

# Natural Heritage Assessment

## Evaluation of Significance Report

**Napanee TS Taylor-Kidd**

**Solar Energy Project**

prepared for

AxioPower Canada Inc.

DRAFT



**ECOLOGICAL SERVICES**

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## 1.0 INTRODUCTION

### 1.1 Project Description

Axio Power Canada Inc. (Axio Power) is proposing to develop a 10 megawatt (MW) solar photovoltaic project titled Napanee TS Taylor-Kidd Solar Energy Project. The Project Location<sup>1</sup> is a 36 hectare parcel situated on Part of Lots 27 and 28, Concession 1, Township of Loyalist (lower tier municipality) within the County of Lennox and Addington (upper tier municipality and within Picton Site Region 6E-15 (Figure 1.1). The longitude and latitude are 44° 13' 23.35" and 76° 42' 40.52". The property in which the Project Location is situated has been zoned Industrial by Loyalist Township.

### 1.2 Renewable Energy Approval Legislative Requirements

Ontario Regulation (O. Reg.) 359/09 – *Renewable Energy Approvals Under Part V.0.1 of the Act*, made under the *Environmental Protection Act* identifies the Renewable Energy Approval (REA) requirements for renewable energy projects in Ontario. Ground-mounted solar facilities with a nameplate capacity greater than 10 kilowatts (kW) are classified as Class 3 solar facilities and require a REA in accordance with Section 4 of O. Reg. 359/09. Subsection 24 (1) of O. Reg. 359/09 requires proponents of Class 3 solar projects to undertake a natural heritage assessment consisting of a records review report, site investigation report and an evaluation of significance report for each natural feature identified during the natural heritage records review and site investigation.

Natural features are defined in subsection 1 (1) of O. Reg. 359/09 to be all or part of:

- a) an area of natural and scientific interest (ANSI) (earth science)
- b) an ANSI (life science)
- c) a coastal wetland
- d) a northern wetland
- e) a southern wetland
- f) a valleyland
- g) a wildlife habitat, or
- h) a woodland.

The *Natural Heritage Assessment Records Review Report (NHARR)* Hatch Ltd., 2011a) and *Natural Heritage Assessment Site Investigation Report (SI)* (Ecological Services, 2011) did not identify any ANSI's, wetlands or valleylands on or within 120 m of the Project Location. However, there were confirmed significant woodlands (Hatch Ltd., 2011a) and candidate significant wildlife habitat (Ecological Services, 2011) on and within 120 m of the Project Location that will need to be evaluated to determine significance.

<sup>1</sup> "Project Location means, when used in relation to a renewable energy project, a part of land and all or part of any building or structure in, on or over which a person is engaging in or proposes to engage in the project and any air space in which a person is engaging in or proposed to engage in the project" (O. Reg. 359/09, s. 1 (1)).

### ***1.2.1 Natural Heritage Assessment Evaluation of Significance Report (EOS)***

Section 27 of the REA Regulation requires proponents of Class 3 solar projects to prepare a *Natural Heritage Assessment Evaluation of Significance Report (EOS)* for natural features identified in the *NHARR* (Hatch, 2011a) and *SI* (Ecological Services, 2011) that sets out:

- a determination of whether the natural feature is:
  - provincially significant or not provincially significant (i.e. wetlands and ANSI's)
  - significant or not significant (i.e. woodland, valleyland or wildlife habitat)
- summary of the evaluation criteria or procedures used to make the determination
- the name and qualifications of any person who applied to evaluation criteria or procedures.

This report has been prepared to meet these requirements. A map showing the boundaries of the significant natural features identified in this report (Figure 3.1) has also been prepared. As mentioned in Section 1.2, there are no wetlands or ANSI's on or within 120 m of the Project Location. Therefore, an evaluation to determine if these features are provincially or non-provincially significant is not required. However, there are confirmed significant woodlands and candidate significant wildlife identified on and within 120 m of the Project Location that will be evaluated to determine significance. Although the municipality has confirmed the presence of significant woodlands on and within 120 m of the Project Location, these woodlands will be evaluated to reflect the information obtained during the site investigation (Ecological Services, 2011).

## 2.0 EVALUATION OF CANDIDATE SIGNIFICANT NATURAL FEATURES

### 2.1 Candidate Significant Woodlands

The *NHARR* (Hatch Ltd., 2011a) identified woodlands on and within 120 m of the Project Location. The following evaluation will assess the significance of these woodlands based upon the criteria shown in Section 7 of the *Natural Heritage Reference Manual* (MNR, 2010).

Woodlands are defined in subsection 1 (1) of the REA Regulation as:

- a) land that is south and east of the Canadian Shield
- b) land that has per hectare, at least
  1. 1000 trees of any size
  2. 750 trees measuring over 5 cm in diameter
  3. 500 trees measuring over 12 cm in diameter
  4. 250 trees measuring over 20 cm in diameter
- c) land that does not include a cultivated fruit or nut orchard or a plantation established for the purpose of producing Christmas trees.

A tree inventory prepared by a registered forester for Axio confirmed that there are woodlands within 120 m of the Project Location that meet the REA criteria for tree stocking density. The boundaries of the woodland identified in Figure 3.1 were delineated based on observations made during the site investigations and air photo interpretation and follow the REA criteria for woodland. The LIO woodland mapping shown in the *NHARR* (Hatch Ltd., 2011a) is considered accurate.

The criteria for establishing woodland significance are identified in Section 7 of the *Natural Heritage Reference Manual* (*NHRM*) (Ontario Ministry of Natural Resources (MNR), 2010a) and in the *Natural Heritage Assessment Guidelines for Renewable Energy Projects* (MNR, 2010b). The criteria for establishing significance and how the woodlands were evaluated against the criteria are discussed for the woodland identified on and within 120 m of the Project Location. Woodland that meets a suggested minimum standard set out in the *NHRM* (MNR, 2010) for any one of the criterion is considered significant.

#### Woodland 1

- **Woodland size** – The significance of woodland based on size is related to the amount of woodland coverage within a region. The Project Location is within Picton Ecodistrict 6E-15, which has approximately 37% natural area coverage (Henson and Brodribb, 2005). According to the *NHRM* (MNR, 2010), where woodlands represent 30–60% of the land cover, woodlands 50 ha in size or greater should be considered significant. *Woodland 1* consists of 46 ha of a larger 218 ha local woodland that extends north and east. *Woodland 1* therefore meets the size requirements for significance.
- **Ecological function**
  - *Woodland interior* – Where woodlands represent 30–60% of the land cover, 8 ha or more of interior habitat is considered significant (MNR, 2010). Woodland interior habitat is

typically defined as habitat more than 100 m from a defined edge. The amount of interior woodland habitat found within *Woodland 1* is 2 ha or 3% of the approx. 66 ha of woodland interior found within the larger 218 ha woodland associated with the Project Location (Appendix A). The woodland interior criterion has therefore been met.

- *Proximity to other woodlands or other habitats* – Woodlands within 30 m of a significant natural feature receiving ecological benefit from the woodland and are 0.5 – 20 ha in size are considered significant (MNR, 2010). *Woodland 1* provides significant wildlife habitat (*area sensitive breeding bird habitat*, see section 2.2.3.1) and is contiguous with riparian forest along Cooke’s Creek, a permanent watercourse supporting fish and fish habitat. Accordingly, this criterion has been met.
- *Linkages* – Woodlands providing a connecting link between two other significant features (i.e. within 120 m) are considered significant (MNR, 2010). *Woodland 1* provides linkages for the significant wildlife habitat features discussed above. Therefore, this criterion has been met.
- *Water protection* – Woodlands within 50 m of a water feature (e.g. groundwater discharge / recharge area, headwater area, watercourse) are considered significant (MNR, 2010). *Woodland 1* is within 50 m of Cooke’s Creek, a permanent watercourse containing fish and fish habitat. This criterion has therefore been met.
- *Woodland diversity* – A woodland is considered significant if it has: a naturally occurring composition of native forest species that have declined significantly south and east of the Canadian Shield and meet minimum area thresholds (e.g.: 1–20 ha, depending on circumstance), a high native diversity through a combination of composition and terrain (e.g., a woodland extending from hilltop to valley bottom or to opposite slopes) and meets minimum area thresholds (e.g.: 2–20 ha, depending on circumstance) (MNR, 2010). *Woodland 1* includes a native mixed stand (FOM) with species representation (pine, spruce) that meets this criterion. It is also contiguous with larger local woodland that includes a variety of native woodland community types. Therefore, this criterion is met.
- *Uncommon characteristics* – Woodlands that include provincially rare plant species or vegetation communities (i.e. S-rank: S1 to S3) and/or old-growth trees (i.e., 10 or more trees / ha greater than 100 years old) are considered significant (MNR, 2010). No provincially rare species or communities were encountered during the *SI*. Several old growth features (trees approaching 100+ years, large down woody debris) were found along the lower riparian slopes of Cooke’s Creek north and east of the Project Location (outside 120 m). As these features are part of the larger woodland associated with the Project Location, this criterion has been met.
- *Economic and social functional values* – Woodlands with high economic or social values (e.g. air-quality improvement, recreation, education, cultural and historical value) are considered significant (MNR, 2010). Woodland on and within 120 m of the Project Location is used occasionally by locals (minor walking trails present), but is not considered to provide significant economic or social function values. Therefore, this criterion has not been met.



## Woodland 2

- **Woodland size** – The area of *Woodland 2* is <3 ha, however, it is contiguous with several hundred ha of unevaluated woodland cover that extends across the local area. *Woodland 2* therefore meets the size requirements for significance.
- **Ecological function**
  - *Woodland interior* – No interior habitat is found within *Woodland 2*; however > 47 ha of woodland interior occurs within the larger connected local forest cover that extends to the south and east (Appendix A). The woodland interior criterion has therefore been met.
  - *Proximity to other woodlands or other habitats* – The extensive connected woodland of which *Woodland 2* is part is of sufficient size and diversity to provide significant wildlife habitat (unevaluated). Accordingly, this criterion is presumed to have been met.
  - *Linkages* – The extensive connected woodland to which *Woodland 2* is part is presumed to provide linkages for significant wildlife habitat features including habitat for area sensitive species of conservation concern. Therefore, this criterion has been met.
  - *Water protection* – *Woodland 2* is not within 50 m of a water body. The closest watercourse is Cooke’s Creek, which is >750 m north of Taylor-Kidd Blvd. The Lake Ontario shoreline is >800 m to the south. This criterion has therefore not been met.
  - *Woodland diversity* – *Woodland 2* does not encompass native mixed stands of sufficient area and species representation to meet this criterion. The larger woodland of which *Woodland 2* is part is similarly comprised of conifer plantation and young red cedar dominated woodlands, neither of which meet the woodland diversity criterion.
  - *Uncommon characteristics* –No provincially rare species or communities or old growth features are found within *Woodland 2*. This criterion is not considered to have been met.
  - *Economic and social functional values* –*Woodland 2* is not considered to provide significant economic or social function values as no use of the site is evident for recreation and the plantation is too small for economic value. Therefore, this criterion has not been met.

**Evaluation** – Both *Woodland 1* and *Woodland 2* meet at least one of these criteria. Accordingly, these woodlands have been evaluated as significant and will be carried forward to the *Natural Heritage Assessment Environmental Impact Study Report* as the proposed development is within 120 m of this natural feature.

## 2.2 Candidate Significant Wildlife Habitat

Wildlife habitat assessment guidelines indicated in the *Draft Significant Wildlife Habitat Ecoregion Criteria Schedules (MNR, 2009b)* for Site Region 6E identifies 5 main types of wildlife habitat that can be classified as significant: seasonal concentrations areas, rare vegetation communities, specialized habitats for wildlife, habitats of species of conservation concern and animal movement corridors. Within each of these 5 types of wildlife habitat are specific habitat types to reflect the life history requirements of an individual or group of species.

The criteria that were considered during this evaluation and how they were assessed are discussed for each of the candidate significant habitat types for the candidate significant wildlife habitat features (*seasonal concentration areas* and *habitat of species of conservation concern*) identified in the *SI* (Ecological Services, 2011).

### 2.2.1 Seasonal Concentration Areas

Specific criteria used to evaluate *seasonal concentration areas* are identified in Tables Q-1 (and Q-2), Appendix Q in the *SWHTG* (MNR, 2000). The *Draft Significant Wildlife Habitat Ecoregion Criteria Schedules (MNR, 2009b)* was also used to supplement information obtained in the *SWHTG* (MNR, 2000). The criteria that were considered during this evaluation and how they were assessed are discussed for the candidate significant habitat type of *specialized habitats for wildlife* identified in the *SI* (Ecological Services, 2011).

#### 2.2.1.1 Songbird migratory stopover areas

For Site Region 6E, *songbird migratory stopover areas* are defined as woodlots located on peninsulas or points or oriented in north to south direction along the shore and located within 5km of Lake Ontario, and according to the *SWHTG* (MNR 2000) stopover areas must include a variety of habitat types of >10 ha that provide adequate food and shelter for a minimum of 35 migratory species. Important stopover areas are well known for this area (e.g., Amherst Island, Wolfe Island, Prince Edward Point) and are surveyed regularly by local naturalist groups (Weir, 2008). These locations are all islands or peninsular woodlots that extend into Lake Ontario. Local birding records (Weir, 2008; OBBA survey data) over the past 20 years show >35 migrant bird species for the survey areas that include the Project Location. The Project Location is within 5 km of the Lake Ontario shoreline; it is within the Napanee Plains Important Bird Area; and it includes habitat types supportive of migratory birds (FOM, FOC).

**Evaluation** – The woodlands associated with the Project Location are located 1 km inland of Lake Ontario, but are not on a peninsula or oriented in a north-south direction. Instead, they are part of a broad connected system of woodlands that extend across the Kingston-Napanee region. There are no specific references to this site in local birding records (Weir, 2008) and the stand types represented (conifer plantation and red cedar forest) are not habitats typically supportive of high numbers of songbirds. During the breeding bird surveys 16 migrant songbird species were reported for within 120 m of the Project Location. Accordingly, although woodlands on and within 120 m of the Project Location provide limited habitat for migrant species, *significant songbird migratory stopover area habitat* is not considered to be present. This wildlife habitat feature will not be carried forward to the *Natural Heritage Assessment Environmental Impact Study Report* to assess potential negative environmental effects.

### 2.2.1.1 *Butterfly migratory route/stopover areas*

*Migratory butterfly stopover areas* are found within open upland meadow, thicket and woodlands located within 5 km of Lake Ontario. The butterfly species that are considered important in determining the significance of this habitat type include: monarch butterfly, painted lady and white admiral. *Migratory butterfly stopover areas* are generally known within the planning area. The Project Location is within 5 km of the Lake Ontario shoreline and several monarch butterflies were noted during the *SI* foraging within a 3 ha patch of open meadow.

A review of existing planning documents and available information from the MNR determined that there are no confirmed significant *migratory butterfly stopover areas* on or within 120 m of the Project Location (Hatch Ltd., 2011). There are 15 ha of cultural thicket present within 120 m of the Project Location and extensive area of supportive woodland habitat which exceeds the minimum size criterion of 10 ha for this wildlife habitat category.

**Evaluation** – The habitats associated with the Project Location meet some of the criteria indicated for *migratory butterfly stopover area habitat*, and indeed several monarch butterflies were noted foraging within patches of cultural meadow during the *SI* (although surveys were not undertaken during the migration period in late summer-early fall). Within this region the nearest provincially significant stopover area for butterflies is Presqu'ile Provincial Park (Monarch Butterfly Fund 2010). Other areas where dozens to hundreds of butterflies have been reported include Bear Point on Wolfe Island (Mosquin, 1995), and Sandbanks Provincial Park (Ecological Services 1999). There are no reported areas of concentration for butterflies associated with the local area that includes the Project Location, and investigations of adjacent habitats of similar type (red cedar woodland, cultural meadow) within 2 km of the Project Location by Ecological Services during the fall migration period indicate that relatively there are no significant numbers of butterflies using these areas (Ecological Services, 2005).

Although vegetation communities on and within 120 m of the Project Location provide limited foraging habitat for migrating butterflies, *significant migratory butterfly stopover area habitat* is not considered to be present. This wildlife habitat feature will not be carried forward to the *Natural Heritage Assessment Environmental Impact Study Report* to assess potential negative environmental effects.

### 2.2.1.2 *Snake hibernaculum*

Some species of snakes migrate to wooded areas in the fall where they find areas to hibernate such as animal burrows, log piles, and rock crevices. Woodlands  $\geq 30$  ha are favourable as they provide interior forest habitat with more moderate environmental conditions. Snake hibernacula are also found on man-made sites such as old stone fences, crumbling foundations and old wells. For identification of significance, 5 or more snakes or 2 or more species must be found in association with candidate hibernacula. Areas of the Project Location with characteristics potentially supportive of snake hibernacula, e.g., fenceline boulder piles and log piles, were examined on April 3, 2011, but no snakes or evidence of their presence were observed at these locations. A potential hibernaculum was noted within a north-facing limestone ridge and boulder pile running east-west across the south of the Project Location within conifer plantation (Figure 2.1). A single Eastern Gartersnake was encountered in a thicket community within the Project location during the late spring site investigations.

**Evaluation** – No snakes or any indications of their presence were observed near the identified feature in 2010 or in 2011, the latter surveys occurring when snakes were most likely to be emerging (April 3, April

12, 2011). This feature is north-facing, which is not optimal for solar exposure, and it is noted that limestone outcrops, boulder piles, and fractured bedrock are common landscape features found throughout the Napanee Limestone Plains area, any of which could be used by local populations of snakes.

Accordingly, although interior woodland habitat and a small limestone outcrop occur within the Project Location, a *snake hibernaculum* is not considered to be present based on the characteristics of the feature indicated above and the lack of observations of snakes. This feature will not be carried forward to the *Natural Heritage Assessment Environmental Impact Study Report* to assess potential negative environmental effects.



Figure 2.1 Limestone outcrop and rubble within the Project Location.

### ***2.2.2 Specialized Habitats for Wildlife***

Criteria used to evaluate *specialized habitats for wildlife* are identified in Table Q-3 of Appendix Q in the *SWHTG* (MNR, 2000). The *Draft Significant Wildlife Habitat Ecoregion Criteria Schedules* (MNR, 2009b) was also used to supplement information obtained in the *SWHTG* (MNR, 2000). The criteria that were considered during this evaluation and how they were assessed are discussed for each of the candidate significant habitats of species of conservation concern identified in the *SI* (Ecological Services 2011).

#### ***2.2.2.2 Woodland Raptor Nesting Habitat***

Several species of raptors, and those nesting and hunting in forests and grasslands require somewhat specialised nesting habitat for their long-term survival. For Site Region 6E, these include all natural or

conifer plantation forest stands >10 ha in size of intermediate to mature age. No raptor species were encountered during site investigations in the spring of 2010 or 2011. Characteristics of the woodlands within 120 m of the Project Location were considered in relation to their potential to provide raptor nesting habitat. Younger red cedar dominated woodland and conifer plantations occur in the central portions of the Project Location and may provide suitable foraging habitat, while the larger trees found within the mixed forest bordering Cooke's Creek may provide suitable nest sites.

***Evaluation*** – One of the stand types (*fresh-moist mixed conifer-hardwood forest*) bordering Cooke's Creek within 120 m of the Project Location meets the habitat requirements for nesting woodland raptors in terms of stand type, age and size. This stand is also part of large connected woodland with interior habitat. Although no raptors were encountered during the site investigations in 2010 and 2011, **the presence of a mature forest canopy, interior woodland habitat, and associated foraging areas suggest that significant woodland raptor nesting habitat is present along the Cooke's Creek riparian zone including the area within 120 m of the Project Location. This feature will be carried forward to the *Natural Heritage Assessment Environmental Impact Study Report* to assess potential negative environmental effects.**

#### *2.2.2.2 Turtle Nesting and Overwintering Area Habitat*

A single Snapping Turtle nest (destroyed by predators) was found along the railway line approx. 400 metres northwest of the Project location, where a tributary of Cooke's Creek crosses the rail line. This species, and presumably Painted Turtle as well are presumed to use the Cooke's Creek riparian valley as a corridor to access suitable nesting sites in the local area, which potentially includes uplands within 120 m of the Project location.

***Evaluation*** – For an area to function as a turtle-nesting area, it must provide sand and/or gravel that turtles are able to dig in. These sites are often south to south west facing and have maximum exposure to sunlight. It is noted that sands and gravels are absent from the Project Location and soils consist of shallow clay-loams over limestone bedrock. Most of the site is represented by dense conifer growth and plantation, and there are few patches of habitat with sun exposure. The Cooke's Creek riparian zone may provide a local corridor for movement by turtle species, but turtle nesting is unlikely to occur within 120 m of the Project Location. This feature will not be carried forward to the *Natural Heritage Assessment Environmental Impact Study Report* to assess potential negative environmental effects.

#### ***2.2.3 Habitat of Species of Conservation Concern***

Criteria used to evaluate *habitat of species of conservation concern* are identified in Table Q-3 of Appendix Q in the *SWHTG* (MNR, 2000). The *Draft Significant Wildlife Habitat Ecoregion Criteria Schedules* (MNR, 2009b) was also used to supplement information obtained in the *SWHTG* (MNR, 2000). The criteria considered during this evaluation and how they were assessed are discussed for each of the candidate significant habitats of species of conservation concern identified in *SI* (Ecological Services 2011).

##### *2.2.3.1 Area-sensitive Bird Breeding Habitat (forest)*

The *SI* (Ecological Services, 2011) identified candidate significant breeding habitat for area-sensitive forest bird species within the woodland associated with the Project Location and 120 m adjacent lands

(Figure 3.1). Area-sensitive indicator species identified in the *Ecoregion Criteria Schedules* for Site Region 6E include: Black-throated Green Warbler, Blackburnian Warbler, Black-throated Blue Warbler, Ovenbird, Scarlet Tanager, Winter Wren and Canada Warbler (Cerulean Warbler is of Special Concern). Table 2.2 below presents the evaluation of candidate area-sensitive bird breeding habitat on and within 120 m of the Project Location based upon *SWHTG* criteria.

**Table 2.1 Evaluation criteria for candidate significant habitat for area-sensitive bird breeding habitat (forest) identified in the *SI*.**

<b>Criterion</b>	<b>Requirements from SWHTG (MNR 2000)</b>	<b>Description of Area-Sensitive Forest Species Habitat</b>	<b>Criterion Met</b>
Presence of rare, uncommon, or declining species	<ul style="list-style-type: none"> <li>• sites supporting area-sensitive species of birds that are rare or uncommon, and / or species exhibiting population declines within the province are most significant</li> </ul>	<ul style="list-style-type: none"> <li>• One area-sensitive indicator species (Ovenbird) was noted during the site investigation, although it is not an S1-S3-ranked species of conservation concern.</li> </ul>	√
Overall area of woodland	<ul style="list-style-type: none"> <li>• Larger stands in the area are more significant, with those stands &gt;30 ha being the most significant</li> </ul>	<ul style="list-style-type: none"> <li>• There are approx. 350 ha of woodland that is contiguous with those found on and within 120 m of the Project Location</li> </ul>	√
Area of forest interior contained within the forest stand	<ul style="list-style-type: none"> <li>• Significant forest stands typically provide at least 10 ha of forest interior excluding at least a 100 m buffer around the forest interior</li> </ul>	<ul style="list-style-type: none"> <li>• Local woodland contiguous with that on the Project Location provides approx. 112 ha of interior habitat. Woodland on and within 120 m of the Project Location provide approximately 2 ha of interior forest habitat.</li> </ul>	√
Amount of vertical stratification of site	<ul style="list-style-type: none"> <li>• Woodlands that have a well-developed understory comprised of saplings and shrub species provide more habitat types and support more bird species than an even-aged forest, and are consequently, more significant</li> </ul>	<ul style="list-style-type: none"> <li>• There is vertical stratification associated with woodland on and within 120 m of the Project Location and there are open areas of meadow and dense shrub cover.</li> </ul>	√
Amount of contiguous closed-canopy /open areas in forest stand	<ul style="list-style-type: none"> <li>• Sites with an abundance of mature trees are more significant for certain nesting raptor species as well as for a number of songbird species</li> </ul>	<ul style="list-style-type: none"> <li>• Mature tree cover is found in the mature stand bordering Cooke’s Creek within 120 m of the Project Location. Remaining areas of the Project Location are young conifer dominated plantations or open red cedar forest and thicket</li> </ul>	√
Amount of adjacent residential development	<ul style="list-style-type: none"> <li>• Sites with less adjacent development are more significant</li> </ul>	<ul style="list-style-type: none"> <li>• The woodlands found on and within 120 m of the Project Location are relatively isolated from development in the local area</li> </ul>	√
Current representation of specialized habitat in planning area		<ul style="list-style-type: none"> <li>• Unknown</li> </ul>	
Provision of significant wildlife habitat	<ul style="list-style-type: none"> <li>• Sites providing several identified significant wildlife habitats are most significant</li> </ul>	<ul style="list-style-type: none"> <li>• Woodlands associated with the Project Location have been identified as providing <i>significant wildlife habitat</i></li> </ul>	√
Potential for long-term protection of the site	<ul style="list-style-type: none"> <li>• Sites providing best opportunity for long term protection are usually more significant than similar sites with little opportunity for protection or facing an uncertain future due to potential threats</li> </ul>	<ul style="list-style-type: none"> <li>• The Project Location and adjacent areas are on private lands and therefore, long-term protection cannot be assured.</li> <li>• There is municipal intent for local commercial and industrial development along Taylor-Kidd Blvd</li> </ul>	

**Evaluation** – Woodlands on and within 120 m of the Project Location meet most of the requisite *SWHTG* criteria for *area-sensitive forest bird breeding habitat*. **This feature will be carried forward to the *Natural Heritage Assessment Environmental Impact Study Report* to assess potential negative environmental effects. A map showing the location of this habitat type is shown on Figure 3.1.**

*2.2.3.2 Shrub/early successional bird breeding habitat*

Candidate significant breeding habitat for bird species that prefer shrub/early successional vegetation communities was identified in the *SI* on and within 120 m of the Project Location. These areas of cultural thicket (CUT) consist of red cedar dominated patches of successional growth on abandoned pasture. The largest contiguous thicket community is approx. 8 ha in size.

Table 2.3 below presents the evaluation of *shrub/early successional breeding habitat* found on and within 120 m of the Project Location based upon criteria presented in the *Ecoregion Criteria Schedules* (MNR 2009b).

**Table 2.2 Evaluation criteria for candidate significant shrub/successional bird breeding habitat identified in the *SI*.**

<b>Criterion</b>	<b>Requirements from SWHTG Ecoregion Criteria Schedules (MNR 2009b)</b>	<b>Description of Open Country Bird Breeding Habitat</b>	<b>Criterion Met</b>
Presence of indicator species and species of conservation concern	<ul style="list-style-type: none"> <li>presence of nesting or breeding of 2 or more indicator (Brown Thrasher, Clay-coloured Sparrow) or special concern species (Yellow-breasted Chat, Golden-winged Warbler) and at least 1 of the common species (Field Sparrow, Black-billed Cuckoo, Eastern Towhee, Willow Flycatcher, or Blue-winged Warbler). A field with breeding Yellow-breasted Chat or Golden-winged Warbler is to be considered as Significant Wildlife Habitat.</li> </ul>	<ul style="list-style-type: none"> <li>One shrubland indicator bird species (Clay-coloured Sparrow) observed on Project Location.</li> <li>Two common species (Field Sparrow, Eastern Towhee) observed</li> <li>Numbers of individuals very low</li> </ul>	
Overall area	<ul style="list-style-type: none"> <li>Shrubland or successional areas &gt;30 ha</li> </ul>	<ul style="list-style-type: none"> <li>Largest contiguous shrub thicket community is approx. 15 ha</li> </ul>	
Land Use History	<ul style="list-style-type: none"> <li>sites considered significant should have a history of longevity (i.e., not actively farmed in last 5 years).</li> </ul>	<ul style="list-style-type: none"> <li>Shrub thicket communities present for &gt;5 years</li> </ul>	√
Site Disturbance	<ul style="list-style-type: none"> <li>Should be free from human disturbance and not in close proximity to residential areas or transportation corridors</li> </ul>	<ul style="list-style-type: none"> <li>Relative undisturbed, some evidence of walking trails (rarely used)</li> </ul>	

**Evaluation** – Although the Project Location provides habitat for low numbers of some shrub/early successional breeding birds, there is insufficient habitat available to meet the minimum size criterion. The shrub thicket habitat type found on and within 120 m of the Project Location is common across the region and is not considered limited. Accordingly, this feature will not be carried forward to the *Natural Heritage Assessment Environmental Impact Study Report*.

2.2.2.2 Special concern and S1-S3 species and communities (milksnake)

In the *SI* report (Ecological Services, 2011), candidate habitat potentially supportive of an S1-S3 species (milksnake) was identified for the areas encompassed by the Project Location and 120 m adjacent lands. Table 2.4 below presents the evaluation of milksnake habitat found on and within 120 m of the Project Location based upon criteria presented in Table Q3 of Appendix **SWHTG** (MNR, 2000).

**Table 2.3. Evaluation criteria for candidate significant habitat for species of special concern and S1-S3 species (milksnake) identified in the *SI*.**

Criterion	Requirements from SWHTG Ecoregion Criteria Schedules (MNR 2009b)	Evaluation of Habitat	Criterion Met
Degree of rarity of species found at site	<ul style="list-style-type: none"> <li>• Habitats of the rarest species are more significant than those of less rare species.</li> <li>• Species ranked as vulnerable by the OMNR should also be considered significant.</li> <li>• Less rare species and their habitats in the planning area may be deemed species of conservation concern</li> <li>• If a species' habitat is to be protected, sufficient area (based on the species' known requirements) should be retained to ensure a viable and sustainable population.</li> </ul>	<ul style="list-style-type: none"> <li>• Milksnake are an S3 species of special concern</li> <li>• Habitat generalists occupying range of habitat types in eastern Ontario often in close association with rural farms and outbuildings</li> <li>• Herpetofaunal summary atlas shows species records distributed across southern Ontario</li> </ul>	√
Documented significant decline in a species and/or its critical habitat	<ul style="list-style-type: none"> <li>• habitat for species experiencing the greatest declines is most significant.</li> <li>• habitat for declining species that has the lowest representation in the planning area is more significant.</li> <li>• habitats that provide the best opportunity for the long-term sustainability of the declining species are most significant (e.g., large well-protected sites; sites that best meet the species' habitat requirements; sites with good connections to other similar habitats).</li> </ul>	<ul style="list-style-type: none"> <li>• Habitat on site includes range of woodlands and early successional habitat that is prevalent across the region in terms of representation and connectivity</li> <li>• Critical habitat recognized as hibernacula, which was not identified on site</li> <li>• There are no population estimates of the Milksnake available for either Quebec or Ontario. Observations in Ontario suggest that it has maintained much of its historical range, although the species has likely been extirpated from some large urban centres or areas of intensive agricultural use where habitat has been lost</li> </ul>	



<p>Species whose range is solely or primarily found in Ontario (i.e., provincial responsibility)</p>	<ul style="list-style-type: none"> <li>Habitat for those species with the poorest representation within the planning area is more significant.</li> <li>species and their habitats are significant even if well represented in the planning area, due to high provincial responsibility for their protection.</li> <li>Those habitats that provide the best opportunities for the long-term sustainability of the target species are most significant (e.g., large well protected sites; sites that best meet the species' habitat requirements; sites with good connections to other similar habitats).</li> </ul>	<ul style="list-style-type: none"> <li>Milksnake populations range across eastern North America and are not confined to Ontario</li> </ul>	
<p>Condition of existing habitat at site</p>	<ul style="list-style-type: none"> <li>Sites that provide habitat that best meets the survival requirements of the target species and that also include a natural buffer zone are most significant (i.e. most likely to sustain species/population over the long term).</li> <li>Sites that contain the fewest non-native species of potential threat to the target species are significant.</li> <li>Undisturbed or least-disturbed habitats (e.g., no/few deleterious impacts from roads, human activities) are significant.</li> <li>Sites capable of producing a large number of individuals of a single species of conservation concern are significant.</li> <li>Highly diverse sites that support one or more species of conservation concern are most significant.</li> </ul>	<ul style="list-style-type: none"> <li>Large area of contiguous woodlands and smaller areas of early successional habitat cross the Project Location and are relatively undisturbed (some ATV trails)</li> <li>No hibernacula encountered</li> </ul>	<p>√</p>
<p>Size of species population at site</p>	<ul style="list-style-type: none"> <li>Habitats supporting large populations of a several species of conservation concern are most significant.</li> <li>Habitat supporting large populations of a single species is significant.</li> </ul>	<ul style="list-style-type: none"> <li>No milksnake encountered within 120 m of the Project Location</li> </ul>	
<p>Size and location of habitat</p>	<ul style="list-style-type: none"> <li>Large sites supporting large populations of several species of conservation concern are most significant.</li> <li>Large sites are generally more significant than most comparable but smaller sites.</li> <li>Sites large enough to ensure long-term support and viability of species of conservation concern are significant. Sites with large areas of suitable habitat that are also connected to other potentially suitable habitat and/or natural areas are most significant.</li> </ul>	<ul style="list-style-type: none"> <li>General habitat potentially supportive of this species is found across the municipality and beyond</li> </ul>	<p>√</p>

Potential for long-term protection of the habitat	<ul style="list-style-type: none"> <li>Habitats that provide the best opportunity for long-term protection are usually more significant than similar habitats with little opportunity for protection or facing an uncertain future due to potential threats (e.g., habitat found in a large natural area vs. an isolated site close to an expanding residential development).</li> <li>Habitats threatened with degradation or loss are more significant than similar, but currently unthreatened habitats, if they can be protected.</li> <li>Habitats of species currently experiencing severe population declines in Ontario (e.g., grassland bird species) due to habitat loss are most significant.</li> <li>Habitats of species currently experiencing significant population declines in the municipality are significant.</li> </ul>	<ul style="list-style-type: none"> <li>Habitats occur on private lands – cannot predict future scenarios for development, but local region has been in successional recovery for &gt;50 years due to farm abandonment</li> </ul>	
Representation of species/habitat within the municipality	<ul style="list-style-type: none"> <li>Poorly represented habitats for species of conservation concern are significant.</li> <li>Habitats that could be lost or severely degraded and cannot be replaced by similar habitats in the planning area are highly significant.</li> </ul>	<ul style="list-style-type: none"> <li>Milksnake are habitat generalists, therefore able to use wide variety of habitat types common to the region</li> <li>Loss of hibernacula and road mortality are threats to population (Govt. of Canada 2010)</li> </ul>	
Evidence of use of the habitat	<ul style="list-style-type: none"> <li>Sites with documented traditional use by species are most significant.</li> </ul>	<ul style="list-style-type: none"> <li>No documented use of Project Location by this species, but locally common</li> </ul>	√
Species of particular interest to the planning authority (e.g., the CAC may recommend certain species such as indicator species)	<ul style="list-style-type: none"> <li>Sites providing the best examples of habitat that will ensure the long term sustainability of the species are significant.</li> </ul>	<ul style="list-style-type: none"> <li>Generalized habitat regionally common</li> <li>Milksnake are not of particular interest to local planning authority (Loyalist Twp), other than as an SC species</li> </ul>	

**Evaluation** – Although neither milksnake or hibernacula were not found on or within 120 m of the Project Location during the *SI*, general foraging habitat for milksnake was identified on and within 120 m of the Project Location. These habitats are common to the region, and the species is recognized as a habitat generalist. **Milksnake habitat is considered to be significant and will be carried forward to the Natural Heritage Assessment Environmental Impact Study Report.**

### 3.0 SUMMARY OF EVALUATION

Based on the findings in this report, the following natural features have been evaluated as significant:

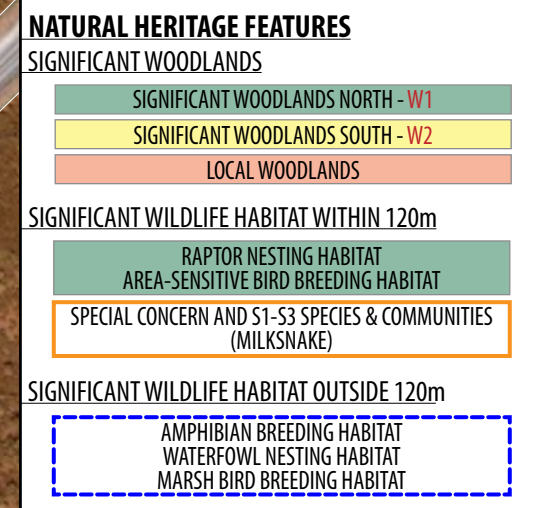
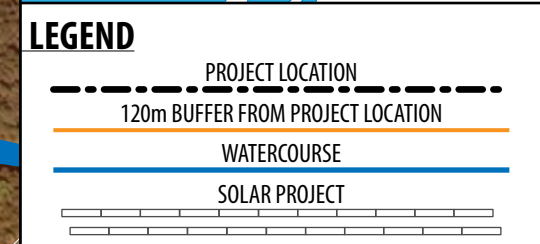
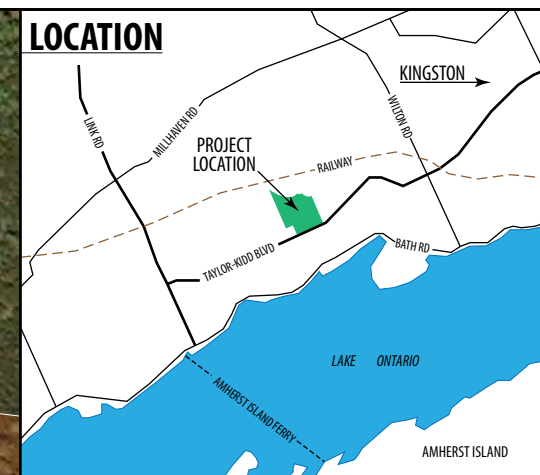
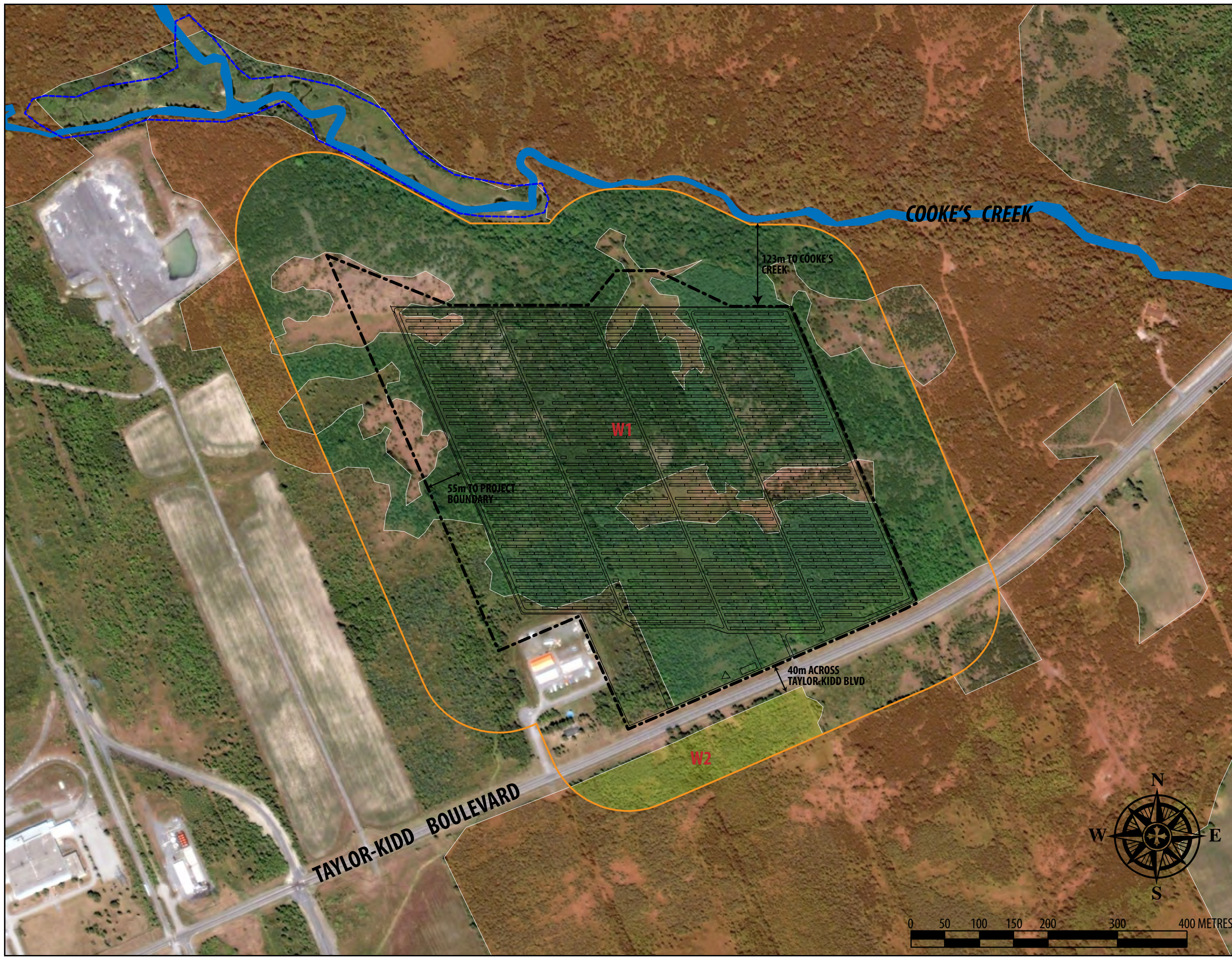
- **Significant Woodlands** – Two woodlands on and within 120 m of the Project Location have been evaluated as significant.
- **Significant Wildlife Habitat** – The following wildlife habitat types have been evaluated as significant:
  - **Specialized Habitats for Wildlife** – *woodland raptor nesting habitat*
  - **Habitats of species of conservation concern** – This includes *area-sensitive bird breeding habitat (forest)* and general foraging habitat potentially supportive of an S1-S3-ranked species (milksnake).

Therefore, the significant natural features identified above will be carried forward to the *Natural Heritage Assessment Environmental Impact Study Report* to assess the potential negative environmental effects on these features. A map showing the locations of these habitat types is provided on Figure 3.1. Table 3.1 is a summary of natural features identified in the *SI* and *EOS* reports for the Taylor-Kidd Project Location.

**Table 3.1. Summary of corrections required to the site investigation report for the Taylor-Kidd Project Location.**

SITE INVESTIGATION					EVALUATION OF SIGNIFICANCE		
Type	Functions and Attributes	Composition	Distance from Project Location (PL)	Corrections to Records Review?	Evaluation Criteria/ Procedures Used	Significant Natural Feature Confirmed?	Defining Criteria
Candidate Significant Woodland	<b>Woodland 1</b> - Size: 46 ha of 218 ha woodland - Interior woodland - Proximity to Cooke’s Creek - Linkage - Water protection - Diversity - Uncommon characteristics (mature growth) - Wildlife habitat	- <i>Dry-Fresh Red Cedar Coniferous Forest, Fresh-Moist White Cedar-Hardwood Mixed Forest, White Pine-White Spruce Conifer Plantation</i>	28 ha of woodland within PL	No	<i>NHRM</i> (MNR 2010) significant woodland evaluation criteria	Yes	- Size - Proximity - Interior woodland - Water protection - Diversity representation - Linkage function - Provision of significant wildlife habitat
	<b>Woodland 2</b> - Size: 2.6 ha of 136 ha woodland - Interior woodland - Proximity to other significant woodlands - Linkage - Wildlife habitat	- <i>Dry-Fresh Red Cedar Coniferous Forest, White Pine-White Spruce Conifer Plantation</i>	Within 120 m of PL but across Taylor Kidd Blvd	No	<i>NHRM</i> (MNR 2010) significant woodland evaluation criteria	Yes	- Size - Proximity - Linkage - Provision of significant wildlife habitat
Seasonal Concentration Areas	<i>Songbird migratory stopover area</i>	- woodland and shrub thicket communities within Napanee Plains IBA - within 5 km of Lake Ontario	on and within 120 m of PL	No	<i>SWHTG</i> (MNR 2000) wildlife habitat criteria; Ecoregion Criteria Schedules (MNR 2009)	No	- not a peninsula or island - area not recognized as important - regionally common habitats
	<i>Butterfly migratory route/stopover area</i>	- 3 ha open meadow - 15 ha shrub thicket - within 5 km of Lake Ontario	On and within 120 m of PL	No	See above	No	- not a peninsula or island - area not recognized as important - regionally common habitats
	<i>Snake hibernaculum</i>	- small limestone ridge and rubble present	On and within 120 m of PL	No	See above	No	- north facing - no snakes encountered - locally common feature
Specialized Habitats for Wildlife	<i>Raptor nesting habitat</i>	- extensive woodlands, meadows and shrub thickets across local region - interior habitat present	Within Project and 120 m adjacent lands	No	See above	Yes	- woodland and thicket habitat present - interior habitat present - mature forest canopy present - ELC stand type meets criteria

SITE INVESTIGATION					EVALUATION OF SIGNIFICANCE		
Type	Functions and Attributes	Composition	Distance from Project Location (PL)	Corrections to Records Review?	Evaluation Criteria/ Procedures Used	Significant Natural Feature Confirmed?	Defining Criteria
Specialized Habitats for Wildlife	<i>Turtle nesting and overwinter areas</i>	<ul style="list-style-type: none"> <li>- Cooke's Creek riparian corridor</li> <li>- Snapping turtle nest located within corridor 400 m away</li> </ul>	Cooke's Creek riparian zone 120 - 150 m from PL	No	See above	No	<ul style="list-style-type: none"> <li>- No wetlands or water bodies on or within 120 m of PL</li> <li>- No suitable nesting substrates present</li> </ul>
Habitats of Species of Conservation Concern	<i>Area sensitive bird breeding habitat</i>	<ul style="list-style-type: none"> <li>- Interior woodland habitat (2 ha) within 120 m of Project Location</li> <li>- Indicator species present</li> </ul>	On and within 120 m of PL	No	See above	Yes	<ul style="list-style-type: none"> <li>- Suitable woodland habitat present</li> <li>- Interior habitat present</li> <li>- Indicator species noted</li> </ul>
	<i>Shrub/early successional bird breeding habitat</i>	<ul style="list-style-type: none"> <li>- 15 ha of shrub thicket areas across Project Location and 120 m adjacent lands</li> <li>- Indicator species noted</li> </ul>	On and within 120 m of PL	No	See above	No	<ul style="list-style-type: none"> <li>- Insufficient habitat area present</li> <li>- Regionally common habitat type</li> </ul>
	<i>Special concern and SI-S3 species and communities (milksnake)</i>	<ul style="list-style-type: none"> <li>- extensive woodlands, meadows and shrub thickets across local region</li> </ul>	On and within 120 m of PL	No	See above	Yes	<ul style="list-style-type: none"> <li>- Suitable woodland and thicket foraging habitat present</li> <li>- Species locally known</li> </ul>



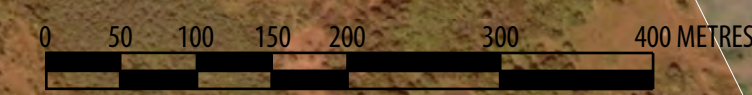
**FIGURE 3.1**

**axiopower**

Ecological Services

MINTOSH PERRY  
Consulting Engineers Ltd.

TITLE	NAPANEE TS TAYLOR-KIDD NATURAL HERITAGE FEATURES		
DATE	JUNE 28, 2011	PROJECT No.	KP-11-626
		FIGURE	



#### **4.0 NEXT STEPS**

- A *Natural Heritage Assessment Environmental Impact Study Report* conducted according to the requirements of Subsection 38 (2) of O. Reg. 359/09 will be required in order to assess the potential effects, and recommend mitigation and monitoring requirements for the construction, operating and decommissioning of Project components within 120 m of these significant natural features.

## **5.0 DATE OF BEGINNING AND COMPLETION OF EVALUATION**

*Start:* 1<sup>st</sup> Draft: September 10, 2010; 2<sup>nd</sup> Draft: May 12, 2011

*Completion:* July 14, 2011.



## **6.0 NAMES AND QUALIFICATIONS OF PERSONS CONDUCTING THE EVALUATION OF SIGNIFICANCE**

The EOS assessment and report were completed by:

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Ecological Services is a locally owned firm, specializing in the provision of services relating to ecological management and research. We have been in operation in eastern Ontario since 1985. Our core personnel combine education and experience to give us a strong focus on land use planning and management as they relate to natural resources. Our experience includes environmental impact assessments, management plans, wetland evaluations, and municipal land use planning. We have research experience in aquatic ecology and chemistry, forest fragmentation, avian ecology, and fisheries ecology.

We have worked with government at the federal, provincial, local and international levels. Other clients have included Crown corporations, planning and engineering firms, developers, and local groups. Our association with Queen's University provides us immediate access to current and broad-based research, and also provides us with a pool of expert associates. A work prospectus is available at our website at <http://ecologicalservices.webs.com>.

### **CURRICULUM VITAE OF DALE KRISTENSEN**

#### **Relevant Employment Experience**

1988 - present: Environmental Consultant with Ecological Services

- Specializing in floral and faunal resource inventories, wetland evaluations, environmental impact assessments, habitat analyses, and habitat restoration.

1996 - present. Phytotron Manager (Plant Research Facility). Dept. of Biology, Queen's University.

- Manager of a controlled environment facility for plant and other research

2008 – present: Curator Queen's University Fowler Herbarium

1987- 2009: Adjunct Academic. Department of Biology at Queen's University.

Development and instruction of various courses at Queen's University, including:

- Wildlife Issues in a Changing World (ENSC 320)
- Biology of Sex (BIOL 210)
- Field ecology module at Lake Opinicon (BIOL 344)
- Restoration Ecology (BIOL 522)
- Field Botany (BIOL 320)
- International graduate-level course on biodiversity

## **Education**

M.Sc., 1996 (Ecology) Queen's University. Kingston, Ontario.

B.Sc., 1981 (Wildlife Biology), University of Guelph. Guelph, Ontario.

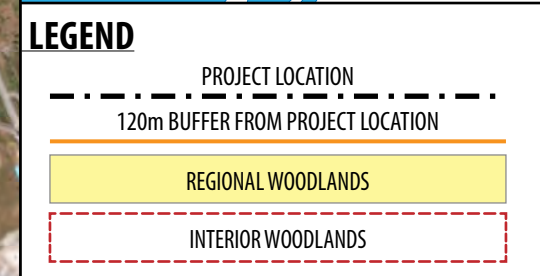
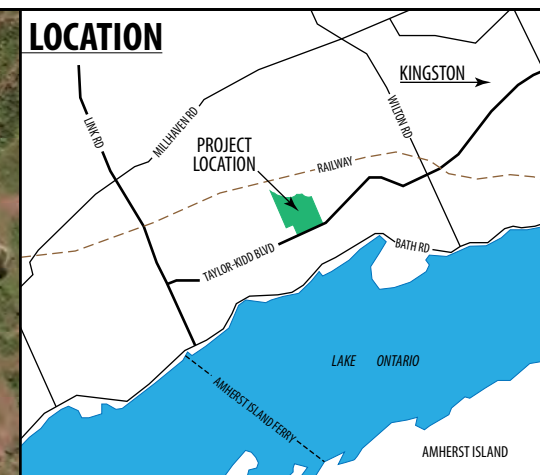
## **Affiliations**

Ecological Restoration Society, North American Wildflower Society, Land Conservancy for Kingston, Frontenac, Lennox & Addington, Kingston Field Naturalists, COSEWIC Species Recovery Team – Deerberry (*Vaccinium stamineum*) and Cerulean Warbler (*Dendroica caerulea*) habitat modelling for St. Lawrence Islands National Park. Provincially Certified Butternut Health Assessor

## 7.0 LIST OF REFERENCES

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## **Appendix A. Local forest cover in relation to Project Location**



<b>WOODLAND NORTH OF TAYLOR KIDD BOULEVARD</b>
REGIONAL WOODLAND = 218.3ha
INTERIOR WOODLAND = 65.5ha
<b>WOODLAND SOUTH OF TAYLOR KIDD BOULEVARD</b>
REGIONAL WOODLAND = 136.0ha
INTERIOR WOODLAND = 47.1 ha

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TITLE	NAPANEE TS TAYLOR-KIDD PROJECT LOCATION & REGIONAL WOODLAND	
DATE	JUNE 27, 2011	PROJECT No. KP-11-626
FIGURE		

