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Environmental Impact Statement
Phase 2 Business Park
Carp Airport
Geographic Township of Huntley
Ottawa, Ontario

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Environmental Impact Statement
Phase 2 Business Park
Carp Airport
Geographic Township of Huntley
Ottawa, Ontario

November 24, 2025
GEMTEC Project: 100011.049

experience • knowledge • integrity

EXECUTIVE SUMMARY

GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) was retained by West Capital Developments to complete an Environmental Impact Statement (EIS) for the portion of the property that is part of the Carp Airport, Ottawa, Ontario. This EIS has been completed in support of a draft approved Phase 2 business park Plan of Subdivision 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 multi-season field investigations were completed to identify the presence or absence of natural heritage features and species at risk (SAR) on-site. The focus of the site investigations were 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 investigation, the following natural heritage features were identified on-site or within the study area: fish habitat and headwater drainage features, significant wildlife habitat for bat maternity roost habitat (*candidate*), and habitat of species of special concern (barn swallow, eastern wood-pewee, wood thrush, snapping turtle and monarch butterfly). The following SAR and their habitat were identified as having a potential to occur on-site: bobolink, eastern meadowlark, SAR bats, Blanding's turtle, and butternut. No butternut trees were observed on-site. No protected habitat for Blanding's turtle was identified on-site. Protected habitat for bobolink and eastern meadowlark was identified on-site.

Potential impacts to the natural heritage features were primarily associated with the loss of agricultural, meadow and hedgerow habitat for significant wildlife habitat and species at risk, and impacts to fish habitat through culvert installation and new road crossings. Impacts to fish habitat and are primarily associated with alterations to water quality through increased nutrient and sediment loading.

Potential impacts to natural heritage features on-site can be mitigated primarily through the implementation of development setbacks from surface water features. For the protection of fish habitat a 30 m setback from the top of bank of direct fish habitat and naturalized surface water features (i.e. Carp-S1, H4A-S1 and H4B) is recommended. For surface water features on-site that have been heavily influenced by anthropogenic activity, that are providing lower quality fish habitat a 25 m setback from the top of bank is proposed for these features (i.e. Carp-S2 and Carp-S3). A 15 m setback from the top of bank is proposed for the roadside ditch along Carp Road (i.e. H9).

Impacted habitat for bobolink and eastern meadowlark will require consultation with the Ministry of Environment, Conservation and Parks (MECP) to determine permitting requirements.

Additionally, to provide protection to potential SAR and their habitat on-site, reptile and amphibian exclusion fencing should be installed around all future construction areas prior to any development or site alteration, to prevent the immigration of SAR turtles and other wildlife into the construction area. 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 development complies with the natural heritage policies of the Provincial Planning 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 was retained by West Capital Developments to complete an Environmental Impact Statement (EIS) for five property parcels, totalling approximately 54 hectares (ha), located on Lots 13, 14 and 15, Concession 3, in the Geographic Township of Huntley, City of Ottawa, Ontario. Collectively the lands comprise the proposed Phase 2 Business Park lands of the Carp Airport (hereafter referred to as "the subject property"). The location of the subject property is illustrated on Figure A.1 in Appendix A.

1.1 Purpose

The proponent is seeking to register the draft approved Plan of Subdivision, consisting of an approximately 54 ha property, part of the Carp Airport, for the Phase 2 Business Park. Through the submission of plans and studies for detailed design approval, the City has requested an EIS demonstrating that the proposed development will not negatively impact any 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 property and the extents of the study area are illustrated on Figure A.2 in Appendix A.

1.2 Objective

The 2024 Provincial Planning Statement (MMAH, 2024) 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 2024 Provincial Planning 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 Planning Statement (MMAH, 2024), on the subject property and within the broader study area and; 2) to assess the potential impacts from the proposed Plan of Subdivision development 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 Planning Statement (MMAH, 20240);
- Endangered Species Act (Ontario, 2007);
- Migratory Birds Convention Act (Canada, 1994);
- 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 Background Work

It is GEMTEC's understanding that the following work has been completed for the subject property in support of the Phase 2 Business Park. This EIS is to build off the findings of both the historical IER and Preliminary Constraints Assessment.

1.3.1 Integrated Environmental Review – Carp Airport Residential Subdivision and Aerospace Business Park, Geographic Township of Huntley, City of Ottawa, Ontario

Muncaster Environmental Planning Inc. prepared an Integrated Environmental Review (IER) report for the Phase 1 and Phase 2 subdivision developments at the Carp Airport in 2007. The overall objective of the IER was to ensure that significant findings from the supporting studies were integrated and assessed as a complete package. Specifically, the IER demonstrates how all the studies in support of the application influenced the design of the development with respect to effects on the environment and compliance with the appropriate policies of Section 4 of the City of Ottawa Official Plan and the principles of design with nature. The IER also addressed the recommendations of the Carp River Watershed/Subwatershed Study.

1.3.2 Preliminary Constraints Assessment, Carp Airport – Phase 2 Business Park, Part of Lots 13, 14, and 15, Concession 3, City of Ottawa, Ontario

GEMTEC was retained by West Capital Developments to complete a preliminary constraints assessment of the subject property. The memo report was completed in 2023. The purpose of the Preliminary Constraints Assessment was to identify natural heritage features on the subject property and within the study area, as outlined in the City of Ottawa Official Plan (2022), which may pose a potential environmental constraint for future development at the site. GEMTEC completed a desktop review of natural heritage information and a single site visit September 16, 2022. The results of the preliminary constraints assessment was used to scope the work completed for this EIS.

1.4 Physical Setting

The subject property is located on five parcels of land on Lots 13, 14 and 15, Concession 3, City of Ottawa, Ontario. The subject property currently consists of a mix of cultural meadow, open agriculture, deciduous forest and thicket vegetation communities. The property is bound to the north by 3453 Carp Road and to the east by Carp Road and Russ Bradley Road. To the west, the site is bound by Thomas Argue Road. To the south the site is bound by neighbouring property 1500 Thomas Argue Road.

1.5 Land Use Context

The subject property is situated within a larger rural-industrial area. The existing land use designation from the City of Ottawa is Area Specific Policy 8.6 – Carp Airport Area.. The City of Ottawa zoning by-law for the property is air transportation facility zone, subzone B (T1B).

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, 2023a);
- Natural Heritage Information Centre Biodiversity Explorer (OMNRF, 2013);
- Land Information Ontario (OMNRF, 2011);
- Ontario Geological Survey (OGS, 2019);
- Fisheries and Oceans Canada SAR Maps (DFO, 2023);
- Fish ON-Line (MNRF, 2023);
- Breeding Bird Atlas of Ontario (Cadman et al., 2007);
- Ontario Reptile and Amphibian Atlas (Ontario Nature, 2019);
- City of Ottawa Official Plan (City of Ottawa, 2022);
- GeoOttawa Portal (Ottawa, 2023);
- Species at Risk in Ottawa (Ottawa, 2024);
- Wildlife Values Area (OMNRF, 2023a);
- Wildlife Values Site (OMNRF, 2023b); and
- Mississippi Valley Conservation Authority Geoportal (MVCA, undated).

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 natural heritage features and to identify 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	Purpose
September 16, 2022	12:00-15:00	15°C, ~60% cloud cover, Beaufort 3, no precipitation	Preliminary Constraints Assessment, Ecological Land Classification
April 27, 2023	12:30-17:00	12°C, ~50% cloud cover, Beaufort 1, no precipitation	Headwater Drainage Feature Assessment; Basking Turtle Survey
May 10, 2023	15:00	25°C, ~20% cloud cover, light precipitation, noise 1	Basking Turtle Survey
May 18, 2023	11:00-17:45	11°C, ~10% cloud cover, Beaufort 3, no precipitation	Headwater Drainage Feature Assessment; Basking Turtle Survey; Fish Habitat Assessment
May 29, 2023	05:15-08:00	16°C, no cloud cover, Beaufort 4, no precipitation, noise 4	Breeding Bird Survey, Ecological Land Classification
June 8, 2023	14:15-16:15	17°C, ~90% cloud cover, Beaufort 1, no precipitation	Basking Turtle Survey
June 9, 2023	12:45-13:45	16°C, ~95% cloud cover, Beaufort 1, no precipitation	Basking Turtle Survey
June 15, 2023	05:30-08:15	16°C, ~90% cloud cover, Beaufort 4, no precipitation, noise 4	Breeding Bird Survey
June 29, 2023	07:45-10:00	19°C, no cloud cover, Beaufort 3, no precipitation	Breeding Bird Survey
July 26, 2023	09:00-11:00	20°C, ~90% cloud cover, Beaufort 2, no precipitation	Headwater Drainage Feature Assessment
May 28, 2024	05:30-09:30	16°C, ~100% cloud cover, Beaufort 3, no precipitation, noise 2	Breeding Bird Survey, Ecological Land Classification
June 15, 2024	06:45-11:15	13°C, ~100% cloud cover, Beaufort 2, no precipitation, noise 2	Breeding Bird Survey
June 25, 2024	07:15-12:15	20°C, ~30% cloud cover, Beaufort 1, no precipitation, noise 2	Breeding Bird Survey

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 September 16, 2022, May 29, 2023, and May 28, 2024, 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.

2.2.2 Breeding Bird Surveys

Breeding bird surveys were conducted on six occasions at eleven point count locations; breeding bird survey locations are provided on Figure A.1. 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). Surveys were conducted no earlier than 30 minutes before sunrise and were completed within five hours of sunrise, to encompass peak song bird activity. Breeding bird surveys consisted of five 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. A list of all avian species identified on-site is provided in Appendix C.1.

2.2.3 Basking Turtle Survey

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 (SAR), a series of five turtle basking surveys were conducted following the approved protocol for Blanding's turtles established by the MNRF (2015). No turtle species were observed during the basking turtle surveys.

2.2.4 Headwater Drainage Feature Assessment

Field data collection of Headwater Drainage Features (HDFs) on-site followed the protocol outlined in Section 4: Module 11, "Unconstrained Headwater Sampling" from the Ontario Stream Assessment Protocol (OSAP) (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 HDFs, 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 hydrology, vegetation, fish and fish habitat, and terrestrial habitat.

2.2.5 Fish Habitat Assessment

The fish habitat assessment was conducted by traversing the entire stretch of the unnamed tributary of the Carp River within the confines of the subject property, while documenting habitat conditions and documenting the presence/absence of SAR and their regulated habitat. An

additional component was to assess the potential for any critical life stage habitat, such as spawning areas.

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, 2015);
- Significant Wildlife Habitat Mitigation Support Tool (OMNRF, 2014b); and
- City of Ottawa Official Plan (City of Ottawa, 2022).

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 between 4.9°C to 7.8°C with annual precipitation ranging 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 Study Area Land Use

Figure 1 below provides an illustration of the temporal changes in land use within the study area from 1976, 1991, 2008 and 2022 aerial imagery taken from GeoOttawa.

In 1976, the Carp Airport was present, but in smaller scale to today's operations. The subject property and surrounding lands were primarily populated with agricultural fields, farmhouses and meadows.

By 1991, the Carp Airport had expanded with additional buildings constructed along the eastern side of the property. The subject property and surrounding lands remained primarily populated by agricultural fields with some residential development along March Road and Carp Road. Mineral extraction activities were occurring at a sand and gravel pit to the south.

By 2008, buildings for the Carp Airport continued to expand. The subject property remained as agricultural land use, with some tree regrowth along the Carp River tributary. The pit to the south continued operations, and more residential development occurred along March Road. The surrounding lands remained primarily composed of agricultural fields with woodland regrowth occurring along the Carp River tributary to the west of the subject property.

By 2022, the Carp Airport has continued to expand. Land use has not changed on the subject property and the remaining surrounding lands are in present day configuration.

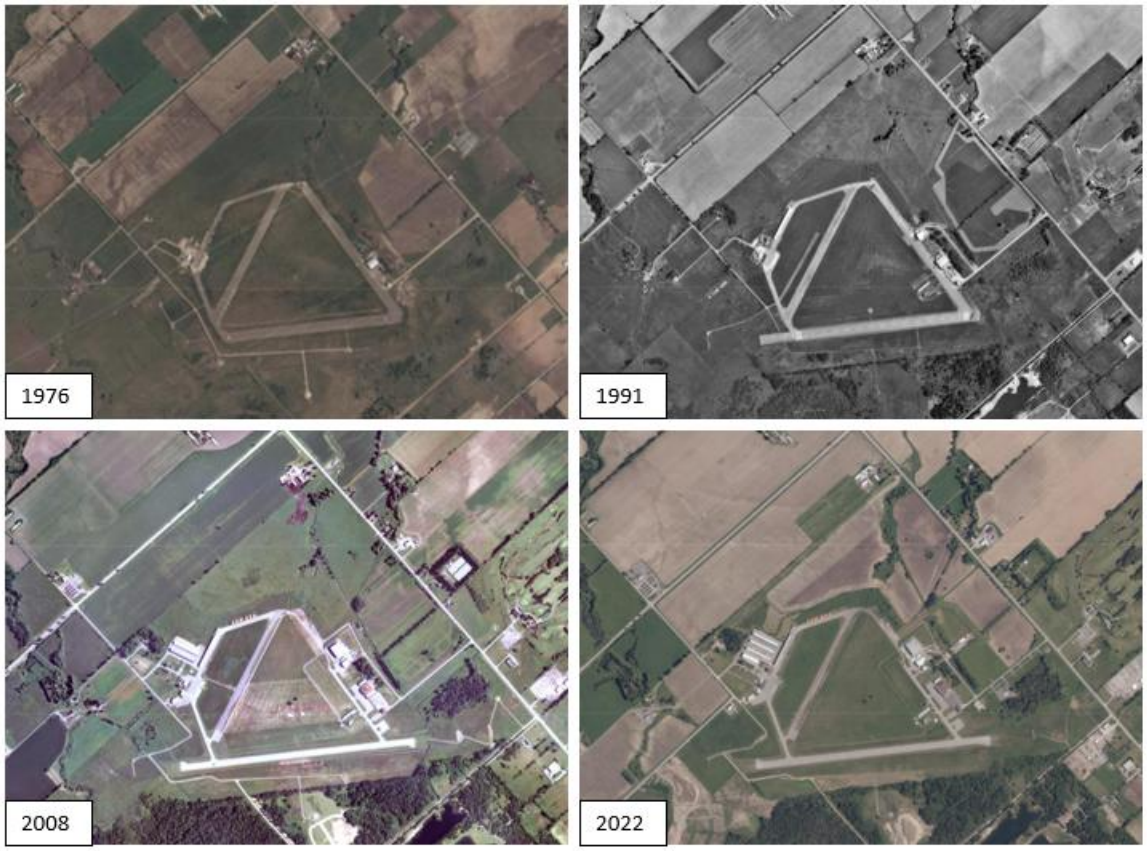

Figure 1 – Temporal Changes in Land Use within Study Area

3.2.1 Carp River Watershed/Subwatershed Study

The Carp River Watershed/Subwatershed Study (Robinson, 2004) was completed, in part, to provide initial guidance on approaches required to protect and restore environmental values within the Carp River watershed. The Carp River watershed encompasses an area of approximately 30,600 ha surrounding the former municipalities of West Carleton, Kanata and Goulbourn. The Carp River Watershed/Subwatershed Study (CRSWS) identifies opportunities and constraints for improvement of the Carp River Watershed while providing a series of Best Management Practices (BMPs) that may be implemented in order to protect, enhance or restore the environment. The desktop review has identified a Carp River tributary as occurring on-site and the CRSWS has classified it as a cold-cool water stream. As such, under the recommendations provided by the CRSWS, surface water features within the Carp River watershed and subwatershed should receive a 30 m setback from top of bank and revegetating up to 75% of the total stream length with native wood, riparian vegetation (with woody vegetation representing 50% by area of the replanted area).

3.3 Landforms, Soils and Bedrock Geology

The topography of the site is relatively flat, with a gentle slope downwards towards the center of the property and watercourse from a topographical high of 112 mASL in the west to a topographical low of 101 mASL in the north.

One topographical landform, as mapped by Chapman and Putnam (1984) is described on the subject property, clay plains of the Ottawa Valley Clay Plains physiographic region.

The Ontario Geological Survey (OGS, 2019) identifies two surficial soil units on the subject property: coarse-textured glaciomarine deposits and fine-textured glaciomarine deposits. The largest surficial soil unit is the fine-textured glaciomarine deposits occurring in the north and western half of the property comprised of silt and clay, minor sand and gravel that is massive to well laminated. Coarse-textured glaciomarine deposits occur in the southeastern half of the property comprised of sand, gravel, minor silt and clay with foreshore and basinal deposits.

Bedrock on the site consists of the Ottawa Group, Simcoe Group, and Shadow Lake Formation comprised of shale, limestone, dolostone, arkose, and sandstone.

3.4 Surface Water, Groundwater and Fish Habitat

Based on a review of the Mississippi Valley Conservation Authority mapping, Natural Heritage Information Centre (NHIC) mapping, GeoOttawa Portal and observations during the site investigations, surface water on-site is limited to a single, unnamed tributary of the Carp River (identified as CARP) and 11 HDFs, identified as H1 through H11.

The unnamed tributary of the Carp River enters the property from the southeast, flowing northeast through the property, before exiting along the northeastern property border.

At the time of the site investigations the unnamed tributary had sustained water levels. Fish were observed within the tributary as well as within H4B and H9. Based on these observations and the downstream connectivity to the Carp River the watercourse and above noted HDFs are assumed to provide year-round fish habitat for a variety of fish species. In addition to GEMTEC HDFs survey, CIMA+ identified the Carp River tributary, H4A-S1, H4B and H9 as direct fish habitat (Per. Comms.).

HDFs with water conveyance and connectivity to downstream fish habitat, but no fish observations are assumed to provide seasonal and contributing fish habitat, by contributing to base flow conditions for downstream habitat particularly during spring freshet and following significant precipitation events. HDFs which were dry during all site investigations are unlikely to provide direct fish habitat.

Groundwater investigations were not completed in support of this EIS, but were completed by GEMTEC as part of a Hydrogeological Investigation (2024b). Depths to water table on-site ranged from 0.05 m Below Ground Surface (BGS) to 5.1 m BGS.

3.4.1 Headwater Drainage Feature Assessment

A headwater drainage feature assessment (HDFA) was conducted for all un-named watercourses on-site. The Carp River tributary is labelled as CARP and the HDFs are labelled as H1 through H11 on Figure A.2 in Appendix A.

CARP originates south of the property and flows in a northerly direction for approximately 730 m before exiting the property along the northeastern property boundary. H1 to H9 identified on-site eventually connect with CARP. Off-site, CARP flows for approximately 1.18 km in a northeasterly direction before discharging in the Carp River.

H1 originates on the eastern property border parallel to Carp Road and flows in a northwesterly direction for approximately 150 m before discharging into CARP.

H2 originates off-site entering the property from the northern corner flowing along the eastern property boundary for approximately 169 m before discharging into CARP.

H3 originates within the cultural meadow adjacent to the farmstead north of the property border off-site. The features flows in a northeasterly direction for approximately 210 m before discharging into H2.

H4A originates within the cultural meadow in the western area of the property and flows in a northeasterly direction for approximately 736 m before discharging into CARP.

H4B originates within the hedgerow thicket off-site in the central area south of the property and flows in a northerly direction for approximately 150 m before discharging into CARP.

H4C originates within the cultural meadow off-site in the central area south of the property and flows in a northerly direction for approximately 60 m before discharging into H4A.

H4D originates within the cultural meadow in the western area of the property and flows in a northeasterly direction for approximately 88 m before discharging into H4A.

H5 originates within the cultural meadow off-site in the eastern area south of the property and flows in an easterly direction for approximately 195 m before discharging into CARP.

H6 originates within the cultural meadow off-site in the eastern area south of the property and flows in a westerly direction for approximately 70 m before discharging into CARP.

HDF1A originates north of Russ Bradley Road along the scrubland and agricultural field border off-site. The features flows in a northwesterly direction for approximately 504 m before discharging into H8.

H8 flows from a confluence with H7 in a northeasterly direction for approximately 288 m and discharging into H9.

H9 is a roadside ditch that occurs along Carp Road. H9 originates off-site entering the property from the southeastern corner flowing along the eastern property boundary for approximately 638 m before exiting the property and crossing Carp Road. H9 continues flowing in a northerly direction for approximately 1.1 km before eventually discharging into CARP.

H10 is an unconnected HDF with no flow to the downstream network of other watercourses surveyed on-site. H10 originates in the west within the cultural meadow and flows in a northwesterly direction, for approximately 104 m before ending.

H11 is an unconnected HDF with no flow to the downstream network of other watercourses surveyed on-site. H11 originates in the west within the deciduous forest and flows in a northwesterly direction, for approximately 116 m before ending.

The full methodologies and results of HDFA are provided in Appendix D. A summary of the HDFA results is discussed in Section 4.7.

3.5 Vegetation Communities

Vegetation communities on-site were confirmed by GEMTEC in 2022, 2023, and again in 2024, following protocols utilized in the Southern Ontario Ecological Land Classification System (Lee et al., 2008). Vegetation at the site s comprised of a mix of cultural meadow, open agriculture, deciduous forest and thicket vegetation communities. Table 3.1 below provides a summary of the various vegetation communities identified on-site while Figure A.3 in Appendix A provides an illustration of the various vegetation communities.

Table 3.1 Vegetation Communities On-site

ELC Type	Description	Size (ha)
Open Agriculture (OAG)	This vegetation community occurs throughout the eastern, central and western section of the property and was dominated by corn. At the time of the field investigation, this ecosite was actively being used to grow corn. Within this community was a hedgerow inclusion in the eastern half of the property. Constituents of the hedgerow included American elm (*Ulmus americana*), Manitoba maple (*Acer negundo*), green ash (*Fraxinus pennsylvanica*), balsam poplar (*Populus balsamifera*), common buckthorn (*Rhamnus cathartica*), new England aster (*Symphyotrichum novae-angliae*) and goldenrod species (*Solidago* sp.).	34.65
Dry-Fresh Deciduous	Located in the center of the property, and along the unnamed watercourse, is a deciduous thicket community. This community was	4.03

ELC Type	Description	Size (ha)
Hedgerow Thicket (THDM3)	dominated for species. The canopy consisted of Manitoba maple. The shrub layer included common buckthorn, red-osier dogwood (*Cornus sericea*) and willow species (*Salix* sp.). The herbaceous layer contained wild parsnip (*Pastinaca sativa*), queen Anne's lace (*Daucus carota*), new England aster, common milkweed (*Asclepias syriaca*), red clover (*Trifolium pratense*), goldenrod species, reed canary grass (*Phalaris arundinacea*), malus species (*Malus sp.),* purple loosestrife (*Lythrum salicaria*), cow vetch (*Vicia cracca*), stinging nettle (*Urtica dioica*), spotted-touch-me-not (*Impatiens capensis*) and red pine (*Pinus resinosa*) saplings. Within the watercourse cattails (*Typha* sp.) were the dominant vegetation.	
Cultural Meadow (CUM)	Located in the south and western portions of the property is a cultural meadow. This community was dominated by various grass species including timothy grass (*Phleum pratense*), switch grass (*Panicum virgatum*) and reed canary grass. The herbaceous layer included goldenrod, new England aster, cow vetch, buttercup (*Ranunculus bulbosus*), bull thistle (*Cirsium* sp.), common milkweed, queen Anne's lace and eastern cottonwood (*Populus deltoides*) species. Scattered within the community the shrub layer included red osier dogwood and willow species.	10.17
Commercial and Industrial (CVC)	Located in the western corner of the property is an industrial building and associated paved parking and laneway	0.81
Dry-Fresh Poplar Deciduous Forest (FODM3-1)	This vegetation community occurs in the western corner of the property and was dominated by trembling poplar (*Populus tremuloides*). Lesser constituents included American elm, Manitoba maple and green ash. The shrub layer included trembling poplar, common buckthorn and willow species. The herbaceous layer contained wild grape (*Vitis vinifera),* poison ivy (*Toxicodendron radicans*), fragrant bedstraw (*Galium triflorum*), false Solomon's seal (*Maianthemum racemosum*), horsetail (*Equisetum* sp.) and wild parsnip.	0.85

3.6 Wildlife

Wildlife observed on-site and within the study area during field investigations completed in 2022, 2023 and 2024 are summarized in Table C.1 in Appendix C.

Table C.1 includes a summary of wildlife observed during targeted surveys and incidental wildlife observations.

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.”

No significant wetlands were identified on-site or within the study area during the desktop review or the site investigations. Additionally, no local wetlands were identified on-site or within the study area during the desktop review or the site investigations. As no significant or local wetlands occur on-site or within the study area, significant wetlands are not evaluated or discussed further in this EIS.

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, it is assumed that the woodland coverage within the planning area (City of Ottawa – Rural Planning Area – Ottawa West) is between 30% and 60% of the land area, 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, significant woodlands are not present on-site as they do not meet the criteria as established by the NHRM to be considered significant. Furthermore, the City of Ottawa has also not identified the woodlands on-site as significant. As such, significant woodlands are not present on-site or within the study area and they are not discussed or evaluated further in this EIS.

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). The definitions provided by the province (as part of the Harmonized Conservation Authorities Act) for top of bank and top of slope in the natural heritage reference manual are similar to those used by the City of Ottawa in the Official Plan and Environmental Impact Study guidelines.

The 2023 City of Ottawa Environmental Impact Study Guidelines identify significant valleylands as “valleylands with slopes greater than 15% and a length of more than 50 metres, with water present for some period of the year, excluding manmade features such as pits and quarries”. Based on the results of the slope stability assessment (GEMTEC, 2024a) completed for the property, the tributary of the Carp River on-site had horizontal inclinations between 10 to 70 degrees. A horizontal inclination of 10 degrees equates to a slope of approximately 17.6%, indicating that the lowest percent slope recorded on-site is larger than the City of Ottawa’s 15% slope criteria. Further the tributary of the Carp River has an overall on-site length of 730 m. Based on the City of Ottawa’s significant valleyland criteria, the valleyland associated with the Carp River tributary on-site is considered significant. Table C.3 in Appendix C provides a summary of the NHRM criteria for significant valleylands.

This EIS has identified the extents of the significant valleylands as the approximate top of slope identified in the Geotechnical Investigation and Slope Stability Assessment report (GEMTEC, 2024a). Significant valleylands are illustrated on Figure A.4 in Appendix A.

Impacts to significant valleylands are discussed in Section 6 below.

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, one habitat of seasonal concentration of animals was identified on-site, bat maternity colonies.

4.5.1.1 Bat Maternity Colonies

Candidate bat maternity colony areas have been identified within the woodlands of the subject property and study area. Targeted bat maternity roost surveys were not completed for this property, due to the limited availability of suitable forest and woodland habitat on-site. Woodland

habitat on-site is comprised of the poplar deciduous forest (FODM3-1) and occupies approximately 0.85 ha of the site.

Visual surveys of this community were completed during ELC surveys to look for potential roost trees, this community was observed to be snag poor, consisting primarily of young, early successional species such as trembling aspen, American elm, Manitoba maple and green ash.

As outlined in the Significant Wildlife Habitat Criteria Schedule for Ecoregion 6E, candidate SWH for bat maternity roost colonies are located in mature deciduous or mixed forest stands with greater and 10 large diameter snag trees per hectare. The forest community on site does not represent a mature deciduous forest stand, and based on site observations is not likely to contain 10 large diameter snag trees within it community. Due to the immature age of the forest stand and the lack of large diameter snag trees observed, the woodlands on-site are unlikely to provide *candidate* bat maternity colony SWH.

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 3.5 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, no *candidate* specialized habitats for wildlife have been identified on-site or within the study area, accordingly this category of significant wildlife habitat 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, 2015), 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, one habitat of species of conservation concern has been identified on-site, habitat for special concern and rare wildlife species for barn swallow, eastern wood-pewee, wood thrush, snapping turtle, and monarch butterfly.

4.5.4.1 Special Concern and Rare Wildlife Species SWH

Based on observation data from the field investigations combined with occurrence data from various online databases (i.e., NHIC, Ontario Breeding Bird Atlas, Ontario HerpAtlas), five species of special concern have been identified on-site or within the broader study area: barn swallow, eastern wood-pewee, wood thrush, snapping turtle, and monarch butterfly. No other species of special concern or rare wildlife species were identified on-site or within the broader study area.

Barn Swallow

Barn swallow 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. Barn swallow is often found in close association with humans, using man-made structures, such as barns, to supplement suitable nesting sites and foraging over open areas, such as grasslands and agricultural fields. Barn swallow was observed foraging on-site during field investigations, as such there is a high potential for barn swallow to occur on-site.

Eastern Wood-pewee

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 is a woodland species that is often found near clearings and edges. The NHIC has identified historic observations for the subject property and surrounding study area, however the species was not observed during targeted breeding bird surveys. As suitable habitat for eastern wood-pewee occurs on site there is a moderate potential for the species to occur on-site.

Wood Thrush

The wood thrush is a medium-sized songbird with an S-rank of S4 (uncommon but not rare) and is listed as a species of special concern in Ontario. Wood thrush is a woodland species often

found in moist, deciduous hardwood or mixed forests stands, with dense deciduous undergrowth and tall trees. The NHIC has identified historic observations for the subject property and surrounding study area, however the species was not observed during targeted breeding bird surveys. As suitable habitat for wood thrush occurs on site there is a moderate potential for the species to occur on-site.

Snapping Turtle

The snapping turtle is a highly aquatic turtle species with an S-rank of S3 (rare to uncommon) and is listed as a species of special concern in Ontario. Snapping turtles are aquatic generalists, found in a variety of wetlands, water bodies and watercourses. The NHIC identified the snapping turtle as having historically occurred within 1 km of the site. The watercourses on-site may provide suitable habitat conditions for snapping turtle, however the species was not observed during turtle basking surveys. Given the suitable aquatic habitat on-site there is a moderate chance of snapping turtle or their habitat to occur on-site.

Monarch Butterfly

The monarch butterfly is a relatively large butterfly with an S-rank of S2N, S4B (non-breeding imperiled status; breeding population apparently secure) and is listed as a species of special concern in Ontario. The monarch butterfly are dependent on milkweed plants during the caterpillar stage, however adult butterflies can be found in more diverse habitats that have wildflowers and nectar to feed from. Adult monarch butterfly were observed on-site during the site investigation. Given the availability of open habitat for adult butterfly and the presence of milkweed within the hedgerows and cultural meadow on-site, there is a high chance for monarch butterfly or their habitat to occur on-site.

4.5.5 Animal Movement Corridors

Animal movement corridors are elongated areas used by wildlife to move from one habitat to another and allow for the seasonal migration of animals (OMNRF, 2015). The Significant Wildlife Habitat Ecoregion Criterion Schedules for Ecoregion 6E-11 (OMNRF, 2015), identifies two types of animal movement corridor: amphibian movement corridors and deer movement corridors. As per guidance presented in MNRF, 2015, animal movement corridors should only be identified as significant wildlife habitat when a *confirmed or candidate* significant wildlife habitat has been identified by the MNRF district office or by the regional planning authority.

Following review of Table C.7 in Appendix C, no animal movement corridors have been identified on-site. Furthermore, the MNRF has not identified any animal movement corridors on the publicly available data sets for wildlife values area (OMNRF, 2023a) or wildlife values site (OMNRF, 2023b). As such, animal movement corridors are not discussed or evaluated further in this EIS.

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 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.

As discussed in Section 3.4, the Carp River tributary provides fish habitat for small-bodied fish species. Fish were observed within two of the HDFs, H4A-S1H4B, and H9, identified on-site. These three HDFs are assumed to provide direct fish habitat, while the remaining HDFs are assumed to primarily contribute to downstream fish habitat, and are unlikely to support permanent fish habitat. No critical habitat for aquatic 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 Headwater Drainage Features

As indicated above in Section 2.2.4, a headwater drainage feature assessment was completed as part of this EIS. The HDFA is presented in full, in Appendix D; the results of the HDFA identified a single tributary of the Carp River (identified as CARP) and 11 ephemeral headwater features on the subject site. HDFs are illustrated on Figure A.2 in Appendix A.

Assessment of the contribution of each HDF to downstream fish habitat was completed using the Evaluation, Classification and Management of Headwater Drainage Features Guideline (2014) jointly developed by Toronto Region Conservation Authority and Credit Valley Conservation Authority and endorsed regionally by Conservation Partners.

Using the linking classification to management flow chart provided by the TRCA and CVC (2014), illustrated in Figure 4.1 below, the characteristics of the on-site HDF were used to determine management recommendations presented in Section 7.

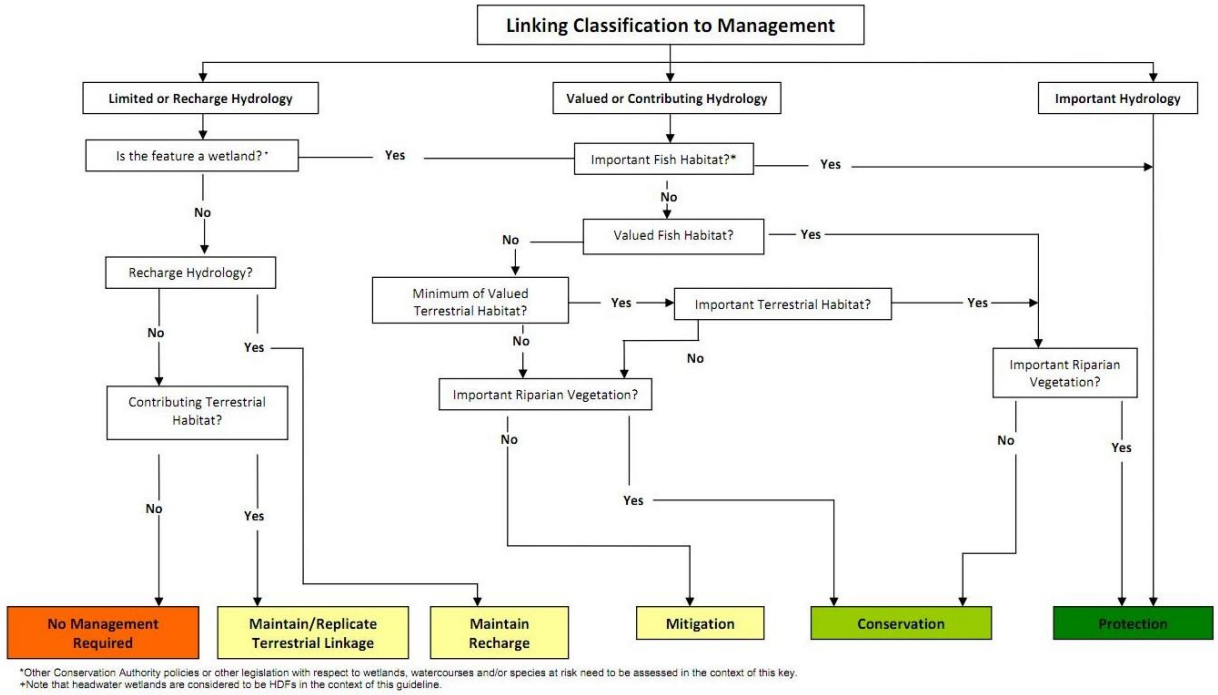

Figure 4.1 Flow Chart Providing Directions of Management Option's (TRCA/CVC, 2014)

4.8 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.

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 includes the development of the approximately 54 ha property, part of the Carp Airport, for the Phase 2 Business Park.

Based on the information provided, the draft approved Plan of Subdivision for the Phase 2 Carp Airport Business Park includes the creation of 21 development blocks, new private roads to access the development blocks, and stormwater management ponds.

The extent of future development on each block is unknown at this time but will be subject to future Site Plan Applications. As a component of individual Site Plan Applications new EIS or addendum to this report may be required to ensure consistency with environmental policies. The location of the proposed pumping station is not known at this time, however it is expected to be located near Blocks 23 and 24.

A proposed watermain, sanitary sewer and other possible utilities will be constructed within Block 27, crossing the existing Northeast Tributary. Storm drainage will be completed using open ditch drainage connecting to the stormwater management ponds, without crossing the Northeast Tributary.

Future development as part of the draft approved Plan of Subdivision is likely to include stormwater management pond creation, road creation and the creation of individual development blocks. Components of this work considered in the impact assessment presented in Section 6 may include: tree clearing and vegetation grubbing, fill placement and elevation grading and excavation to allow for SWM pond and road creation as part of the registration.

Development on the created individual blocks may include further tree clearing and vegetation grubbing, fill placement and elevation grading, excavation and pouring of foundations, construction of business buildings and general landscaping activities. These components will be subject to future Site Plan Applications and are not assessed in this EIS.

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.

Potential effects to the environment of the site from the proposed development outlined in Section 5 include: loss of woodlands, increase in impervious surface, increase in stormwater generation, short-term increases in sedimentation and/or erosion and increased noise generation.

6.1 Significant Valleylands

As discussed in Section 4.3, the Carp River tributary has been identified as significant valleyland based on the application of the City of Ottawa Significant Valleylands criteria outlined in the Environmental Impact Statement Guidelines (Ottawa, 2023).

A survey of the property completed by Fairhall Moffat & Woodland Limited (FMW) was conducted and identified the top of slope, which has been used to delineate the extents of the valleyland on-site.

Potential impacts to significant valleylands on-site may include changes to the surface water and groundwater water balance through increased storm water runoff resulting from an increase in the impervious surface area, alteration of channel flow velocity or depth due to improperly sized culvert installation, increased fragmentation, obstruction of linkages, and encroachment resulting in compaction of soils and vegetation loss.

Potential direct impacts to on-site significant valleylands may include changes to the degree of naturalness or loss of riparian vegetation. Potential indirect impacts include changes to surface water quality and quantity through increased stormwater 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 disturbances like noise generation, dumping of refuse, and trampling.

Mitigation measures for the protection of on-site significant valleylands are provided in Section 7.

6.2 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 one significant wildlife habitats were determined to be present on-site or within the study area; special concern and rare wildlife species SWH.

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.

6.2.1 Habitats of Special Concern and Rare Wildlife Species SWH

Barn Swallow

The barn swallow (*Hirondelle rustique*) is a medium-sized, insectivorous bird that typically build their nests out of mud located on ledges or walls of barns or other human made-structures. 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 rarely used for nesting (Cadman et al., 2007). Foraging occurs over open areas such as fields and ponds. In Ontario barn swallow is listed as a species of special concern.

Barn swallow were observed foraging on-site during the field investigations. Foraging habitat is widely available in the surrounding area. No nests or suitable nesting structures were observed on-site and development is not proposed to occur within suitable barn swallow nesting habitat. As such, no negative impacts are anticipated to occur to barn swallow as a result of the proposed development and no mitigation measures area provided in Section 7 for the protection of barn swallow and they are not discussed or evaluated further in this EIS.

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, 2012a). In Ontario, the eastern wood-pewee is listed as a species of special concern.

Suitable habitat for eastern wood-pewee is limited to the deciduous forest and hedgerows on-site, which may provide suitable nesting and foraging habitat. However, eastern wood-pewee were not observed during targeted breeding bird surveys. As such the proposed development is not anticipated to impact eastern wood-pewee or its habitat.

General mitigation for the protection of wildlife and breeding birds is provided in Section 7 below.

Wood Thrush

The wood thrush (*Hylocichla mustelina*) is a medium-sized songbird, found in moist, deciduous hardwood or mixed forest stands, often in previously disturbed sites with dense, deciduous undergrowth and tall trees that are used as singing perches (COSEWIC, 2012b). Habitat selection for wood thrush is based more on the structure of the forest, preferring sites with lower elevations, trees taller than 16 m, closed canopy (>70%), with a high variety of deciduous species, moist soil and decaying leaf litter (COSEWIC, 2012b). In Ontario, the wood thrush is listed as a species of special concern.

Suitable habitat for eastern wood-pewee is limited to the deciduous forest and hedgerows on-site, which may provide suitable nesting and foraging habitat. However, eastern wood-pewee were not

observed during targeted breeding bird surveys. As such the proposed development is not anticipated to impact wood thrush or its habitat.

General mitigation for the protection of wildlife and breeding birds is provided in Section 7 below.

Snapping Turtle

Snapping turtle is the largest freshwater turtle found in Canada, and inhabits a variety of aquatic habitats including wetlands, rivers, ponds, and lakes. In Ontario the snapping turtle is listed as a species of special concern.

Snapping turtle observations were provided by the NHIC within 1 km of the subject property. Snapping turtle were not observed on-site during any of the site investigations. On-site habitat for snapping turtle is limited to the Carp River tributary and the larger HDF features, which primarily provide migration and transitory functions. No turtle overwintering or nesting habitat has been identified on-site.

In-water work required as part of the development is proposed to include a service crossing (for sanitary, water and other utilities) of the Carp River tributary . Potential direct impacts to snapping turtle due to a service crossings or culvert installation may include temporary infilling of aquatic habitat during installation of the service crossing, removal of riparian vegetation and cover along drainage ditch banks, alteration of channel flow velocity or depth due to improperly sized culvert installation. However, no long-term negative impacts on snapping turtle and their habitat are anticipated post installation of the service crossing provided standard operating procedures for in-water work are followed.

Furthermore, indirect impacts are primarily associated with alterations to water quality due to nutrient and sediment loading, alterations to the hydrologic regime due to increases in impermeable surfaces, stormwater runoff 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 yard waste and trampling as well as increased road mortality, particularly during nesting season when turtles are more transient.

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

Monarch Butterfly

The monarch butterfly is a relatively large orange and black butterfly with white spots. Monarch butterflies are found throughout southern Ontario where milkweed and breeding habitats are wide-spread. In Ontario the monarch butterfly is listed as a species of special concern.

Monarch butterfly were observed during site investigations. Habitat for monarch butterfly is wide-spread throughout the site, particularly in open fallow areas and along hedgerows where milkweed is present.

Impacts to monarch butterfly are likely to include a loss of milkweed and open habitat space.

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

6.3 Fish Habitat

According to the Provincial Planning Statement (MMAH, 2024), “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.”

The Fisheries Act states that work must avoid “the harmful alteration, disruption or destruction (HADD) of fish habitat” (Canada, 1985). When activities are unable to avoid or mitigate HADD 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 discussed in Sections 3.4 and 4.6, the Carp River tributary, H4A-S1, H4B and H9 contribute to direct fish habitat. The remaining HDFs contribute seasonal and storm-event flows to downstream fish habitat.

In-water work proposed as part of the development is proposed to include a service crossing (for sanitary, water and other utilities) of the Carp River tributary.

Potential direct impacts to fish habitat due to a service crossings may include temporary infilling of fish habitat during installation, removal of riparian vegetation and cover along drainage ditch banks, alteration of channel flow velocity or depth due to improperly sized culvert installation, stranding of fish in isolated pools following de-watering, and injury to fish when de-watering pumps are used. However, no long-term negative impacts on fish and fish habitat are anticipated post service crossing installation provided standard operating procedures for in-water work are followed.

Potential indirect impacts to water quality and fish habitat from development can include increased overland flow and concomitant sediment transport caused by an increase in impervious surface area, increased nutrient loading through both overland and subsurface pathways resulting from landscaping practices.

Mitigation measures, intended to protect fish habitat on-site are presented in Section 7.

6.3.1 Headwater Drainage Features

CARP, H4A-S1, H4B and H9 had water conveyance throughout all three site investigations. In conjunction with the HDF feature types defined natural channel or channelized, it was determined that the features had important hydrology. As such the four above noted segments were classified as having important functions and require **protection.** In addition to the important hydrologic functions driving the classification of these features, these features were also identified by CIMA+ as fish habitat.

H1, H2, H3, H4A-S2, H5, H7, and H8 had varying levels of water conveyance during the first visit, and dry to standing water conditions in the second and/or third visit. In conjunction with the HDF feature type, these features were determined to have contributing hydrology, contributing fish habitat and limited or valued terrestrial and riparian habitat. As such the seven above-noted features were classified as having contributing functions and require **mitigation**.

H4C, H4D, H6, H10 and H11 had limited water conveyance (dry or standing water) during all site investigations. In conjunction with the HDF feature type channelized, it was determined that these features had limited hydrology, limited fish and terrestrial habitat and valued or important riparian habitat. As such the above-noted features were classified as having limited functions and require **no management.**

As part of the plan of subdivision, it is proposed that H4 (excluding H4A-S2) will be realigned along the property boundary of the pan of subdivision. In accordance with the HDFA guidelines from TRCA/CVC features identified as mitigation, such as H4, maybe relocated provided the relocated features replicate on-site flow and outlet flows at the top of the system. As H4 was identified to contributing/indirect fish habitat direct impacts to fish habitat are not anticipated as a result of the proposed realignment. Impacts to relocated HDFs may include changes to the hydrological connectivity of downstream fish habitat, loss of riparian and in-stream vegetation, and increased sedimentation and erosion to downstream habitat. Impacts during construction and long-term impacts to downstream fish habitat can be mitigated through implementation of standard construction mitigation measures.

Mitigation measures, intended to protect fish habitat and HDF function on-site are presented in Section 7.

6.4 Species at Risk

As outlined in the Endangered Species Act (Ontario, 2007), only species listed as threatened or endangered and their habitat receive automatic protection. Following enactment of Bill 5, species specific habitat regulations are no longer valid for species protection, this includes documents such as general habitat descriptions that outlined Category 1, Category 2 and Category 3 habitats for species. Presently, habitat protections refer to the definition outlined in Bill 5 as follows:

"*'habitat' means:*

a) In respect of an animal species:

i. A dwelling-place such as a den, nest or other similar place, that is occupied or habitually occupied by one or more members of a species for the purposes of breeding, rearing, staging, wintering or hibernating, and

ii. The area immediately around a dwelling place described in subclause (i) above that is essential for the purposes set out in that subclause.

b) In respect of a vascular plant species: the critical root zone surroundings a member of the species, and

c) In respect of all other species: an area on which any member of a species directly depends in order to carry on its life processes"

Under the ESA, 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 4.8, are discussed on a species-by-species basis in subsections below.

6.4.1 Bank Swallow

Bank swallows (Riparia riparia) are small, insectivorous songbirds with compact bodies, short necks, and forked tails. The species is known for the brown upperparts, white underparts, and a distinctive dark band across the chest.

In North America, bank swallows are primarily found in regions extending from coast to coast, including southern Canada and the United States. Within Ontario, their distribution is mainly concentrated in the southern part of the province, particularly in areas south of the Highway 401 corridor. They can be observed in various habitats, including riverbanks, lakeshores, and sand and gravel pits.

Bank Swallows are colonial nesters, forming large nesting colonies along eroding banks or cliffs. They excavate burrows in the soft soil, creating tunnel-like nests where they lay their eggs. These nests provide protection and shelter for young. They are commonly associated with areas featuring exposed mud or sandbanks near water bodies, where they can find an abundant supply of flying insects.

Six diurnal breeding bird surveys were conducted during May and June 2023 and 2024, under optimal conditions (minimal to no rain, low winds) to target breeding birds. The surveys were conducted at 11 point count locations spread across the subject property. The survey locations are illustrated on Figure 3.

Bank swallow were observed foraging on-site during breeding bird surveys. No nesting habitat or nesting colonies were observed on-site or adjacent to site. As such no protected habitat has been identified on-site and the project is not anticipated to impact bank swallow or their regulated habitat, and they are not discussed further in this EIS.

6.4.2 Bobolink

Bobolink (*Dolichonyx oryzivorus*) are small, omnivorous songbirds with large, somewhat flat heads, short necks, and short tails. The male bobolink has a white back, black underside, and a straw-yellow coloured patch on the back of the head. Female bobolinks have a non-descript buff and brown plumage, not unlike most species of sparrows.

In Ontario, bobolink are restricted to southern Ontario and occur south of the Highway 17 corridor between North Bay and Sault Ste. Marie. Scattered populations exist in correlation with Clay Belt areas in Timiskaming, Cochrane, and Thunder Bay areas. Between the first and second breeding bird atlas, the probability of bobolink observations declined by 28% province-wide (Cadman et al., 2007).

Bobolink breed primarily in hayfields and other grasslands with tall vegetation that provides cover for nests which are established on the ground (Cadman et al., 2007). The bobolink is generally sensitive to vegetation structure and composition within its habitat; its preferred habitat structure is generally found in old (> 8 years old) forage crops. Abundance and density are positively correlated with a moderate litter depth, high lateral litter cover, high grass-to-legume rations, an abundance of small shrubs, and a high percentage of forb cover (COSEWIC, 2010). Bobolinks typically avoid nesting in habitats that are dominated by overly dense shrub vegetation with an overly deep littler layer or a high percentage of bare soil (COSEWIC, 2010).

Six diurnal breeding bird surveys were conducted during May and June 2023 and 2024, under optimum weather conditions (minimal to no rain, low winds) to target breeding birds. The surveys were conducted at 11 point count locations, eight of which targeted potentially suitable habitat for grassland birds such as bobolink; the survey locations are illustrated on Figure A.2 in Appendix A. Bobolink were observed on-site during the breeding bird survey conducted on May 28 and June 15, 2023 and May 28, June 12, and June 25, 2024. The general location of observed birds is illustrated on Figure A.5 in Appendix A.

Bobolink are late spring migrants, as such their breeding period is identified as June through to the first week of July (OMNR, 2011b). To avoid disturbing nesting bobolink, precise nest locations were not confirmed during site investigations, however bobolink detected calling, foraging and/or

in pairs during the typical breeding bird period (June to the first week of July) were assumed to indicate the presence of nesting bobolink. Bobolink observed on-site prior to the start of the breeding season were assumed to be transient and not associated with an established nest or territory.

There is a high potential for the bobolink observed on-site to have been breeding and/or nesting. Bobolink nests are protected under the Endangered Species Act. Individuals are also protected from killing, harming and/or capture. Any development that cannot avoid bobolink nests or impacts to individual species will require consultation with the MECP to determine permitting requirements. The approximate location of breeding bobolink/nests are illustrated on Figure A.5 in Appendix A.

The proposed development on-site will impact potential nest areas for bobolink. As such impacts to bobolink habitat may include the loss or destruction of nests and nest habitat. Any impacts to protected bobolink habitat will require consultation with the MECP to determine permitting requirements.

Impacts to individual bobolink during construction can be mitigated through best management practices.

Any development that occurs outside of the protected nest habitat is not anticipated to require further permitting with the MECP.

Avoidance, mitigation and compensation measures intended to protect bobolink and their habitat during construction are provided in Section 7.

6.4.3 Eastern Meadowlark

Eastern meadowlark (*Sturnella manga*) is a chunky, medium-sized grassland songbird with a short tail and a long spear-shaped bill. The colour pattern of the species is pale brown marked with black, the underside is bright yellow and a bold black ‘V’ pattern across the chest.

The eastern meadowlark was once well established in southern Ontario. However, due to the natural succession of abandoned agricultural fields transitioning back to forested habitat on the Canadian shield and through the northern portion of the Lake Simcoe-Rideau region, along with intensive farming practices and expanding of urbanization in southwestern and eastern Ontario, the eastern meadowlark has suffered significant habitat loss (Cadman et al., 2007). Between the first and second breeding bird atlas, the probability of observation declined by 13% province-wide (Cadman et al., 2007). The current distribution of eastern meadowlark is concentrated through the Lake Simcoe-Rideau region, primarily from Kingston to Lake Simcoe.

The eastern meadowlark prefers native grassland, pasture and savannah habitat, however it is known to use a variety of anthropogenic grassland habitats including hayfields, weedy meadows,

young orchards, grain fields and herbaceous fence rows (COSEWIC, 2011). Preferred grassland habitat typically contains moderately tall (25 to 50 cm) grass species with abundant litter cover, with a high proportion of grass, moderate to high forb density a low percent of shrub cover (typically <5%) and low percent cover of bar ground (COSEWIC, 2011).

Six diurnal breeding bird surveys were conducted during May and June, 2023 and 2024, under optimum weather conditions (minimal to no rain, low winds) to target breeding birds. The surveys were conducted at 11 point count locations, eight of which targeted potentially suitable habitat for grassland birds such as eastern meadowlark; the survey locations are illustrated on Figure A.2 in Appendix A. Eastern meadowlark were observed on-site on April 27, May 18 and July 26, 2023 and during five of the targeted breeding bird surveys conducted on May 29 and June 15, 2023 and May 28, June 12 and June 25, 2024. The general location of observed birds is illustrated on Figure A.5 in Appendix A.

The breeding bird season for eastern meadowlark is identified as June through to early July (OMNR, 2011b). To avoid disturbing nesting eastern meadowlark, precise nest locations were not confirmed during site investigations, however eastern meadowlark detected calling, foraging and/or in pairs during the typical breeding bird period (June to the first week of July) were assumed to indicate the presence of nesting eastern meadowlark. Eastern meadowlark observed on-site prior to the start of the breeding season were assumed to be transient and not associated with an established nest or territory.

There is a high potential for the eastern meadowlark observed on-site to have been breeding and/or nesting. Eastern meadowlark nests are protected under the Endangered Species Act. Individuals are also protected from killing, harming and/or capture. Any development that cannot avoid eastern meadowlark nests or impacts to individual species will require consultation with the MECP to determine permitting requirements. The approximate location of breeding eastern meadowlark/nests are illustrated on Figure A.5 in Appendix A.

The proposed development on-site will impact potential nest areas for eastern meadowlark. As such impacts to eastern meadowlark habitat may include the loss or destruction of nests and nest habitat. Any impacts to protected eastern meadowlark habitat will require consultation with the MECP to determine permitting requirements.

Impacts to individual eastern meadowlark during construction can be mitigated through best management practices.

Any development that occurs outside of the protected nest habitat is not anticipated to require further permitting with the MECP.

Avoidance, mitigation and compensation measures intended to protect eastern meadowlark and their habitat during construction are provided in Section 7.

6.4.4 Eastern Red Bat

Eastern red bat (*Lasiurus borealis*) is a medium-large sized (typically 10-17 g), insectivorous bat found in Ontario. The fur of an eastern red bat is usually orange but can vary from yellowish-red to yellowish-grey, with white or white-tipped hairs (COSEWIC, 2023).

The eastern red bat is found throughout Canada (except Prince Edward Island), the United States, and northeast Mexico; with distribution uncommon west of the Western Cordillera. In Ontario, the species occurs throughout Ontario, appearing as far north as James Bay (COSEWIC, 2023).

Eastern red bats overwinter in warmer climates in the southern extent of the Unites States, typically beneath leaf litter (COSEWIC, 2023). In comparison to many other Ontario bat species, they do not overwinter in caves. During the spring and summer months, they typically utilize the foliage of trees and occasionally shrubs for roosting habitat, with a preference for roosting near the edge of the crown and at sufficient heights to prevent access from mammalian predators (COSEWIC, 2023).

The forest habitat on-site is unlikely to meet the requirements to support bat maternity colonies however, given the availability of suitable habitat and potentially suitable anthropogenic buildings within the study area, there is a potential for eastern red bat to occur on the property, for foraging and maternal roosting. Impacts to eastern red bat are primarily associated with encroachment and increased wildlife-human interaction. Mitigation measures intended to protect eastern red bat from impacts of the proposed development are discussed in Section 7.

6.4.5 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 south 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, 2021a).

The forest habitat on-site is unlikely to meet the requirements to support bat maternity colonies however, given the availability of suitable habitat and potentially suitable anthropogenic buildings within the study area, there is a potential for eastern small-footed Myotis to occur on the property, for foraging and maternal roosting. Impacts to eastern small-footed Myotis are primarily associated with 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.

6.4.6 Hoary Bat

Hoary bat (*Lasiurus cinereus*) is a large (typically 16-38 g), insectivorous bat found in Ontario and is the largest bat found in Canada. The fur of a hoary bat is dense and include a complex mixture of colors, ranging from light to dark brown, and have white tipped hairs on the dorsal and ventral sides (COSEWIC, 2023). The hoary bat is distinguishable by the large size and light yellow-brown fur on the head, throat, and anterior margins of the wings (COSEWIC, 2023).

The hoary bat range spans across all provinces and territories within Canada, all the states within the United States, and has a wide distribution throughout Mexico (COSEWIC, 2023). In Ontario, the hoary bat is found throughout the province, and has been observed north of James Bay (COSEWIC, 2023).

Hoary bats overwinter in warmer climates in the southern extent of the Unites States, typically beneath leaf litter (COSEWIC, 2023). In comparison to many other Ontario bat species, they do not overwinter in caves. During the spring and summer months, they typically utilize the foliage of trees and occasionally shrubs for roosting habitat, with a preference for roosting near the edge of the crown and at sufficient heights to prevent access from mammalian predators (COSEWIC, 2023).

The forest habitat on-site is unlikely to meet the requirements to support bat maternity colonies however, given the availability of suitable habitat and potentially suitable anthropogenic buildings within the study area, there is a potential for hoary bat to occur on the property, for foraging and maternal roosting. Impacts to hoary bat are primarily associated with encroachment and increased wildlife-human interaction. Mitigation measures intended to protect hoary bat from impacts of the proposed development are discussed in Section 7.

6.4.7 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, 2021b).

Little brown myotis overwinter in caves and abandoned mines, they require highly humid conditions and temperatures that remain above the freezing mark (Ontario, 2021b). 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, 2013).

The forest habitat on-site is unlikely to meet the requirements to support bat maternity colonies however given the availability of suitable habitat and potentially suitable anthropogenic buildings within the study area, there is a potential for eastern little brown Myotis to occur on the property, for foraging and maternal roosting. Impacts to little brown Myotis are primarily associated with 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.

6.4.8 Silver-haired Bat

Silver-haired bat (*Lasionycteris noctivagans*) is a medium-sized (typically 9-17 g), insectivorous bat. The fur is one of the darkest of all bats in Canada, with black skin membranes and black to dark brown fur (COSEWIC, 2023).

In North America, the silver-haired bat is widely distributed and spans from the southern extent of the Canadian provinces to east-central Mexico (COSEWIC, 2023). In Canada, the distribution spans from coast to coast, but appears to be uncommon in Atlantic Canada. In Ontario, the species occurs throughout Ontario, appearing as far north as James Bay (COSEWIC, 2023).

Silver-haired bats overwinter in mines, rock crevices, trees, and snags across North America, including the United States, the Great Lakes region of Ontario, and in some areas of British Columbia (COSEWIC, 2023). Foraging typically occurs in young and old forests. Silver-haired bat roost primarily under bark and in cavities of trees; however, may occasionally roost on or in buildings (COSEWIC, 2023).

The forest habitat on-site is unlikely to meet the requirements to support bat maternity colonies however, given the availability of suitable habitat and potentially suitable anthropogenic buildings within the study area, there is a potential for silver-haired bat to occur on the property, for foraging and maternal roosting. Impacts to silver-haired bat are primarily associated with encroachment and increased wildlife-human interaction. Mitigation measures intended to protect silver-haired bat from impacts of the proposed development are discussed in Section 7.

6.4.9 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).

The forest habitat on-site is unlikely to meet the requirements to support bat maternity colonies however, given the availability of suitable habitat and potentially suitable anthropogenic buildings within the study area, there is a potential for tri-colored bat to occur on the property, for foraging and maternal roosting. Impacts to tri-colored bat are primarily associated with 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.

6.4.10 Blanding's Turtle

Blanding's turtles (*Emydoidea blandingii*) have a highly domed, smooth black carapace with slight, 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, 2016). This turtle species occurs primarily in shallow water; adults are generally found in open or partially vegetated sites, whereas juveniles prefer areas that contain thick aquatic vegetation. Blanding's turtles are known to make extensive 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, 2016).

During the site investigation, Blanding's turtles were not detected on-site however the site is located within a greater area of known Blanding's turtle occurrences. Based on NHIC observation data the species has been documented within 1 km of the site.

Protected habitat for Blanding's turtle is limited to overwintering sites, and nesting sites. No overwintering habitat was identified on-site and no nesting sites, or suitable nesting habitat was identified during the EIS.

In-water work may be required for the project with respect to culvert crossing to permit new road construction. In-water work has the potential to impact individual turtle species, however these impacts can be mitigated through implementation of avoidance measures and best management practices for mitigation measures during construction.

As the proposed project will not impact protected overwintering or nesting habitat, and impacts to individual turtle species can be mitigated during construction, it is GEMTECs opinion that further consultation with the MECP is not required at this time and no permit is required for the proposed work.

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.

6.5 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, loss of riparian habitat and the loss of woodland and meadow habitat, primarily for avian species.

Cumulative impacts to the natural environment at the site due to increased human presence, increased wildlife and human interaction and increased noise, are expected to be negligible given the existing airport and agricultural land use in the surrounding project 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). Buffers recommended in the following subsections and illustrated on Figure A.6 in Appendix A, are done so within the context of the existing environmental disturbances but also to promote reasonable natural rehabilitation.

7.1 Fish Habitat

No negative impacts on the integrity of fish habitat are anticipated as a result of the proposed development if all mitigation measures recommended below are enacted and best management practices followed. Fish habitat on-site can be protected against potential impacts of the proposed development through the implementation of a construction setback.

In consideration of fish habitat, and the nature of the proposed development, a minimum 30 m setback from the top of bank of the CARP-S1, H4A-S1 and H4B is required. The required 30 m setback from top of bank from these watercourses provides sufficient protection for mitigating water quality impacts and human disturbances. At 30 m, the protection the buffer offers for core habitat protection, falls into the moderate risk for watercourses of not achieving desired buffer function. As such a 30 m setback is sufficient to protect core habitat within the watercourses of the CARP-S1, H4A-S1, and H4B. .

The 30 m setback from top of bank is consistent with the recommendations from the Carp River Watershed/Subwatershed Study (Robinson, 2004).

CARP-S2 and CARP-S3 have been heavily influenced by anthropogenic activities, slopes are highly intrenched, the portion is heavily straightened, and in-stream and riparian vegetation is limited, providing lower quality habitat than CARP-S1. As such a 25 m setback from the top of bank is proposed for CARP-S2 and CARP-S3.

H9 is a roadside ditch located along Carp Road. In consideration of the nature of the existing H9 ditch and the proposed development, a 15 m setback from the top of bank is proposed for H9.

Figure A.6 illustrates a 30 m setback from the CARP-S1, H4A-S1 and H4B, and the 25 m setback from CARP-S2 and CARP-S3 which are sufficient to protect on-site fish habitat, significant valleylands and the Carp River tributary.

As discussed in Sections 4.6 and 6.3, the Carp River tributary, H4A-S1, HB4 and H9 provide direct fish habitat. As in-water work is proposed as a part of the proposed plan of development, a Department of Fisheries and Oceans (DFO) Request for Project Review (RfR) will be required to address potential impacts to fish and fish habitat for the proposed service crossing.

In addition to the DFO RfR, the following general mitigation measures are recommended for the protection of water quality and fish habitat:

- Buffers are to be comprised of a mixture of native, non-invasive, self-sustaining trees, shrubs and tall grasses. The prescribed setbacks along the watercourse shall remain in a natural, vegetated state.
- 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.
- Culverts must be installed such that it is imbedded into the streambed, ensuring the culvert remains passable (i.e. does not become perched);
- All work below the ordinary high water mark shall be completed in the dry;
- Schedule in-water work to respect timing windows of breeding fish, to protect fish, their eggs, juveniles, spawning adults and/or the organisms upon which they feed;
- For the protection of spring spawning fish species, all in-water work must occur outside of March 15 to July 15, as outlined by the DFO Timing Windows for the Protection of Fish and Fish Habitat in the Southern Region (2013).
- Follow all DFO measures to protect fish habitat (DFO, 2019b). Due to the requirement of in-water work, a DFO RfR is recommended to be submitted to the DFO.
- Ensure all applicable permits for relocating fish, if required, are obtained and relocate any fish that become trapped.
- Silt fencing should be installed along all setbacks to provide visual demarcation of the setbacks to prevent machinery encroachment and sediment transport.
- Install and maintain effective sediment and erosion control measures before starting work.
- Schedule work to avoid wet, windy and rainy periods.
- 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.

- Maintain erosion and sediment control measures until all disturbed ground has been permanently stabilized, suspended sediment has resettled, and runoff water is clear.
- Ensure that the water being pumped/diverted from the site is filtered prior to release;
- Stabilize shoreline or banks disturbed by any project activity to prevent erosion and/or sedimentation, preferably through re-vegetation with native species suitable for the site.
- Operate machinery on land above the high watermark, in a manner that minimizes disturbance to the banks and bed of the municipal drain;
- In order to protect fish habitat from contamination, all machinery must be maintained in good working condition and all machinery must be fueled a minimum of 30 m from the high watermark.
- 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.
- Maintain as much of the natural vegetation as possible within and around the construction project. Post-construction, degraded vegetation within the disturbed areas should be replaced by planting of native plant species, or seeded, as to prevent further soil erosion.

7.2 Significant Valleylands

A slope stability assessment (GEMTEC, 2023) was completed for the property and was used to determine the extents of the valleyland on-site. The 30 m setback from CARP-S1, H4A-S1 and H4B, and the 25 m setback from CARP-S2 and Carp-S3 is proposed and encompass both the top of slope identify by the FMW survey, as well as the limit of hazard lands identified by the GEMTEC slope stability assessment.

A 15 m setback from top of slope (identified by FMW survey) has been applied and is illustrated on Figure A.6. In addition to the 15 m top of slope setback, a 30 m and 25 m setback from the top of bank of the Carp River tributary is illustrated on Figure A.6. The limit of disturbance illustrated on Figure A.6 takes the larger of either the top of slope or top of bank setbacks, which is in accordance with the City of Ottawa Official Plan policies. The combination of these setbacks is sufficient to protect the core habitat functions of the valleylands identified in Section 4 (i.e., water conveyance and ecological functions).

The buffer area between the top of bank or top of slope and setback limits must remain as vegetated as possible, with native, self-sustaining trees, shrubs and tall grasses. The setbacks will ensure that the degree of naturalness and habitat functions of the valleyland will not be impacted from the proposed development.

Opportunities exist to enhance vegetation within and along the various buffer areas. Additional and/or more naturalized landscape or plantings should be considered within and along the edge of the buffer areas to off-set any loss of habitat within the buffers, and enhance the overall form and function of the remaining significant valleyland.

7.3 Significant Wildlife Habitat

7.3.1 Habitats of Species of Conservation Concern

7.3.1.1 Eastern Wood-Pewee and Wood Thrush

Impacts to eastern wood-pewee and wood thrush are primarily associated with habitat loss of the poplar deciduous forest and hedgerow habitat located along the borders of the agricultural fields. Future development will result in the loss of approximately 2.3 ha of treed habitat within the poplar deciduous forest and the hedgerows.

To minimize the impact of the proposed development on eastern wood-pewee and wood thrush habitat, vegetation removal should occur outside the key breeding bird period (typically March 31 to August 31) as identified by Environment Canada for the protection of nesting and foraging eastern wood-pewee 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 will be required.

Nesting surveys shall be completed by a qualified professional, be conducted no more than 48 hours prior to vegetation clearing and be repeated if removal takes more than 2 days. Vegetation with active nests may not be removed until the nesting period has past, or the nest becomes vacant.

7.3.1.2 Snapping Turtle

The 30 m setback presented above, to protect the Carp River tributary is sufficient to protect special concern and rare wildlife habitat (snapping turtle).

To further protect potential migrating reptiles, exclusion fencing shall be installed around the entire construction area prior to construction commencing to prohibit the movement of reptiles into the construction area. Exclusion fencing must follow the protocols outlined in the Species at Risk Branch: Best Practices Technical Note: Reptile and Amphibian Exclusion Fencing Version 1.1 (MNRF, July 2013). Following the installation of exclusion fencing, the construction area shall be swept daily by a qualified person (i.e. a trained/competent member of contractor staff). Exclusion fencing must be installed around the entirety of active construction areas to prevent the movement of wildlife into areas with active heavy machinery use.

Additionally, all stock piled material shall be covered with a geotextile to prevent turtles from nesting in the material between May 1 and August 1 of any year.

7.3.1.3 Monarch Butterfly

To minimize the impact of the proposed development on monarch butterfly, vegetation removal should occur outside the active season for monarch butterfly, typically late May through mid-late September.

Incorporate pollinator-friendly milkweed and other plants and wildflowers into landscape plans to provide habitat and food sources for monarch butterflies, and other pollinator insects such as bees.

7.4 Species at Risk

7.4.1 Bobolink and Eastern Meadowlark

As indicated in Section 6.5.1 and 6.5.2, bobolink and eastern meadowlark, avian species at risk, were identified on-site. The current proposed development plan is likely to result in impact to protected nesting habitat on-site.

Consultation with the MECP will be required to determine permitting options to address impacts to bobolink and eastern meadowlark.

Should any components of the proposed development change, and have the potential to impact regulated habitat for bobolink or eastern meadowlark, than consultation with the MECP will be required. However based on the current scope of the project it is GEMTECs opinion that the proposed development will not negatively impact bobolink, eastern meadowlark or their habitat, and no further consultation with the MECP is required at this time.

7.4.2 SAR Bats

As no critical habitat (i.e. overwintering caves or crevasses, or maternity roosts) were identified on-site, in accordance with MECP best management practices, to protect roosting and foraging bats, tree removal where required shall take place outside of the spring and summer active season (typically March 15 to November 30), when bats are more likely to be using forest habitat. If vegetation clearing cannot avoid the active season, consultation with the MECP is needed to determined whether the project will require an authorization under the Endangered Species Act.

To further protect bat species during vegetation removal, trees and vegetation (during the appropriate timing window) should be cleared in stages, working from the outer edge, in towards the centre, in order to provide wildlife in the forest time to migrate out.

In GEMTECs experience on similar development applications and consultation with the MECP for projects and properties of similar size and scale, the above mitigation/avoidance measures are sufficient to ensure no negative impacts to SAR bats. In eastern Ontario habitat is not a limiting factor, as such the MECP recommends the use of avoidance timing window for clearing of trees (>10cm in diameter) in order to avoid impacts to SAR bat species. As long as timing windows can be adhered to, the project will not impact SAR bats, and it is GEMTECs opinion that no further consultation with the MECP is required.

Should any components of the proposed project require tree clearing between March 15 and November 30, further consultation with the MECP is required.

7.4.3 Blanding's Turtle

Outside of culvert installation, no construction or alteration is proposed within the watercourse. The 30 m watercourse setback is sufficient to protect watercourse habitat from encroachment and habitat loss. During construction Blanding's turtles will be excluded from the work area, but following construction completion the remining habitat (outside of new dwellings) will still be available for use by Blanding's turtles.

Protected Blanding's turtle habitat (overwintering or nesting) is not anticipated to be impacted by the proposed development. As such it is GEMTECs opinion that the proposed project will not contravene the ESA and further consultation with the MECP is not required at this time, provided mitigation measures to protect individual turtle species below are enacted.

Should components of the project change, that may impact regulated habitat, consultation with the MECP maybe required.

The following mitigation measures are expected to be implemented to avoid contravention of the ESA:

- Prior to any site work, reptile and amphibian exclusion fencing should be installed around the entire perimeter of the construction area to prevent the migration of Blanding's Turtles and other wildlife into the construction zone. The temporary exclusion fencing will also provide a visual demarcation of the development area for workers during construction. Exclusion fencing should follow the protocols outlined in the Species at Risk Branch: Best Practices Technical Note: Reptile and Amphibian Exclusion Fencing Version 1.1 (MNRF, July 2013).
- Temporary exclusion fencing should be inspected by a designated staff member once per week between April 15 and October 15 of any year. The designated staff member should be trained by a Qualified Professional. Any damage to temporary fencing should be repaired by the end of the business day when the damage is observed.
- Each day of construction a daily pre-work sweep of the construction area should occur to ensure no SAR are present and to remove any wildlife from inside the construction area.
- All staff working on-site should be provided Species at Risk training to identify species at risk which a potential to occur on-site including: Blanding's turtle. Training will also outline the stop work procedures and MECP reporting/consultation prior to resuming work.
- During construction if any SAR is identified on-site all work should stop and a qualified professional and the MECP should be contacted for next steps. SAR sightings should be reported to the MECP and the NHIC.
- Heavy-duty silt fencing should be installed and maintained during construction and whenever soil is exposed; the incorporation of lot-side swales and gravel laneways are intended to promote infiltration and direct stormwater runoff to road side ditches instead of towards adjacent waterbodies.

- Tree clearing and vegetation removal will be undertaken outside of the active season (April 1 – October 31) for Blanding's turtles. Prior to vegetation removal a sweep will be completed to ensure Blanding's turtles are absent from the area.
- Cover all stockpiled material with a geotextile to prevent turtles from nesting in the material between May 1 and August 1 of any year.
- To protect aquatic habitat for Blanding's turtles, machinery should be maintained in good working condition and all machinery should be fueled a minimum of 30 m from the high water mark.
- Following construction completion, businesses and employees should be provided with information and awareness packages for SAR that have the potential to occur on their property. Information and awareness packages will include information on species identification, life-history, and habitat use for all species at risk with a potential to occur on-site, including Blanding's turtle. Information packages will also include contact/reporting options to the MECP and NHIC is species are encountered.

7.5 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, 2022).
- Vegetation removal should occur outside of March 15 to November 30 to avoid the key breeding bird period, bat summer active season, and reptile and amphibian active season. The timing windows provides protection of migratory birds, roosting bats, migrating reptiles and amphibians and avoids contravention of the Migratory Bird Convention Act and Endangered Species Act. If vegetation clearing activities must take place during the aforementioned timing window than a nest survey and site sweep shall be conducted by a qualified professional to ensure no impacts to birds, reptiles, or amphibians. If vegetation removal during the active season has the potential to impact SAR bats consultation with the MECP is required to determine whether the project will required, an authorization.
- Installation of silt fence barriers around the entire active construction areas to prohibit the emigration of wildlife into the construction area, silt fencing should be checked daily and following each precipitation event.
- 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 shall be contacted immediately

and operations ceased to avoid any negative impacts to species at risk or their habitat until further direction is provided by the MECP.

7.6 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 the development of the approximately 54 ha property, part of the Carp Airport, for the Phase 2 Business Park. Phase 2 of the development has been draft approved, the registration of which is anticipated to include the creation of roads and future development blocks. The extent of future development and paved areas will be subject to future Site Plan Applications.

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 woodlands, local wetlands, significant wildlife habitat, habitat of species at risk and fish habitat, from future commercial development are anticipated.
- The proposed project complies with the natural heritage policies of the Provincial Planning Statement.
- The proposed development complies with the natural heritage policies 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 Ltd (GEMTEC), and prepared for West Capital Developments and is intended for the exclusive use of West Capital Developments. This report may not be relied upon by any other person or entity without the express written consent of GEMTEC and West Capital Developments 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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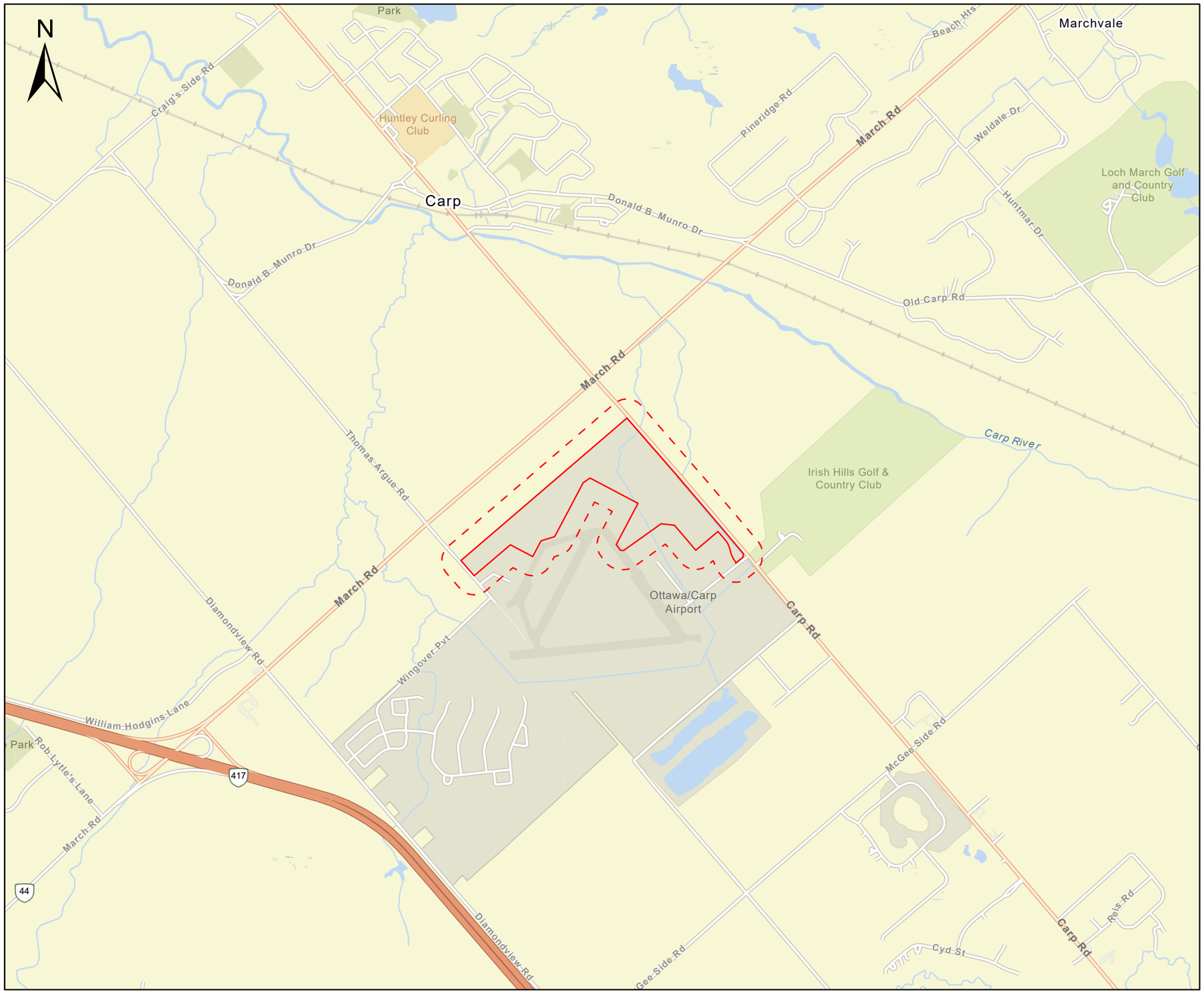
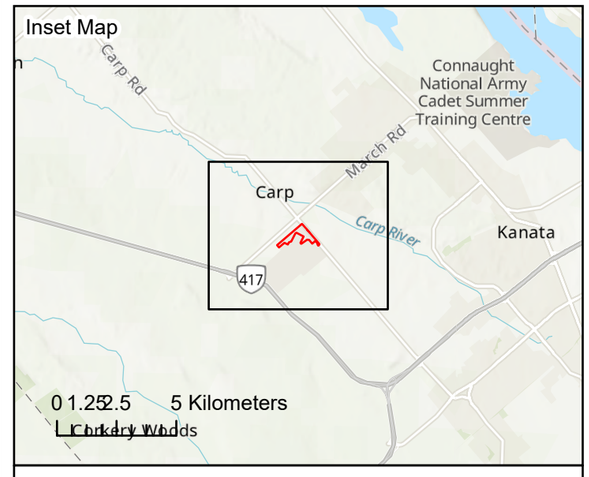
APPENDIX A

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



Legend

- Property Boundary
- Study Area



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

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Project: 100011.049

Location: Part of Lots 13, 14 and 15, Concession 3
City of Ottawa, Ontario

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

Date: October 2025

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Rev. 1

Figure: A.1

Coordinate System: NAD 1983 UTM Zone 18N
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Legend

- Property Boundary
- Study Area
- Watercourse
- Headwater Drainage Feature
- Breeding Bird Survey Station (100m Radius)

Scale
1:7,000
0 50 100 200 300 400 500 Meters

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City of Ottawa, Ontario

Drwn By:	Chkd By:	
EP	TW	Site Layout

Date: October 2025

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Figure: A.2

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World Imagery: Maxar

Legend

- Property Boundary
- Study Area
- Watercourse
- Headwater Drainage Feature
- Vegetation Community

OAG = Active Agriculture
CUM = Cultural Meadow
CVC = Commercial and Institutional
THDM3 = Dry-Fresh Deciduous Hedgerow Thicket
FODM3-1 = Dry-Fresh Poplar Deciduous Forest

Scale
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0 50 100 200 300 400 500 Meters

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Location
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Drwn By: EP | Chkd By: TW | Vegetation Communities

Date: October 2025 | Rev. 1 | Figure: A.3

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World Imagery: Maxar

Legend

- Property Boundary
- Study Area
- Watercourse
- Headwater Drainage Feature
- Proposed Road
- Proposed Block Line
- Proposed Stormwater Management
- Surveyed Top of Bank (FWM); Fish Habitat (CIMA+)
- Surveyed Top of Slope (FMW)
- Approximate Limit of Hazard Lands (GEMTEC)

Scale
1:7,000
0 50 100 200 300 400 500 Meters

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Client: West Capital Developments

Project: 100011.049

Location: Part of Lots 13, 14 and 15, Concession 3
City of Ottawa, Ontario

Drwn By: EP | Chkd By: TW | Development Concept

Date: October 2025 | Rev. 1 | Figure: A.4

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World Imagery: Maxar

Legend

- Property Boundary
- Study Area
- Surveyed Top of Bank (FWM); Fish Habitat (CIMA+)
- Contributing Fish Habitat (CIMA+); Surveyed Location (FMW)
- Headwater Drainage Feature
- Upstream Tributaries (FMW)
- Proposed Development
- Surveyed Top of Slope (FMW); Significant Valleyland
- Approximate Limit of Hazard Lands (GEMTEC)
- Erosion Access Allowance (GEMTEC)
- Bank Swallow Observation
- Bobolink Observation (300m Buffer)
- Eastern Meadowlark Observation (300m Buffer)
- Continuous Habitat for Bobolink or Eastern Meadowlark

HDF Management Classification

- Protection
- Mitigation
- No Management Required

Scale
1:7,000
0 50 100 200 300 400 500 Meters

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Client: West Capital Developments

Project: 100011.049

Location: Part of Lots 13, 14 and 15, Concession 3 City of Ottawa, Ontario

Drwn By: EP | Chkd By: TW

Natural Heritage Features

Date: October 2025

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Rev. 1

Figure: A.5

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World Imagery: Maxar

Legend

- Property Boundary
- Study Area
- Surveyed Top of Bank (FWM); Fish Habitat (CIMA+)
- Contributing Fish Habitat (CIMA+); Surveyed Location (FMW); Existing Ditch to be Relocated
- Proposed Ditch Realignment
- Headwater Drainage Feature
- Upstream Tributaries (FMW)
- Proposed Development
- Surveyed Top of Slope (FMW); Significant Valleyland
- 15m Setback from Top of Slope
- Approximate Limit of Hazard Lands (GEMTEC)
- Erosion Access Allowance (GEMTEC)
- Bank Swallow Observation
- Bobolink Observation (300m Radius)
- Eastern Meadowlark Observation (300m Radius)
- Continuous Habitat for Bobolink or Eastern Meadowlark
- 15m Setback from Top of Bank
- 25m Setback from Top of Bank
- 30m Setback from Top of Bank
- Limit of Development

Scale
1:7,000
0 50 100 200 300 400 500 Meters

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Client: West Capital Developments

Project: 100011.049

Location: Part of Lots 13, 14 and 15, Concession 3
City of Ottawa, Ontario

Drwn By:	Chkd By:	
EP	TW	Mitigation Measures

Date: October 2025

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Figure: A.6

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

APPENDIX B

Site Photographs

Site Photograph 1 – Active Agriculture (OAG)

Site Photograph 2 – Active Agriculture (OAG)

Site Photograph 3 – Dry-Fresh Deciduous Hedgerow Thicket (THDM3)

Site Photograph 4 – Dry-Fresh Deciduous Hedgerow Thicket (THDM3)

GEMTEC Consulting Engineers and Scientists	Project Carp Airport – Phase 2 Business Park Part of Lots 13, 14, and 15, Concession 3 Ottawa, Ontario	**ATTACHEMNT B** File No. 100011.049	**Site Photographs**

Site Photograph 5 – Cultural Meadow (CUM)

Site Photograph 6 – Cultural Meadow (CUM)

Site Photograph 7 – Cultural Thicket (CUT)

Site Photograph 8 – Cultural Thicket (CUT)

GEMTEC Consulting Engineers and Scientists	Project Carp Airport – Phase 2 Business Park Part of Lots 13, 14, and 15, Concession 3 Ottawa, Ontario	**ATTACHEMNT B** File No. 100011.049	**Site Photographs**

Site Photograph 9 – Dry-Fresh Poplar Deciduous Forest (FODM3-1)

Site Photograph 10 – Dry-Fresh Poplar Deciduous Forest (FODM3-1)

Site Photograph 11 – Watercourse

Site Photograph 12 – Ephemeral Watercourse (HDF)

APPENDIX C

Report Summary Tables

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

Common Name	Scientific Name	S-Rank	Evidence
Avian Species			
Alder flycatcher	*Empidonax alnorum*	S5B	Heard calling
American black duck	*Anas rubripes*	S4	Observed on-site, flyover
American crow	*Corvus brachyrhynchos*	S5	Observed on-site, heard calling
American kestrel	*Falco sparverius*	S4	Observed on-site, heard calling
American goldfinch	*Spinus tristis*	S5	Observed on-site, heard calling
American redstart	*Setophaga ruticilla*	S5B	Heard calling
American robin	*Turdus migratorius*	S5	Observed on-site, heard calling
Baltimore oriole	*Icterus galbula*	S4B	Heard calling
Barn swallow	*Hirundo rustica*	S4B	Observed on-site, heard calling
Black-capped chickadee	*Poecile atricapillus*	S5	Observed on-site, heard calling
Blue jay	*Cyanocitta cristata*	S5	Observed on-site, heard calling
Bobolink	*Dolichonyx oryzivorus*	S4B	Observed on-site, heard calling
Brown thrasher	*Toxostoma rufum*	S4B	Observed on-site, heard calling
Brown-headed cowbird	*Molothrus ater*	S5	Heard calling
Canada goose	*Branta canadensis*	S5	Heard calling
Cedar waxwing	*Bombycilla cedrorum*	S5	Observed on-site, heard calling
Chestnut-sided warbler	*Setophaga pensylvanica*	S5B	Heard calling
Chipping sparrow	*Spizella passerina*	S5B,S3N	Observed on-site, heard calling
Common grackle	*Quiscalus quiscula*	S5	Observed on-site, heard calling
Common raven	*Corvus corax*	S5	Observed on-site, heard calling
Common yellowthroat	*Geothlypis trichas*	S5B,S3N	Observed on-site, heard calling
Downy woodpecker	*Dryobates pubescens*	S5	Heard calling
Eastern meadowlark	*Sturnella magna*	S4B,S3N	Observed on-site, heard calling
Eastern phoebe	*Sayornis phoebe*	S5B	Observed on-site, heard calling
European starling	*Sturnus vulgaris*	SNA	Observed on-site, heard calling
Field sparrow	*Spizella pusilla*	S4B,S3N	Heard calling
Great blue heron	*Ardea herodias*	S4	Observed on-site, flyover
Great crested flycatcher	*Myiarchus crinitus*	S5B	Observed on-site, heard calling
Gray catbird	*Dumetella carolinensis*	S5B,S3N	Observed on-site, heard calling
Hairy woodpecker	*Dryobates villosus*	S5	Heard calling
House wren	*Troglodytes aedon*	S5B	Heard calling
Indigo bunting	*Passerina cyanea*	S5B	Observed on-site, heard calling
Killdeer	*Charadrius vociferus*	S4B	Observed on-site, heard calling
Mallard	*Anas platyrhynchos*	*S5*	Observed on-site, heard calling
Mourning dove	*Zenaida macroura*	S5	Observed on-site, heard calling
Northern cardinal	*Cardinalis cardinalis*	S5	Heard calling
Northern flicker	*Colaptes auratus*	S5	Observed on-site, heard calling
Northern harrier	*Circus hudsonius*	S5B,S4N	Observed on-site
Northern mockingbird	*Mimus polyglottos*	S4	Heard calling
Northern rough-winged swallow	*Stelgidopteryx serripennis*	S4B	Observed on-site, heard calling
Red-eyed vireo	*Vireo olivaceus*	S5B	Heard calling
Red-winged blackbird	*Agelaius phoeniceus*	S5	Observed on-site, heard calling
Ring-billed gull	*Larus delawarensis*	S5	Observed on-site, heard calling
Rock pigeon	*Columba livia*	SNA	Observed on-site
Rose-breasted grosbeak	*Pheucticus ludovicianus*	S5B	Heard calling
Savannah sparrow	*Passerculus sandwichensis*	S5B,S3N	Observed on-site, heard calling
Song sparrow	*Melospiza melodia*	S5	Observed on-site, heard calling
Spotted sandpiper	*Actitis macularius*	S5B	Observed on-site, heard calling
Tree swallow	*Tachycineta bicolor*	S4S5B	Observed on-site, heard calling
Turkey vulture	*Cathartes aura*	S5B,S3N	Observed on-site
Upland sandpiper	*Bartramia longicauda*	S2B	Heard calling
Warbling vireo	*Vireo gilvus*	S5B	Heard calling
White-crowned sparrow	*Zonotrichia leucophrys*	S5B,S3N	Heard calling

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

White-throated sparrow	*Zonotrichia albicollis*	S5	Observed on-site, heard calling
Wild turkey	*Meleagris gallopavo*	S5	Observed on-site, heard calling
Yellow warbler	*Setophaga petechia*	S5B	Observed on-site, heard calling
Mammalian Species			
Eastern gray squirrel	*Sciurus carolinensis*	S5	Observed on-site
White-tailed deer	*Odocoileus virginianus*	S5	Observed on-site
Amphibian Species			
American toad	*Anaxyrus americanus*	S5	Observed on-site, heard calling
Green frog	*Lithobates clamitans*	S5	Heard calling
Wood frog	*Lithobates sylvaticus*	S5	Heard calling
Insect Species			
Monarch butterfly	*Danaus plexippus*	S2N, S4B	Observed on-site

Notes:
* Denotes a Species at Risk
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 RATIONAL FOR SIGNIFICANT WOODLANDS

Woodland Criteria	Further Considered in EIS	Rationale
Woodland Size	No	Contiguous woodlands on-site do not meet the minimum size requirement for the planning area (> 50 ha).
Ecological Functions		
a) Woodland Interior	No	Interior woodlands on-site does not meet the minimum size requirement for the planning area (> 8 ha).
b) Proximity	No	Woodlands on-site are not proximate to fish habitat.
c) Linkages	No	Woodlands on-site do not provide linkages to other natural heritage features.
d) Water Protection	No	Woodlands on-site are not proximate to fish habitat and watercourses.
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 RATIONAL FOR SIGNIFICANT VALLEYLANDS

Valleyland Criteria	Further Considered in EIS	Rationale
Landform-Related Functions and Attributes		
a) Surface Water Functions	Yes	Based on the Ontario Flow Assessment Tool, on-site portions of the Carp River tributary drains from a catchment area of over 400ha. The tributary begins 1.1km south of the site and was still conveying water in July during the last HDF survey.
b) Groundwater Functions	No	No seeps, seepage slopes or springs were identified on-site.
c) Landform Prominence	No	Valley morphology does not have an average width of 25 m or more.
d) Distinctive Geomorphic Landforms	No	No distinctive geomorphic landforms represented on-site.
Ecological Functions		
a) Degree of Naturalness	Yes	Valleylands contain > 25% natural vegetation cover.
b) Community and Species Diversity	No	Valleylands does not contain areas of high community and/or species diversity.
c) Unique Communities and Species	Yes	Valleylands may support habitat of rare species.
d) Habitat Value	Yes	Valleylands provide direct fish habitat and contribute to downstream fish habitat within the Carp River.
e) Linkage Function	Yes	Valleylands and the Carp River tributary provide wildlife corridors and ecological connections to other natural areas.
Restored Ecological Functions		
a) Restoration Potential and Value	Yes	Valleylands already provide ecological benefits. Further restoration would provide an additional benefit to existing natural areas from potential development.

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

Wildlife Habitat	Further Considered in EIS	Rationale
Waterfowl Stopover and Staging Areas	No	No wetland habitat on-site to provide suitable conditions for waterfowl stopover and staging areas (aquatic). Terrestrial stopover and staging areas are not present on-site.
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 both forest and upland habitat, it does not meet the candidate habitat criteria as both habitat on-site does not meet the minimum size criteria of greater than 20 ha.
Bat Hibernacula	No	Cave and crevice habitat is not present on-site or within the study area.
Bat Maternity Colonies	No	Woodlands on-site may meet minimum snag density (>10 snags/hectare) requirements to be considered SWH for bat maternity colonies.
Turtle Wintering Area	No	No wetlands are present on-site to support turtle wintering areas.
Reptile Hibernaculum	No	No structures such as large rock piles, bedrock outcrops, cervices or other karstic features have been identified on-site.
Colonial Bird Nesting Habitat	No	No suitable habitat located on-site or within the study area to support colonial bird nesting.
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.
Deer Yarding Areas and Winter Congregation Areas	No	Outside of hedgerows, there are no stands of coniferous woodlands on-site to support deer yarding or congregation areas. As outlined in the Significant Wildlife Habitat Criteria Schedules (OMNRF, 2015) winter deer yards and deer management are an MNRF responsibility. Based on review of publicly available data from the OMNRF on Land Information Ontario Geo-hub, no Stratum I deer yards, Stratum II deer yards, or winter congregation areas have been identified on-site or within the broader study area.

TABLE C.5
SCREENING RATIONALE FOR SPECIALIZED WILDLIFE HABITATS

Specialized Wildlife Habitat	Further Considered in EIS	Rationale
Waterfowl Nesting Area	No	No wetland habitat present on-site to support waterfowl nesting area.
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	No	No suitable habitat is located on-site or within the study area to support foraging bald eagles or osprey. Nesting sites for these species are uncommon in Ecoregion 6E (MNRF, 2012).
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. The site does not have large mature forests stands on-site to support woodland raptor nesting. No sticks nests were observed on-site.
Turtle Nesting Habitat	No	No suitable habitat (exposed mineral soil with minimal vegetation cover) is present on-site.
Seeps and Springs	No	No seeps or springs where identified on-site.
Woodland Amphibian Breeding Habitat	No	No wetland habitat within or adjacent to a woodland occurs on-site to support woodland amphibian breeding habitat.
Wetland Amphibian Breeding Habitat	No	No wetland occurs on-site which may support wetland amphibian breeding habitat.
Woodland Area-Sensitive Bird Breeding Habitat	No	Woodland area-sensitive birds require interior forest habitat located >200 m from the forest edge in large (>30 ha) forest stands. Woodlands on-site do not meet the defining size criteria.

TABLE C.6
SCREENING RATIONALE FOR SPECIALIZED WILDLIFE HABITATS

General Habitats of Species of Conservation Concern	Further Considered in EIS	Rationale
Marsh Breeding Bird Habitat	No	No wetland habitat present on-site to support marsh breeding bird habitat.
Open Country Breeding Bird Habitat	No	No suitable meadow habitat on-site to support open country bird breeding as upland habitat does not meet the minimum size criteria of > 30 ha.
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. Thicket habitat on-site does not meet the required minimum size criteria to support shrub/early successional breeding bird habitat.
Terrestrial Crayfish Habitat	No	Terrestrial crayfish are only found within southwestern Ontario (MNRF, 2012).
Special Concern and Rare Wildlife Species	Yes	Based on site observations and occurrence data from the NHIC, the following species of special concern have occurred on-site and/or within the surrounding area: barn swallow, eastern wood-pewee, wood thrush, snapping turtle, and monarch butterfly.

TABLE C.7
SCREENING RATIONALE FOR HABITATS OF SPECIES OF CONSERVATION CONCERN

General Habitats of Species of Conservation Concern	Further Considered in EIS	Rationale
Amphibian Movement Corridor	No	No *confirmed* amphibian movement corridors have been identified on-site.
Deer Movement Corridor	No	No winter deer yards have been identified on-site by the OMNRF.

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					
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	Suitable cliffs, banks or dune habitat not present on-site for species nesting habitat. NHIC data indicates species has been observed within 1 km of the site.
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.	High	Suitable grassland habitat available for foraging on-site and structures within the broader study area to provide nesting habitat. No historical data records for species within the study area. Species observed foraging on-site during field 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 for woody vegetation.	High	Suitable grassland habitat available on-site and within the study area. NHIC indicates species has been observed within 1 km of the site. Species was observed on-site during field investigations.
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 forests not present on-site. No historical data records for species within the study area. Species not observed during field investigations.
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 forests not present on-site. No historical data records for species within the study area. Species not observed during field investigations.
Chimney Swift	Threatened	3 confirmed, 2 probable, and 11 possible nests in recent OBBA.	Nests in traditional-style open brick chimneys.	Low	No suitable nesting structures on-site. No recent observations within 1 km of site. Species not observed during field investigations.
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 gravel rooftops.	Moderate	Potentially suitable habitat on-site to support common nighthawk. Species was not observed on-site during field investigations.
Eastern Meadowlark	Threatened	22 confirmed, 11 probably and 3 possible nests during recent OBBA.	Nests and forages in dense tall grass fields and meadows, higher tolerance to woody vegetation.	High	Suitable grassland habitat available on-site and within the study area. NHIC indicates species has been observed within 1 km of the site. Species was observed on-site during field investigations.
Eastern Whip-poor-will	Special Concern	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	Suitable woodland and exposed rock habitat not present on-site or within study area. No historical data records for species within the study area. Species not observed during field investigations.
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.	Moderate	Woodland habitat on-site and within study area may provide suitable habitat to support species. NHIC indicates species has been observed within 1 km of the site. Species was not observed on-site during field investigations.
Evening Grosbeak	Special Concern	5 confirmed, 6 probable, 8 possible nests in recent OBBA (mostly in west).	Nests in trees or large shrubs, preference to large coniferous forests, will use deciduous. Overwinters in Ottawa.	Low	Site outside of known breeding range. No suitable habitat present on-site. No historical data records for species within the study area. Species not observed during field investigations.
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	Site lacks successional scrub habitats surrounded by forests. No recent observations within 1 km of site. Species not observed during field investigations.
Grasshopper Sparrow	Special Concern	4 confirmed, 5 probable and 2 possible nests in recent OBBA.	Ground-nesting grassland species. Prefers fields with low sparse vegetation on sand, alvars or poor soils.	Low	Suitable grassland habitat present on-site to support species. No historical data records for species within the study area. Species not observed during field investigations.
Least Bittern	Threatened	Confirmed nesting in 1 square, 3 probable and 4 possible during recent OBBA. Mississippi Snye identified as critical habitat in federal recovery strategy.	Prefers marshes, shrub swamps, usually near cattails	Low	No suitable marsh habitat present on-site to support species. NHIC indicates species has been observed within 1 km of the site. Species not observed during field investigations.
Loggerhead Shrike	Endangered	Possible nests reported in Burnt Lands Provincial Park (2018) and Richmond area (2019). Critical habitat identified in Montague Township.	Prefers grazed pastures with short grass and scattered shrubs, especially hawthorn.	Low	Preferred pasture habitat not present on-site. No historical data records for species within the study area. Species not observed during field investigations.
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.	Low	Suitable nesting habitat may be present on-site. No historical data records for species within the study area. Species not observed during field 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	Suitable nesting habitat not present on-site. No recent observations within 1 km of site. Species not observed during field investigations.
Red-headed Woodpecker	Endangered	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, particularly those dominated by oak and beech.	Low	No suitable deciduous woodlands are present on-site to support species. No recent observations within 1 km of site. Species not observed during field investigations.
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	No boreal wetlands present on-site or in study area.
Short-eared Owl	Threatened	1 confirmed, 2 probable, 2 possible nests in recent OBBA.	Ground nester, prefers open habitats, fields and marshes.	Low	Open fields present on-site. No recent observations within 1 km of site. Species not observed during field investigations.
Wood Thrush	Special Concern	5 possible, 15 probable, and 16 confirmed nests in recent OBBA for Ottawa area.	Prefers deciduous or mixed woodlands.	Moderate	Woodland habitat on-site and within study area may provide suitable habitat to support species. NHIC indicates species has been observed within 1 km of the site. Species was not observed on-site during field investigations.
Mammalian					
Eastern Red Bat	Endangered	One Atlas record in eastern downtown, one in Casselman.	Solitary rooster, typically in tree foliage of mixed hardwood forest stands. Occasionally roosts in leaf litter, grasses or under roof shingles. Do not typically roost in anthropogenic structures. Migrates south for winter.	Moderate	Available habitat on-site unlikely to meet bat maternity colony requirements, but may provide foraging and non-maternal roost summer habitat.
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 on-site and adjacent to site. Available habitat on-site unlikely to meet bat maternity colony requirements, but may provide foraging and non-maternal roost summer habitat.

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
Hoary Bat	Endangered	ɔut found throughout the urban and	Solitary rooster, typically in trees near edges of the canopy. Forages in clearings, over water, near lights. Migrates south for winter.	Moderate	Potentially suitable anthropogenic structures on-site and adjacent to site. Available habitat on-site unlikely to meet bat maternity colony requirements, but may provide foraging and non-maternal roost summer habitat.
Little Brown Myotis	Endangered	Various sites in central and western parts of the Ottawa area. Critical habitat (hibernacula) identified to northwest of Ottawa.	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 on-site and adjacent to site. Available habitat on-site unlikely to meet bat maternity colony requirements, but may provide foraging and non-maternal roost summer habitat.
Northern myotis (Northern Long-eared Bat)	Endangered	Historical records in downtown Ottawa, more recently in sites to east (Orleans, Clarence-Rockland). Critical habitat (hibernacula) identified to northwest of Ottawa.	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 rarely roosts in anthropogenic structures.
Silver-haired Bat	Endangered	Few local records.	Forms small maternity colonies. Roosts in large trees typically in cavities or under bark. Forages in treetops and over water. May roost in anthropogenic structures. Migrates south for winter.	Moderate	Potentially suitable anthropogenic structures on-site and adjacent to site. Available habitat on-site unlikely to meet bat maternity colony requirements, but may provide foraging and non-maternal roost summer habitat.
Tri-colored Bat	Endangered	Unknown; historical records from sites in urban Ottawa, Lanark County. Critical habitat (hibernacula) identified to northwest of Ottawa.	Roosts in trees, rock crevices and occasionally buildings during summer. Overwinters in caves and mines.	Moderate	Potentially suitable anthropogenic structures on-site and adjacent to site. Available habitat on-site unlikely to meet bat maternity colony requirements, but may provide foraging and non-maternal roost summer habitat.
Reptilian					
Blanding's Turtle	Threatened	Scattered throughout, with numerous sites in western half of City. Critical habitat present in Ottawa.	Inhabits quiet lakes, streams and wetlands with abundant emergent vegetation. Frequently occurs in adjacent upland forests.	Moderate	Based on data obtained from the Herp Atlas (Ontario Nature, 2019), Blanding's turtle have been observed 56 times between 2016 and 2019 within the four 10 km2 grid squares that encompass the site. NHIC data indicates species has been observed within 1 km of the site. The site may provide potentially suitable aquatic habitat within the on-site watercourse for Blanding's turtle.
Snapping Turtle	Special Concern	Widespread and abundant in Ottawa and surrounding region.	Highly aquatic species, found in a wide variety of wetlands, water bodies and watercourses.	Moderate	Based on data obtained from the Herp Atlas (Ontario Nature, 2019) snapping turtle have been observed 47 times between 2015 and 2019 within the four 10 km2 grid squares that encompass the site. NHIC data indicates species has been observed within 1 km of the site. The site may provide suitable aquatic habitat for snapping within the on-site watercourse for snapping turtle.
Plants					
American Ginseng	Endangered	Critical habitat broadly identified in the Ottawa area. Specific locations are confidential.	Rich, moist, relatively mature deciduous forests.	Low	Suitable deciduous forests not present on-site. No historical data records for species within study area. Species was not identified on-site during the site investigations.
Black Ash	Endangered	Scattered throughout.	Predominantly a wetland species, found in swamps, floodplains and fens.	Low	Suitable wet habitat present on-site. Species was not identified during site investigations. No historical data records for species within the study area.
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.	Low	Potentially suitable areas in a regenerative state on-site. Species was not identified on-site during the site investigation. NHIC data indicates species has been observed within 1 km of the site.
Insects					
American Bumble Bee	Special Concern	Unknown; COSEIWC identifies historical sightings in Ottawa and one nearby in 2012.	Nests at or above ground level, often in mats of long grass but also in other available shelters.	Moderate	Potentially suitable habitat available on-site.
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 vegetation available for Monarch 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.
Rusty-patched Bumble Bee	Endangered	Historic records only from scattered sites in Ottawa and Gatineau.	Habitat generalist	Low	Currently the only known population occurs in Pinery Provincial Park.
Transverse 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 are 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 available for yellow-banded bumble bee on-site.

APPENDIX D

Headwater Drainage Feature Assessment (GEMTEC, 2025)

October 9, 2025 File: 100011.049

West Capital Developments c/o Novatech
240 Michael Cowpland Drive
Ottawa, Ontario
K2M 1P6

Re: Headwater Drainage Feature Assessment
Carp Airport – Phase 2 Business Park
Part of Lots 13, 14 and 15, Concession 3, City of Ottawa, Ontario

1.0 INTRODUCTION

GEMTEC Consulting Engineers and Scientists Ltd. (GEMTEC) was retained by West Capital Developments to carry out an Environmental Impact Statement (EIS) for the collective parcels of land located on Part of Lots 13, 14 and 15, Concession 3, 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 to develop five parcels on Lots 13, 14 and 15, totally approximately 54 hectare (ha) in the City of Ottawa, Ontario. Collectively the lands comprise the Phase 2 Business Park lands of the Carp Airport. As a component of the Environmental Impact Statement (EIS) completed in accordance with City of Ottawa Official Plan policies, a HDFA was conducted to aid in the assessment of surface water features on the subject property and within 120 metres of the site. The subject property and location are illustrated on Figure A.1in Attachment A, and identified Headwater Drainage Features (HDFs) are illustrated on Figure A.2 in Attachment A.

This HDF report is principally focused on identifying, evaluation and assessing impacts to headwater drainage features on the adjacent lands for the proposed plan of development, specifically as it relates to impact assessment of the HDFs on the subject property and within a 120 metre buffer, henceforth referred to as the "study area".

1.2 Policy Context and Objective

Under Ontario Regulation 41/24, made under the Conservation Authorities Act, a watercourse is defined as "a defined channel, having a bed and banks, or sides, in which a flow of water regularly or continuously occurs". The *Evaluation, Classification, and Management of Headwater Drainage Features Guidelines* developed by the Toronto Region Conservation Authority and Credit Valley Conservation (TRCA/CVC, 2014) provides the following definition for headwater drainage features "*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 to headwater wetlands, but do not include rills or furrows".

Based on the current definition of a watercourse, not all HDFs meet the definition of a watercourse, and not all HDFs are considered regulated features by the conservation authority.

The objective of the work presented herein is twofold; 1) to identify headwater drainage features on-site and within the study area; and 2) to evaluate and classify identified headwater drainage features in accordance with "Evaluation, Classification and Management of Headwater Drainage Features Guidelines" developed by Toronto Region Conservation Authority and the Credit Valley Conservation (TRCA/CVC, 2014), including recommended mitigation and conservation measures.

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);
- Mississippi Valley Conservation Authority Geoportal (MVCA, undated);
- City of Ottawa Official Plan (Ottawa, 2022); and
- Make a Map: Natural Heritage Areas (OMNRF, 2023).

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 2.1 below.

Table 2.1 Summary of Field Investigations

Date	Time	Weather	HDFA Visit Number
April 27, 2023	12:30 – 17:00	12°C, ~50% cloud cover, Beaufort 1, no precipitation	1
May 18, 2023	11:00 – 17:45	11°C, ~10% cloud cover, Beaufort 3, no precipitation	2
July 26, 2023	09:00 – 11:00	20°C, ~90% cloud cover, Beaufort 2, no precipitation	3

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 (OSAP) (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 hydrology, vegetation, fish and fish habitat, and terrestrial habitat. Mitigation and management recommendations are provided for the headwater drainage features (HDFs) based on the results of the classification.

3.0 HEADWATER DRAINAGE FEATURES ASSESSMENT

3.1 Site Characteristics

The 54 ha site currently consists of a mosaic of cultural meadow, open agriculture, deciduous forest and thicket vegetation communities. The site is located within the ‘Carp River’ watershed and is under the jurisdiction of the MVCA.

Based on the desktop review and the site investigations, one tributary of the Carp River, identified as CARP and 11 headwater drainage features (HDF) identified as H1 to H11 occur on-site. All 12 surface water features are illustrated on Figure A.2 in Attachment A.

CARP originates south of the property and flows in a northerly direction for approximately 730 m before exiting the property along the northeastern property boundary. H1 to H9 identified on-site eventually connect with CARP. Off-site, CARP flows for approximately 1.18 km in a northeasterly direction before discharging in the Carp River.

Each surface water feature is identified and described in more detail in the subsections below, with summaries of collected field data included in Attachment B.

3.1.1 CARP

CARP is a tributary of and the only headwater feature on-site to drain directly into the Carp River. CARP is comprised of a single, channeled branch, with six confluences along its upstream path on-site and flows through four culverts. Differences in flow and feature conditions were observed throughout the different reaches of the features. As such, Carp A has been further divided into three sections, CARP – S1, S2, and S3. Due to observed differences in flow and riparian vegetation, each segment is evaluated as an individual feature in the subsections below.

3.1.1.1 CARP-S1

CARP-S1 is a defined natural channel feature that was observed to have minimal but sustained flow during all three investigations. No vegetation was found within CARP-S1 while the riparian zone was primarily dominated by scrubland. Table B.1 in Attachment B summarizes the existing conditions and characteristics of CARP-S1 observed during the site investigations. During the site investigations, CARP-S1 was assessed as one continuous feature with no site break triggers.

3.1.1.2 CARP-S2

CARP-S2 is a defined natural channel feature that was observed to have minimal but sustained flow during all three investigations. No vegetation was found within CARP-S2 while the riparian zone was dominated primarily by cropped agricultural fields. Table B.1 in Appendix B summarizes the existing conditions and characteristics of CARP-S2 observed during the site investigations. During the site investigations, CARP-S2 was assessed as one continuous feature with no site break triggers.

3.1.1.3 CARP-S3

CARP-S3 is a defined natural channel feature that was observed to have minimal but sustained flow during the first and second visit, with substantial substrate deposition, and substantial flow during the last site investigation. Vegetation within CARP-S3 was dominated by wetland species and the riparian vegetation was dominated by meadow. Table B.1 in Attachment B summarizes the existing conditions and characteristics of CARP-S3 observed during the site investigations. During the site investigations, CARP-S3 was assessed as one continuous feature with no site break triggers.

3.1.2 H1

H1 originates on the eastern property border parallel to Carp Road and flows in a northwesterly direction for approximately 150 m before discharging into CARP.

H1 is a roadside ditch that was observed to have minimal but sustained flow during the first visit, standing water during second visit, and was dry by the last site investigation. No vegetation was present within H1 and the riparian zone was dominated by meadow. Table B.1 in Attachment B summarizes the existing conditions and characteristics of H1 observed during the site investigations. During the site investigations, H1 was assessed as one continuous feature with no site break triggers.

3.1.3 H2

H2 originates off-site entering the property from the northern corner flowing along the eastern property boundary for approximately 169 m before discharging into CARP.

H2 is comprised of a single, roadside ditch, with one confluence along its upstream path on-site and flows through one culvert.

H2 was observed to have minimal but sustained flow during the first and second visit, , and was dry by the last site investigation. No vegetation was found within HDF3 and the riparian zone was dominated by cropped agriculture. Table B.1in Attachment B summarizes the existing conditions and characteristics of H2 observed during the site investigations. During the site investigations, H2 was assessed as one continuous feature with no site break triggers.

3.1.4 H3

H3 originates within the cultural meadow adjacent to the farmstead north of the property border off-site. The features flows in a northeasterly direction for approximately 210 m before discharging into H2.

H3 is a channelized feature that was observed to have standing water during the first visit, and dry during the second and third site investigations. No vegetation was found within H3 and the riparian zone was dominated by cropped agriculture. Table B.1 in Attachment B summarizes the existing conditions and characteristics of H3 observed during the site investigations. During the site investigations, H3 was assessed as one continuous feature with no site break triggers

3.1.5 H4A

H4A originates within the cultural meadow in the western area of the property and flows in a northeasterly direction for approximately 736 m before discharging into CARP.

H4A is comprised of a single, channelized feature, with two confluences along its upstream path and flows through a pipe and one culvert on-site. Differences in flow conditions and feature type were observed throughout the different reaches of the feature. As such, H4A has been further

divided into H4A-S1, and H4A-S2. Due to the observed differences in flow and feature type, each segment is evaluated as an individual feature in the subsections below.

3.1.5.1 H4A-S1

H4A-S1 is a defined natural channel that was observed to have minimal but sustained flow during all three site investigations. No vegetation was found within H4A-S1 while the riparian zone was dominated by scrubland. Table b.1 in Attachment B summarizes the existing conditions and characteristics of H4A-S1 observed during the site investigations. During the site investigations, H4A-S1 was assessed in segments based on site break triggers, but the segments displayed similar features and conditions and have been grouped for evaluation purposes.

3.1.5.2 H4A-S2

H4A-S3 is a channelized feature that was observed to have interstitial flow during the first visit, standing water during the second visit and dry during third site investigation. No vegetation was found within H4A-S2 while the riparian zone was dominated by meadow. Table B.1 in Attachment B summarizes the existing conditions and characteristics of H4A-S2 observed during the site investigations. During the site investigations, H4A-S2 was assessed in segments based on site break triggers, but the segments displayed similar features and conditions and have been grouped for evaluation purposes.

3.1.6 H4B

H4B originates within the hedgerow thicket off-site in the central area south of the property and flows in a northerly direction for approximately 150 m before discharging into CARP.

H4B is comprised of a single, defined natural channel, with one confluence along its upstream path on-site.

H4B was observed to have minimal but sustained flow during all three investigations. No vegetation was found within H4B while the riparian zone was dominated by scrubland. Table B.1 in Attachment B summarizes the existing conditions and characteristics of H4B observed during the site investigations. During the site investigations, H4B was assessed in segments based on site break triggers, but the segments displayed similar features and conditions and have been grouped for evaluation purposes.

3.1.7 H4C

H4C originates within the cultural meadow off-site in the central area south of the property and flows in a northerly direction for approximately 60 m before discharging into H4A.

H4C is a swale that was observed to be dry during all three site investigations. No vegetation was found within H4C while the riparian zone was dominated by meadow. Table B.1 in Attachment B summarizes the existing conditions and characteristics of H4C observed during the site

investigations. During the site investigations, H4C was assessed as one continuous feature with no site break triggers

3.1.8 H4D

H4D originates within the cultural meadow in the western area of the property and flows in a northeasterly direction for approximately 88 m before discharging into H4A.

HFD is a channelized feature that was observed to be dry during all three site investigations. No vegetation was found within H4D while the riparian zone was dominated by meadow. Table B.1 in Attachment B summarizes the existing conditions and characteristics of H4D observed during the site investigations. During the site investigations, H4D was assessed as one continuous feature with no site break triggers

3.1.9 H5

H5 originates within the cultural meadow off-site in the eastern area south of the property and flows in an easterly direction for approximately 195 m before discharging into CARP.

H5 is comprised of a single, channelized feature, with a rock dam along its upstream path on-site.

H5 was observed to have interstitial flow during the first visit and dry during the second and third site investigation, with extensive substrate deposition. No vegetation was found within H5 while the riparian zone was dominated by lawn.. Table B.1 in Attachment B summarizes the existing conditions and characteristics of H5 observed during the site investigations. During the site investigations, H5 was assessed as one continuous feature with no site break triggers.

3.1.10 H6

H6 originates within the cultural meadow off-site in the eastern area south of the property and flows in a westerly direction for approximately 70 m before discharging into CARP.

H6 is comprised of a single, channelized feature, with a rock dam along its upstream path on-site.

H6 was observed to be dry during all three site investigations. No vegetation was found within H6 while the riparian zone was dominated by meadow. Table B.1 in Attachment B summarizes the existing conditions and characteristics of H6 observed during the site investigations. During the site investigations, H6 was assessed as one continuous feature with no site break triggers.

3.1.11 H7

HDF1A originates north of Russ Bradley Road along the scrubland and agricultural field border off-site. The features flows in a northwesterly direction for approximately 504 m before discharging into H8.

H7 is a channelized feature that was observed to have interstitial flow during the first visit and was dry by the second and third visits. No vegetation was present within H7, and the riparian zone was dominated by meadow. Table B.1 in Attachment B summarizes the existing conditions and characteristics of H7 observed during the site investigations. During the site investigations, H7 was assessed in segments based on site break triggers, but the segments displayed similar site features and conditions and have been grouped for evaluation purposes.

3.1.12 H8

H8 flows from a confluence with H7 in a northeasterly direction for approximately 288 m and discharging into H9.

H8 is a channelized feature that was observed to have interstitial flow during the first visit, standing water during the second visit, and was dry by the third visit. Vegetation within H8 was dominated by wetland vegetation and the riparian vegetation was dominated by cropland. Table B.1 in Attachment B summarizes the existing conditions and characteristics of H8 observed during the site investigations. During the site investigations, H8 was assessed as one continuous feature with no site break triggers.

3.1.13 H9

H9 is a roadside ditch that occurs along Carp Road. H9 originates off-site entering the property from the southeastern corner flowing along the eastern property boundary for approximately 638 m before exiting the property and crossing Carp Road. H9 continues flowing in a northerly direction for approximately 1.1 km before eventually discharging into CARP.

H9 is comprised of a single, channelized branch, with one confluence along its upstream path on-site and flows through three culverts.

H9 was observed to have minimal but sustained flow during the first and second visit, with extensive substrate deposition, and dry during the last site investigation. No vegetation was present within H9 and the riparian vegetation was dominated by cropped agriculture. Table B.1 in Attachment B summarizes the existing conditions and characteristics of H9 observed during the site investigations. During the site investigations, H9 was assessed as one continuous feature with no site break triggers.

3.1.14 H10

H10 is an unconnected HDF with no flow to the downstream network of other watercourses surveyed on-site. H10 originates in the west within the cultural meadow and flows in a northwesterly direction, for approximately 104 m before ending.

H10 has no defined feature and was observed to have standing water during the first two site visits and was dry during the third site investigation. No vegetation was found within H10 while the riparian zone was dominated by scrubland. Table B.1 in Attachment B summarizes the

existing conditions and characteristics of H10 observed during the site investigations. During the site investigations, H10 was assessed as one continuous feature with no site break triggers.

3.1.15 H11

H11 is an unconnected HDF with no flow to the downstream network of other watercourses surveyed on-site. H11 originates in the west within the deciduous forest and flows in a northwesterly direction, for approximately 116 m before ending.

H11 has no defined feature that was observed to have standing water during the first two site visits and was dry during the third site investigation. No vegetation was found within H11 while the riparian zone was dominated by forest. Table B.1 in Attachment B summarizes the existing conditions and characteristics of H11 observed during the site investigations. During the site investigations, H11 was assessed as one continuous feature with no site break triggers.

4.0 CLASSIFICATION

All HDFs on-site were 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.

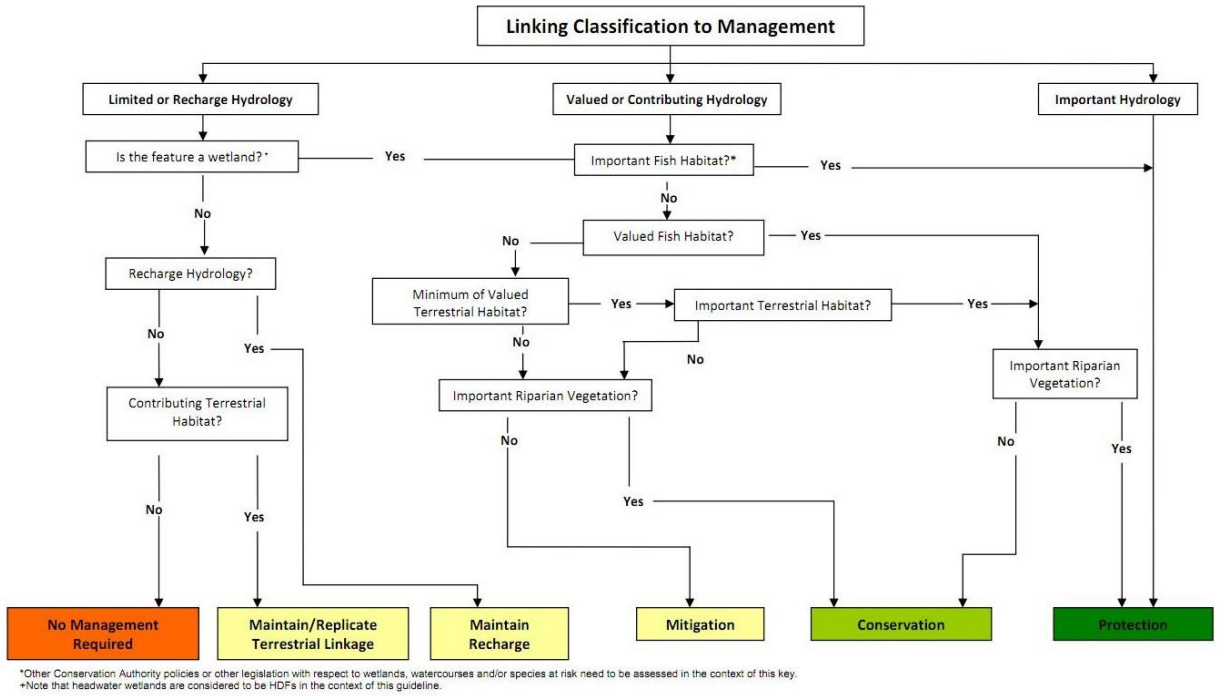


Figure 1 Flow Chart Providing Directions of Management Option's (TRCA/CVC, 2014)

CARP, H4A-S1, H4B and H9 had water conveyance throughout all three site investigations. In conjunction with the HDF feature types defined natural channel or channelized, it was determined that the feature had important hydrology. In accordance with the TRCA/CVC guidance, the important hydrology results in the determination that the above noted HDFs require **protection**.

H1, H2, H3, H4A-S2, H5, H7, and H8 had varying levels of water conveyance during the first visit, and dry to standing water conditions in the second and/or third visit. In conjunction with the HDF feature type, these features were determined to have contributing hydrology, contributing fish habitat and limited or valued terrestrial and riparian habitat which resulted in **mitigation** management required for these features.

H4C, H4D, H6, H10 and H11 had limited water conveyance (dry or standing water) during all site investigations. In conjunction with the HDF feature type channelized, it was determined that these features had limited hydrology, limited fish and terrestrial habitat and valued or important riparian habitat and as such **no management** is required for these features.

A summary of the classification and management recommendation for all HDFs is provided in Table B.2 in Attachment B.

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 hydrology, fish habitat and/or riparian vegetation. Based on the classification in Section 4 above, Carp-S1. Carp-S2, Carp-S3, H4A-S1, H4B, and H9 have been field verified to provide important hydrology, important, valued or contributing fish habitat, valued, contributing or limited terrestrial habitat and important or valued riparian habitat, as such **protection** is required for these features.

As outlined in the guidance document, protection management includes: protecting or enhancing the existing feature and its riparian zone corridor, maintaining the hydroperiod, incorporate shallow groundwater and base flow protection techniques (e.g. infiltration treatment), use natural channel design techniques or wetland design to restore or enhance existing habitat features, realignment is not generally permitted, and design and locate the stormwater management system to avoid impacts to the feature (TRCA/CVC, 2014).

In accordance with the guidance document (TRCA/CVC, 2014), HDFs classified as contributing functions require **mitigation**; these are typically features characterized by contributing hydrology, contributing fish habitat, contributing terrestrial habitat and/or contributing riparian habitat. Based on the classification in Section 4 above, H1, H2, H3, H4A-S2, H5, H7 and H8 have been field verified to provide contributing hydrology, contributing fish habitat, limited terrestrial habitat and/or valued or limited riparian habitat, as such **mitigation** is required for these features.

As outlined in the guidance document, mitigation management includes: replicating or enhancing feature functions through enhanced lot level conveyance measures (well vegetated swales), replicate on-site flow and outlet flows at the top of the system to maintain feature functions with vegetated swales/bioswales, if catchment drainage has been previously removed dur to diversion of stormwater flows, restore lost functions through enhanced lot level controls, replicated functions by lot level conveyance measures (e.g. vegetated swales) connected to the natural heritage system, as feasible and/or Low Impact Development (LID) stormwater options (TRCA/CVC, 2014).

In accordance with the guidance document (TRCA/CVC, 2014) HDFs classified as limited functions require **no management**; these are typically features with no or minimal flow and/or no fish or fish habitat. Based on the classification in Section 4 above, H4C, H4D, H6, H10, and H11have been field verified to have very limited hydrology, fish habitat, terrestrial habitat and/or riparian habitat, as such **no management** is required for these features.

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

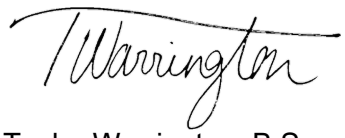
- All future development and construction activities within the study area, including ditching, culvert installation, erosion and sediment control and storm water management should be completed in accordance with Ontario Provincial Standard Specification 182 and OPSS 805.
- No in-water work should occur 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.

6.0 SUMMARY

A headwater drainage feature assessment was completed and one tributary of the Carp River, identified as Carp A, and nine HDFs were identified on-site, identified as HDF1 through HDF9. Protection is required for Carp A, HDF1, HDF4, H4A-S1 and HDF7. 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). Mitigation management is required for H1A-S1, HDF2, HDF3, H4A-S2, H4A-S3 and HDF5. Mitigation management should include: replicating or enhancing existing feature functions through lot level conveyance measures. Recharge protection is required for H3A, HDF4A-1 and HDF4A-2. Recharge management should include: maintaining overall water balance and assessing terrestrial features for associations with other terrestrial functions. No management is required for HDF6, HDF8 and HDF9.

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

7.0 REFERENCES

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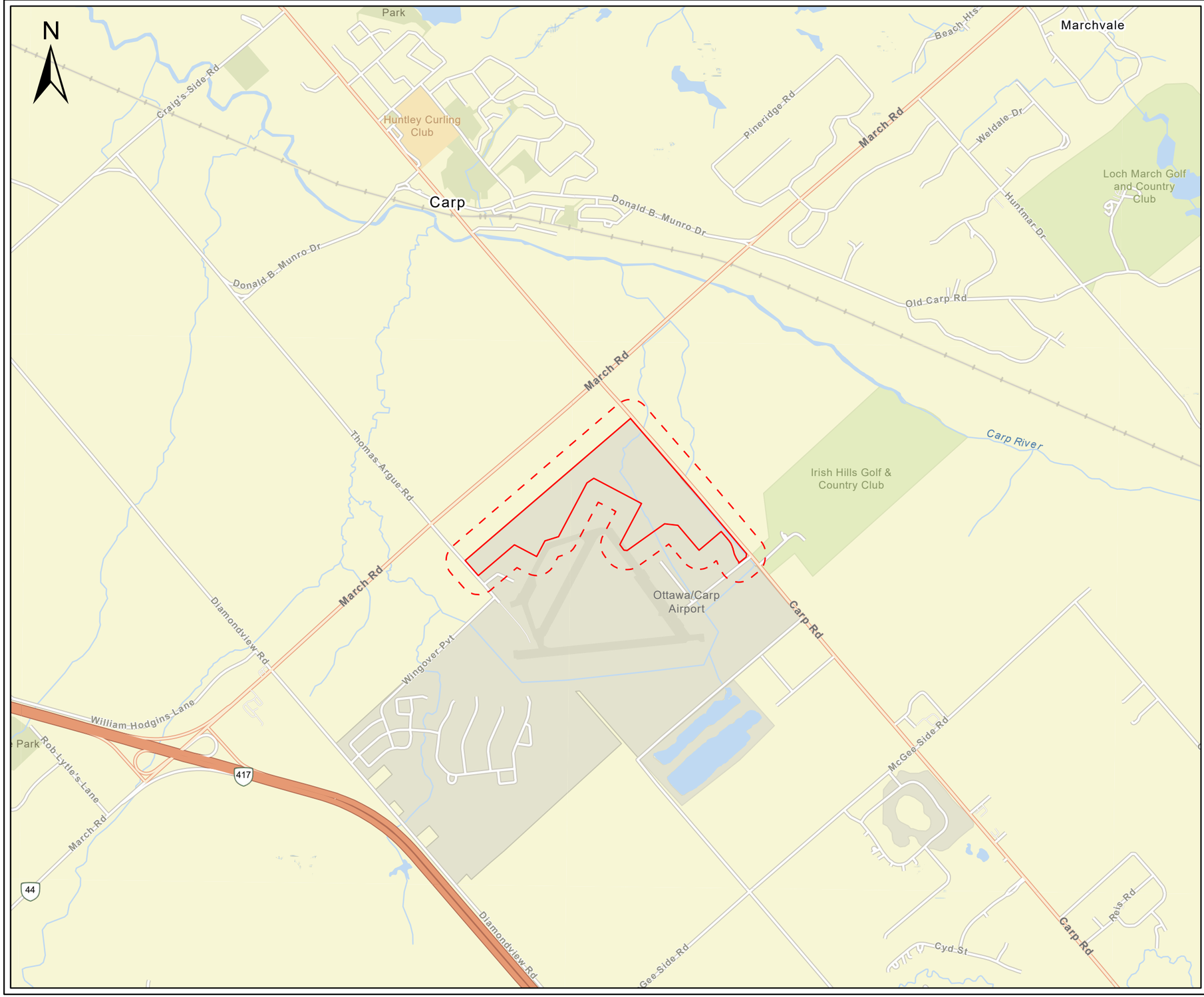
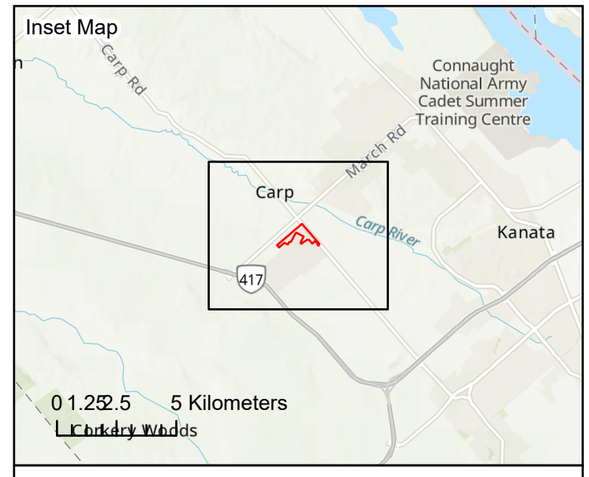
ATTACHMENT A

Figure A.1 – Site Location
Figure A.2 – Site Layout
Figure A.3 – Management Classification



Legend

- Property Boundary
- Study Area



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

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Client: West Capital Developments

Project: 100011.049

Location: Part of Lots 13, 14 and 15, Concession 3
City of Ottawa, Ontario

Drwn By:	Chkd By:	
EP	TW	Site Location

Date: July 2025

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Rev. 0

Figure: A.1

Coordinate System: NAD 1983 UTM Zone 18N
Service Layer Credits: World Street Map: Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community
World Topographic Map: Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Legend

- Property Boundary
- Study Area
- Watercourse
- Headwater Drainage Feature

Scale
1:7,000
0 50 100 200 300 400 500 Meters

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City of Ottawa, Ontario

Drwn By: EP | Chkd By: TW

Site Layout

Date: July 2025

Rev. 0

Figure: A.2

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World Imagery: Maxar

Legend

- Property Boundary
- Study Area
- Watercourse

HDF Management Classification

- Protection
- Mitigation
- No Management Required

Scale 1:7,000

0 50 100 200 300 400 500 Meters

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Drwn By:	Chkd By:	
EP	TW	Management Classification

Date: July 2025	Rev. 0	Figure: A.3

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World Imagery: Maxar

ATTACHMENT B

Headwater Drainage Feature Assessment Summary Tables

Table B.1 – Summary of HDF Existing Conditions

Table B.2 – Summary of HDF Classification and Management Recommendations

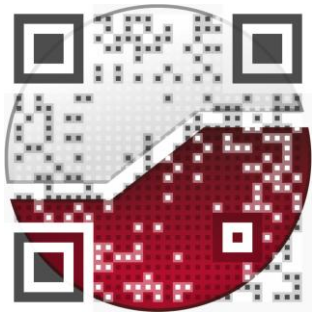
Table B.1
Summary of HDF Existing Conditions

Site Visit	Hydrology: Flow Influence (FI)	Hydrology: Flow Condition (FC)	Hydrology: Feature Type (FT)	Vegetation Assessment: Feature	Vegetation Assessment: Riparian	Channel Form: Average Wetted Width (m)	Channel Form: Average Depth (range) (cm)	Channel Form: Average Bankfull Width (m)	Channel Form: Substrate	Sediment Transport: Sediment Transport	Sediment Transport: Sediment Dep.
CARP-S1											
1	Freshet (1)	Minimal Flow (4)	Defined Natural Channel (1)	None (1)	Scrubland (5)	0.86	33 (30-36)	2.4	Silty Sand	Instream Bank Erosion (7)	Substantial (4)
2	Baseflow (3)	Minimal Flow (4)	Defined Natural Channel (1)	None (1)	Scrubland (5)	0.95	16.84 (10-21)	2.4	Silty Sand	Instream Bank Erosion (7)	Substantial (4)
3	Baseflow (3)	Minimal Flow (4)	Defined Natural Channel (1)	None (1)	Scrubland (5)	1.2	22.17 (15-31)	2.4	Silty Sand	Instream Bank Erosion (7)	Substantial (4)
CARP-S2											
1	Freshet (1)	Minimal Flow (4)	Defined Natural Channel (1)	None (1)	Cropped (3)	0.39	24.25 (14-28)	9.2	Silty Sand	Instream Bank Erosion (7)	Moderate (3)
2	Baseflow (3)	Minimal Flow (4)	Defined Natural Channel (1)	None (1)	Cropped (3)	0.6	18.3 (10-25)	9.2	Silty Sand	Instream Bank Erosion (7)	Moderate (3)
3	Baseflow (3)	Minimal Flow (4)	Defined Natural Channel (1)	None (1)	Cropped (3)	0.6	15.67 (15-17)	9.2	Silty Sand	Instream Bank Erosion (7)	Moderate (3)
CARP-S3											
1	Freshet (1)	Minimal Flow (4)	Defined Natural Channel (1)	Wetland (6)	Scrubland (5)	1.7	20.67 (15-24)	5	Silty Sand	None	Substantial (4)
2	Baseflow (3)	Minimal Flow (4)	Defined Natural Channel (1)	Wetland (6)	Scrubland (5)	0.96	16 (10-23)	5	Silty Sand	None	Substantial (4)
3	Baseflow (3)	Minimal Flow (4)	Defined Natural Channel (1)	Wetland (6)	Scrubland (5)	0.8	19 (17-22)	5	Silty Sand	None	Substantial (4)
H1											
1	Freshet (1)	Minimal Flow (4)	Roadside Ditch (8)	None (1)	Meadow (4)	0.2	10 (10)	2	Silty Sand	None	Extensive (5)
2	Baseflow (3)	Standing Water (2)	Roadside Ditch (8)	None (1)	Meadow (4)	0.25	2.67 (1-5)	2	Silty Sand	None	Extensive (5)
3	Baseflow (3)	Dry (1)	Roadside Ditch (8)	None (1)	Meadow (4)	--	--	2	Silty Sand	None	Extensive (5)
H2											
1	Freshet (1)	Minimal Flow (4)	Roadside Ditch (8)	None (1)	Cropped (3)	0.5	10 (10)	2	Silty Sand	Instream Bank Erosion (7)	Extensive (5)
2	Baseflow (3)	Minimal Flow (4)	Roadside Ditch (8)	None (1)	Cropped (3)	0.48	2 (1-3)	2	Silty Sand	Instream Bank Erosion (7)	Extensive (5)
3	Baseflow (3)	Dry (1)	Roadside Ditch (8)	None (1)	Cropped (3)	--	--	2	Silty Sand	Instream Bank Erosion (7)	Extensive (5)
H3											
1	Freshet (1)	Standing Water (2)	Channelized (2)	None (1)	Cropped (3)	0.93	9 (3-15)	2.5	Silty Sand	None	None
2	Baseflow (3)	Dry (1)	Channelized (2)	None (1)	Cropped (3)	--	--	2.5	Silty Sand	None	None
3	Baseflow (3)	Dry (1)	Channelized (2)	None (1)	Cropped (3)	--	--	2.5	Silty Sand	None	None
H4A-S1											
1	Freshet (1)	Minimal Flow (4)	Defined Natural Channel (1)	None (1)	Scrubland (5)	0.47	10.3 (7-15)	1	Silty Sand	None	Moderate (3)
2	Baseflow (3)	Minimal Flow (4)	Defined Natural Channel (1)	None (1)	Scrubland (5)	0.48	5.83 (3-10)	1	Silty Sand	None	Moderate (3)
3	Baseflow (3)	Minimal Flow (4)	Defined Natural Channel (1)	None (1)	Scrubland (5)	--	--	1	Silty Sand	None	Moderate (3)
H4A-S2											
1	Freshet (1)	Interstitial Flow (3)	Channelized (2)	None (1)	Meadow (4)	1.17	11.75 (3-27)	3	Silty Sand	None	None
2	Baseflow (3)	Standing Water (2)	Channelized (2)	None (1)	Meadow (4)	2.25	16 (11-25)	3	Silty Sand	None	None
3	Baseflow (3)	Dry (1)	Channelized (2)	None (1)	Meadow (4)	--	--	3	Silty Sand	None	None
H4B											
1	Freshet (1)	Minimal Flow (4)	Defined Natural Channel (1)	None (1)	Scrubland (5)	0.59	11.5 (8-15)	2.75	Silty Sand	None	Moderate (3)
2	Baseflow (3)	Minimal Flow (4)	Defined Natural Channel (1)	None (1)	Scrubland (5)	0.68	16.67 (10-25)	2.75	Gravely Sand	None	Moderate (3)
3	Baseflow (3)	Minimal Flow (4)	Defined Natural Channel (1)	None (1)	Scrubland (5)	0.63	16.33 (10-25)	2.75	Gravely Sand	None	Moderate (3)
H4C											
1	Freshet (1)	Dry (1)	Swale (7)	None (1)	Meadow (4)	--	--	5	Silty Sand	None	None
2	Baseflow (3)	Dry (1)	Swale (7)	None (1)	Meadow (4)	--	--	5	Silty Sand	None	None
3	Baseflow (3)	Dry (1)	Swale (7)	none (1)	Meadow (4)	--	--	5	Silty Sand	None	None
H4D											
1	Freshet (1)	Dry (1)	Channelized (2)	None (1)	Meadow (4)	--	--	2.95	Silty Sand	None	None
2	Baseflow (3)	Dry (1)	Channelized (2)	None (1)	Meadow (4)	--	--	2.95	Silty Sand	None	None
3	Baseflow (3)	Dry (1)	Channelized (2)	None (1)	Meadow (4)	--	--	2.95	Silty Sand	None	None
H5											
1	Freshet (1)	Interstitial Flow (3)	Channelized (2)	None (1)	Lawn (2)	2	30	5	Silty Sand	None	Extensive (5)
2	Baseflow (3)	Dry (1)	Channelized (2)	None (1)	Lawn (2)	--	--	5	Silty Sand	None	Extensive (5)
3	Baseflow (3)	Dry (1)	Channelized (2)	None (1)	Lawn (2)	--	--	5	Silty Sand	None	Extensive (5)
H6											
1	Freshet (1)	Dry (1)	Channelized (2)	None (1)	Meadow (4)	--	--	5	Silty Sand	None	Moderate (3)
2	Baseflow (3)	Dry (1)	Channelized (2)	None (1)	Meadow (4)	--	--	5	Silty Sand	None	Moderate (3)
3	Baseflow (3)	Dry (1)	Channelized (2)	None (1)	Meadow (4)	--	--	5	Silty Sand	None	Moderate (3)
H7											
1	Freshet (1)	Interstitial Flow (3)	Channelized (2)	None (1)	Meadow (4)	0.34	3.33 (2-5)	8	Silty Sand	None	Moderate (3)
2	Baseflow (3)	Dry (1)	Channelized (2)	None (1)	Meadow (4)	0.65	5.67 (4-8)	8	Silty Sand	None	Moderate (3)
3	Baseflow (3)	Dry (1)	Channelized (2)	None (1)	Meadow (4)	0.7	1.7 (1-2)	8	Silty Sand	None	Moderate (3)
H8											
1	Freshet (1)	Interstitial Flow (3)	Channelized (2)	Wetland (6)	Cropped (3)	0.34	3.3 (2-5)	10	Silty Sand	Rill and Gully (3)/ Rill (2)	Extensive (5)
2	Baseflow (3)	Standing Water (2)	Channelized (2)	Wetland (6)	Cropped (3)	0.65	5 (4-6)	10	Silty Sand	Rill and Gully (3)/ Rill (2)	Extensive (5)
3	Baseflow (3)	Dry (1)	Channelized (2)	Wetland (6)	Cropped (3)	--	--	10	Silty Sand	Rill and Gully (3)/ Rill (2)	Extensive (5)
H9											
1	Freshet (1)	Minimal Flow (4)	Roadside Ditch (8)	None (1)	Cropped (3)	1	37 (37)	1	Silty Sand	Rill and Gully (3)/ Rill (2)	Extensive (5)
2	Baseflow (3)	Minimal Flow (4)	Roadside Ditch (8)	None (1)	Cropped (3)	1	2.9 (2.5-3.2)	1	Silty Sand	Rill and Gully (3)/ Rill (2)	Extensive (5)
3	Baseflow (3)	Dry (1)	Roadside Ditch (8)	None (1)	Cropped (3)	--	--	1	Silty Sand	Rill and Gully (3)/ Rill (2)	Extensive (5)
H10											
1	Freshet (1)	Standing Water (2)	No Defined Feature (4)	None (1)	Scrubland (5)	3.33	17.33 (8-30)	6	Silty Sand	None	None
2	Baseflow (3)	Standing Water (2)	No Defined Feature (4)	None (1)	Scrubland (5)	0.25	3.67 (2-5)	6	Silty Sand	None	None
3	Baseflow (3)	Dry (1)	No Defined Feature (4)	None (1)	Scrubland (5)	--	--	6	Silty Sand	None	None
H11											
1	Freshet (1)	Standing Water (2)	No Defined Feature (4)	None (1)	Forest (7)	4.33	32.3 (30-35)	6	Silty Sand	None	None
2	Baseflow (3)	Standing Water (2)	No Defined Feature (4)	None (1)	Forest (7)	1.3	3 (2-5)	6	Silty Sand	None	None
3	Baseflow (3)	Dry (1)	No Defined Feature (4)	None (1)	Forest (7)	--	--	6	Silty Sand	None	None

Table B.2
Summary of HDF Classification and Management Recommendations

HDF	Step 1 Hydrology	Step 1 Modifiers	Step 2 Fish Habitat	Step 3 Terrestrial Habitat	Step 4 Riparian Vegetation	Management Recommendation
CARP-S1	Important - Perennial	None	Important	Contributing	Important - Scrubland	Protection
CARP-S2	Important - Perennial	None	Important	Contributing	Limited - Cropped	Protection
CARP-S3	Important - Perennial	Culvert	Important	Contributing	Important - Scrubland	Protection
H1	Contributing - Ephemeral	Culvert	Contributing	Limited	Valued - Meadow	Mitigation
H2	Contributing - Ephemeral	Culvert	Contributing	Limited	Limited - Cropped	Mitigation
H3	Contributing - Ephemeral	None	Contributing	Limited	Limited - Cropped	Mitigation
H4A-S1	Important - Perennial	Piping	Valued	Contributing	Important - Scrubland	Protection
H4A-S2	Contributing - Ephemeral	Piping	Contributing	Limited	Valued - Meadow	Mitigation
H4B	Important - Perennial	None	Important	Contributing	Important - Scrubland	Protection
H4C	Limited - Dry	Piping	Limited	Limited	Valued - Meadow	No Management Required
H4D	Limited - Dry	None	Limited	Limited	Valued - Meadow	No Management Required
H5	Contributing - Ephemeral	Rock dam	Contributing	Limited	Limited - Lawn	Mitigation
H6	Limited - Dry	Rock dam	Limited	Limited	Valued - Meadow	No Management Required
H7	Contributing - Ephemeral	Culvert	Contributing	Limited	Valued - Meadow	Mitigation
H8	Contributing - Ephemeral	None	Contributing	Limited	Limited - Cropped	Mitigation
H9	Contributing - Ephemeral	Culvert	Important	Limited	Limited - Cropped	Protection
H10	Limited - Standing Water	None	Limited	Limited	Important - Scrubland	No Management Required
H11	Limited - Standing Water	None	Limited	Limited	Important - Forest	No Management Required

experience • knowledge • integrity



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

expérience • connaissance • intégrité