A total of five reptile hibernacula surveys were conducted for the subject property. Table 4.2 below provides a summary of the reptile hibernaculum survey results.

Table 4.2 Summary of Reptile Hibernacula Surveys

Location	Species / Highest Number Observed / Date	Confirmed SWH
Candidate Hibernaculum	Eastern Gartersnake / 2 / May 21, 2020	No

Following review of Table 4.2 above, the subject property does not meet the defining use criteria for reptile hibernaculum. As such, reptile hibernaculum SWH is not present on-site and it is not discussed or evaluated further in this EIS.

4.5.2 Rare Vegetation Communities

Rare vegetation communities in the province are described generally as those with an S1 to S3 ranking by the NHIC, and typically include communities such as sand barrens, alvars, old growth forests, savannahs and tallgrass prairies.

The vegetation communities identified on-site and described in Section 3.4 of this report are not ranked by the NHIC as S1, S2 or S3 and are therefore not considered to be rare vegetation communities. As such, rare vegetation communities are not discussed or evaluated further in this EIS.

4.5.3 Specialized Habitats for Wildlife

Specialized wildlife habitats are microhabitats that provide a critical resource to some groups of wildlife. The significant wildlife habitat technical guide (OMNR, 2000), defines eight specialized

habitats that may constitute significant wildlife habitat, these eight types of specialized wildlife habitats are evaluated in Table C.5 in Appendix C.

Following review of Table C.5 in Appendix C, three candidate habitats for wildlife have been identified on-site or within the study area, waterfowl nesting area, woodland amphibian breeding habitat and wetland amphibian breeding habitat.

4.5.3.1 Waterfowl Nesting Area

Candidate waterfowl nesting SHW has been identified on-site, and is associated with all upland habitats within 120 m of the Cranberry Creek PSW and local wetlands where waterfowl breeding is known to occur as defined by the significant wildlife habitat criterion schedules (OMNRF, 2015a).

Nine waterfowl species are listed as indicator species for waterfowl nesting areas: American black duck, northern pintail, northern shoveler, gadwell, blue-winged teal, green-winged teal, wood duck, hooded merganser and mallard. Based on observations from breeding bird surveys, only one of the nine listed wildlife species were observed on-site, mallard. A total of 10 nesting mallard pairs are required to confirm SWH. Waterfowl nesting can occur in any upland ecosite; however, based on professional experience in completion of waterfowl nesting surveys, habitat conditions present on-site are unlikely to provide *confirmed* SWH for nesting waterfowl. This conclusion is supported by the absence of other listed species and the fact that less than 10 mallard pairs were identified on-site over a multi-year time period.

Impacts to *candidate* waterfowl nesting from potential future development are discussed in Section 6.

4.5.3.2 Amphibian Breeding Habitat

Candidate woodland amphibian breeding habitat was identified within the on-site swamp and watercourse habitats adjacent to woodlands on-site. *Candidate* wetland amphibian breeding habitat was identified on-site within the Cranberry Creek PSW. To evaluate the potential for the habitats on-site to provide amphibian breeding habitat, a series of amphibian breeding surveys were conducted.

Table 4.3 below summarizes the results of the amphibian breeding surveys described in Section 2 of this report. Figure A.3 in Appendix A illustrates the survey locations.

Table 4.3 Summary of Amphibian Breeding Call Surveys

Survey Location	Breeding Habitat	Species/Highest Call Code/ Date	Confirmed SWH
1	Woodland	GRTR / 3 / May 21, 2020	No
2	Woodland	NLFR / 1-1 / May 1, 2020	No

		SPPE / 2-6 / May 1, 2020 GRTR / 1-1 / May 21, 2002	
3	Woodland	SPPE / 1-3 / May 1, 2020 GRTR / 1-1 / May 12, 2020, & June 19, 2020 NLFR / 1-1 / May 1, 2020	No
4	Woodland	SPPE / 3 / May 1, 2020 & May 21, 2020	No
5	Wetland	SPPE / 3 / May 1, May 21, 2020 NLFR / 3 / May 1, 2020 AMTO / 2-8 / May 21, 2020 GRTR / 3 / June 19, 2020 GRFR / 1-6 / June 19, 2020	No

Notes: SPPE = Spring Peeper, GRTR = Gray Treefrog, GRFR = Green frog, NLFR = Northern Leopard Frog, AMTO = American Toad. Call Codes: the first number indicates the call code where: (1) number of individuals can be accurately counted, (2) individuals can be readily estimated, (3) calls are continuous and overlapping such that estimates of individuals are not reliable. The second number identifies the number of individuals calling. Call codes of 3 do not have a second number, as individual estimates are not possible.

4.5.3.3 Woodland Amphibian Breeding SWH

Woodland amphibian breeding habitat provides critically important breeding habitat for the following wildlife species: eastern newt, blue-spotted salamander, spotted salamander, gray treefrog, spring peeper, western chorus frog and wood frog. Woodland amphibian breeding habitat can be located in all ecosites associated with coniferous, mixed and deciduous forests or swamps. The defining criteria for confirmed woodland amphibian breeding SWH is the presence of breeding populations of one or more listed newt/salamander species, two or more of the listed frog/toad species with at least 20 individuals, or two or more of the listed frog/toad species with a call level code 3.

Based on review of Table 4.3 above, woodland habitat on-site does not meet the defining use criteria for woodland amphibian breeding SWH. As such woodland amphibian breeding habitat is not present on-site and it is not discussed or evaluated further in this EIS.

4.5.3.4 Wetland Amphibian Breeding SWH

Wetland amphibian breeding habitat provides critically important breeding habitat for the following wildlife species: American toad, spotted salamander, four-toed salamander, blue-spotted salamander, gray treefrog, western chorus frog, northern leopard frog, pickerel frog, green frog, mink frog and bullfrog. Wetland amphibian breeding habitat occurs throughout swamps, marshes, fens, bogs, open aquatic and submerged aquatic habitats. The defining use criteria is the presence of breeding populated of one or more listed newt/salamander species, two or more of

the listed frog/toad species with at least 20 individuals or two or more listed frog/toad species with a call level code of 3.

Based on review of Table 4.3 above, wetland habitat on-site does not meet the defining use criteria for wetland amphibian breeding SWH. As such wetland amphibian breeding habitat is not present on-site and is not discussed further in this EIS.

4.5.4 Habitats of Species of Conservation Concern

Provincial rankings are used by the Natural Heritage Information Centre to set protection priorities for rare species, similar to those described in Section 4.5.2 above for vegetation communities. Provincial rankings (S-ranks), are not legal designations such as those used to define the various protection statuses of species at risk, they are only intended to consider factors within the political boundaries of Ontario that might influence a particular species abundance, distribution or population trend.

Based on the guidance provided in the Significant Wildlife Habitat Ecoregion Criterion Schedules (MNRF, 2015), when a plant or animal element occurrence is recorded for any species with an S-rank of S1 (extremely rare), S2 (very rare), S3 (rare to uncommon) or SH (historically present), the corresponding vegetation ecosite is considered to provide *candidate* habitat for species of conservation concern and further consideration within the EIS is warranted.

The Significant Wildlife Habitat Ecoregion Criterion Schedules (OMNRF, 2015a), provides five general habitat types known to support a wide range of species of conservation concern in Ontario. The five general habitat types for Ecoregion 6E-11 are provided in Table C.6 in Appendix C, including a brief rationale as to why they are or are not considered further in this EIS. Following review of Table C.6 in Appendix C, two habitat of species of conservation concern has been identified on-site, marsh breeding bird habitat and habitat for special concern and rare wildlife species (eastern wood-pewee, olive-sided flycatcher, snapping turtle and bridle shiner).

4.5.4.1 Marsh Breeding Bird SWH

Candidate marsh breeding bird SWH was identified within the Cranberry Creek PSW on-site. Wetlands for marsh breeding birds are typically productive and rare in southern Ontario landscapes. Marsh breeding bird habitat provides critical habitat for the following wildlife species: American bittern, Virginia rail, sora, common moorhen, American coot, pied-billed greve, marsh wren, sedge wren, common loon, sandhill crane, green heron, trumpeter swan black tern and yellow rail. The defining use criteria for confirmed marsh breeding bird habitat is the presence of five or more nesting pairs of sedge or marsh wrens, or one pair of sandhill cranes or breeding by any combination of five or more listed species. Any wetland with breeding of one or more black tern, trumpeter swan, green heron or yellow rail is also considered SWH.

Table 4.4 below summarizes the results of the breeding bird surveys conducted at the Cranberry Creek PSW survey location.

Table 4.4 Summary of Marsh Breeding Bird Surveys

Survey Location	Species / Number of Individuals Calling / Date	Confirmed SWH
1	AMBI* / 2 / June 3, 2020 SORA* / 1 / June 3 & June 25, 2020 VIRA* / 1 / June 3, 2020 MRWR / 1 / June 17, 2020	No

Notes: AMBI = American Bittern, SORA = Sora, VIRA = Virginia Rail, MRWR = Marsh Wren.
* Denotes species that were detected responding to the Marsh Monitoring Program Call Broadcast used to elicit calls from secretive marsh species.

Based on review of Table 4.4 above, marsh habitat on-site does not meet the defining use criteria for marsh breeding bird SWH. As such marsh breeding bird habitat is not present on-site and is not discussed further in this EIS.

4.5.4.2 Special Concern and Rare Wildlife Species SWH

Based on observation data from the NHIC and DFO SAR mapping, two species of special concern has been identified on-site or within the broader study area, snapping turtle and bridle shiner. Additionally, two species of special concern were identified on-site during field investigations: eastern wood-pewee and olive-sided flycatcher, while barn swallow was identified based on historical occurrence records.

The barn swallow (*Hirondelle rustique*) is a medium-sized, insectivorous bird with a slightly flattened head and broad shoulders that taper to long, pointed wings. The forked tail is long and extends beyond wingtips when perched. Barn swallows have blue-black coloured wings and tail, with a whitish to orange underside and dark rufus throat. Potentially suitable nesting structure occurs within the study area, with potentially suitable foraging habitat in the existing agricultural fields.

The eastern wood-pewee is a small flycatcher bird with an S-rank of S4 (uncommon but not rare), and is listed as a species of special concern in Ontario. Eastern wood-pewee was identified on-site during the site investigations. Eastern wood-pewee is a woodland species that is often found near clearings and edges. Given the mosaic of woodland and open habitat on-site and the eastern wood-pewee's affinity for clearings and edges, there is a high chance for eastern wood-pewee or suitable habitat to occur on-site. Furthermore, eastern wood-pewee were observed calling on-site during the site investigation.

Olive-sided flycatcher is a medium-sized songbird, with an S-rank of S4B (breeding is uncommon but not rare) and is listed as a species of special concern in Ontario. Olive-sided flycatcher was observed on-site during field investigations. Olive-sided flycatchers are widely distributed throughout central and northern areas of Ontario and are typically along natural forest edges and openings, utilizing forests that have been logged or burned only if there are tall snags and trees

to use as perches. They typically breed in coniferous or mixed forests adjacent to rivers or wetlands. In Ontario they commonly nest in conifers including white and black spruce, jack pine and balsam fir. Olive-sided flycatcher were observed calling on-site during a turtle basking survey on May 28, 2020. Olive-sided flycatcher was not detected during any of the targeted breeding bird surveys conducted on June 3, June 17 and June 25, 2020.

The snapping turtle is a highly aquatic turtle species with an S-rank of S3 (rare to uncommon) and is listed as species of special concern in Ontario. The NHIC identified the snapping turtle as having historically occurred within 1 km of the site, on August 3, 2007. Snapping turtles are aquatic generalists, found in a variety of wetlands, water bodies and watercourses. Given the availability of potentially suitable aquatic habitat on-site, there is a moderate chance for snapping turtle or suitable habitat to occur on-site. Furthermore, snapping turtle were observed on-site during targeted basking turtle surveys.

Bridle shiner is a small minnow species with an S-rank of S2 (very rare) and is listed as species of special concern in Ontario. The DFO SAR mapping identified bridle shiner as being present in Cranberry Creek, and in both the east and west permanent watercourses on-site. No critical habitat is identified on-site or within the broader study area. Bridle shiner prefer clear, unpolluted streams, rivers or lakes with abundant aquatic vegetation which provide suitable spawning and foraging habitat as well as protection from predators. Given the availability of suitable habitat within Cranberry Creek there is a moderate potential for bridle shiner to occur on-site, however the two permanent watercourses on-site are not likely to provide bridle shiner habitat as the water quality and habitat available in the creeks does not meet the preferred habitat description for bridle shiner.

Impacts to habitat for species of special concern significant wildlife habitat are discussed in Section 6 below.

4.6 Fish Habitat

The protection of fish and fish habitat is a federal responsibility and is administered by the Department of Fisheries and Oceans Canada (DFO). Fish habitat as defined in the Fisheries Act (Canada, 1985) means, “spawning grounds and nursery, rearing food supply and migration areas on which fish depend directly or indirectly in order to carry out their life processes.”

When development is unable to avoid to avoid resulting in the harmful alteration, disturbance or destruction of fish habitat from typical project impacts such as temperature change, sedimentation, infilling, reduction of nutrient and food supply, etc., an authorization under the Fisheries Act is required for the project to proceed.

A fisheries assessment was not conducted as part of this EIS, until such a time that a fisheries assessment is completed, the Cranberry Creek PSW and associated local wetlands and watercourses are assumed to provide fish habitat for small-bodied fish species.

Furthermore, a headwater drainage feature assessment (Appendix D) was conduced to assess the contribution of un-mapped and un-named watercourses on-site to fish habitat. One HDF was identified on-site and is illustrated on Figure A.2 in Appendix A. The watercourses on-site were classified based on the information collected during site investigations pertaining to hydrology, riparian habitat, fish and fish habitat and terrestrial components. Using the linking classification management flow chart provided by the TCRA and CVA (2014), illustrated in Figure 4.1 below, the characteristics of the on-site watercourses were used to determine the management recommendations.

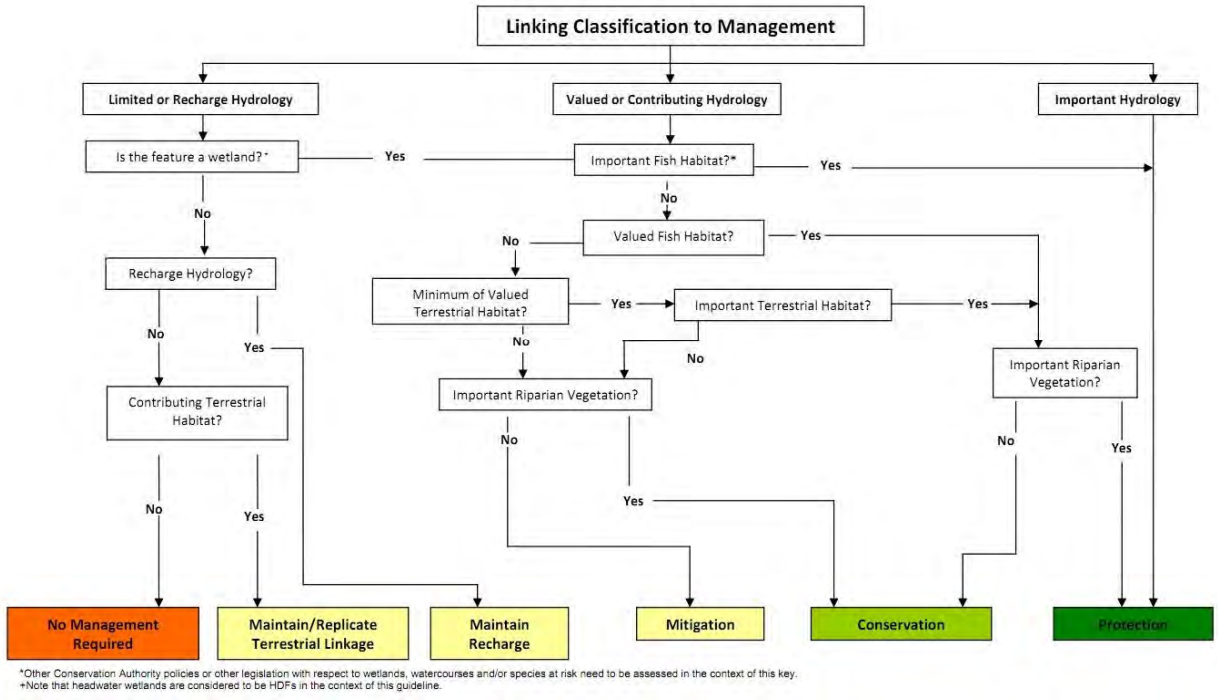


Figure 4.1 Flow Chart Providing Directions of Management Option's (TRCA/CVC, 2014)

HDF1, HDF3 and HDF4 had water present for one of the three sampling events, as such they were determined to have limited hydrology, with contributing fish habitat and limited terrestrial and riparian habitat. Accordingly, HDF1, HDF3 and HDF4 require no management.

HDF2 originates in a local wetland and provides important riparian and terrestrial habitat, as such it was determined to have important functions and protection of the watercourse is required.

As discussed in Section 4.5.4, one aquatic Species at Risk (SAR), bridle shiner, has been identified within the permanent watercourses downstream of HDF1 and HDF2 and within Cranberry Creek. Bridle shiner is listed as a species of special concern under the Endangered Species Act. No critical habitat for SAR has been identified within the subject area or any HDF present on-site.

Fish habitat is illustrated on Figure A.5 in relation to other site features. Impacts to fish habitat on-site are discussed in Section 6.

4.7 Species at Risk

The probability of occurrence for species at risk to occur on-site and within the broader study area was determined through the desktop review stage of this EIS, as described in Section 2.1, and through the site-specific surveys conducted as part of this EIS, outlined in Section 2.2.

Table C.8 in Appendix C, provides a summary of all species at risk which were determined to have the potential to occur on-site or within the broader study area, their protection status under the provincial Endangered Species Act (Ontario, 2007), their regional distribution, their probability of occurrence and a brief rationale of that probability. Impacts to endangered or threatened SAR determined to have a moderate or high potential to occur on-site or within the broader study area are discussed further in the Section 6.3.

5.0 PROPOSED PROJECT

The proposed project assessed for potential impacts on the natural heritage features determined to be present within the broader study area is a zoning amendment to permit future commercial development on the property.

While the zoning amendment is not anticipated to result in any physical changes, future components of the potential future development on the subject property considered in the impact assessment presented in Section 6 may include: tree clearing and vegetation grubbing, fill placement and elevation grading, laneway construction, drilling of groundwater wells and septic system installation, excavation and pouring of foundations, construction of a commercial-use building and general landscaping activities.

6.0 IMPACT ASSESSMENT

Potential impacts to natural heritage features on-site and within the broader study area are assessed for direct, indirect and cumulative effects based on the proposed project outlined in Section 5. Natural heritage features identified in Section 4 of this report as present or likely to be present are discussed in the subsections below.

As discussed in Section 5, the proposed project supported by this EIS is a zoning amendment to permit future commercial development. While the zoning amendment is not anticipated to result in any physical changes or disturbances to the natural heritage features identified on-site in Section 4, in order to provide a meaningful impact assessment, it is assumed that potential future commercial development activities on-site may include: vegetation removal, disturbance of the natural soil mantle, increased noise generation, increased human disturbance, increased storm water generation and increased nutrient loading to adjacent surface water features.

6.1 Provincially Significant and Local Wetlands

As no-in water work is proposed for the development, the greatest potential impacts to wetlands on-site are changes to surface and groundwater balance through increased storm water runoff, resulting from an increase in the impervious surface area, compaction of soils, vegetation loss and decreased groundwater recharge resulting from reduced upland infiltration capacity.

Other potential impacts include short duration construction impacts including: heavy machinery encroachment, fill placement and long term human disturbance such as noise generation, dumping of refuse and trampling.

Mitigation measures to protect PSW's and local wetlands from development impacts are provided in Section 7.

6.2 Significant Woodlands

As discussed in Section 4.2, a portion of the on-site woodlands are considered significant due to their size and ecological function, as illustrated on Figure A.5. As no development is proposed to occur within the significant woodlands on-site, potential impacts from future development on-site are anticipated to be indirect in nature. Potential indirect impacts may include encroachment and increased human disturbance.

Mitigation measures to reduce impacts to significant woodlands are outlined in Section 7.

6.3 Significant Valleylands

As discussed in Section 4.3, a majority of the site has been identified as significant valleyland (flood plains) by the City of Ottawa and the RVCA. Impacts to naturalness and habitat value are not anticipated as no development is proposed to occur within significant woodlands or wetlands that coincide with significant valleylands.

Mitigation measures to reduce impacts to significant valleylands are outlined in Section 7.

6.4 Significant Wildlife Habitat

The potential presence of *candidate* significant wildlife habitat on-site and within the study area was evaluated in Section 4.5. As a result of this assessment four types of *candidate* significant wildlife habitat were determined to be present on-site or within the study area; *candidate* waterfowl nesting area, *confirmed* turtle wintering area, and special concern and rare wildlife species SWH for eastern wood-pewee, olive-sided flycatcher, snapping turtle and bridle shiner.

Potential impacts to each type of SWH are discussed in greater detail in the following subsections, while mitigation measures intended to prevent such impacts are presented in Section 7.

6.4.1 *Candidate* Waterfowl Nesting Area

Candidate waterfowl nesting habitat has been identified within all upland habitats within 120 m of Cranberry Creek PSW and associated local wetlands.

Potential direct impacts to *candidate* waterfowl nesting SWH includes a loss of potential upland nesting habitat and vegetation cover. Other potential impacts include short duration construction impacts, including: heavy machinery encroachment, fill placement, and long-term human disturbance such as noise generation, dumping of refuse and trampling.

Mitigation measures to reduce impacts to *candidate* waterfowl nesting areas SWH are provided in Section 7.

6.4.2 Turtle Wintering Habitat

Confirmed turtle wintering habitat has been identified within the Cranberry Creek PSW on-site. As no in-water work is proposed as part of the future development, potential impacts to turtle wintering SWH on-site are anticipated to be indirect in nature. Potential indirect impacts may include changes to surface water quality and quantity through increased storm water runoff resulting from an increase in impervious surface area and vegetation loss.

Other potential impacts include short duration construction impacts, including: heavy machinery encroachment, fill placement and long-term human disturbance such as noise generation, dumping of refuse and trampling.

Mitigation measures to reduce impacts to and protect turtle wintering habitat are provided in Section 7.

6.4.3 Special Concern and Rare Wildlife Species – Barn Swallow

The barn swallow (*Hirondelle rustique*) is a medium-sized, insectivorous bird with a slightly flattened head and broad shoulders that taper to long, pointed wings. The forked tail is long and extends beyond wingtips when perched. Barn swallows have blue-black coloured wings and tail, with a whitish to orange underside and dark rufus throat.

While most abundant in Ontario south of the Shield, the breeding range for barn swallow in Ontario extends from the Carolinian region in extreme southwest Ontario to the Hudson Bay Lowlands (Cadman et al., 2007). In Ontario, breeding bird survey data demonstrated a decline in barn swallow populations of 60-75% between the first and second breeding bird atlas.

Barn swallows typically build their nests out of mud on ledges or walls on barns or other human made structures. Natural sites, including cliffs and caves are not rarely used for nesting (Cadman et al., 2007). Foraging occurs fields and ponds. Barn swallows are less common in highly urban area and areas with higher forest cover (Cadman et al., 2007).

Potentially suitable nesting structure occurs within the study area, with potentially suitable foraging habitat in the existing agricultural fields. Furthermore barn swallow were not observed on-site during any of the site investigations. As the proposed development does not include the removal or modification of any existing structures on-site and no barn swallow's were observed on-site during the field investigations, no negative impacts are anticipated to occur to potential barn swallow habitat on-site. As such no mitigation measures are provided in Section 7 for the protection of barn swallow and they are not discussed or evaluated further in this EIS.

6.4.4 Special Concern and Rare Wildlife Species – Eastern Wood-pewee

Eastern wood-pewee (*Contupus virens*) is a small, avian insectivore, that lives in a variety of deciduous, mixed and to a lesser extent, coniferous woodland habitat (COSEWIC, 2012). Adult eastern wood-pewee are grey-olive with pale wing-bars, the breast and sides are slightly darker green than the wings. It is best identified by its three-phrased song, often paraphrased as a whistled 'pee-ah-wee' (COSEWIC, 2012). In Ontario, the eastern wood-pewee is listed as a species of special concern.

Threats to eastern wood-pewee are not well understood, however, loss of suitable forest habitat does not appear to be a significant issue across their Canadian breeding range (COSEWIC, 2012). Furthermore, research indicates that the species is not very sensitive to forest fragmentation effects or forest size (COSEWIC, 2012). Eastern wood-pewee may be sensitive to human habitation, in Ontario they occur less frequently in woods with surrounding development than those without houses (COSEWIC, 2012). Other threats to eastern wood-pewee may include changes in the availability of aerial insects, mortality during migration and/or wintering, nest predation and habitat changes due to white-tailed deer browsing (COSEWIC, 2012).

Impacts to eastern wood-pewee and their habitat on-site from the proposed development is limited to the wooded and forest habitat on-site (ELC Codes FOD3-1 and FOC4-1 on Figure A.4), which may provide nesting and foraging habitat. Impacts to eastern wood-pewee habitat may include loss of forest habitat, increased fragmentation, and increased human presence.

While the zoning amendment is not anticipated to impact any forest cover, potential future developmentmay result in the loss of suitable forested habitat on-site. However suitable habitat is readily available within the broader study area. Research also indicates that eastern wood-pewee are not negatively impacted by the loss of forest habitat, increased fragmentation or smaller woodlot size (COSEWIC, 2012). Impacts from increased human presence are anticipated to be negligible given the existing development surrounding the subject property and availability of suitable habitat within the greater study area.

Mitigation measures intended to prevent negative impacts to nesting and foraging eastern wood-pewee are presented in Section 7.

6.4.5 Special Concern and Rare Wildlife Species – Olive-Sided Flycatcher

Olive-sided flycatcher (*Contopus cooperi*) is a medium sized songird, that lives throughout many forested parts of Canada (COSEWIC, 2018). Adult birds are deep brownish-olive above with whitish colouring extending from the throat, centre of breast and belly to the undertail. The flanks are dark with indistinctive pale wing bars. It is best identified by its three-note whistle, typically phrased as “Quick, three beers!” (COSEWIC, 2018). In Ontario the olive-sided flycatcher is listed as species of special concern.

The most significant threat to olive-sided flycatcher is loss of forest on wintering grounds throughout Central and South America, however habitat loss or degradation is likely affecting breeding grounds as well. Loss of insects and insect-producing environments is also believed to be impacting populations.

Potential impacts to olive-sided flycatcher from potential future development on-site is limited to the forest habitat on-site, in particular the coniferous forest (ELC Codes FOC4-1 on Figure A.4), which may provide nesting and foraging habitat. Impacts to olive-sided flycatcher habitat may include the loss of forest habitat, increased fragmentation and increased human presence. Potential future development is not anticipated to impact existing forest edge habitat along Cranberry Creek PSW.

Coniferous woodlands on-site do not represent preferred coniferous forests (i.e. white spruce, black spruce, balsam fir, jack pine) and they are not adjacent to considerable water or wetland habitat. Potential future development on-site may result in the loss of suitable forest habitat on-site however; suitable habitat is readily available within the broader study area, particularly in off-site portions of Cranberry Creek, and along the Rideau River where larger coniferous woodlands adjacent to water wetlands are more readily available.

Mitigation measures intended to prevent negative impacts to nesting and foraging olive-sided flycatcher are presented in Section 7.

6.4.6 Special Concern and Rare Wildlife Species – Snapping Turtle

Snapping turtle is the largest freshwater turtle found in Canada; in central Ontario males average 32 cm in carapace length and have an average mass of 9.3 kg (COSEWIC, 2008). The carapace is keeled, and can be brown, black or olive in colour (COSEWIC, 2008). The plastron is cross-shaped and is small, leaving the limbs and sides of the body exposed (COSEWIC, 2008). The head of a snapping turtle is large with a hooked upper jaw, relatively long neck, and tail that can be as long as the carapace (COSEWIC, 2008). In Ontario the snapping turtle is listed as a species of special concern.

Threats to snapping turtle are primarily related to their life-history, their slow recruitment, late maturity, long lifespan and high adult survival make them extremely vulnerable to a variety anthropogenic impacts (COSEWIC, 2008). Short, cool summers also reduce hatching success.

In Canada, snapping turtles are most impacted by events that increase adult mortality, such as harvesting of adults, persecution and road mortality (COSEWIC, 2008). Other threats include loss of habitat, environmental contamination, and nest predation (COSEWIC, 2008).

As no in-water work is proposed as part of the future development, potential impacts to snapping turtle and their habitat are anticipated to be indirect in nature. Potential indirect impacts may include changes to surface water quality and quantity through increased storm water runoff resulting from an increase in impervious surface area and vegetation loss.

Other potential impacts include short duration construction impacts, including: heavy machinery encroachment, fill placement and long-term human disturbance such as noise generation, dumping of refuse and trampling.

Mitigation measures to protect snapping turtle and their habitat from the proposed development are presented in Section 7.

6.4.7 Special Concern and Rare Wildlife Habitat – Bridle Shiner

Bridle shiner is a small-bodied member of the minnow family, reaching a maximum size of 65 mm in length (COSEWIC, 2013a). Adult individuals are generally silver in colour, with a straw-coloured body and silvery-white underside. Bridle shiner have a dark stripe that extends along the side of the body, but is not always prominent. In Ontario, bridle shiner is listed as a species of special concern.

Bridle shiner are sensitive to habitat degradation and poor water quality, as such threats to the species include activities that degrade habitat and water quality, such as wetland infilling, channelization, eutrophication, sedimentation and increased turbidity. Intensive agricultural practices and the use of excess fertilizers in particular are two of the largest threats to bridle shiner and their habitat. Additionally, research indicates that invasive Eurasian watermilfoil may clog spawning areas, further contributing to population declines (Ontario, 2019a).

As no in-water work is proposed as part of the future development, potential impacts to bridle shiner and their habitat are anticipated to be indirect in nature. Potential indirect impacts may include changes to surface water quality and quantity through increased storm water runoff resulting from an increase in impervious surface area and vegetation loss.

Other potential impacts include short duration construction impacts, including: heavy machinery encroachment, fill placement and long-term human disturbance such as noise generation, dumping of refuse and trampling.

Mitigation measures to protect bridle shiner and their habitat from the proposed development are presented in Section 7.

6.5 Fish Habitat

According to the Provincial Policy Statement (MMAH, 2020), “development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements.” Fish habitat as defined in the Fisheries Act (Canada, 1985) means “spawning grounds and nursery, rearing, food supply and migration areas on which fish depend directly or indirectly in order to carry out their life processes.”

When activities are unable to avoid or mitigate harm to fish or fish habitat from typical project impacts such as temperature change, sedimentation, infilling, reduction of nutrient and food supply, etc., an authorization under Subsection 35 (2) of the Fisheries Act is required for the project to proceed without contravening the Act.

As no in-water work is proposed as part of the future development, potential impacts to fish habitat is anticipated to be indirect in nature. Potential indirect impacts may include changes to surface water quality and quantity through increased storm water runoff resulting from an increase in impervious surface area and changes to the thermal regime results from the loss of riparian vegetation.

Other potential impacts include short duration construction impacts, including: heavy machinery encroachment, fill placement and long-term human disturbance such as noise generation, dumping of refuse and trampling.

General mitigation measures for the protection of fish habitat on-site are provided in Section 7.

6.6 Species at Risk

As outlined in the Endangered Species Act (Ontario, 2007), only species listed as threatened or endangered and their general habitat receive automatic protection. When a species-specific recovery strategy is developed, a specific habitat regulation will be established, which eventually replaces the automatic habitat protection. Species of special concern and their habitat do not receive protection under the ESA.

Potential impacts associated with the proposed project to threatened or endangered species identified as having a moderate or high potential to occur on-site in Section 4.7, are discussed on a species-by-species basis in the subsections below.

6.6.1 Eastern Small-footed Myotis

Eastern small-footed Myotis (*Myotis leibii*) is the smallest (typically 3-5 g), insectivorous bat found in Ontario. The fur of an eastern small-footed Myotis is golden-brown in colour, with a distinct black mask across the face. The eastern small-footed Myotis is very similar in appearance to the little brown Myotis, and is distinguishable by their small foot and keeled calcar (Fraser, MacKenzie & Davy, 2007).

The eastern small-footed Myotis is found throughout eastern North America. In Ontario the species has been observed in the areas sough of Lake Superior across to the Ontario-Quebec border (Humphrey, 2017).

Eastern small-footed Myotis overwinter primarily in caves and abandoned mines with low humidity and temperatures and stable microclimates (Humphrey, 2017). In comparison to other Ontario bat species, they are able to tolerate much colder temperatures, drier conditions and draftier locations for hibernating (Humphrey, 2017). During the spring and summer months, they utilize a variety of habitats for roosting, including under rocks or rock outcrops, in buildings, under bridges, or in caves, mines or hollow trees (Ontario, 2019b).

Although the forest habitat on-site does not meet the requirements to support bat maternity colonies, given the availability of habitat and buildings on-site and within the study area, there is a potential for eastern small-footed Myotis to occur on the property, primarily for foraging or non-maternal roosting. Impacts to eastern small-footed Myotis are primarily associated with habitat loss, encroachment and increased wildlife-human interaction.

Mitigation measures intended to protect eastern small-footed Myotis from impacts of the proposed development are discussed in Section 7.

6.6.2 Little Brown Myotis

Little Brown Myotis (*Myotis lucifugus*) is a small (typically 4-11 g), insectivorous bat. The fur of a Little Brown Myotis is bi-coloured; fur is a glossy brown with a darker coloured base. The tragus of the Little Brown Myotis is long and thin, with a rounded tip (Fraser, MacKenzie & Davy, 2007).

In Canada, Little Brown Myotis' occur throughout all of the provinces and territories (except Nunavut), with its range extending south through the majority of the United States as well. In Ontario, the Little Brown Myotis is widespread in southern Ontario and has been found as far north as Moose Factory and Favourable Lake (Ontario, 2019c).

Little Brown Myotis overwinter in caves and abandoned mines, they require highly humid conditions and temperatures that remain above the freezing mark (Ontario, 2019c). During the summer months, maternity colonies are often located in buildings or large-diameter trees. Little Brown Myotis roost in trees and buildings. Foraging occurs over water and along waterways, forest edges and in gaps in the forest. Open fields and clear-cuts are not typically utilized for foraging (COSEWIC, 2013b).

Although the forest habitat on-site does not meet the requirements to support bat maternity colonies, given the availability of habitat and buildings on-site and within the study area, there is a potential for little brown Myotis to occur on the property, primarily for foraging or non-maternal roosting. Impacts to little brown Myotis are primarily associated with habitat loss, encroachment and increased wildlife-human interaction.

Mitigation measures intended to protect little brown Myotis from impacts of the proposed development are discussed in Section 7.

6.6.3 Tri-colored Bat

Tri-colored bat (*Perimyotis subflavos*) is a small (typically 5-7 g), insectivorous bat. The fur is uniformly coloured on the ventral and dorsal sides, however when parted fur shows three distinct colour bands. The base of the hair is blackish, with a blonde middle and brownish tip. The snout of the tri-coloured bat is also distinct, with swollen bulbous glands present (Fraser, MacKenzie & Davy, 2007).

In Canada, the tri-colored bat has only been recorded in southern parts of Nova Scotia, New Brunswick, Quebec and central Ontario. In Ontario it occurs primarily from the southern edge of Lake Superior across to the Ontario-Quebec border and south (COSEWIC, 2013).

Tri-colored bat overwinter in in caves or mines, and have very rigid habitat requirements; they typically roosting the deepest parts where temperatures are the least variable, and have the strongest correlation with humidity levels and warmer temperatures (COSEWIC, 2013). In the spring and summer, tri-colored bat utilize trees, rock crevices and buildings for maternity colonies. Foraging is mainly done over watercourses and streamside vegetation (COSEWIC, 2013).

Although the woodlands on-site do not meet minimum snag density requirements to support bat maternity colony habitat, given the availability of habitat on-site there is a potential for tri-colored bat to occur on the property, primarily for foraging or non-maternal roosting. Impacts to tri-colored bat are primarily associated with habitat loss, encroachment and increased wildlife-human interaction.

Mitigation measures intended to protect tri-colored bat from impacts of the proposed development are discussed in Section 7.

6.6.4 Blanding's Turtle

Blanding's turtles (*Emydoidea blandingii*) have a highly domed, smooth black carapace with small, irregular tan or yellow flecking. The most distinctive characteristic of this species is the bright yellow chin and throat. Their hinged plastron is yellow with a large dark blotch in the corner of each scute, but may also be entirely black (Oldham and Weller, 2000).

In Canada, Blanding's turtles are found throughout southern and south-central Ontario from south of Manitoulin Island to western Quebec. In Ontario, Blanding's turtles are often observed utilizing eutrophic habitats with clear water (COSEWIC, 2005). This turtle species occurs primarily in shallow water; adults are generally found in open or partially vegetated sites, where as juveniles prefer areas that contain thick aquatic vegetation. Blanding's turtles are known to make large overland journeys between connected lakes, rivers, streams, marshes or ponds, upwards of 6 km

in a single active season. Overwintering occurs in permanent pools that average about one metre in depth, or slow flowing streams (COSEWIC, 2005).

The site is located within a greater area of known Blanding's turtle occurrences. While the site has the potential for Blanding's turtles to occur in a transient nature, no critical habitat has been identified on-site (i.e. turtle overwintering habitat). However; due to the historical occurrences in the vincinity of the site, and in accordance with the general habitat descrition for Blanding's Turtle, Category 1 habitat is present with in the on-site portions of the Cranberry Creek PSW and the local wetland located in the northwest portion of the site (MAM2-2 on Figure A.3). Simiarily, Category 2 habitat is present on-site between the edge of the aforementioned wetlands extending outwards to a distance of 30 m. Category 3 habitat, defined as being located between the Category 2 habitat (30 m wetland offset) and 250 m from a wetland, occurs over the majority of the site. Regulated Blanding's turtle habitat is illustrated on Figure A.5.

As no in-water work is proposed as part of the development plan, impacts to Blanding's turtles are anticipated to be indirect in nature. Impacts to Blanding's turtles and their potential habitat may include changes in water quality due to increases in storm water runoff, as well as increased human disturbance, increased wildlife and human interaction, and encroachment during construction.

Avoidance and mitigation measures intended to prevent harm to Blanding's turtles who have the potential to occur on-site are present in Section 7.

6.6.5 Butternut

Butternut (*Juglans cinerea*) is a short lived, medium-sized tree that can reach up to 30 m in height. Butternut is easily recognized by its compound leaves, made up of 11 to 17 leaflets, each 9 to 15 centimetres long, arranged in a feather-like pattern. The bark is grey and smooth in younger trees, and becomes rigid with age. Butternut is a member of the walnut family and produces edible nuts in the fall.

The range of butternut trees in Canada extends from southern Ontario into southern Quebec and New Brunswick (COSEWIC, 2003). It is shade intolerant and prefers riparian habitats or sites with rick, moist, well-drained loams and gravels with limestone origin. Common associates for butternut include: basswood, black cherry, beech, black walnut, elm, hickory, oak, red maple, sugar maple, yellow poplar, white ash and yellow birch.

No butternut trees were observed on-site during any of the site investigations. Furthermore, no butternut observation records were provided by the NHIC for the single 1 km grid square that encompasses the site. As no butternuts were documented on-site no mitigation measures are provided in Section 7 in relation to butternut and they are not discussed or evaluated further in this EIS.

6.7 Cumulative Impacts

Potential cumulative impacts associated with the proposed project include an increase in storm water generation, increases in nutrient loading to adjacent aquatic features and the potential loss of active agricultural fields.

Cumulative impacts to the natural environment at the site due to increased human presence are expected to be negligible given the nature of the development within a larger rural residential and agricultural land use area.

Cumulative impacts such as those listed above can be mitigated by implementing the proposed setbacks and recommended mitigation measures outlined in Section 7 below.

7.0 RECOMMENDED AVOIDANCE AND MITIGATION MEASURES

The following avoidance and mitigation measures have been recommended by GEMTEC in order to minimize or eliminate potential environmental impacts identified in Section 6.

For the purpose of this report, a setback is defined as the minimum required distance between any structure, development or disturbance and a specified line. A buffer, for the purpose of this report, is defined as the area located between a natural heritage feature and the prescribed setback. For the purpose of the following subsections, buffers should be located between natural heritage features and lands subject to development or alteration, be permanently vegetated by native or non-invasive, self sustaining vegetation and protect the natural heritage feature against the impact of the adjacent land use.

Vegetated buffers, particularly buffers that are vegetated with a mix of grassy herbaceous vegetation and shrubby or woody vegetation are most effective in mitigating impacts associated with anthropogenic activities in adjacent lands (Beacon, 2012). In the subsections below, where possible, literature references for studies used as the basis of the recommended buffer widths are provided.

7.1 Provincially Significant and Local Wetlands

No negative impacts on the integrity of the significant wetlands or local wetlands are anticipated as a result of the proposed project if all mitigation measures recommended below are enacted and best management practices followed. Provincially Significant and Local Wetlands on-site can be protected against potential impacts of the proposed future development through the implementation of a construction setback. A minimum 50 m setback is recommended from the PSW on-site and a minimum 30 m setback is recommended from all local wetlands on-site. In areas where the setback from the PSW and local wetlands overlap, the larger of the two setbacks should be implemented. Setbacks are illustrated on Figure A.6 in Appendix A.

General mitigation measures recommended for the protection of water quality and fish habitat include:

- All future development and construction activities within the study area, including ditching, culvert installation, erosion and sediment control and storm water management should be completed in accordance with Ontario Provincial Standard Specification 182 and OPSS 805.
- No in-water work should occur between March 15 and June 30 of any year to protect spawning fish habitat adjacent to the development area. All in-water habitat features, including aquatic vegetation, natural woody debris and boulders should be left in their current locations in the near shore area.
- When native soil is exposed, sediment and erosion control work in the form of heavy-duty sediment fencing shall be positioned along the down gradient edge of any construction envelopes adjacent to waterbodies.
- The development plan should include lot-side swales and/or road side ditches designed to promote infiltration.
- In order to protect fish habitat from contamination, it is recommended that all machinery be maintained in good working condition and that all machinery be fueled a minimum of 30 m from the high water mark.
- Any temporary storage of aggregate material shall be set back from the water's edge by no less than 40 m and be contained by heavy-duty silt fencing.
- Septic systems shall be installed no closer than 30 m from the high water mark of any surface water feature.

7.2 Significant Woodlands

No negative impacts on the integrity of the significant woodlands are anticipated as a result of the proposed project if all mitigation measures recommended below are enacted and best management practices followed. The 30 m setback presented above to protect local wetlands on-site is sufficient to protect significant woodlands on-site and adjacent to site from development and encroachment during construction.

No negative impacts on the ecological function of the significant woodlands are anticipated as a result of this project if the construction setback and all mitigation measures and best management practices recommended in this EIS are adhered to.

7.3 Significant Valleylands

The 30 m setback from local wetlands and watercourses on-site will minimize the total potential loss of significant valleyland on-site and mitigate potential impacts to water quality from development. However, it is further understood that existing City and Conservation Authority

policies prohibit development within designate floodplains. Accordingly, no development is anticipated to occur within the significant valleyland and its associated floodplain.

7.4 Fish Habitat

No negative impacts on the integrity of the wetlands or fish habitat are anticipated as a results of the proposed development if all mitigation measures recommended below area enacted and best management practices followed. Fish habitat outside of the PSW and local wetlands on-site can be protected against potential impacts of the proposed future development through the implementation of a construction setback. A 30 m setback is recommended from all watercourses on-site. A 30 m setback is sufficient to provide protection to the watercourses and fish habitat from nutrient loading, encroachment and human disturbance.

General mitigation measures recommended above for wetland protection should also be applied for the protection of water quality and fish habitat:

7.5 Significant Wildlife Habitat

7.5.1 *Candidate* Waterfowl Nesting Area

The 50 m and 30 m setbacks established to protect significant and local wetlands on-site is sufficient to protect the core area of *candidate* waterfowl nesting area from potential impacts of development. The setbacks ensure that the higher quality upland habitat (adjacent woodlands and meadows) are protected from development and encroachment. Development is likely to occur within the fallow fields, which are unlikely to provide quality nesting habitat due to the absence of vegetation cover and on-going agricultural disturbance.

7.5.2 *Confirmed* Turtle Wintering Area

The 50 m and 30 m setbacks established to protect significant and local wetlands on-site is sufficient to protect *confirmed* turtle wintering area SWH from potential impacts of development.

To protect migrating turtles associated with *confirmed* overwintering habitat on-site, reptile exclusion fencing should be installed around the entire construction area prior to construction commencing to prohibit the movement of turtles and amphibians into the construction area.

7.5.3 Special Concern and Rare Wildlife Species – Barn Swallow, Eastern Wood-Pewee, Olive-Sided Flycatcher

Impacts to barn swallow, eastern wood-pewee and olive-sided flycatcher are primarily concern habitat loss and increased fragmentation. No impacts are anticipated to occur to significant woodlands on-site. To further minimize the impact of the proposed development, vegetation removal should occur outside the key breeding bird period (typically April 15 to August 15) as identified by Environment Canada for the protection of nesting and foraging avian species and to avoid contravention of the Migratory Bird Convention Act. If vegetation clearing activities must

take place during the aforementioned timing window than a nest survey shall be conducted by a qualified professional.

7.5.4 Special Concern and Rare Wildlife Species – Snapping Turtle

The setbacks established to protect significant and local wetlands on-site is sufficient to protect snapping turtle and their habitat on-site from potential impacts of development.

To protect migrating turtles associated with *confirmed* overwintering habitat on-site, reptile exclusion fencing should be installed around the entire construction area prior to construction commencing to prohibit the movement of turtles and amphibians into the construction area. Reptile exclusion fencing should follow guidelines established in *Species at Risk Branch Best Practices Technical Note – Reptile and Amphibian Exclusion Fencing* (OMNRF, 2013b).

7.5.5 Special Concern and Rare Wildlife Species – Bridle Shiner

The 30 m setback established to protect general fish habitat on-site is sufficient to protect bridle shiner and its habitat on-site from potential impacts of development.

7.6 Species at Risk

7.6.1 Eastern Small-footed Myotis, Little Brown Myotis & Tri-colored Bat

To protect roosting and foraging bats, tree removal where required should take place outside of the spring and summer active season (typically May 1 to September 1), when bats are more likely to be using forest habitat. If vegetation clearing must be conducted during the spring and summer timing window than a roost survey should be conducted be a qualified professional.

7.6.2 Blanding's Turtle

As indicated in Section 6.6, Blanding's turtle, a reptilian species at risk, has the potential to occur on-site, primarily in a transient nature. Further, regulated Category 1, Category 2 and Category 3 habitats are present on-site. To protect Blanding's turtles that may transit the site, on-site reptile exclusion fencing should be installed around the entire construction zone and be maintained for the duration of the project to prevent Blanding's turtle from entering the construction zone. Additionally, completion and submission of an Information Gathering Form to the MECP is required to determine long term, permanent mitigation measures to be implemented at the site to ensure compliance with the *Endangered Species Act, 2007.* Reptile exclusion fencing should follow guidelines established in *Species at Risk Branch Best Practices Technical Note – Reptile and Amphibian Exclusion Fencing* (OMNRF, 2013b).

7.7 Wildlife

The following avoidance and mitigation measures are provided in effort to minimize impacts to on-site and off-site wildlife:

- To protect wildlife during construction, construction should be completed in accordance with the best practices outlined in Protocols for Wildlife Protection During Construction, from the City of Ottawa (Ottawa, 2015).
- Vegetation removal should occur outside the key breeding bird period (typically April 15 to August 15) as identified by Environment Canada for the protection of migratory birds and to avoid contravention of the Migratory Bird Convention Act. If vegetation clearing activities must take place during the aforementioned timing window than a nest, survey shall be conducted by a qualified professional.
- Installation of silt fence barriers around the entire construction envelope to prohibit the emigration of wildlife into the construction area.
- Cover all stock piled material with a geotextile to prevent turtles from nesting in the material between May 1 and August 1 of any year.
- Perform daily pre-work sweeps of the construction area to ensure no species at risk are present and to remove any wildlife from inside the construction area.
- Should any species at risk be discovered throughout the course of the proposed works, the species at risk biologist with the local MECP district should be contacted immediately and operations modified to avoid any negative impacts to species at risk or their habitat until further direction is provided by the MECP.

7.8 Best Practice Measures for Mitigation of Cumulative Impacts

The following best practice measures are provided for the mitigation of cumulative impacts resulting from general construction and development activities;

- To protect trees identified to be retained during construction, the Critical Root Zone (CRZ) should be identified and fenced. The CRZ is defined as 10 cm from the base of the tree for every centimetre in diameter of the tree trunk measured at breast height.
- Maintain as much permeable surface as possible in future development plans to minimize the generation of stormwater runoff.
- Silt fencing should be installed along all setbacks to provide visual demarcation of the setbacks and to prevent machinery encroachment and sediment transport.
- Erosion and sediment control measures should be maintained until all disturbed ground has been permanently stabilized.
- In effort to offset the effect of vegetation clearing, consideration should be given to landscape planting with native tree species indicative of the Great Lakes – St. Lawrence Forest Region, such as white cedar, white spruce, red maple, and red oak.

8.0 CONCLUSIONS

The proposed project supported by this EIS is a zoning amendment to permit potential future commercial development.

Based on the results of the impact analysis, impacts to the natural environment are anticipated to be minimal. Provided that mitigation measures recommended in Section 7 are implemented as proposed, no significant residual negative impacts are anticipated from the proposed future development.

Following review of the information pertaining to the natural heritage features of the site, the following general conclusions are provided by GEMTEC in regards to the Environmental Impact Statement.

- No significant negative impacts to natural heritage features identified on-site, including significant wetlands, significant woodlands, significant wildlife habitat, habitat of species at risk and local wetlands and fish habitat, from future residential development are anticipated.
- The proposed project complies with the natural heritage policies of the Provincial Policy Statement.
- The proposed development complies with the natural heritage polices of the City of Ottawa Official Plan.

9.0 LIMITATION OF LIABILITY

This report and the work referred to within it have been undertaken by GEMTEC Consulting Engineers and Scientists Limited (GEMTEC), and prepared for Dilworth Development Inc. and is intended for the exclusive use of Dilworth Development Inc.. This report may not be relied upon by any other person or entity without the express written consent of GEMTEC, Dilworth Development Inc. Nothing in this report is intended to provide a legal opinion.

The investigation undertaken by GEMTEC with respect to this report and any conclusions or recommendations made in this report reflect the best judgements of GEMTEC based on the site conditions observed during the investigations undertaken at the date(s) identified in the report and on the information available at the time the report was prepared.

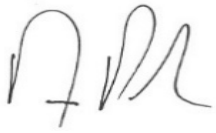
This report has been prepared for the application noted and it is based, in part, on visual observations made at the site, all as described in the report. Unless otherwise stated, the findings contained in this report cannot be extrapolated or extended to previous or future site conditions, or portions of the site that were unavailable for direct investigation

Should new information become available during future work or other studies, GEMTEC should be requested to review the information and, if necessary, re-assess the conclusions presented herein.

We trust this report provides sufficient information for your present purposes. If you have any questions concerning this report, please do not hesitate to contact our office.

Sincerely,

Taylor Warrington, B.Sc.
Biologist



Drew Paulusse, B.Sc.
Senior Biologist

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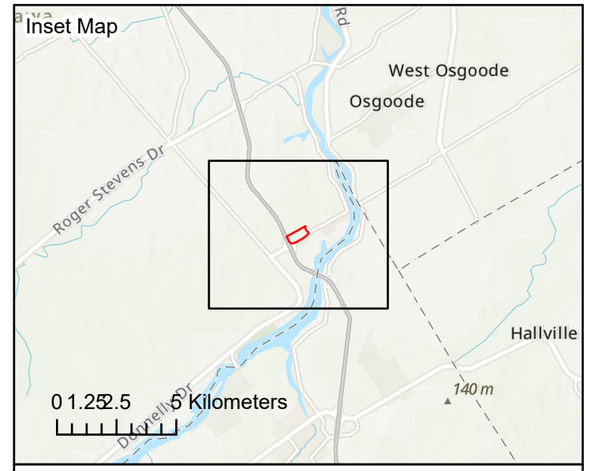
APPENDIX A

Report Figures
Figure A.1 – Site Location
Figure A.2 – Site Layout
Figure A.3 – Survey Locations
Figure A.4 - Vegetation Communities
Figure A.5 – Natural Heritage Features
Figure A.6 – Mitigation Measures

Legend

- Property Boundary
- Study Area



Scale
1:25,000
0 200 400 800 1,200 1,600 Meters

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Client:	Project:
Dennis Colautti	103350.001

Location
2095 Dilworth Rd
Kars, Ontario

Drwn By:	Chkd By:	
EP	TW	Site Location

Date: May 2024	Rev.	
© Queen's Printer for Ontario	0	Figure: A.1

Coordinate System: NAD 1983 UTM Zone 18N
Service Layer Credits: World Street Map: City of Ottawa, Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, NRCan, Parks Canada
World Topographic Map: City of Ottawa, Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, NRCan, Parks Canada

Legend

- Property Boundary
- Study Area
- Local Wetland
- Provincially Significant Wetland
- Watercourse
- Headwater Drainage Feature

Scale
1:4,000
0 30 60 120 180 240 Meters

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Location: 2095 Dilworth Rd
Kars, Ontario

Drwn By: EP | Chkd By: TW | Site Layout

Date: May 2024

Rev. 0

Figure: A.2

Coordinate System: NAD 1983 UTM Zone 18N
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Legend

- Property Boundary
- Study Area
- Local Wetland
- Provincially Significant Wetland
- Watercourse
- Headwater Drainage Feature
- Amphibian Breeding Survey Location (100 m radius)
- Breeding Bird Survey Location (100 m radius)

Scale
1:4,000
0 30 60 120 180 240 Meters

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Client: Dennis Colautti

Project: 103350.001

Location: 2095 Dilworth Rd
Kars, Ontario

Drwn By: EP | Chkd By: TW | Survey Locations

Date: May 2024

Rev. 0

Figure: A.3

Coordinate System: NAD 1983 UTM Zone 18N
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World Imagery: UCLG, Maxar, Microsoft

Legend

- Property Boundary
- Study Area
- Local Wetland
- Provincially Significant Wetland
- Watercourse
- Headwater Drainage Feature
- Vegetation Community

FOD7-2 = Green Ash - Hardwood Lowland Deciduous Forest
SWD2-2 = Green Ash Deciduous Swamp
MAM2-2 = Reed-Canary Grass Graminoid Mineral Meadow Marsh
MAS2-1 = Cattail Mineral Shallow Marsh
OAG = Open Agriculture
CVR_4 = Rural Property
CUM = Cultural Meadow
CUT = Cultural Thicket

Scale
1:4,000
0 30 60 120 180 240 Meters

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Dennis Colautti	103350.001

Location
2095 Dilworth Rd
Kars, Ontario

Drwn By:	Chkd By:	
EP	TW	Vegetation Communities

Date: May 2024	Rev.	Figure: A.4
	0	

Coordinate System: NAD 1983 UTM Zone 18N
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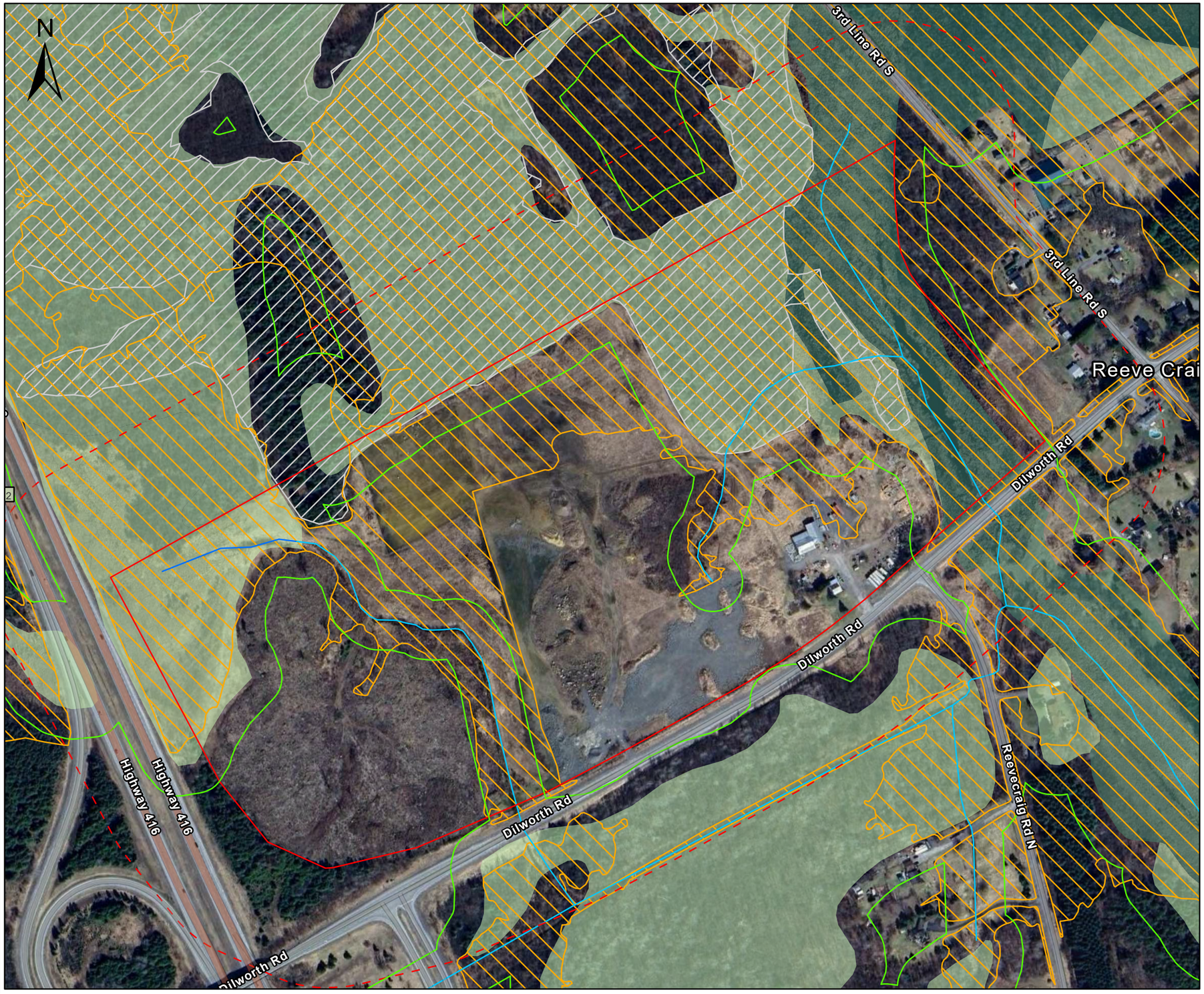

Legend

- Property Boundary
- Study Area
- Local Wetland
- Provincially Significant Wetland
- Watercourse
- Headwater Drainage Feature
- Significant Woodlands
- 1:100 Year Floodplain
- Blanding's Turtle Category 2 Habitat (30 m)

Scale

1:4,000

0 30 60 120 180 240 Meters

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Client:	Project:
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Location

2095 Dilworth Rd
Kars, Ontario

Drwn By:	Chkd By:	
EP	TW	Natural Heritage Features

Date: May 2024	Rev.	
	0	Figure: A.5

Coordinate System: NAD 1983 UTM Zone 18N
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World Imagery: UCLG, Maxar, Microsoft

Legend

- Property Boundary
- Study Area
- Local Wetland
- Provincially Significant Wetland
- Watercourse
- Headwater Drainage Feature
- Significant Woodlands
- 1:100 Year Floodplain
- Blanding's Turtle Category 2 Habitat (30 m)
- 30 m Setback
- 50 m Setback

Scale
1:4,000
0 30 60 120 180 240 Meters

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Location
2095 Dilworth Rd
Kars, Ontario

Drwn By:	Chkd By:	
EP	TW	Mitigation Measures

Date: May 2024	Rev.	
© Queen's Printer for Ontario	0	Figure: A.6

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World Imagery: UCLG, Maxar, Microsoft

APPENDIX B

Site Photographs

Site Photograph 1 – White Cedar Coniferous Forest

Site Photograph 2 – White Cedar Coniferous Forest

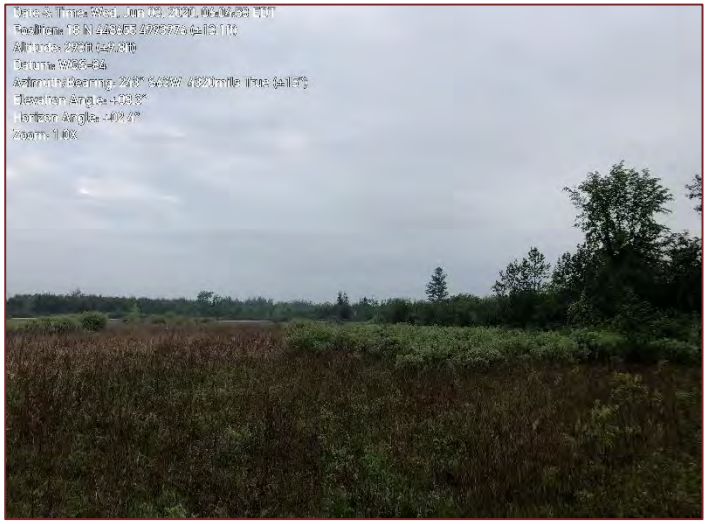
Site Photograph 3 – Poplar Deciduous Forest

Site Photograph 4 – *Candidate* Reptile Hibernaculum

GEMTEC Consulting Engineers and Scientists	Project Environmental Impact Statement 2095 Dilworth Road Ottawa, Ontario	**APPENDIX B**	**Site Photographs**
		File No. 65007.01	

Site Photograph 5 – Open Agriculture

Site Photograph 6 – Open Agriculture



Site Photograph 7 – Reed-Canary Grass Graminoid Meadow Marsh

Site Photograph 8 – Reed-Canary Grass Graminoid Meadow Marsh

GEMTEC Consulting Engineers and Scientists	Project Environmental Impact Statement 2095 Dilworth Road Ottawa, Ontario	**APPENDIX B**	**Site Photographs**
		File No. 65007.01	

Site Photograph 9 – Green Ash Deciduous Mineral Swamp

Site Photograph 10 – Green Ash Deciduous Mineral Swamp

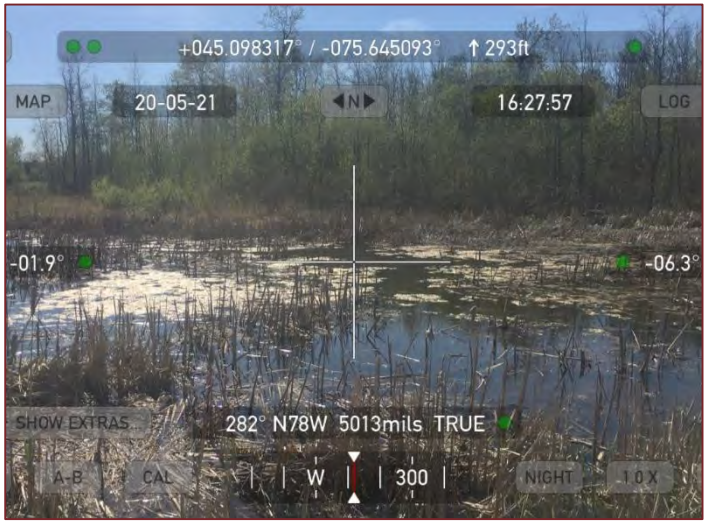
Site Photograph 11 – Green Ash Deciduous Mineral Swamp

Site Photograph 12 – Green Ash Deciduous Mineral Swamp

GEMTEC Consulting Engineers and Scientists	Project Environmental Impact Statement 2095 Dilworth Road Ottawa, Ontario	**APPENDIX B**	**Site Photographs**
		File No. 65007.01	

Site Photograph 13 – Cattail Shallow Water Marsh

Site Photograph 14 – Cattail Shallow Water Marsh



Site Photograph 15 – Cattail Shallow Water Marsh

Site Photograph 16 – Cultural Meadow with Cattail Shallow Water Marsh Behind

Site Photograph 17 – Western Watercourse

Site Photograph 18 – Western Watercourse

Site Photograph 19 – Eastern Watercourse

Site Photograph 20 – Eastern Watercourse

GEMTEC Consulting Engineers and Scientists	Project Environmental Impact Statement 2095 Dilworth Road Ottawa, Ontario	**APPENDIX B**	**Site Photographs**
		File No. 65007.01	

APPENDIX C

Report Summary Tables

TABLE C.1
SUMMARY OF WILDLIFE OBSERVED ON-SITE AND ADJACENT TO SITE

Common Name	Scientific Name	S-Rank	Evidence
Avian Species			
Alder flycatcher	*Empidonax alnorum*	S5B	Heard calling
American bittern	*Botaurus lentiginosus*	S4B	Heard calling, response to MMP broadcast
American crow	*Corvus brachyrhynchos*	S5B	Heard calling
American goldfinch	*Spinu tristis*	S5B	Heard calling
American robin	*Turdus migratorius*	S5B	Heard calling, observed foraging
American tree sparrow	*Spizella arborea*	S4B	Heard calling
Baltimore oriole	*Icterus galbula*	S4B	Heard calling
Black-and-white warbler	*Mniotilta varia*	S5B	Heard calling, observed foraging
Black-capped chickadee	*Poecile atricapillus*	S5	Heard calling, observed foraging
Blue jay	*Cyanocitta cristata*	S5	Heard calling
Brown headed cowbird	*Molothrus ater*	S4B	Heard calling
Canada goose	*Branta canadensis*	S5	Heard calling, observed
Cedar waxwing	*Bombycilla cedrorum*	S5B	Heard calling
Common grackle	*Quiscalus quiscala*	S5B	Heard calling
Common raven	*Corvus corax*	S5	Heard calling
Common yellowthroat	*Geothlypis trichas*	S5B	Heard calling
Eastern phoebe	*Sayornis phoebe*	S5B	Heard calling
Eastern wood-pewee	*Contopus virens*	S4B	Heard calling
Great blue heron	*Ardea herodias*	S4B	Observed foraging
Great crested flycatcher	*Myiarchus crinitus*	S4B	Heard calling
Hairy woodpecker	*Picoides villosus*	S5	Heard calling, observed foraging
House sparrow	*Passer domesticus*	SNA	Heard calling
Indigo bunting	*Passerina cyanea*	S4B	Heard calling, observed perched
Killdeer	*Charadrius vociferus*	S5B, S5N	Observed foraging
Mallard	*Anas platyrhynchos*	S5	Heard calling
Marsh wren	*Cistothorus palustris*	S4B	Heard calling
Mourning dove	*Senaida macroura*	S5	Heard calling
Northern cardinal	*Cardinalis cardinalis*	S5	Heard calling
Northern flicker	*Colaptes auratus*	S4B	Heard calling

TABLE C.1
SUMMARY OF WILDLIFE OBSERVED ON-SITE AND ADJACENT TO SITE

Common Name	Scientific Name	S-Rank	Evidence
Olive-sided flycatcher	*Contopus cooperi*	S4B	Heard calling
Osprey	*Pandion haliaetus*	S5B	Heard calling
Ovenbird	*Seiurus aurocapilla*	S4B	Heard calling
Red-tailed hawk	*Buteo jamaicensis*	S5	Observed soaring
Red-winged blackbird	*Agelaius phoeniceus*	S4B	Heard calling
Song sparrow	*Melospiza melodia*	S5B	Heard calling
Sora	*Porzana carolina*	S4B	Heard calling, response to MMP broadcast
Swamp sparrow	*Melospiza georgiana*	S5B	Heard calling
Tree swallow	*Tachycineta bicolor*	S4B	Heard calling
Turkey vulture	*Cathartes aura*	S5B	Heard calling
Veery	*Catharus fuscescens*	S4B	Heard calling
Virginia rail	*Rallus limicola*	S5B	Heard calling, response to MMP broadcast
White-breasted nuthatch	*Sitta carolinensis*	S5	Heard calling
White-throated sparrow	*Zonotrichia albicollis*	S5B	Heard calling
Wild turkey	*Meleagris gallopavo*	S5	Observed foraging and tracks
Wilson's snipe	*Gallinago delicata*	S5B	Heard calling
Wood duck	*Aix sponsa*	S5	Heard calling, observed on-site
Yellow warbler	*Setophaga petechia*	S5B	Heard calling
Yellow-bellied sapsucker	*Sphyrapicus varius*	S5B	Heard calling, observed foraging
Reptilian Species			
Eastern gartersnake	*Thamnophis sirtalis sirtalis*	S5	Observed on-site
Midland painted turtle	*Chrysemys picta marginata*	S4B	Aqua-basking
Snapping turtle	*Chelydra serpentina*	S3	Aqua-basking
Amphibian Species			
American toad	*Anaxyrus americanus*	S5	Heard calling
Gray treefrog	*Hyla versicolor*	S5	Heard calling
Green frog	*Lithobates clamitans*	S5	Heard calling
Northern leopard frog	*Lithobates pipiens*	S5	Heard calling
Spring peeper	*Pseudacris crucifer*	S5	Heard calling
Mammalian Species			
Beaver	*Castor canadensis*	S5	Observed on-site

TABLE C.1
SUMMARY OF WILDLIFE OBSERVED ON-SITE AND ADJACENT TO SITE

Common Name	Scientific Name	S-Rank	Evidence
Eastern cottontail	*Sylvilagus floridanus*	S5	Observed on-site
Hoary bat	*Lasiurus cinereus*	S4	Observed using EchoMeter
Porcupine	*Erethizon dorsatum*	S5	Observed on-site
Silver-haired Bat	*Lasionycteris noctivagans*	S4	Observed using EchoMeter
White-tailed deer	*Odocoileus virginianus*	S5	Observed on-site

Notes:

Subnational Conservation Status Ranks:

S1 - Critically Imperilled, at very high risk of extirpation, very few populations or occurrences or very steep population decline

S2 - Imperiled, at high risk of extirpation, few populations or occurrences or steep population decline

S3 - Vulnerable, at moderate risk of extirpation, relatively few populations or occurrences, recent and widespread population decline

S4 - Apparently Secure, at a family low risk of extirpation, many populations or occurrences, some concern for local population decline

S5 - Secure, at very low or no risk of extirpation, abundant populations or occurrences, little to no concern for population decline

Qualifiers:

S#B - Conservation status refers to the breeding population of the species

S#N - Conservation status refers to the non-breeding population of the species

S#M - Migrant species, conservation status refers to the aggregating transient population of the species

TABLE C.2
SCREENING RATIONALE FOR SIGNIFICANT WOODLANDS

Woodland Criteria	Further Considered in EIS	Rationale
Woodland Size	Yes	Contiguous woodlands on-site meet the minimum size requirement for the planning area (> 50 ha).
Ecological Functions		
a) Woodland Interior	No	Interior woodlands on-site do not meet the minimum size requirement for the planning area (> 8 ha).
b) Proximity	Yes	Woodlands on-site areadjacent to Cranberry Creek PSW.
c) Linkages	No	Woodlands on-site do not provide linkages to other natural heritage features.
d) Water Protection	Yes	Woodlands on-site do not provide water protection to sensitive watersheds.
e) Diversity	No	Species composition within the on-site woodland is well represented on the landscape and no rare species communities were observed on-site.
Uncommon Characteristics	No	The woodlands on-site do not have a unique species composition, vegetation communities with a ranking of S1, S2 or S3, or a mature size structure.
Economical and Social Functional Values	No	The woodlands on-site do not contain high productivity in terms of economically valuable products, high social value such as recreational use, identified historical cultural or educational values.

TABLE C.3
SCREENING RATIONALE FOR SIGNIFICANT VALLEYLANDS

Woodland Criteria	Further Considered in EIS	Rationale
Landform-Related Functions and Attributes		
a) Surface Water Functions	Yes	Ontario Flow Assessment Tool indicates that the upstream catchment area is larger than 50 ha in size.
b) Groundwater Functions	No	No areas of groundwater infiltration or release were identified on-site.
c) Landform Prominence	Yes	City of Ottawa and RVCA has identified portions of the property as floodplain for Cranberry Creek and Cranberry Creek PSW.
d) Distinctive Geomorphic Landforms	No	No distinctive landforms (oxbows, bottomlands, terraces, deltas, exposed soil strata or eroding slopes) were identified on-site.
Ecological Functions		
a) Degree of Naturalness	Yes	While the mapped flood plain on-site and in surrounding area is predominantly residential, peri-urban and agricultural land use, there is more than 25% natural vegetation (forest cover) throughout the mapped floodplains in the broader study area.
b) Community and Species Diversity	No	Community and species diversity on-site is low and well represented in the greater landscape.
c) Unique Communities and Species	No	No seasonally important habitats have been identified.
d) Habitat Value	Yes	The valleyland contains the Cranberry Creek PSW, which provides important habitat to sustain native aquatic and terrestrial habitats. It should be noted the floodplains on-site identified by the City of Ottawa and RVCA are primarily agricultural fields and do not provide habitat value.
e) Linkage Function	No	The valleyland and surrounding land have not been identified to provide an important linkage function to other natural areas within the watershed.
Restored Ecological Functions		
a) Restoration Potential and Value	No	Area has not been significantly altered.

TABLE C.4
SCREENING RATIONALE FOR HABITATS OF SEASONAL CONCENTRATION AREAS

Wildlife Habitat	Further Considered in EIS	Rationale
Winter Deer Yard	No	No significant stands of mast producing trees, no large coniferous forest stands on-site to provide protection and cover from winter elements. Winter deer yards have not been identified on-site in the City of Ottawa Official Plan.
Colonial Bird Nesting Habitat	No	No suitable habitat located on-site or within the study area to support colonial bird nesting.
Waterfowl Stopover and Staging Areas	No	No suitable habitat located on-site or within the study area to support waterfowl stopover and staging areas.
Shorebird Migratory Stopover Area	No	Shorebird stopover sites are typically well-known and have a long history of use. The site does not contain suitable shoreline habitat for shorebird foraging.
Raptor Wintering Area	No	While the site contains an appropriate amount of forested and upland habitat, the forest habitat does not meet the required size criteria of interior habitat (> 10 ha) established in the NHRM.
Bat Hibernacula	No	Cave and crevice habitat is not present on-site or within the study area.
Bat Maternity Colonies	No	Woodlands on-site do not meet minimum snag density (>10 snags/hectare) requirement to be considered SWH for bat maternity colonies.
Turtle Wintering Area	Yes	The Cranberry Creek PSW may provide suitable conditions for turtle wintering habitat.
Reptile Hibernaculum	Yes	Large rock piles were observed on-site and may provide reptile hibernaculum.
Migratory Butterfly Stopover Area	No	The site is not located within 5 km of Lake Ontario and therefore does not meet the defining criteria.
Landbird Migratory Stopver Area	No	The site is not located within 5 km of Lake Ontario and therefore does not meet the defining criteria.

TABLE C.5
SCREENING RATIONALE FOR SPECIALIZED WILDLIFE HABITATS

Specialized Wildlife Habitat	Further Considered in EIS	Rationale
Waterfowl Nesting Area	Yes	The site provides suitable upland habitat adjacent to wetlands necessary to support waterfowl nesting.
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	No	While potentially suitable habitat is present in the study area, no bald eagle or osprey nests were observed on-site or in study area.
Woodland Nesting Raptor Habitat	No	Nesting may occur in any ecosite and species preference is towards mature forest stands >30 ha with >10 ha of interior habitat with a 200 m buffer. Contiguous forest stands >30 ha are present; however, interior forest habitat with a 200 m buffer does not meet the minimum size criteria.
Turtle Nesting Habitat	No	Vegetation and soil on-site does not provide suitable nesting habitat for turtles.
Seeps and Springs	No	No seeps or spring were identified on-site during the preliminary site investigaiton.
Woodland Amphibian Breeding Habitat	Yes	Suitable wetland habitat occurs within the woodlands on-site that may support wetland amphibian breeding.
Wetland Amphibian Breeding Habitat	Yes	Cranberry Creek PSW may provide sutiable wetland habitat to support wetland amphibian breeding habitat.
Woodland Area-Sensitive Bird Breeding Habitat	No	Woodland area-senstive birds require interior forest habitat located >200 m from the forest edge in large (>30 ha) forest stands. Woodlands on-site and adjacent to the site do not meet the defining criteria.

TABLE C.6
SCREENING RATIONALE FOR HABITAT FOR SPECIES OF CONSERVATION CONCERN

General Habitats of Species of Conservation Concern	Further Considered in EIS	Rationale
Marsh Breeding Bird Habitat	Yes	Suitable marsh habitat is present within Cranberry Creek PSW to support marsh breeding bird habitat.
Open Country Breeding Bird Habitat	No	No suitable meadow habitat on-site to support open country bird breeding due to recent (< 5 years) agricultural disturbances.
Shrub/Early Successional Breeding Bird Habitat	No	Candidate early successional breeding bird habitat typically includes fallow fields transitioning to early successional forest habitats that are > 10 ha but have not been actively used for farming. The cultural thickets on-site are not considered SWH due to recent (< 5 years) agricultural disturbances.
Terrestrial Crayfish Habitat	No	Terrestrial crayfish are only found within southwestern Ontario (MNRF, 2012).
Special Concern and Rare Wildlife Species	Yes	Occurence data from the NHIC indicates the presence of barn swallow and eastern wood-pewee, species of special concern, within the study area. Furthermore eastern wood-pewee were observed on-site during field investigations. Additionally, the following species of special concern were observed on-site during field investigations: olive-sided flycatcher and snapping turtle. Review of the DFO SAR mapping application indicates that bridle shiner, a species of special concern has been observed within 1km of the site.

TABLE C.7
SCREENING RATIONALE FOR ANIMAL MOVEMENT CORRIDORS

General Habitats of Species of Conservation Concern	Further Considered in EIS	Rationale
Amphibian Movement Corridor	No	No wetland or woodland amphibian breeding habitat has been identified on-site or within the study area.
Deer Movement Corridor	No	No winter deer yards have been identified on-site. The City of Ottawa Official Plan does not identify any deer movement corridors on-site.

TABLE C.8
SCREENING RATIONALE FOR POTENTIAL SPECIES AT RISK ON-SITE OR WITHIN STUDY AREA

Species	ESA Status	Regional Distribution	Habitat Use	Probability of Occurrence On-Site or Within Study Area	Rationale
Avian					
Bald Eagle	Special Concern	Confirmed nest at Shirley's bay since 2012.	Nest in mature forests near open water.	Low	While forest habitat is present adjacent to open water, no bald eagle nests were observed during the site investigations.
Bank Swallow	Threatened	12 confirmed, 2 probable and 8 possible nests in recent OBBA.	Colonial nester, burrows in eroding silt, to sand banks, sand pit walls, etc.	Low	No suitable sand banks, pit walls or cliff walls to support bank swallow nesting.
Barn Swallow	Special Concern	33 confirmed, 2 probable, and 3 possible nests in recent OBBA.	Nests in barns and other semi-open structures. Forages over open fields and meadows.	Moderate	Potentially suitable nesting structures on-site and ir broader study area. Suitable open habitat for foraging. Species was not detected on-site during site investigations.
Bobolink	Threatened	Widespread in the Ottawa region, confirmed and probable nests found in 39 or 40 local atlas squares during recent OBBA.	Nests in dense tall grass fields and meadows, low tolerance fo woody vegetation.	Low	No suitable grassland habitat on-site to support bobolink breeding, nesting and foraging.
Canada Warbler	Special Concern	1 confirmed, 2 probable, 6 possible nests during recent OBBA. No critical habitat identified in region.	Prefers wet forests with dense shrub layers	Low	Preferred wet forest habitat is not present on-site.
Cerulean Warbler	Threatened	No nests reported during recent OBBA. SARO and SARA range maps include part of Ottawa.	Prefers mature deciduous forest habitat.	Low	Preferred mature deciduous forest habitat is not present on-site or within study area.
Chimney Swift	Threatened	3 confirmed, 2 probable, and 11 possible nests in recent OBBA.	Nests in traditional-style open brick chimneys.	Low	Suitable nesting structures are not present on-site or within the broader study area.
Common Nighthawk	Special Concern	6 probable, 5 possible nests reported in recent OBBA. No critical habitat identified in Ottawa region.	Nests in a variety of open sites: beaches, fields and grave rooftops.	Low	No suitable nesting habitat present on-site.
Eastern Meadowlark	Threatened	Sporadic occurrences in Ottawa region, more common in rural areas with pasture or fallow fields.	Nests and forages in dense tall grass fields and meadows, higher tolerance to woody vegetation.	Low	No suitable grassland habitat on-site to support eastern meadowlark breeding, nesting and foraging.
Eastern Whip-poor-will	Threatened	Primary breeding range located east, west and south of the Precambrian shield. 7 probable and 10 possible nests in recent OBBA. Critical habitat tentatively identified in 4 squares in western Ottawa.	Nests on the ground in open deciduous or mixed woodlands with little underbrush, and bedrock outcrops.	Low	No suitable woodland habitat occurs on-site or within study area.
Eastern Wood-Pewee	Special Concern	4 possible, 15 probable and 19 confirmed nests in recent OBBA for Ottawa area	Woodland species, often found near clearings and edge habitat.	High	Woodland habitat on adjacent properties may provide suitable habitat for eastern wood-pewee. Species was observed on-site
Golden Eagle	Endangered	Migrant only in Ottawa area.	Nests on remote, bedrock cliffs, overlooking large burns, lakes or tundra's	Low	Suitable nesting habitat is not present on-site.
Golden-winged Warbler	Special Concern	1 confirmed, 1 probable nest in recent OBBA. Critical habitat identified in Quebec, northwest of Ottawa.	Ground nesting, edge species. Breeds in successional scrub habitats surrounded by forests.	Low	Preferred scrub habitat is not present on-site or within the study area.
Evening Grosbeak	Special Concern	5 confirmed, 6 probable, 8 possible nests in recent OBBA.	Nests in trees or large shrubs, preference to large coniferous forests, will use deciduous. Overwinters in Ottawa.	Low	Suitable habitat does not occur on-site.
Henslow's Sparrow	Endangered	No nests in recent OBBA.	Prefers open, moist, tallgrass fields.	Low	Preferred grassland habitat is not present on-site o within the study area.
Loggerhead shrike	Endangered	1 possible nest in recent OBBA. Critical habitat in Montague Township, however no confirmed nests from MNRF since 2002.	Prefers grazed pastures with short grass and scattered shrubs, especially hawthorn.	Low	Preferred pasture habitat and shrub vegetation does not occur on-site.
Olive-sided Flycatcher	Special Concern	1 probable, 1 possible nest in recent OBBA.	Forest edge species, forages in open areas from high vantage points in trees.	High	Site has appropriate forest edge habitat and woodlands adjacent to wetlands. Species was observed during the site investigations.
Peregrine Falcon	Special Concern	1 confirmed nest in recent OBBA and second nest established in 2011 in the Ottawa downtown.	Nests on cliffs near water and on more anthropogenic structures such as tall buildings, bridges, and smokestacks.	Low	Site lacks suitable nesting structure for peregrine falcon.
Red Knot	Endangered	Migrant only in region, found along Ottawa River shorelines, and area lagoons,	Nests in the far north, migrant along the shorelines and lagoons of the Ottawa River.	Low	Site does not provide suitable habitat for migrant red knot.
Red-headed Woodpecker	Special Concern	1 confirmed, 1 probable and 1 possible during recent OBBA. Nesting pair reported from village of Constance Bay in recent years.	Prefers open deciduous woodlands.	Low	Preferred woodland habitat is not present on-site.
Rusty Blackbird	Special Concern	No nests in recent OBBA. Primarily observed during migration only.	Wet wooded or shrubby areas (nests at edges of Boreal wetlands)	Low	Suitable habitat does not occur on-site.
Short-eared Owl	Special Concern	1 confirmed, 2 probable, 2 possible nests in recent OBBA.	Ground nester, prefers open habitats, fields and marshes.	Low	No suitable open field or open marsh habitat on-site.
Wood Thrush	Special Concern	5 possible, 15 probable, and 16 confirmed nests in recent OBBA for Ottawa area.	Prefers deciduous or mixed woodlands.	Low	The site lacks suitable deciduous or mixed woodland habitat to support Wood Thrush.
Mammalian					
Eastern small-footed Myotis	Endangered	Rare throughout its range. Historical records in downtown Ottawa.	Roosts in rock crevices, barns and sheds. Overwinters in abandoned mines. Summer habitats are poorly understood in Ontario, elsewhere prefers to roost in open, sunny rocky habitat and occasionally in buildings (Humphrey, 2017).	Moderate	Potentially suitable anthropogenic structures adjacent to site. Potential summer habitat present within study area.

TABLE C.8
SCREENING RATIONALE FOR POTENTIAL SPECIES AT RISK ON-SITE OR WITHIN STUDY AREA

Species	ESA Status	Regional Distribution	Habitat Use	Probability of Occurrence On-Site or Within Study Area	Rationale
Little Brown Myotis	Endangered	Various sites in central and western parts of the Ottawa area. No critical habitat (hibernacula) identified in Ottawa to date.	Maternal colonies known to use buildings, may also roost in trees during summer. Affinity towards anthropogenic structures for summer roosting habitat and exhibit high site fidelity (Environment Canada, 2015).	Moderate	Potentially suitable anthropogenic structures adjacent to site. Potential summer habitat present within study area.
Northern myotis (Northern Long-eared Bat)	Endangered	Historical records in downtown Ottawa, more recently in sites to east (Orleans, Clarence-Rockland). No critical habitat (hibernacula) identified in Ottawa to date. Ottawa and region is at southern most limit of range.	Occurs throughout eastern North America in associated with Boreal forests. Roosts mainly in trees, occasionally anthropogenic structures during summer (Environment Canada, 2015). Overwinters in caves and abandoned mines.	Low	Species affinity is for Boreal forests and species rarely roosts in anthropogenic structures.
Tri-colored Bat	Endangered	Provincially Uncommon, only 26 documented occurrences in Ontario from pre-1980 to present (MNRF, 2016). Unknown distribution in Ottawa; historical records from sites in urban Ottawa and Lanark County.	Roosts in trees, rock crevices and occasionally buildings during summer. Overwinters in caves and mines.	Moderate	Potentially suitable anthropogenic structures adjacent to site. Potential summer habitat present within study area.
Reptilian					
Blanding's Turtle	Threatened	Provincial range extends from Manitoulin Island south and east. Scattered occurrence records in central Ontario. Scattered throughout Ottawa and National Capital Region, with numerous sites in western half of region. Critical habitat present in Ottawa.	Inhabits quiet lakes, streams and wetlands with abundant emergent vegetation. Frequently occurs in adjacent upland forests.	Moderate	Occurrence data for species on NHIC, HerpAtlas occurrence data indicates species has been observed in the broader area. Potentially suitable wetland habitat present on-site within Cranberry Creek PSW.
Snapping Turtle	Special Concern	Widespread and abundant in Ottawa and surrounding region.	Highly aquatic species, found ir a wide variety of wetlands, water bodies and watercourses	High	Cranberry Creek PSW may provide suitable wetland habitat. Species was observed on-site.
Fish					
American eel	Endangered	Ottawa, Mississippi, Carp South Nation and Rideau Rivers	Primarily nocturnal, hiding in soft substrate or submerged vegetation during the day	Low	Species not known to occur in Cranberry Creek. No occurrence data for American eel within 1 km of the site according to DFO SAR mapping.
Bridle Shiner	Special Concern	Rideau River	Preferes clear water with abundant vegetation over silty or sandy vegetation.	Moderate	Cranberry Creek and other watercourses on-site have been identified on the DFO SAR mapping as having bridle shiner occurences.
Channel Darter	Special Concern	Ottawa River	Prefers areas with moderate current over sandy or rocky susbstrate.	Low	Species not known to occur in Cranberry Creek or Rideau River watershed.
Lake Sturgeon	Special Concern	Ottawa River	Only douns in large lakes andrivers. Forages in cool water, 4-9 m deep over soft substrate. Spawns in shallower, fast-flowing areas over rocks or gravel.	Low	Species only occurs in Ottawa River.
Northern Brook Lamprey	Special Concern	Ottawa River	Prefers shallow areas with warm water. Larvae burrows in soft substrate for up to 7 years.	Low	Species only known to occur in Ottawa River.
River Redhorse	Special Concern	Ottawa and Mississippi Rivers	Prefers fast-flowing, clear rivers over rocky substrate.	Low	Species not known to occur in Cranberry Creek or Rideau River watershed.
Silver Lamprey	Special Concern	Ottawa River	Larvae live 4-7 years in burrows, preference to soft substrates.	Low	Species not known to occur in Crenberry Creek or Rideau River watershed.
Plants					
American Ginseng	Endangered	Critical habitat broadly identified in the Ottawa area. Specific locations are confidential.	Rich, moist, relatively mature deciduous forests.	Low	Suitable habitat does not occur on-site.
Butternut	Endangered	Range is confined to eastern and southern Ontario. Widespread in Ottawa and region.	Inhabits a wide range of habitats including upland and lowland deciduous and mixed forests.	Moderate	Portions of the site is open and in a regenerative state.
Lichens					
Pale-bellied Frost Lichen	Endangered	Historical records in downtown area (extirpated locally). No critical or regulated habitat identified in Ottawa.	Grows on the bark of hardwood trees such as white ash, black walnut, American elm and ironwood. Can also be found growing on fence posts and boulders.	Low	Species believed to be extirpated from the Ottawa area.
Insects					
Bogbean Buckmoth	Endangered	Richmond Fen	Preferred food plant is bog bean, present in a variety of wetlands including bogs, swamps and fens.	Low	Preferred wetland habitat is not present on-site.
Gypsy Cuckoo Bumble Bee	Endangered	Historic occurrences only. Range in Ontario uncertain.	Inhabits a wide range of habitats: open meadows, agricultural and urban areas, boreal forests and woodlands.	Low	Currently the only known population is in Pinery Provincial Park
Monarch Butterfly	Special Concern	Widespread in the region	Caterpillars require milkweed plants confined to meadow and open areas. Adult butterflies use more diverse habitat with a variety of wildflowers	Moderate	Potentially suitable foraging habitat for monarch butterflies occurs on-site.
Mottled Duskywing	Endangered	Constance Bay area, Burnt Lands Alvar	Larval food plant (New Jersey Tea) found in sandy areas and alvars.	Low	Sandy areas and alvars not present in the study area.
Nine-spotted Lady Beetle	Endangered	Historically present but no reports in Ontario since mid-1990s	Habitat generalist	Low	No recent occurrence reports in the area, thought to be locally extirpated.

TABLE C.8
SCREENING RATIONALE FOR POTENTIAL SPECIES AT RISK ON-SITE OR WITHIN STUDY AREA

Species	ESA Status	Regional Distribution	Habitat Use	Probability of Occurrence On-Site or Within Study Area	Rationale
Rusty-patched Bumble Bee	Endangered	Historic records in Ottawa and Gatineau	Habitat generalist	Low	Currently the only known population occurs in Pinery Provincial Park.
Traverse Lady Beetle	Endangered	Unknown in Ottawa region. No southern Ontario records since 1985	Habitat generalist	Low	No new records of traverse lady beetle in Ontario, species thought to be absent in former habitats.
West Virginia White Butterfly	Special Concern	Unknown. No NESS or NHIC records. SARO range map includes Ottawa.	Requires mature moist deciduous woods with larval host plant toothwort.	Low	Necessary vegetation and toothwort plant not present on-site or within study area.
Yellow-banded Bumble Bee	Special Concern	Unknown. Historic occurrences and a few recent occurrences in Eastern Ontario/Western Quebec region.	Habitat generalist; mixed woodlands, variety of open habitat	Moderate	Potentially suitable foraging habitat for yellow-banded bumble bee occurs on-site.

APPENDIX D

Headwater Drainage Feature Assessment

May 10, 2024 File: 65007.01 – R0

Dilworth Development Inc.
92 Bentley Avenue
Ottawa, Ontario
K2E 6T9

Attention: Mr. Dennis Colautti

Re: Headwater Drainage Feature Assessment
2095 Dilworth Road, Ontario

1.0 INTRODUCTION

GEMTEC Consulting Engineers and Scientists Ltd. (GEMTEC) was retained by Dilworth Development Inc. to carry out an Environmental Impact Statement (EIS) for the property located at 2095 Dilworth Road in the City of Ottawa, Ontario, hereafter referred to as the "subject property". As a component of the EIS a headwater drainage feature assessment (HDFA) is required. This letter provides the methodologies and results of the HDFA conducted at the subject property.

1.1 Purpose

The proponent is seeking a zoning amendment for an approximately 35 hectare (ha) property from rural to highway commercial to permit future commercial and residential uses on the subject property. A headwater drainage feature assessment was conducted to aid in the assessment of potential fish habitat on-site.

1.2 Objective

The objective of the work presented herein is twofold; 1) to identify headwater drainage features and 2) to evaluate and classify any headwater drainage features on-site, in accordance with *"Evaluation, Classification and Management of Headwater Drainage Features Guidelines*" from the Toronto Region Conservation Authority and the Credit Valley Conservation (TRCA/CVC, 2014), and to recommend mitigation and conservation measures for headwater drainage features present on-site. As outlined in the Headwater Drainage Features Guidelines (TRCA/CVC, 2014), the following definition of a headwater drainage feature will be used for the purposes of this report: "*non-permanently flowing drainage features that may not have defined bed or banks; they are first order and zero-order intermittent and ephemeral channels, swales and connected headwater wetlands, but do not include rills or furrows.*"

2.0 METHODOLOGY

2.1 Desktop Review

A desktop information gathering exercise was completed to aid in the scoping of field investigations and to gather background information relating to headwater drainage features on-site. Information relating to the presence and assessment of headwater drainage features on-site was obtained from the following sources:

- Evaluation, Classification and Management of Headwater Drainage Features Guidelines (TRCA/CVC, 2014);
- Ontario Stream Assessment Protocol, Section 4, Module 11 (OSAP, 2017);
- Land Information Ontario (OMNR, 2011);
- Rideau Valley Conservation Authority Geoportal (RVCA, 2016); and
- Make a Map: Natural Heritage Areas (OMNRF, 2014).

2.2 Field Investigations

Three field investigations were undertaken to evaluate the headwater drainage feature identified on-site. Field investigations completed in support of this HDFA are outlined in Table 2.2 below.

Table 2.2 Summary of Field Investigations

Date	Time	Weather	Visit Number
October 30, 2020	14:00-16:00	9°C, overcast, no precipitation, Beaufort 3	3
March 27, 2020	08:45-11:20	0°C, partly cloudy, no precipitation, Beaufort 4	1
April 29, 2020	13:45-15:30	19°C, clear skies, no precipitation, Beaufort 0	2

Site photographs taken during the field investigations are provided in Attachment A.

2.2.1 Headwater Drainage Feature Assessment

Field data collection of headwater drainage features on-site followed the protocol outlined in Section 4: Module 11, “Unconstrained Headwater Sampling” from the Ontario Stream Assessment Protocol (Stanfield, 2017).

Data collected during the site investigations included flow conditions, sediment transport, feature roughness, riparian and feature vegetation, as well as upstream and downstream site features. As outlined in the OSAP manual for assessing headwater drainage features, three site visits were completed

Classification of the headwater drainage features on-site followed the protocols outlined in the Evaluation, Classification and Management of Headwater Drainage Features Guidelines manual (TRCA/CVC, 2014). Functions of the headwater drainage feature that were evaluated included hydrolology, vegetation, fish and fish habitat, and terrestrial habitat were evaluated. Mitigation and management recommendations were provided for the headwater drainage feature based on the results of the classification.

3.0 HEADWATER DRAINAGE FEATURES ASSESSMENT

3.1 Site Characteristics

The 35 ha site currently consists of a mosaic of deciduous and coniferous woodlands, deciduous swamps, reed-canary grass meadow marsh, cattail marsh, cultural meadow and open agriculture communities. The site is located within the 'Lower Rideau River' subwatershed, and is under the jurisdiction of the RVCA.

Based on the desktop review and the site investigations, one headwater drainage feature (HDF) occurs on-site and is identified as HDF1. HDF1 are illustrated on Figure C.1 in Attachment C.

HDF1 originates within the local wetland in the northwest corner of the property and flows in a eastern direction for approximately 140 m where it meets a permanent waterbody. The permanent watercourse turns to flow in a south-southeast direction before exiting the property along the southern property boundary, crossing Dilworth Road, before turning east and flowing for approximately 500 m before discharging into Cranberry Creek and eventually the Rideau River.

According to the Aquatic Species at Risk map (DFO, 2018), one aquatic Species at Risk (SAR) has been identified within the permanent watercourses downstream of HDF1 and HDF2, bridle shiner. Bridle shiner is listed as a species of special concern under the Endangered Species Act. No critical habitat for SAR has been identified within the subject area or any HDF present on-site.

3.1.1 HDF2

HDF2 is a headwater wetland, connected to the downstream un-named watercourse that eventually discharges to the Rideau River. Based on the definition provided in the Headwater Drainage Features Guidance document (TRCA/CVC, 2014), "*wetlands that are connected downstream through surface flow are considered to be headwater drainage features for the purposes of this guideline.*"

During the first two spring visits, interstitial to standing water was observed and the feature was dry during the late season investigation. The feature is primarily populated by wetland vegetation including reed canary grass, cattail, red osier dogwood and willow. Riparian vegetation consist of wetland and forest.

Table 3.1 below summarizes the existing conditions and characteristics of HDF2 observed during the site investigation. During the site investigations, the HDF was assessed in segments based on site break triggers, but the segments have been grouped for evaluation purposes.

Table 3.2 Summary of Existing Conditions for HDF1

Site Visit	Hydrology			Vegetation Assessment		Channel Form			Sediment Transport		
	Flow Influence (FI)	Flow Condition (FC)	Feature Type (FT)	Feature	Riparian	Average Wetted Width (m)	Average Depth (range) (cm)	Average Bankfull Width (m)	Substrate	Sediment Transport	Sediment Dep.
1	Freshet (1)	Interstitial (3)	No Defined Feature (4)	Wetland (6)	Wetland (6)	-	15.7 (21-15)	-	Silty sand	None	None
2	Spate (2)	Dry (1)	No Defined Feature (4)	Wetland (6)	Wetland (6)	-	10 (10)	-	Silty Sand	None	None
3	Baseflow (3)	Dry (1)	No Defined Feature (4)	Wetland (6)	Wetland (6)	0	0	-	Silty Sand	None	None

4.0 CLASSIFICATION

HDF1 was classified based on the information collected during the site investigations pertaining to hydrology, riparian habitat, fish and fish habitat and terrestrial components. Using the linking classification to management flow chart provided by the TRCA and CVC (2014), illustrated in Figure 1 below, the classification of each HDF was used to determine management recommendations.

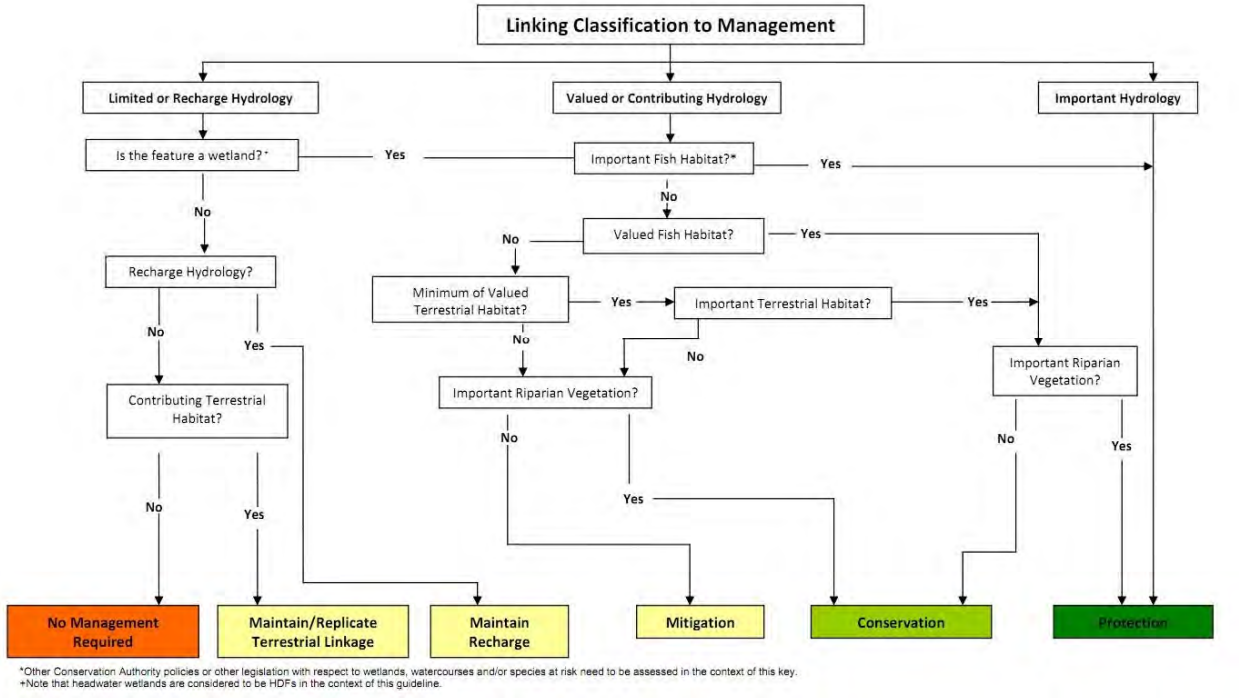


Figure 1 Flow Chart Providing Directions of Management Option's (TRCA/CVC, 2014)

HDF1 originates in a local wetland and provides important riparian and terrestrial habitat, as such it was determined to have important functions and protection of the watercourse is required.

One aquatic Species at Risk (SAR), bridle shiner, has been identified within the permanent watercourses downstream of HDF1 and HDF2 and within Cranberry Creek. Bridle shiner is listed as a species of special concern under the Endangered Species Act. No critical habitat for SAR has been identified within the subject area or any HDF present on-site.

A summary of the classification and management recommendation for HDF1 is provided in Table 4.1 below

Table 4.1 Summary of HDF Classification and Management recommendations

HDF	Step 1		Step 2	Step 3	Step 4	Management Recommendation
	Hydrology	Modifiers	Riparian	Fish Habitat	Terrestrial Habitat	
HDF1	Valued: intermittent water	HDF originates in wetland	Important – Wetland	Contributing	Important – breeding amphibians	Protection

5.0 MANAGEMENT RECOMMENDATIONS AND MITIGATION MEASURES

In accordance with the guidance document (TRCA/CVC, 2014), HDFs classified as important functions require protection; these are typically features characterized by important terrestrial and riparian habitats, wetlands with amphibian breeding habitat and SAR habitat. Based on the classification in Section 4 above, HDF1 has been field verified to provide valued hydrology, contributing fish habitat, and important riparian and terrestrial habitat, as such protection is required for the watercourse.

As outlined in the guidance document, protection management includes: protecting and/or enhancing the existing feature and riparian zone corridor or wetland in-situ, maintaining hydroperiod, incorporate shallow groundwater and base flow protection techniques, restore or enhance existing features and design and locate stormwater management systems to avoid impacts to the feature (TRCA/CVC, 2014).

In addition to the management recommendations for any alterations to the watercourse, the following mitigation measures are provided by GEMTEC in order to minimize or eliminate potential impacts to fish habitat.

- Any future construction should maintain a minimum of 30 m setback from, HDF1 and all permanent watercourses on-site.
- All future development and construction activities within the study area, including ditching, culvert installation, erosion and sediment control and storm water management should be completed in accordance with Ontario Provincial Standard Specification 182 and OPSS 805.
- No in-water work should occur between March 15 and June 30 of any year to protect spawning fish habitat adjacent to the development area. All in-water habitat features, including aquatic vegetation, natural woody debris and boulders should be left in their current locations in the near shore area.
- When native soil is exposed, sediment and erosion control work in the form of heavy-duty sediment fencing shall be positioned along the down gradient edge of any construction envelopes adjacent to waterbodies.
- The development plan should include lot-side swales and/or road side ditches designed to promote infiltration.
- In order to protect fish habitat from contamination, it is recommended that all machinery be maintained in good working condition and that all machinery be fueled a minimum of 30 m from the high water mark.
- Any temporary storage of aggregate material shall be set back from the water's edge by no less than 40 m and be contained by heavy-duty silt fencing.
- Septic systems shall be installed no closer than 30 m from the high water mark of any surface water feature.

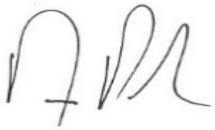
6.0 SUMMARY

A headwater drainage feature assessment was completed and one HDF was identified on-site, identified as HDF1. Protection was recommended for HDF1 based on wetland conditions and important riparian and terrestrial habitat is provides. Protection management should include: protecting and/or enhancing the existing feature and riparian zone corridor or wetland in-situ, maintaining hydroperiod, incorporate shallow groundwater and base flow protection techniques, restore or enhance existing features and design and locate stormwater management systems to avoid impacts to the feature (TRCA/CVC, 2014).

We trust this report provides sufficient information for your present purposes. If you have any questions concerning this report, please do not hesitate to contact our office.

Sincerely,

Taylor Warrington, B. Sc.
Biologist



Drew Paulusse, B.Sc.
Senior Biologist

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ATTACHMENTS

A – Site Photographs

B – Site Layout Figure

Site Photograph 5 – HDF1, October 2019 (Late Season HDF Visit)

Site Photograph 6 – HDF1, March 2020 (Early Spring HDF Visit)

Site Photograph 7 – West Watercourse Downstream of HDF1

Site Photograph 8 – West Watercourse Downstream of HDF1

GEMTEC Consulting Engineers and Scientists	Project Headwater Drainage Feature Assessment 2095 Dilworth Road Ottawa, Ontario	**ATTACHMENT A**	**Site Photographs**
		File No. 65007.01	

Legend

- Property Boundary
- Study Area
- Local Wetland
- Provincially Significant Wetland
- Watercourse
- Headwater Drainage Feature

Scale

1:4,000

0 30 60 120 180 240 Meters

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Client:	Project:
Dennis Colautti	103350.001

Location

2095 Dilworth Rd
Kars, Ontario

Drwn By:	Chkd By:	
EP	TW	Headwater Drainage Feature

Date: May 2024	Rev.	Figure: C.1
	0	

Coordinate System: NAD 1983 UTM Zone 18N
Service Layer Credits: World Topographic Map: City of Ottawa, Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, NRCan, Parks Canada
World Imagery: UCLG, Maxar, Microsoft

experience • knowledge • integrity

civil	civil
geotechnical	géotechnique
environmental	environnementale
field services	surveillance de chantier
materials testing	service de laboratoire des matériaux

expérience • connaissance • intégrité