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3555 Borrisokane Road Scoped EIS

Barrhaven, Ottawa, Ontario.

Palmer Project #
2201001

Prepared For
Halo Carwash

April 27, 2022

April 27, 2022

Jordan Lupovici
Senior Development and Project Manager
Halo Carwash

Dear Jordan:

Palmer is pleased to submit the attached Scoped Environmental Impact Study for the proposed development at 3555 Borrisokane Road.

Based on the findings and recommendations of the report, it is our opinion that with the implementation of the mitigation measures provided, the proposed development is environmentally feasible and no negative impacts to the adjacent natural environment are expected. Please let us know if you have questions or comments on this submission.

Yours truly,

Palmer

Ryan Morin, B.Sc.
Ecologist

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1. Introduction

Palmer has been retained by Halo Carwash to complete a Scoped Environmental Impact Study (EIS) for the property identified as 3555 Borrisokane Road, Barrhaven, Ottawa (the Subject Property, **Figure 1**). The proponent wishes to develop the property into an operating carwash and have retained Palmer to undertake the EIS to ensure the proposal meets the requirements of the existing policy framework.

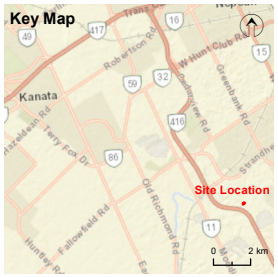
A previous EIS has been completed in 2019 by Kilgour & Associates for a larger parcel which includes the Subject Property in question. This Scoped EIS incorporates background data from the 2019 EIS as several addition wildlife surveys (breeding birds, breeding amphibians) were conducted.

The proponent wishes to develop the lot, building a carwash with associated parking and infrastructure. This Scoped EIS relies on background information and a single site visit by a Palmer Ecologist to investigate any potential impacts or environmental policy implications associated with this proposed development. The property occurs within the planning area for the City of Ottawa, as well as the Rideau Valley Conservation Area (RVCA).

LEGEND

Watercourse (OHN)

Subject Property



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North American Datum 1983
Universal Transverse Mercator Projection Zone 17

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Checked: RM
Date: Apr 7, 2022

NORTH

Source Notes: Base imagery (2019) provided by City of Ottawa GIS REST services.

CLIENT: Halo Carwash

PROJECT: 3555 Borrisokane Road Scoped EIS

TITLE: **Site Location**

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REF. NO. 2201001-1-1

Figure 1

Document Path: G:\Shared drives\Projects 2022\22010 - Halo Carwash\2201001 - 3555 Borrisokane Road Scoped EIS\GIS\1_Workspace\Task 1 - EIS Figures\2201001-1-1-Site Location.mxd

2. Environmental Policy

2.1 Migratory Birds Convention Act (1994)

The *Migratory Birds Convention Act, 1994* (MBCA) and *Migratory Birds Regulations, 2014* (MBR) protect most species of migratory birds and their nests and eggs anywhere they are found in Canada (Government of Canada, 1994). General prohibitions under the MBCA and MBR protect migratory birds, their nests and eggs and prohibit the deposit of harmful substances in waters / areas frequented by them. The MBR includes an additional prohibition against incidental take, which is the inadvertent harming or destruction of birds, nests or eggs.

Compliance with the MBCA and MBR is best achieved through a due diligence approach, which identifies potential risk, based on a site-specific analysis in consideration of the Avoidance Guidelines and Best Management Practices information on the Environment Canada website (Government of Canada, 2018).

2.2 Endangered Species Act (2007)

Species designated as Endangered or Threatened by the Committee on the Status of Species at Risk in Ontario (COSSARO) are listed as Species at Risk in Ontario (SARO). These species at risk (SAR) and their habitats (e.g., areas essential for breeding, rearing, feeding, hibernation and migration) are afforded legal protection under the *Endangered Species Act, 2007* (ESA) (Government of Ontario, 2007). This *Act* is administered by the Ministry of Environment, Conservation and Parks (MECP).

The protection provisions for species and their habitat within the ESA apply only to those species listed as Endangered or Threatened on the SARO list, being Ontario Regulation 230/08 of the ESA. Species listed as Special Concern may be afforded protection through policy instruments respecting significant wildlife habitat (e.g., the Provincial Policy Statement (PPS)) as defined by the Province or other relevant authority, or other protections contained in Official Plan policies.

2.3 Provincial Policy Statement (2020)

The *Provincial Policy Statement* (PPS) provides direction to regional and local municipalities regarding planning policies for the protection and management of natural heritage features and resources (Ontario Ministry of Municipal Affairs and Housing, 2020). The PPS defines eight types of Natural Heritage Features (NHF) and adjacent areas and provides planning policies for each. Of these NHF, development is not permitted in:

- Significant Coastal Wetlands;
- Significant Wetlands in Ecoregions 5E, 6E and 7E;
- Fish Habitat, except in accordance with provincial and federal requirements; or
- Habitat of species designated as Endangered and Threatened, except in accordance with provincial and federal requirements.

Additionally, unless it can be demonstrated through an Environmental Impact Study (EIS) that there will be no negative impacts on the natural features or their ecological functions, development and site alteration are also not permitted in:

- Significant Wetlands in the Canadian Shield north of Ecoregions 5E, 6E and 7E;
- Significant Woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River);
- Significant Valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River);
- Significant Wildlife Habitat;
- Significant Areas of Natural and Scientific Interest;
- Other Coastal Wetlands in Ecoregions 5E, 6E and 7E; and
- Lands defined as *Adjacent Lands* to all the above natural heritage features.

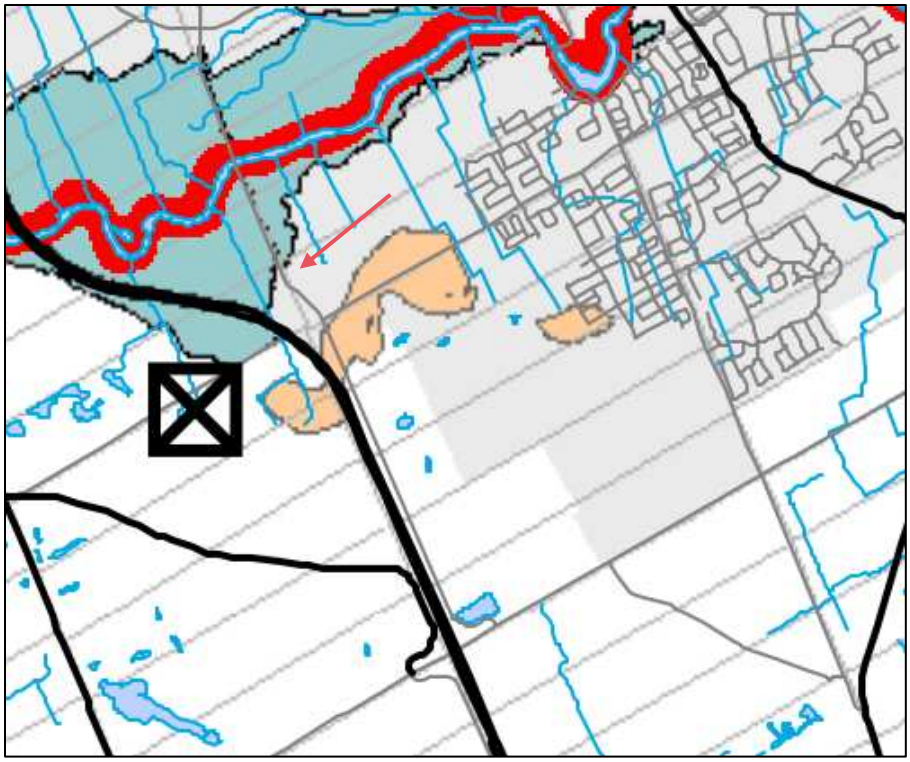
The property, occurs in Ecoregion 6E and as shown below in **Map A**, does not contain any of the abovementioned features, with woodland and wetland occurring to the south.

Map A : NHIC data showing no features on the property with wetland and woodlands to the south

2.4 City of Ottawa Official Plan (2003)

The purpose of the City of Ottawa Official Plan (2003) is to "manage this growth in ways that reinforce the qualities of the city most valued by its residents: its distinctly liveable communities, its green and open character, and its unique characteristics that distinguish Ottawa from all other places".

As per Schedule K of the OP (**Map B**), the property does not contain any Environmental Constraints or Flood Plain, however both of these features are found to the north and the south of the property.



Map B Schedule K Environmental Constraints, Flood Plain (Teal) immediately to the north and Organic Soil (Orange) to south of the Subject Property (approximate location denoted by red arrow)

Regarding the policy for development *adjacent* to natural features, the OP states: *"Development and site alterations will not be permitted within 120m of the boundary of a Significant Wetland unless an Environmental Impact Statement demonstrates that there will be no negative impacts (as defined by Section 4.7.8) on the wetland or its ecological function."*

2.5 Rideau Valley Conservation Authority (O/Reg. 174/06)

The Subject Property occurs within the jurisdiction of the Rideau Valley Conservation Authority (RVCA), regulated under *O/Reg. 174/06*.

Regarding development prohibition:

> *2. (1) Subject to section 3, no person shall undertake development or permit another person to undertake development in or on the areas within the jurisdiction of the Authority that are,*
>
> *(a) adjacent or close to the shoreline of inland lakes that may be affected by flooding, erosion or dynamic beaches, including the area from the furthest offshore extent of the Authority's boundary to the furthest landward extent of the aggregate of the following distances:*
>
> *(i) the 100 Year flood level,*

(ii) the predicted long term stable slope projected from the existing stable toe of the slope or from the predicted location of the toe of the slope as that location may have shifted as a result of shoreline erosion over a 100-year period, and

(iii) an allowance of 15 metres inland;

(b) river or stream valleys that have depressional features associated with a river or stream, whether or not they contain a watercourse, the limits of which are determined in accordance with the following rules:

(i) where the river or stream valley is apparent and has stable slopes, the valley extends from the stable top of bank, plus 15 metres, to a similar point on the opposite side,

(ii) where the river or stream valley is apparent and has unstable slopes, the valley extends from the predicted long term stable slope projected from the existing stable slope or, if the toe of the slope is unstable, from the predicted location of the toe of the slope as a result of stream erosion over a projected 100-year period, plus 15 metres, to a similar point on the opposite side,

(iii) where the river or stream valley is not apparent, the valley extends the greater of,

(A) the distance from a point outside the edge of the maximum extent of the flood plain under the applicable flood event standard, plus 15 metres, to a similar point on the opposite side, and

(B) the distance from the predicted meander belt of a watercourse, expanded as required to convey the flood flows under the applicable flood event standard, plus 15 metres, to a similar point on the opposite side;

(c) hazardous lands;

(d) wetlands; or

(e) other areas where development could interfere with the hydrologic function of a wetland, including areas within 120 metres of all provincially significant wetlands and wetlands greater than 2 hectares in size, and areas within 30 metres of wetlands less than 2 hectares in size. O. Reg. 174/06, s. 2 (1); O. Reg. 78/13, s. 1 (1, 2).

As shown below on (**Map C**), the property does not contain Regulated area as shown in online web mapping by the RVCA, or other identified hazard or natural heritage features.

Map C: RVCA Mapping showing Regulated Area (Green Hatching) to the north and Forest (green polygon) to the south

3. Background Review and Methodology

3.1 Background Review

Palmer has reviewed relevant background material to provide a focus on field investigations and ensure compliance with applicable regulations and policy. Background information collection is guided by the *Natural Heritage Information Request Guide* (Ministry of Natural Resources and Forestry, 2018). Current direction from the Ministry of Natural Resources and Forestry (MNRF) and Ministry of Environment, Conservation and Parks (MECP) is to gather natural heritage information and species occurrence records from available sources; the Natural Heritage Information Centre (NHIC) Make Make-a-Map application being the main source of information and records from the Ministry itself (Ministry of Natural Resources and Forestry, 2021). Information gathered is recommended to be balanced and supplemented by a professional ecological review of potential habitats and characteristics of a project site.

Background review included the collection and review of relevant mapping and reports, including regulations and policies, Official Plans, and the NHIC Make-a-Map application for species occurrences and designated area mapping. In addition to these sources, the following data sources were reviewed for the project:

- **Land Information Ontario (LIO):** certain data types including aquatic resource area (ARA) information is available through these publicly available data layers (Government of Ontario, 2021).
- **Conservation Authority:** the RVCA collects and maintains natural heritage mapping and data, and publish reports, that all provide regional and often site-specific ecological context.
- **Ontario Breeding Birds Atlas (OBBA):** for breeding bird records in the general vicinity (Bird Studies Canada, 2021).

Following the *Information Request Guide (*MNRF, 2018*)*, MECP advice and direction should be solicited once Species at Risk (SAR) interactions or potential interactions are identified via field investigations and analysis. For some SAR, specific regulations under O. Reg. 242/08 can be followed without recourse to consultation with the MECP staff.

3.2 Ecological Surveys

An ecological field survey was conducted on March 2nd, 2022. The weather conditions at the time of Palmer's survey included overcast skies and light snow. There was snow cover at the time of the survey. The ecological investigation included in-field data collection for vegetation communities, to the extent possible during the current winter growing season, with reference to the Kilgour EIS for further background information.,

Vegetation Communities and Flora

Vegetation communities were mapped and described following the Ecological Land Classification (ELC) System for Southern Ontario (Lee, et al., 1998). Vegetation community boundaries were delineated on field

maps through the interpretation of and recent aerial photographs and refined in the field. The limit of any wetlands (if identified) would be delineated in accordance with protocols established in the Ontario Wetland Evaluation System (OWES).

Screening for Species at Risk Habitat and Significant Wildlife Habitat

A screening for Species at Risk (SAR) habitat and Significant Wildlife Habitat (SWH) has been completed for the Subject Property through a review of potential SAR or SWH values known to occur in the region, with an analysis of potential presence based on background review and a single site investigation.

LEGEND

ELC Community

Subject Property

ELC LEGEND

CUM: Cultural Upland Meadow

ANT: Anthropogenic

0 10 20 30

METRE SCALE

North American Datum 1983
Universal Transverse Mercator Projection Zone 17

Scale: 1:750
Page Size: Letter (8.5 x 11 inches)

Drawn: SM
Checked: RM
Date: Apr 12, 2022

NORTH

Source Notes: Base imagery (2019) provided by City of Ottawa GIS REST services.

CLIENT: Halo Carwash

PROJECT: 3555 Borrisokane Road Scoped EIS

TITLE: **Existing Environmental Conditions**

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REF. NO. 2201001-2-2

Figure 2

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4. Existing Conditions

4.1 Environmental Designation

Based on the review of MNRF's online Make-a-map, the Subject Property has no provincial environmental designations (i.e ANSI, Provincially Significant Wetlands) (**Map A)**. To the south of the property in a large naturalized block NHIC shows the presence of unevaluated wetland and woodland, as well as some site drainage along the periphery.

4.2 Ecological Land Classification

The Subject Property occurs on the east side of Borrisokane Road in an area of anthropogenic influence, including a suburban development to the east and historic farmlands on all other surrounding lands. The property was historically used for agricultural purposes but has been left fallow for several years, with the primary current cover being regeneration meadow (**Figure 2**). The Subject Property was absent of trees at the time of Palmer's survey, with the exception of a few mid-aged American Elm *(Ulmus americana)* fronting Borrisokane Road.

The Subject Property occurs south of the Jock River, with the identified site drainage flowing north to the Jock which then ultimately conveys east to the Rideau River. None of the drainage channels that were historically created by agricultural uses were observed to cross through the Subject Property as shown in NHIC data (**Map A**). The large treed wetland identified in NHIC data as existing on the immediate south adjacent lands was identified in the Kilgour EIS (2019) as primarily being Red Maple *(Acer rubrum)* and Black Ash *(Fraxinus nigra)* dominated swamp.

The two vegetation communities identified within the Subject Property are shown on **Figure 2** and are further described as follows:

Anthropogenic (ANT)
A small area in the north end of the property includes an existing gravel flat. Palmer expects that this area has recently been utilized for access or parking purposes.

Cultural Upland Meadow (CUM)
The only vegetated area within the Subject Property was a Cultural Upland Meadow which appeared to be historically cleared and maintained for Agricultural use but has since been left to fallow (as mentioned above). The meadow appeared to be sparse with exposed soil (**Photograph 1 & 2**), however the field investigation for this study was not conducted during the vegetative growing season to confirm such conditions. The meadow doid not contain a well-established grassland community, as this would be evidenced by persistent stalks at the time of Palmer's investigation. The Kilgour EIS (2019) found these Cultural Upland Meadow areas to have had topsoil removed previously, and be primarily covered by forbs including Red Clover *(Trifolium pratense)*, White Clover *(Trifolium repens)*, Birds-foot Trefoil *(Lotus corniculatus)*and Aster species *(Symphyotrichum spp.)*.

Photographs 1 and 2: Subject Property fronting Borrisokane Road with sparse meadow forbs. No drainage feature detected here as noted present in NHIC data. / Primary Cultural Meadow (CUM) through Subject Property with Woodlands to the south (looking south from access road)

Photographs 3 and 4: East side of Subject Property, Cultural Meadow area lacks persistent vegetation, adjacent (east) property in background. / Photograph 4: Drainage Feature for Jock River on adjacent property to the east (looking north).

5. Assessment of Significance

5.1 Species At Risk

Prior to field investigations, a background review was completed for potential SAR habitat opportunities. The NHIC database, the Ontario Breeding Bird Atlas (OBBA), and the Ontario Reptile and Amphibian Atlas (ORAA) were screened for SAR records. The property includes NHIC square 1107866 which indicates Butternut *(Juglans cinerea)* and Bobolink *(Dolichonyx oryzivorus)* are known to occur in the area. Based on available background information from the Kilgour EIS (2019) and Palmer's 2022 field investigation, the Subject Property was screened for potential SAR habitat opportunities.

This assessment was conducted by comparing habitat preferences of species deemed to have potential to occur against current site conditions. This SAR habitat assessment can be found in **Appendix A**, providing a detailed description of each species' habitat (including those deemed to not have potential habitat), as well as a discussion of habitat suitability within the Subject Property, potential impacts, and mitigation, where applicable. Based on the rationale provided in **Appendix A**, no potential SAR habitat was identified as potentially present on the Subject Property.

Butternut trees remain detectable throughout the year and none were detected on the property, with only a few trees occurring along the frontage of Borrisokane Road (comprising Elms). Despite the moderate snow cover that persisted during field investigations, it can be confirmed that Butternut trees do not currently exist on the site. The Kilgour EIS (2019) also did not find Butternut during their study which included several site visits across a larger study area including the Subject Property.

Grassland birds including the Bobolink, Eastern Meadowlark and Grasshopper Sparrow which occur in the region according to Ontario Breeding Bird Atlas results, do not have habitat potential within the Subject Property despite having a meadow community, as it does not include cover by grass vegetation.

Several species of SAR reptile are identified by the Ontario Reptile and Amphibian Atlas (ORAA), as shown in **Appendix A**, as occurring in the region. None would find habitat within the Subject Property due to a complete lack of upland micro-habitat features (i.e. rock or shrub cover, woody debris) and aquatic habitat. These species may occur within the Jock River to the north, likely the source of the records.

5.2 Significant Wildlife Habitat

Significant Wildlife Habitat (SWH) can be difficult to appropriately determine at the site-specific level, as the assessment must incorporate information from a wide geographic area and consider other factors such as regional resource patterns and landscape effects. To help with site level assessments, the MNRF has developed the *Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E* (Ontario Ministry of Natural Resources, 2015).

SWH is defined by the MNRF in the Significant Wildlife Habitat Technical Guide (Ontario Ministry of Natural Resources, 2000) and Natural Heritage Reference Manual (Ontario Ministry of Natural Resources, 2010) and includes the following categories:

- Seasonal Concentration Areas of Animals;
- Rare Vegetation Communities or Specialized Habitats for Wildlife;
- Habitats of Species of Conservation Concern; and
- Animal Movement Corridors.

Criteria for the identification of these features are also provided in the *Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E*. These criteria were used to provide a screening for wildlife habitat within the Study Area for potential SWH within and immediately adjacent to the proposed development footprint, as detailed in **Appendix C**.

No SWH were identified as having potential to occur within the Subject Property, however SWH values likely occur in the adjacent natural communities. Furthermore, the Kilgour EIS (EIS) did not detect the presence of breeding amphibians on the property or in the immediate vicinity, including within the drainage channels during their study.

6. Proposed Development

As detailed on the Site Plan prepared by LRL Engineering (dated Sept 2021), the proposed development involves the erecting of a carwash building on the property with associated access driveway and parking area,. The proposed development is also shown **Figure 3**. Access to the property will be facilitated via the access driveway in the northwest corner of the lot, connecting to the newly developed access road off Borrisokane Road to the west.

LEGEND

Proposed Development

Subject Property

0 10 20 30

METRE SCALE

North American Datum 1983
Universal Transverse Mercator Projection Zone 17

Scale: 1:750
Page Size: Letter (8.5 x 11 inches)

Drawn: SM
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Date: Apr 12, 2022

NORTH

Source Notes: Base imagery (2019) provided by City of Ottawa GIS REST services.

CLIENT: Halo Carwash

PROJECT: 3555 Borrisokane Road Scoped EIS

TITLE: **Proposed Development**

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REF. NO. 2201001-3-1

Figure 3

Document Path: G:\Shared drives\Projects 2022\22010 - Halo Carwash\2201001 - 3555 Borrisokane Road Scoped EIS\GIS\1_Workspace\Task 1 - EIS Figures\2201001-3-1-Proposed Development.mxd

7. Impact Assessment and Mitigation Measures

The Subject Property does not contain any natural features within its boundaries that require removal for the proposed development. Adjacent features (within 120m) have been identified, including a wetland and woodland to the south and a drainage feature conveying north to the Jock River. Indirect impacts to adjacent and off-site features are considered to be the most significant potential effects of the proposed development to be considered, as the cultural meadow has been identified as supporting mainly non-native species and provides limited and low-quality wildlife opportunities

7.1 Woodland and Wetland

To the south of the property, a woodland and wetland complex (according to NHIC data) occur, a distance of approximately 100 meters south. The topography of the landscape, as shown in photographs 1-4, is generally flat with overland conveyance of erosion or other impacts a minor issue. Standard mitigation measures during construction as discussed below will ensure no impacts to this feature occur. After construction, no impacts are anticipated on these features given the distance and nature of site topography.

7.2 Drainage Feature

The drainage feature occurs on a property to the east, at a distance of approximately 120 metres from the eastern boundary of the lot. It flows directly into the Jock River to the north, present a potential risk for erosion and sediment runoff. The distance of the proposed development from this drainage feature ensures no risk to the feature and its riparian area (recently replanted), and those measure for during construction discussed below ensure no risk occurs during this phase.

7.3 Stormwater Management

The property occurs in a general area which has a low capacity for soil and erosion buffering, as the property and surrounds is primarily devoid of rooted vegetation. The use of sediment and erosion control during construction will be required to limit any potential impacts to adjacent properties or natural heritage features.

To prevent any sediment or erosion runoff into the adjacent wetland it is recommended that sediment and erosion control fencing be installed around the entire work area prior to any earth works or soil exposure. This will require daily inspection to ensure fencing is doing an adequate job preventing any loose soil from leaving the project site.

8. Policy Conformity

A summary of applicable natural heritage policies and the manner in which the proposed development plan meets their requirements is provided in **Table 1**. With the implementation of the aforementioned mitigation, there are no predicted negative impacts to the limited Natural Heritage Features observed adjacent to the Subject Property or their ecological functions.

Table 1. Policy Conformity

Policy Document	Policy Intent/Objective	Implications and Policy Conformity
Migratory Bird Act	Protect most species of migratory birds and their nests and eggs anywhere they are found in Canada.	Tree clearing and vegetation removal is not anticipated for the proposal as no vegetation currently exists within the work area. If the few trees fronting Borrisokane Road require removal, this should be conducted outside of the Breeding Bird Window (May 1 – September 1) to ensure no nesting birds are present.
Endangered Species Act	Species and the habitat of species designated as Endangered or Threatened are afforded legal protection.	The proposed development occurs within anthropogenic and cultural meadow areas that does not have existing structure that may provide habitat (i.e existing structures, grassland). Risk to SAR species or their habitat are not anticipated.
Provincial Policy Statement	Direction to regional and local municipalities regarding planning policies for the protection and management of natural heritage features.	Development or site alteration is not to occur within Significant Woodlands or Wetlands in Ecoregion 6E. None of these features have been identified within the Subject Property, thus development is proposed outside of these areas.
City of Ottawa Official Plan (2003)	The Town does not identify any environmental hazards or features within the Subject Property (**Map A**).	An Environmental Impact Study is required as the proposed development occurs adjacent (within 120m) to a wetland and woodland. No features within or adjacent to the property require the application of vegetated setbacks. Section 4.7 of the OP describes minimum setbacks from natural features ranging from 15 – 30 meters, none of which would apply given the distance of the property from natural features..
Rideau Valley Conservation Authority *(O. Reg. 174/06)*	The entire Subject Property contains Regulated Area by the SVCA and a permit under *O. Reg. 174/06* for development will be required.	The property does not contain any Regulated area (as identified by RVCA mapping) or regulated features and a permit should not be required for the proposed development.

9. Conclusions

The findings of this Scoped EIS are the result of a background review, field investigations and an assessment of ecological data, as well as the current natural heritage policy requirements. We have identified the natural environmental sensitivities, constraints and development opportunities associated with the proposed development plan. Based on the findings and recommendations of this study, the only natural heritage features which require considering are those on adjacent lots within 120 metres of the property. It is our professional opinion that with the implementation of the mitigation measures provided in this report, the proposed development plan is feasible under the existing environmental framework.

10. Certification

This report was prepared, reviewed and approved by the undersigned:

Prepared By:

Ryan Morin, B.Sc.
Ecologist

Reviewed By:

Erin Donkers, B.Sc.
Senior Ecologist

11. References

City of Ottawa Official Plan, 2003.

Kilgour & Associates LTD, 2019. Environmental Impact Statement Mattamy – Half Moon Bay West. Project Number MATT514

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Appendix A: Species at Risk Screening

NAME	SARA STATUS	SARO	COSEWIC	SCHEDULE	S-RANK	HABITAT REQUIREMENTS	SOURCE OF RECORD	POTENTIAL HABITAT PRESENT (Y/N)	RATIONALE	POTENTIAL IMPACTS AND MITIGATION
AVIFAUNA										
Bank Swallow (*Riparia riparia*)	THR	THR	THR	1	S4B	The Bank Swallow is threatened by loss of breeding and foraging habitat, destruction of nesting habitat and widespread pesticide use. Bank swallows are small songbirds with brown upperparts, white underparts and a distinctive dark breast band. It averages 12 cm long and weighs between 10 and 18 grams. The swallow can be distinguished in flight from other swallows by its quick, erratic wing beats and its almost constant buzzy, chattering vocalizations. They nest in burrows in natural and human-made settings where there are vertical faces in silt and sand deposit, including banks of rivers and lakes, active sand and gravel pits or former ones where the banks remain suitable. The birds breed in colonies ranging from several to a few thousand pairs (Ministry of Natural Resources and Forestry, 2014).	OBBA	N	No habitat available.	N/A
Barn Swallow (*Hirundo rustica*)	THR	THR	THR	1	S4B	The Barn Swallow is a threatened species, is found throughout southern Ontario, and can range into the north as long as suitable nesting locations can be found. These birds prefer to nest within human made structures such as barns, bridges, and culverts. Barn Swallow nests are cup-shaped and made of mud; they are typically attached to horizontal beams or vertical walls underneath an overhang. A significant decline in populations of this species has been documented since the mid-1980s, which is thought to be related to a decline in prey. Since the Barn Swallow is an aerial insectivore, this species relies on the presence of flying insects at specific times during the year. Changes in building practices and materials may also be having an impact on this species (Ministry of Natural Resources and Forestry, 2015).	OBBA	N	No habitat available.	N/A
Bobolink (*Dolichonyx oryzivorus*)	THR	THR	THR	1	S4B	The Bobolink is found in grasslands and hayfields, and feeds and nests on the ground. This species is widely distributed across most of Ontario; however, are designated at risk because of rapid population decline over the last 50 years (Ministry of Natural Resources and Forestry, 2014). The historical habitat of the bobolink was tallgrass prairie and other natural open meadow communities; however, as a result of the clearing of native prairies and the post-colonial increase in agriculture, bobolinks are now widely found in hayfields. Due to their reproductive cycle, nesting habits, and use of agricultural areas, bobolink nests and young are particularly vulnerable to loss as a result of common agricultural practices (i.e. first cut hay).	OBBA and NHIC	N	No grassland habitat available.	Bobolink prefer open grasslands which can include Cultural Meadows (CUM) as described on the property. This species requires grassland meadow habitat which would have been evidenced by persistent grass stalks. The meadow within the property is a sparsely regenerating forb meadow.
Eastern Meadowlark (*Sturnella magna*)	THR	THR	THR	1	S4B	The Eastern Meadowlark is a bird that prefers pastures and hayfields, but is also found to breed in orchards, shrubby fields and human use areas such as airports and roadsides. Eastern meadowlarks can nest from early May to mid-August, in nests that are built on the ground and well-camouflaged with a roof woven from grasses. The decline in population of these species is thought to be at least partially related to habitat destruction and agricultural practices (Ministry of Natural Resources and Forestry, 2014).	OBBA	N	No grassland habitat available.	Eastern Meadlowlark also prefer open grasslands which can include Cultural Meadows (CUM) as described on the property. This species requires grassland meadow habitat which would have been evidenced by persistent grass stalks. The meadow within the property is a sparsely regenerating forb dominated meadow.
Eastern Wood-Pewee (*Contopus virens*)	SC	SC	SC	1	S4B	The Eastern Wood-pewee is classified as a species of special concern by COSSARO. Their population has been gradually declining since the mid-1960's (The Cornell Lab of Ornithology, 2015). The Eastern Wood-pewee is a "flycatcher", a bird that eats flying insects, that lives in the mid-canopy layer of forest clearings and edges of deciduous and mixed forests. It prefers intermediate-age forest stands with little understory vegetation. Threats to the population are largely unknown; however, causes may include loss of habitat due to urban development and decreases in the availability of flying insect prey (Ministry of Natural Resources and Forestry, 2014).	OBBA	N	Woodlands not found within property	N/A
Grasshopper Sparrow (*Ammodramus savannarum*)	No Status	No Status	SC	X	S4B	Grasshopper Sparrow are specialized to open relatively short grassland habitat, preferably grasslands with relatively sparse cover such as those in areas of poor soils, including alvars, moraines, and sand plains and generally does not favour tall grass moist meadows. It will also breed in manmade hayfields and occasionally in cereals such as Rye (*Secale cereale*).	OBBA	N	No grassland habitat available.	N/A
Wood Thrush (*Hylocichla mustelina*)	THR	SC	THR	1	S4B	The Wood Thrush is a species of Special Concern because of habitat degradation or destruction by anthropogenic development. The Wood Thrush is a medium-sized songbird, generally rusty-brown on the upper parts with white under parts and large blackish spots on the breast and sides, and about 20 cm long. The Wood Thrush forages for food in leaf litter or on semi-bare ground, including larval and adult insects as well as plant material. They seek moist stands of trees with well-developed undergrowth in large mature deciduous and mixed (conifer-deciduous) forests. The Wood Thrush flies south to Mexico and Central America for the winter (Ministry of Natural Resources and Forestry, 2014).	OBBA	N	Woodlands not found within property	N/A
HERPTILES										
Blanding's Turtle (*Emydoidea blandingii*)	THR	THR	END	1	S3	Blanding's turtles are threatened in Ontario primarily as a result of habitat loss and fragmentation. Blanding's turtles spend the majority of their life cycle in the aquatic environment, using terrestrial sites for travel between habitat patches and to lay clutches of eggs. These turtles prefer shallow nutrient rich water with organic sediment and dense vegetation. Blanding's turtles nest in dry coniferous and mixed forest habitats, as well as fields and roadsides (Government of Canada, 2015).	ORAA	N	No habitat available within property	N/A
Northern Map Turtle (*Graptemys geographica*)	SC	SC	SC	1	S3	The northern map turtle is a medium sized turtle with a carapace marked by concentric rings that resemble contour lines on a map. The range of this turtle includes larger lakes and rivers that contain an abundance of their primary prey species; molluscs. Shoreline development, water pollution and the spread of the zebra mussel are notable reasons for the decline in populations of this species (Ministry of Natural Resources and Forestry, 2014).	ORAA	N	No habitat available within property	N/A
Snapping Turtle (*Chelydra serpentina*)	SC	SC	SC	1	S3	The snapping turtle is a species of special concern in Ontario due to the potential for the species to become threatened or endangered as a result of biological factors or other identified threats. While not presently protected by law, the snapping turtle has been recognized as a species of special concern by COSSARO. Snapping turtles spend the majority of their lives in water and travel slightly upland to gravel or sandy embankments or beaches to lay their eggs (Ontario Ministry of Natural Resources and Forestry, 2014).	ORAA	N	No habitat available within property	N/A
VASCULAR PLANTS										
Butternut (*Juglans cinerea*)	END	END	END	1	S2?	The butternut is designated as endangered by COSSARO and is tracked by the NHIC as a species at risk. The tree is federally regulated by the Species at Risk Act (2002). Butternut belongs to the walnut family and produces edible nuts which are a preferred food source for wildlife. The range of butternut trees is south of the Canadian Shield on soils derived from calcium rich limestone bedrock. Butternut trees, which at one time were much more common to the south extending to the northern aspect of zone 6E, have been declining due to factors including forest loss and disease. Butternut trees suffer from a highly transmissible fungal disease called butternut canker. Butternut canker is causing very rapid decline in this tree species across its native range. The fungal disease is easily transmitted by wind and is very difficult to prevent. Trees often die within a few years of infection by butternut canker (Ministry of Natural Resource and Forestry, 2014).	NHIC	POTENTIAL	Woodlands found on adacent site, scattered trees along Borrisokane road	Butternut trees remain detectable throughout the year and none were detected on the property, with only a few trees occurring along the frontage of Borrisokane road. Despite the moderate snow cover that persisted during field investigations, it can be confirmed that Butternut trees do not currently exist on the site.
MAMMALS										
Tri-colored Bat (Eastern Pipistrelle) (*Perimyotis subflavus*)	END	END	END	1	S3?	The eastern pipistrelle is a small bat that is widely distributed in eastern North America and whose range extends north to southern Ontario. The eastern pipistrelle is rare in this region of Ontario which is at the northernmost limit of the natural range for the species. These bats prefer to nest in foliage, tree cavities and woodpecker holes, and are occasionally found in buildings; though this is not their preferred habitat. Winter hibernation takes place in caves, mines and deep crevices. Eastern pipistrelles feed primarily on small insects and prefer an open forest habitat type in proximity to water (University of Michigan Museum of Zoology, 2004).	Professional Experience	N	No treed habitats on property	N/A
Eastern Small-footed Myotis (*Myotis leibii*)	No Status	END	No Status	No Schedul	S2S3	The eastern small-footed myotis, a bat, are an endangered species threatened by a disease known as white nose syndrome, caused by a fungus from Europe. Eastern small-footed bat's fur has black roots and shiny light brown tips, giving it a yellowish-brown appearance. Its face mask, ears and wings are black, and its underside is grayish-brown, about 8 cm long in size and weighs 4-5 grams. In the spring and summer, eastern small-footed bats will roost in a variety of habitats, including in or under rocks, in rock outcrops, in buildings, under bridges, or in caves, mines, or hollow trees. They change their roosting locations daily and hunt at night for insects to eat, including beetles, mosquitos, moths, and flies. They hibernate in winter, often in caves and abandoned mines. They can be found from south of Georgian Bay to Lake Erie and east to the Pembroke area, and choose colder and drier sites (Ministry of Natural Resources and Forestry, 2014).	Professional Experience	N	No treed habitats on property	N/A
Little Brown Myotis (*Myotis lucifugus*)	END	END	END	1	S4	Little brown myotis, a bat, are an endangered species threatened by a disease known as white nose syndrome, caused by a fungus from Europe. Little brown bats have glossy brown fur and usually weigh between four and 11 grams. Bats are nocturnal. During the day they roost in trees and buildings. They often select attics, abandoned buildings and barns for summer colonies where they can raise their young. Little brown bats hibernate from October or November to March or April, most often in caves or abandoned mines that are humid and remain above freezing – an ideal environment for the fungus to grow and flourish. The syndrome affects bats by disrupting their hibernation cycle, so that they use up body fat supplies before the spring when they can once again find food sources (Ministry of Natural Resources and Forestry, 2014).	Professional Experience	N	No treed habitats on property	N/A
Northern Myotis (*Myotis septentrionalis*)	END	END	END	1	S3	The northern long-eared myotis, a bat, are an endangered species threatened by a disease known as white nose syndrome, caused by a fungus from Europe. Northern long-eared bats have dull yellow-brown fur with pale grey bellies. They are approximately eight cm long, with a wingspan of about 25 cm, and usually weigh six to nine grams. Northern long-eared bats can be found in boreal forests, roosting under loose bark and in the cavities of trees. These bats hibernate from October or November to March or April, most often in caves or abandoned mines (Ministry of Natural Resources and Forestry, 2014).	Professional Experience	N	No treed habitats on property	N/A
OTHER										
Monarch Butterfly (*Danaus plexippus*)	SC	SC	END	1	S2N,S4B	The monarch is an orange and black butterfly with small white spots and is classified as a species of special concern by COSSARO. The monarch relies on milkweed plants as a food source for growing caterpillars, but the adult butterflies forage in diverse habitats for nectar from wildflowers. The greatest threat to the monarch is loss of overwintering habitat in Mexico. Other threats include use of pesticides and herbicides throughout its range (Ministry of Natural Resources and Forestry, 2014).	OBA	N	Suitable meadow habitat not present	N/A

Notes:
SC - Special Concern
THR - Threatened
END - Endangered
S1 - Extremely rare in Ontario
S2 - Very rare in Ontario
S3 - Rare to uncommon in Ontario
S4 - Considered to be common in Ontario
S5 - Species is widespread in Ontario
SH - Possibly extirpated
S#S# - Indicates insufficient information exists to assign a single rank.
S#? - Indicates some uncertainty with the classification due to insufficient data.
S#N - Nonbreeding
S#B - Breeding

SWH Type	Associated Species	Associated ELC Ecosites	Habitat Criteria	Presence (Y/N)	Additional Notes and Species Observations
Seasonal Concentration Areas of Animals					
Waterfowl Stopover and Staging Areas (Terrestrial)	Ducks	CUM + CUT ecosites	Fields with sheet-water flooding mid-March to May	N	No sheet flooding of field identified in previous Kilgour EIS
Waterfowl Stopover and Staging Area (Aquatic)	Ducks, Geese	Ponds, Lakes, Inlets, Marshes, Swamps, Shallow Water Ecosites	Sewage & SWM ponds **not** SWH. Reservoir managed as a large wetland or pond/lake qualifies.	N	Habitat not found within property.
Shorebird Migratory Stopover Area	Shorebirds	Beaches, Dunes, Meadow Marshes	Shorelines. Sewage treatment ponds and storm water ponds **not** SWH.	N	Habitat not found within property.
Raptor Wintering Area	Eagles, Hawks, Owls	**Hawks/Owls:** Combination of both Forest and Cultural Ecosites **Bald Eagle:** Forest or swamp near open water (hunting ground)	**Raptors:** >20ha, with a combo of forest and upland. Meadow (>15ha) with adjacent woodlands. **Eagles:** open water, large trees & snags for roosting.	N	Habitat not found within property.
Bat Hibernacula	Big Brown Bat, Tri-coloured Bat	Caves, Crevices, mines, karsts	Buildings and active mine sites **not** SWH.	N	Habitat not found within property.
Bat Maternity Colonies	Big Brown Bat, Silver-haired Bat	Decidious or mixed forests and swamps.	Mature deciduous and mixed forests with >10/ha cavity trees >25 cm DBH.	N	Habitat not found within property.
Turtle Wintering Area	**Turtles** (Midland, N. Map, Snapping)	SW, MA, OA, SA, FEO, BOO (requires open waters)	**Free water beneath ice.** Soft mud substrate. Permanent water bodies, large wetlands, bogs, fens with adequate DO.	N	Habitat not found within property.
Reptile Hibernaculum	Snakes	**Snakes:** Any ecosite (esp. w/ rocky areas), other than very wet ones. **Five-lined Skink:** FOD and FOM, FOC1, FOC3 - with rock outcrops	**Access below frost line:** burrows; **rock** crevices, piles or slopes, **stone** fences or foundations. Conifer/shrubby swamps/swales, poor fens, depressions in bedrock w/ accumulations of sphagnum moss or sedge hummock ground cover.	N	Habitat not found within property.
Colonially-nesting Bird Breeding Habitat (Bank and Cliff)	Cliff Swallow, N. Rough-winged Swallow	Banks, sandy hills/piles, pits, slopes, cliff faces, bridge abutments, silos, barns.	Exposed soil banks, **not** a licensed/permitted aggregate area or new man-made features (2 yrs).	N	Habitat not found within property.
Colonially-nesting Bird Breeding Habitat (Tree/Shrubs)	Great Blue Heron, Black-crowned NightHeron, Great Egret, Green Heron	SWM2, SWM3, SWM5, SWM6, SWD1 to SWD7, FET1	Nests in live or dead standing trees in wetlands, lakes, islands and peninsulas. Shrubs and emergents may be used. Nests in trees are 11 - 15 m from ground, near tree tops.	N	Habitat not found within property.
Colonially-nesting Bird Breeding Habitat (Ground)	Herring Gull, Great Black-backed Gull, Little Gull, Ring-billed Gull, Common Tern, Caspian Tern, Brewer's Blackbird	**Gulls/Terns:** Rocky island or peninsula in lake or river. **Brewer's Blackbird:** close to watercourses in open fields or pastures with scattered trees or shrubs.	**Gulls/Terns:** islands or peninsulas with open water or marshy areas. **Brewers Blackbird colonies:** on the ground in low bushes close to streams and irrigation ditches.	N	Habitat not found within property.
Migratory Butterfly Stopover Area	Painted Lady, Red Admiral, **Special Concern:** Monarch	Combination of open (CU) and forested (FO) ecosites (need one from each).	≥10 ha, located within 5 km of Lake Ontario. Undisturbed sites, with preferred nectar species.	N	Habitat not found within property.
Landbird Migratory Stopover Areas	All migratory songbirds. All migrant raptor species.	Forest (FO) and Swamp (SW) ecosites	Woodlots >10 ha within 5 km of Lake Ontario. If multiple woodlands are along the shoreline, those <2 km from L. Ontario are more significant.	N	Habitat not found within property.
Deer Yarding Areas	White-tailed Deer	Mixed or Conifer ecosites	Determined by MNRF - no studies		Habitat not found within property.
Deer Winter Congregation Areas	White-tailed Deer	Mixed or Conifer ecosites	Determined by MNRF - no studies		Habitat not found within property.
Rare Vegetation Communities					
Cliffs and Talus Slopes		TAO, TAS, CLO, CLS, TAT, CLT e.g., Niagara Escarpment (contact NEC)	**Cliff:** near vertical bedrock >3m **Talus Slope:** coarse rock rubble at the base of a cliff	N	Habiat not found within property.
Sand Barren		SBO1, SBS1, SBT1	Sand Barrens >0.5 ha. Vegetation can vary from patchy and barren to tree covered, but <60%. <50% vegetation cover are exotic species.	N	Habiat not found within property.
Alvar	*Carex crawei, Panicum philadelphicum, Eleocharis compressa, Scutellaria parvula, Trichostema brachiatum,* Loggerhead Shrike	ALO1, ALS1, ALT1, FOC1, FOC2, CUM2, CUS2, CUT2-1, CUW2	Alvar >0.5 ha. **Need 4 of the 5 Alvar Inidcator Spp**. <50% vegetation cover are exotic species.	N	Habiat not found within property.

SWH Type	Associated Species	Associated ELC Ecosites	Habitat Criteria	Presence (Y/N)	Additional Notes and Species Observations
Old Growth Forest	Trees >140 yrs; heavy mortaily = gaps. Multi-layer canopy, lots of snags and downed logs	FOD, FOC, FOM, SWD, SWC, SWM	Woodland areas ≥30 ha with a≥10 ha interior habitat, assuming a 100 m buffer at edge of forest.	N	Habitat not found within property.
Savannah	Prairie Grasses w/ trees	TPS1, TPS2, TPW1, TPW2, CUS2	A Savannah is a tallgrass prairie habitat that has tree cover of 25 – 60%. <50% cover of exotic species.	N	Habitat not found within property.
Tallgrass Prairie	Prairies Grasses dominate	TPO1, TPO2	An open Tallgrass Prairie habitat has < 25% tree cover. Less than 50% cover of exotic species.	N	Habitat not found within property.
Other Rare Vegetation Communities		Provincially Rare S1 - S3 veg. comm. are listed in Appendix M of SWHTG.	Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps.	N	Habitat not found within property.
Specialized Habitat for Wildlife					
Waterfowl Nesting Area	Ducks	Upland habitats adjacent to: MAS1 to MAS3, SAS1, SAM1, SAF1, MAM1 to MAM6, SWT1, SWT2, SWD1 to SWD4 (>0.5 ha open water wetlands, alone or collectively).	Extends 120 m from a wetland or wetland complex. Upland areas should be at least 120 m wide. Wood Ducks and Hooded Mergansers use cavity trees (>40 cm dbh).	N	Habitat not found within property.
Bald Eagle & Osprey Nesting, Foraging and Perching Habitat	Osprey, Bald Eagle	FOD, FOM, FOC, SWD, SWM, SWC directly adjacent to riparian areas	Nesting areas are associated with waterbodies along forested shorelines, islands, or on structures over water.	N	Habitat not found within property.
Woodland Raptor Nesting Habitat	Barred Owl. **Hawks:** N. Goshawk, Cooper's, Sharp-shinned, Red-shouldered, Broad-winged.	Forests (FO), swamps (SW), and conifer plantations	>30 ha with > 10 ha interior habitat.	N	Habitat not found within property.
Turtle Nesting Areas	Midland Painted Turtle **Special Concern:** Snapping Turtle, Northern Map Turtle	Exposed mineral soil (sand or gravel) areas adjacent (<100m) or within: MAS1 to MAS3, SAS1, SAM1, SAF1, BOO1	Nest sites within open sunny areas with soil suitable for digging. Sand and gravel beaches.	N	Habitat not found within property.
Seeps and Springs	Wild Turkey, Ruffed Grouse, Spruce Grouse, White-tailed Deer, Salamander spp.	Seeps/Springs are areas where ground water comes to the surface.	Any forested area within the headwaters of a stream/river system. **(2 or more confirms SWH type).**	N	Habitat not found within property.
Amphibian Breeding Habitat (Woodland)	Woodland Frogs and Salamanders	FOC, FOM, FOD, SWC, SWM, SWD	Open water wetlands, pond or woodland pool of >500 m^2 within or adjacent to wooded areas. Permanent ponds or holding water until mid-July preferred.	N	Habitat not found within property.
Amphibian Breeding Habitat (Wetlands)	Toads, Frogs, and Salamanders	SW, MA, FE, BO, OA and SA. Typically isolated (>120m) from woodland ecosites, however larger wetlands may be adjacent to woodlands.	Open water wetland ecosites >500m^2 isolated from woodland ecosites with high species diversity. Permanent water with abundant vegetation for bullfrogs.	N	Habitat not found within property.
Woodland Area-Sensitive Bird Breeding Habitat	Birds (area-sensitive species)	FOC, FOM, FOD, SWC, SWM, SWD	Large mature (>60 years) forest stands/woodlots >30 ha. Interior forest habitat >200m from forest edge.	N	Habitat not found within property.
Habitat of Species of Conservation Concern					
Marsh Bird Breeding Habitat	Wetland Birds	MAM1 to MAM6, SAS1, SAM1, SAF1, FEO1, BOO1 **Green Heron**: SW, MA and CUM1	Wetlands with shallow water and emergent vegetation. Gr. Heron @ edges of these types w/ woody cover.	N	Habitat not found within property.
Open Country Bird Breeding Habitat	Upland Sandpiper, Grasshopper Sparrow, Vesper Sparrow, N. Harrier, Savannah Sparrow, **Short-eared Owl (SC)**	CUM1, CUM2	Grassland/meadow >30 ha. Not being actively used for farming. Habitat established for 5 years or more.	N	Habitat not found within property.
Shrub/Early Successional Bird Breeding Habitat	**Brown Thrasher + Clay-coloured Sparrow (indicators),** Field Sparrow, Black-billed Cuckoo, E. Towhee, Willow Flycatcher, Yellow-breasted Chat, Golden-winged Warbler	CUT1, CUT2, CUS1, CUS2, CUW1, CUW2	Large field areas succeeding to shrub and thicket habitats > 10 ha. Areas not actively used for farming in the last 5 years.	N	Habitat not found within property.
Terrestrial Crayfish	Chimney or Digger Crayfish; Devil Crayfish or Meadow Crayfish	MAM1 to MAM6, MAS1 to MAS3, SWD, SWT, SWM. CUM1 sites with inclusions of the aforementioned.	Wet meadow and edges of shallow marshes (no minimum size) should be surveyed for terrestrial crayfish (typc. protected by wetland setbacks).	N	Habitat not found within property.
Special Concern and Rare Wildlife Species	Any species of concern or rare wildlife species	Any ELC code.	Presence of species of concern or rare wildlife species.	N	Species at Risk discussed in Appendix A and Section 5.1 of report.
Animal Movement Corridors					
Amphibians	Amphibians	all ecosites assoc. w/ water	When Breeding Habitat - wetland confirmed	N	Habitat not found within property.
Deer Movement	White-tailed Deer	all forested ecosites	When Deer Wintering Habitat confirmed		Habitat not found within property.
Exceptions for Ecoregion 6E					
Mast Producing: 6E-14	Black Bear	Forested Ecosites	>30 ha w/ mast producing species: Cherry (berries), Oak, Beech (nuts).	N	Habitat not found within property.
Leks: 6E-17	Sharp-tailed Grouse	CUM, CUS, CUT	Grassland/meadow >15 ha adjacent to shrublands, >30 ha adjacent to woodlands. Low agricultural intensity.	N	Culutural Upland Meadow present but Sharp-tailed grouse Lek is an obvious feature and has not been reported in the area.