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Sept. 6, 2019

Craig Bellinger
Environmental and Land Project Manager
R.W. Tomlinson Limited
Via Email: cbellinger@tomlinsongroup.com

RE: Environmental Impact Assessment for the Napanee Asphalt Plant

Dear Mr. Bellinger,

Please find attached the results of our natural heritage assessment for the proposed asphalt plant in Napanee. Upon our review of the site, we are confident that further work in the spring of 2020 will not provide new insights about the species and habitat existing on site. In our opinion, the proposed asphalt plant will be consistent with the natural heritage polices of the Provincial Policy Statement and the Napanee Official Plan. We also feel that the work completed for this environmental impact assessment will provide sufficient information to Quinte Conservation for their review.

We recognize that this property has a long-term history of disturbance and therefore its ability to develop sensitive or high value natural heritage features is limited. Nevertheless, there are species at risk present, and we provide recommendations for their protection.

Respectfully submitted,

Rob Snetsinger

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1. Summary

This environmental impact assessment was completed at the request of Craig Bellinger (Environmental and Land project manager) of R.W. Tomlinson Limited (Tomlinson) as a result of a proposal to install an asphalt plant next to their active Napanee quarry (see Figure 1). The current zoning (Extractive Industrial M4) allows for a portable asphalt plant. This means the plant can remain on site for up to a year, or for the duration of a road project, whichever is shorter. After that period, the plant must be removed for a set period of time (e.g., one week). Tomlinson is hoping to secure the necessary zoning for a permanent plant in order to avoid the costs associated with the periodic movement of their existing plant in order to meet the requirements of the current zoning.

The lands proposed for the asphalt plant have a long-term history of disturbance (see Meacham 1878) due to its association with farming and the formation of the Town of Napanee. The exact date of quarry commencement is unknown, but active quarrying can be seen in the adjacent lands in a 1954 aerial image. In that same image, the proposed asphalt plant lands are being used as farmland. As a result of this history, the potential for these lands to have developed natural heritage value features is limited.

No significant woodland, significant wetland, significant valleyland, or ANSI is present on the proposed asphalt plant lands, nor present within 120 m of the proposed asphalt plant lands.

Significant wildlife habitat is available within the proposed asphalt plant lands in relation to Bank Swallow nesting, which are also a species at risk. This is not seen as an impediment to the development of the asphalt plant if the following mitigation recommendations are provided.

> Recommendation 1: It is recommended that no alteration of the soil pile that Bank Swallows are nesting in be attempted during the nesting season (late April to late August).
>
> Recommendation 2: As a pro-active measure to support Bank Swallows, it is recommended that Tomlinson transplant a soil pile further east to the top of the existing eastern berm and shape it to create an east facing stable vertical soil wall. In this regard please refer to OMNRF (2017). Further reinforcing of the wall and/or yearly maintenance is recommended.

Potential species at risk habitat for Bobolink and Meadowlark is present in a field on the adjacent lands (i.e., <120 m), over 105 meters east of the eastern boundary of the proposed asphalt plant lands. This habitat, and these species, will not be at risk from asphalt plant activities as a result of the large separation distances, and intervening buffers including an existing 10 m high berm, dense red cedar woodland, and a treed fence line.

There are small patches of habitat in the adjacent lands (i.e., <120 m) that have alvar features. However, these are not alvar for the purposes of the Provincial Policy Statement. Further details are described in Section 4 of this report.

We are confident that further field assessment work is not needed, and this report can act as a stand alone impact assessment for the proposed asphalt plant. It is our opinion that the operation of the asphalt plant can be consistent with the natural heritage polices of the Provincial Policy Statement and the Napanee Official Plan.

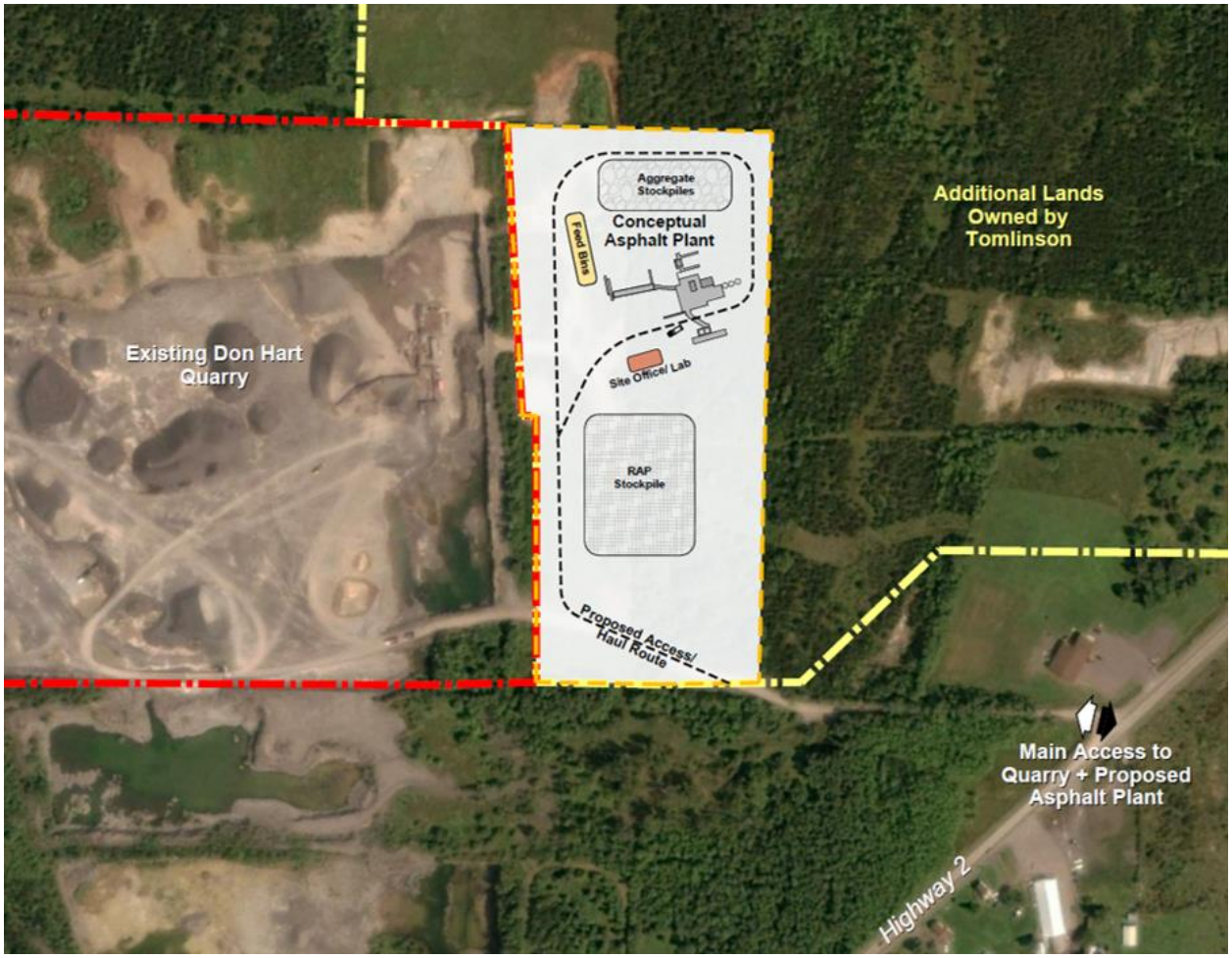


Figure 1. Proposed location of the Asphalt Plant to the south of the operating quarry.

2. Methodology

Natural features, significant wildlife habitat (as described in OMNR 2012b), and species of conservation were considered during the site investigation. This involves documenting the natural features (including wildlife habitat), and plant and wildlife species with a focus on specific habitat indicators. Habitat communities are described following the methodology outlined in the ELC for Southern Ontario (Lee *et al*. 1998) and if applicable, the *Ontario Wetland Evaluation System Southern Manual* (OMNR 2002).

Potential candidate significant natural features were assessed following the criteria outlined in the Natural Heritage Reference Manual (OMNR 2010), Significant Wildlife Habitat Ecoregion Criteria Schedules (OMNR 2015) and Significant Wildlife Habitat Technical Guide (OMNR 2000). Information on potential rarities was provided by the NHIC Element Occurrence web page, Henson and Brodribb (2005), ebird, and local knowledge of the study area.

Breeding bird surveys were based on methods described in the Ontario Breeding Bird Atlas Guide for Participants (Cadman and Kopysh 2001) and the Canadian Wildlife Service Forest Bird Monitoring

Program. The presence of reptiles was assessed by examining areas of appropriate habitat such as the brush and waste piles left on site. Other wildlife species of interest were noted as encountered from direct observation, or from other signs of their presence (tracks, scat, den sites, etc.).

Vascular plants were used to characterize ELC community types. If specimens could not be identified in the field they would be assessed later using appropriate references (e.g., Gleason and Cronquist 1991; Queen`s University Fowler Herbarium records).

MNRF protocols for targeted surveys were applied when necessary. For example:

Bobolink and Eastern Meadowlark: OMNR (2011) Bobolink Survey Methodology.

Barn and Bank Swallows: Standard avifaunal surveys, with focus on prospective nest sites.

Ecological Services personnel who worked on this project:		
Name	**Primary Expertise**	**Secondary Task**
Rob Snetsinger M.Sc.	Wetlands, overall ecology	Ecological assessment
Kurt Hennige	Avifauna	Ecological assessment
Dale Kristensen M.Sc.	Botany and Alvars	Ecological assessment

Mr. Snetsinger has an M.Sc. in Biology. He has taught biology at Queen's University for 33 years and undertaken ecological impact assessments for 36 years, including many for the aggregate resource industry.

Mr. Hennige is a mechanical engineer, who is a well recognized and respected birder in the region. Among his extensive avifauna work, he has been a lead investigator for the Canadian Wildlife Service as part of the Loggerhead Shrike recovery program and was the project leader for the Meadowlark and Bobolink Habitat Selection project on behalf of the Lennox & Addington Stewardship Council. He is also the regional supervisor for eBird.

Mr. Kristensen has an M.Sc. in Biology. He has taught biology at Queen's University for 32 years and has undertaken ecological assessments for 36 years. He is one of the foremost alvar ecology experts in the region, and in this regard has consulted on behalf of various municipalities and stewardship councils.

3. Ecological Land Classification (ELC)

Ecological land classification determination was based on Lee et al. (1998). ELC mapping is provided in Figure 2, and explanations of the mapped ELC terms are provided further on.

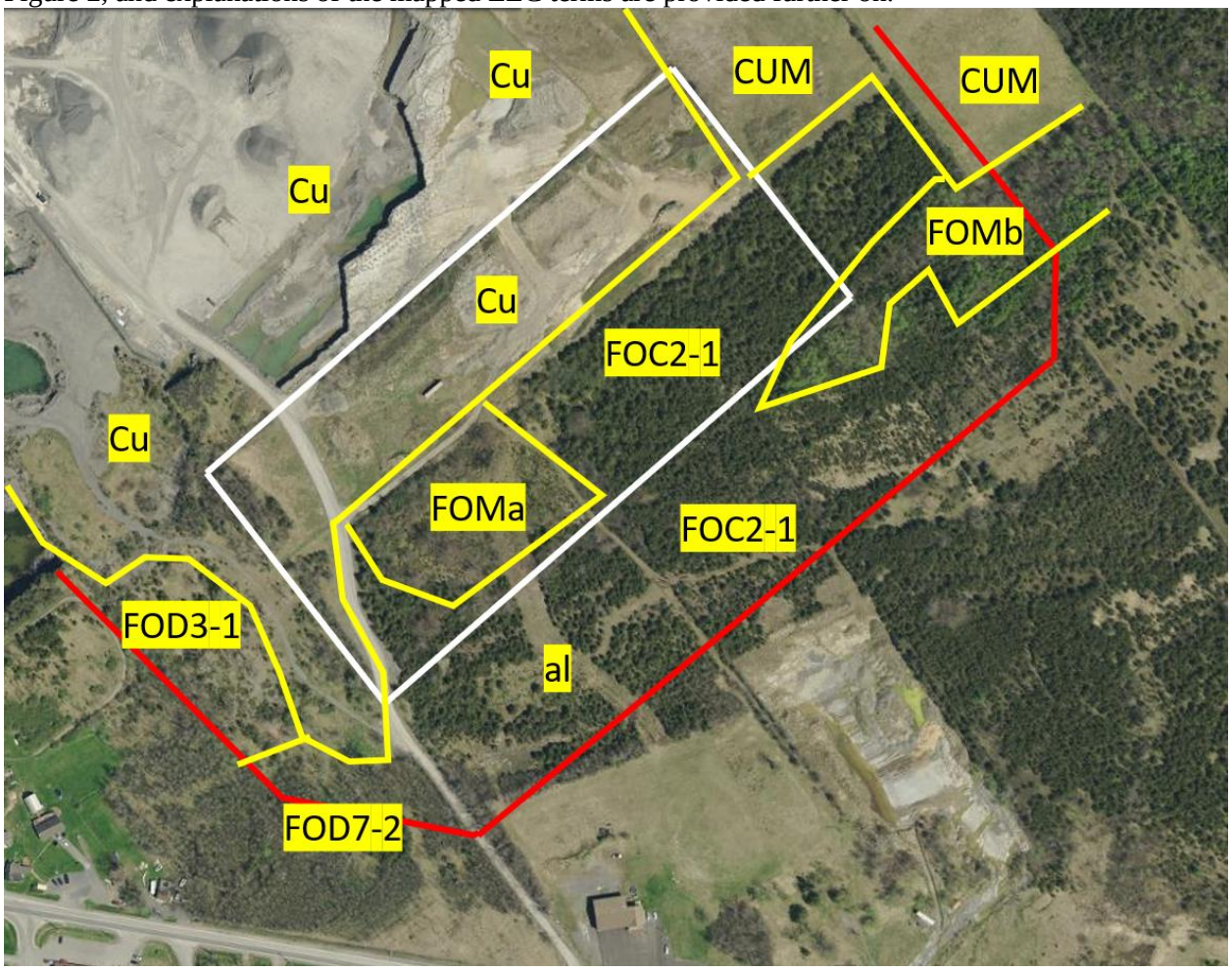


Figure 2. ELC designations for the proposed Asphalt Plant area (outlined in white) and for the lands within the 120 m adjacent lands defined by the red line.

ELC Sites

Cultural (Cu): A cultural site is one that is strongly influenced by cultural activities. Cultural sites include adjacent quarry operations and the northern half of the proposed asphalt plant area. Soil scraping and other activities have been undertaken here by the previous owner. This area is dominated by weedy and non-native species and has limited natural heritage value.

Dry-Fresh Red Cedar Coniferous Forest Type (FOC2-1): This is the predominant woodland in the vicinity of the area proposed for the asphalt plant. It is currently dominated by dense growths of red cedar. The non-native and invasive European buckthorn is dominant in the understory, along with prickly ash. The ground cover is relatively impoverished as a result of the heavy shading of the overstory, and the allelopathic ability of red cedar and buckthorn. Red cedar woodlands are seen as invasive and can result in significant reductions of biodiversity (see Horncastle et al. 2004, Norris et al. 2001, and Briggs et al., 2002).

In the adjacent lands, and within the red cedar woodlands there were patches with alvar features that were too small (>0.5 ha.) to be considered as separate ELC polygons, and therefore were lumped as part of the FOC2-1 site type. One patch (al in the ELC map) is shown in the adjacent image, being reviewed by Mr. Kristensen.

These are not alvars as defined by the Ecosystem Criteria Schedules for Site Region 6E (OMNRF 2015), which is an ecological feature that forms on calcareous bedrock with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil. In order to be considered as alvar (i.e., in relation to potential protection from development under the Provincial Policy Statement), an alvar community must be >0.5 ha in size. It also must possess at least 4 of 5 alvar indicator species (*Carex crawei, Panicum philadelphicum, Eleocharis compressa, Scutellaria parvula* and *Trichostema brachiatum*), not be dominated by >50% introduced species, and be in excellent condition with non-conflicting land uses.

Small patches with alvar features were identified within the study site, however none of these communities surpassed OMNR (2015) significance thresholds, which would otherwise trigger potential PPS protections. This lack of significance is due to the following reasons:

1. The area is dominated by Dry-Fresh Red Cedar Coniferous Forest Type (FOC2-1), which covers much of the study area and is in the process of overgrowing the alvar patches;

2. None of the patches are >0.5 ha in size;

3. The patches have not developed naturally, but instead have developed over areas that had soil and vegetation overburden removed or otherwise disturbed by past land use actions;

4. None of the patches contain the necessary threshold of indicator species required for significance in this Site Region. Furthermore, only one of the 3 indicator species that are present (flat-

stemmed spikerush) occurs in sufficient density to be considered a notable part of the vegetation community;

5. There are a number of aggressive introduced species present that are expected to dominate within a few years (i.e., form >50% of the vegetative cover), including the non-native and invasive Common Lilac, European Buckthorn, and Dog-strangling Vine, as well as the native Gray Dogwood;

6. The lack of isolation means there will be ongoing introduction and migration of weed species.

Cultural Meadow (CUM): Cultural meadow must have less than 25% tree cover and have resulted from or maintained by cultural or anthropogenic disturbances. There are two cultural meadows to the east of the proposed asphalt plant. The closest meadow immediately east is more disturbed from past activities related to the quarry, and it has not been actively managed for hay production. As a result, it has a greater mix of perennial forbs such as clovers, cinquefoils, goldenrods, and thistles, and it is in the process of conversion to red cedar woodland. The second cultural meadow is about 105 m further east of the eastern asphalt plant boundary. It has been actively managed as a hay field, although was not cut up to the day of the field visit on July 25, 2019, and appears not to have been cut in 2018.

Mixed Woodland (FOMa and FOMb): Mixed woodlands must have at least 25% crown cover of both deciduous and conifer species. The conifer species coverage comes from red cedar, whereas the deciduous canopy cover of the FOMa woodland comes primarily from oaks. In the FOMb woodland it primarily comes from trembling aspen (see adjacent image).

The shrub layer in both is dominated by either prickly ash or the non-native and invasive European buckthorn. The ground cover layer is sparsely covered with weedy species.

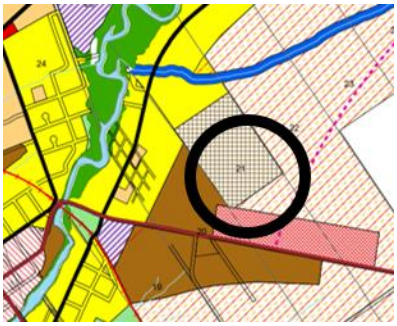
Dry-Fresh Poplar Deciduous Forest Type FOD3-1: This small ELC site is located in the adjacent lands to the south of the proposed asphalt plant area and has a history of disturbance in relation to past quarry activities. The canopy is dominated by Eastern Cottonwood. The sub-canopy is dominated by red cedar and the invasive European Buckhtorn shrub. The ground cover contains many weedy species.

Fresh Moist Lowland Deciduous Forest Type FOD7-2: This site is relatively young and has grown over an area with relatively poor drainage. It is dominated by green ash, although the non-native and invasive European buckthorn is also a significant component of the canopy and the sub-canopy. It does contain a few ephemeral ponding areas (see adjacent image), but these are too small (i.e., <500m^2) to be given consideration for significant amphibian breeding.

4. Assessment of Natural Features

4.0 Woodland

Significant woodland is not identified for the asphalt plant area in the Town of Napanee OP, which is also our assessment. The proposed asphalt plant area is shown in Schedule C of the OP, all within an aggregate zone, as shown in the adjacent image.



The asphalt plant will result in the loss of about 2.7 ha of mostly red cedar woodland out of an overall connected woodland of approximately 40 ha. The overall woodland is a patchwork of woodland blocks, and as such it is fragmented with many gaps, and disturbances (e.g., cattle pasturing). The overall woodland is also dominated by red cedar and these woodlands are seen as invasive and can result in significant reductions of biodiversity (see Horncastle et al. 2004, Norris et al. 2001, and Briggs et al., 2002).

As a result of our field work and woodland analysis, it is our opinion, the woodland associated with the proposed asphalt plant does not meet the thresholds for woodland significance as outlined in OMNR (2010), including size, core habitat, water protection, diversity, linkages, and unusual features.

4.1 Watercourses/Riparian Habitat

There are no watercourses and associated riparian habitat within the lands proposed for the asphalt plant, nor in the adjacent lands.

4.2 Species at Risk (SAR): Threatened or Endangered Species

The following SAR were considered during the field work, as based on our past work with SAR in the area, knowledge of the County, and observations during field work on July 25, 2019.

Butternut (Endangered): No butternut trees were observed within the proposed asphalt plant area, nor on the adjacent lands.

Eastern Meadowlark (Threatened): Eastern Meadowlarks were added to the Ontario Species at Risk list in 2012. We typically observe them in field habits, especially if there are intermittent shrubs present, which they use for perching. Speculation for their decline in numbers in the province is based on a number of possible factors such as once-cleared fields turning back into woodland habitat, unfavorable agricultural practices, and housing development. Unlike other parts of the province, numbers in this region are relatively good, perhaps due to the presence of many abandoned farm fields.

One Meadowlark was observed in the field that begins about 105 m to the east of the eastern asphalt plant boundary area on lands not owned by Tomlinson. The Meadowlark was seen about 220 m east of the eastern plant boundary. We spent considerable time attempting to confirm if nesting was present, but without success. This lone bird may have been visiting for feeding purposes.

If nesting does occur in this field, the large separation distances, the existing intervening 10 m high berm, the dense intervening red cedar woodland, and a treed fence line will be more than adequate for buffering purposes, especially as this bird that is tolerant to nearby human activity. For example, there are a number of Meadowlark sightings in eBird within urban areas, and we studied a nesting Meadowlark in a field in the middle of the Kingston urban core that was surrounded by light industrial development, apartment towers, and a residential subdivision.

It should be stated that the field to the east of the proposed asphalt plant area is in adjacent ownership, and R.W. Tomlinson has no control over impacts to Meadowlark that may occur within this field by the adjacent owner, such as with hay removal.

Bobolink (Threatened): No Bobolinks were observed during the July 25, 2019 site visit. It is acknowledged that this is not an ideal time to search for them, but there is no appropriate Bobolink habitat within the asphalt plant area for Bobolink. There is an adjacent field immediately to the east that is too small and disturbed by past quarry related activities to support Bobolink.

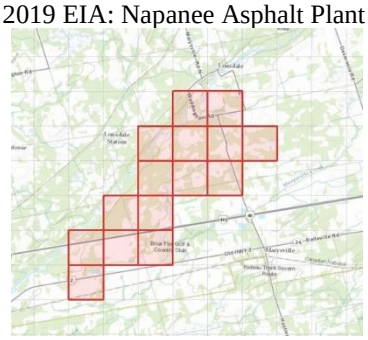
There is a larger field, starting about 105 m east of the eastern boundary of the asphalt plant area that could support a small population of Bobolink. The proposed site of the asphalt plant itself, and the propensity of Bobolink to avoid edge habitat when nesting, means there would be a separation distance of about 200 meters, which is more than sufficient to prevent impacts if Bobolinks were present. As well, there is an intervening 10 m high berm, dense red cedar woodland, and a treed fence line to act as a buffer.

It should be stated that the field to the east of the proposed asphalt plant area is in adjacent ownership, and R.W. Tomlinson has no control over impacts to Bobolink that may occur within this field by the adjacent owner, such as with hay removal.

Chimney Swift (Threatened): Two Chimney Swifts were observed in feeding flights over the active quarry to the north of the proposed asphalt plant. There are no appropriate nesting sites within the asphalt plant area, nor in the adjacent lands, and so these birds would have been on a feeding flight. Kurt Hennige, who conducted the bird survey during the July 25, 2019 site visit and is also the regional administrator for eBird noted that there is a known population of Chimney Swifts in the urban area of Napanee. Accordingly, these birds would have been flying in from there to feed.

Chimney Swifts will not be at risk from the proposed asphalt plant.

Juniper Sedge (Endangered): *Carex juniperorum* is only reported for an area more than 25 km west of the proposed asphalt plant area (see adjacent image) in association with the Salmon River Alvar.



We did not encounter this sedge in the alvar-like patches in the adjacent lands of the proposed asphalt plant area, nor did we expect to, due to the relatively poor alvar features present, especially in contrast to the Salmon River Alvar.

Eastern Whip-poor-will (Threatened): We did not census for Whip-poor-wills for this project due to late start up time of our field work, but rate the probability of them to nest in the proposed asphalt area to be low, as the woodlands of the proposed asphalt plant area are too dense in either tree or shrub cover for effective nesting.

Most nesting in the region occurs north of Hwy. 401, and there are few eBird records within the vicinity of Napanee. The only eBird posting in the Napanee region for Whip-poor-will, was in 2012 by Kyra Pupinski on September 21. At this time of year, this bird would likely be a migrant, passing through the area.

In our opinion, there is a very low probability of Whip-poor-will using the asphalt plant site.

Barn Swallow (Threatened): No Barn Swallows were observed during the field work, and there are no appropriate nesting structures within 120 m of the proposed asphalt plant area.

Bank Swallow (Threatened): One Bank Swallow was observed flying near some nesting holes on a pile of soil created by the previous quarry owners (see red square in adjacent photo). We did not observe any nesting activity in association with the holes.

We often observe Bank Swallows in association with pits and quarries as a result of the vertical soil walls that are created during aggregate operations. These birds are very tolerant to the nearby pit and quarry operations, and as long as their nests are not disturbed, they will continue to thrive.

The pile of soil in the adjacent image is at the eastern edge of the proposed asphalt plant area. This vertical wall of soil will eventually fail from natural erosion processes, whereby it will no longer be suitable for nesting because Banks Swallows will not build nests within non-vertical surfaces.

Recommendation 1: It is recommended that no alteration of the soil pile that Bank Swallows are nesting in be attempted during the nesting season (late April to late August).

Recommendation 2: As a pro-active measure to support Bank Swallows, it is recommended that Tomlinson transplant a soil pile further east to the top of the existing eastern berm and shape it to create an east facing stable vertical soil wall. In this regard please refer to OMNRF (2017). Further reinforcing of the wall and/or yearly maintenance is recommended.

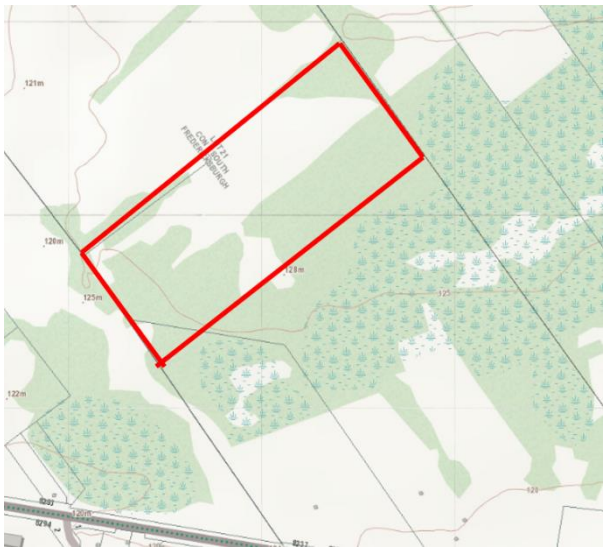
Loggerhead Shrike (Endangered): Kurt Hennige, who undertook the birding survey during the July 25, 2019 site visit has done extensive work with Loggerhead Shrike, including with the Canadian Wildlife Service as part of the shrike recovery. Consequently, he is well qualified to determine habitat potential for these birds. No Loggerhead Shrikes were observed or expected during the field work due to a lack of appropriate open shrubland habitat and because they are not known to nest within this area. All known nest sites are in the Camden East Area more than 11 km to the NE.

Four-leaved Milkweed (Endangered): No Four-leaved Milkweed was observed on site. The only known record for the Napanee area is from the 1890's, but the only recent records are from the McMahon Bluff area of Prince Edward County (COSEWIC 2010).

Blanding's Turtle (Threatened): There is no Blanding's Turtle appropriate aquatic habitat within 120 m of the proposed development area, and no Blanding's Turtles were observed on site.

4.3 Wetland

Provincial NHIC mapping shows possible wetland to the south of the proposed asphalt plant area as shown in the adjacent image, where the asphalt plant area is outlined in red and possible wetland as shown with blue hatching. This mapping is not accurate, insofar as any areas within 120 m of the proposed asphalt plant are not wetland. We are confident in our ability to identify wetland, having completed well over 100 wetland evaluations in this region on behalf of OMNRF.



The blue hatched areas in the adjacent image to the east and south of the proposed asphalt plant are distinctly dry habitats. They were identified in Section 3 of this report as Dry-Fresh Red Cedar Coniferous Forest Type and Mixed woodland, composed of red cedar and trembling aspen. Both of these habitat types are growing on very shallow soils over limestone.

The isolated blue hatched area to the southwest consists of a Fresh Moist Lowland Deciduous Forest Type. It does contain a few small ephemeral wet areas, but these are insufficient in size and breadth to signify wetland status for the whole woodland.

4.4 Area of Natural and Scientific Interest

There is no ANSI on, or within 120 m of, the proposed development site.

4.5 Valleylands

There are no valleyland on, or within 120 m of, the proposed development site. \

4.6 Wildlife Habitat

The Significant Wildlife Habitat (SWH) Criteria for Site Region 6E (MNR 2012) describes in detail the habitat and wildlife requirements and thresholds. Each wildlife habitat type was considered during the site investigation.

Seasonal Concentration Areas:

Waterfowl Stopover and Staging Areas (terrestrial): Only applies to flooded fields (not present).
Waterfowl Stopover and Staging Areas (aquatic): Only applies to open water wetlands (not present).

Shorebird Migratory Stopover Area*:* Only applies to shorelines (not present).

Raptor Wintering Area*:* Applies to mature woodland/field combinations that provide the necessary foraging habitat for overwintering raptors. The development site does not have sufficient appropriate woodland types for raptor winter use, and the open area would not produce the necessary rodent populations to support overwintering raptors. Significance requires the presence of one or more Short-eared Owl or Bald Eagle, or at least 10 individuals of either Rough-legged Hawk, Northern Harrier, American Kestrel, and Snowy Owl.

A good example of a significant Raptor Wintering Area is Owl Woods on Amherst Island.

Bat Hibernacula*:* Not Present
Bat Maternity Colonies: Requires large older woodlands with at least 10 snags/hectare (not present).
Bat Migratory Stopover Area: Criteria still being developed by the OMNRF.

Turtle Wintering Areas*:* Requires aquatic habitat (not present).
Reptile hibernaculum: Hibernation features are lacking (e.g., fractured slopes, caves, old foundations, karst).

Colonially -Nesting Bird Breeding Habitat (Bank and Cliff): Bank and cliff habitat is present and is discussed in Section 5.2 of this report, and includes recommendations.
Colonially -Nesting Bird Breeding Habitat (Trees/Shrubs): Requires swamp habitat (not present).
Colonially -Nesting Bird Breeding Habitat (Ground): Requires coastal habitat (not present).

Butterfly migratory route/stopover areas*:* The site is more than 5 km from Lake Ontario needed for consideration.

Landbird migratory stopover areas*:* The site is more than 5 km from Lake Ontario needed for consideration.

Deer yarding areas: Deer occasionally pass through this area, but not in sufficient numbers to qualify as SWH.
Deer Winter Congregation areas*:* Deer use this area, but it lacks appropriate features to act as a significant winter congregation area.

***Rare Vegetation Communities*:** Not Present

Specialized Habitats for Wildlife

Waterfowl nesting area*:* No aquatic habitat to support waterfowl nesting.

Bald Eagle and Osprey Nesting, Foraging and Perching Habitat: Appropriate habitat features are not present.

Woodland Raptor Nesting Habitat*:* Requires a 30 hectare woodland with at least 10 hectares of interior core habitat. There is no core habitat present.

Turtle Nesting Areas*:* Too far removed from any appropriate turtle habitat for nesting purposes, and lacking in turtle nesting features.

Seeps and Springs*:* Not present.

Amphibian breeding habitat **(woodland):** No ephemeral ponds present of the required 500m^2 to support woodland amphibian breeding.
Amphibian breeding habitat **(wetland):** No wetland habitat present.

Habitat for Species of Conservation Concern

Marsh bird breeding habitat: Marsh habitat not present.
Woodland area –sensitive bird breeding habitat: Requires at least 10 ha of interior habitat, assuming 100 m buffer at edge of forest, which is not present.
Open country bird breeding habitat: Requires grassland habitat 30 ha or larger in size, that is not being actively used for farming. There is no grassland habitat of this size within the proposed development area. ***Shrub/early successional bird breeding habitat***: Shrub habitat not present.
Terrestrial Crayfish: Not present.

Rare Species*:* Refers to provincially rare (S1 to S3 and SC, **not** Threatened or Endangered) plant and animal species. The following four information sources were considered when developing the rare species table below: 1. MNRF's NHIC grid 18UP2975, and Henry Penyk (MNRF Peterborough); 2. Picton Ecodistrict 6E-15, Henson and Brodribb (2005); 3. Ecological Services field work; 4. Other sources (e.g., anecdotal reports, eBird, etc.).

Species	Preferred Habitat	Suitable Habitat <120 m	Source	Sighted during field work
Birds				
Cerulean Warbler (SC)	Mature deciduous woodlands	No	2	No
Wood Thrush (SC)	Deciduous woodlands	Yes	1,4	No
Eastern Wood-peewee (SC)	Mature deciduous woodlands	No	1,4	No
Canada Warbler (SC)	Lowland Forest	No	1	No
Short-eared Owl (SC)	Grasslands	Yes	1	No
Reptiles				
Snapping Turtle (SC)	Wetlands	No	1	No
Map Turtle (SC)	Wetlands	No	1	No
Musk Turtle (SC)	Wetlands	No	1	No
Plants				
Dwarf Hackberry S2	Deciduous woodlands	No	2	No
Insects				
Monarch (SC)	Field habitat with milkweed	Present	3	**Yes**

Discussion (Monarch): During the field work, a few Monarch butterfly were periodically observed in association with the fields starting about 105 m from the eastern edge of the proposed asphalt plant area. These fields also contain some milkweed plants, but this is not a critical or important Monarch site.

Monarchs will not be at threat from the proposed asphalt plant because of the large separation distances, the existing intervening 10 m high berm, the dense intervening red cedar woodland, and a treed fence line will be more than adequate for buffering purposes, especially as Monarchs are tolerant to nearby human activity.

It should be stated that the field to the east of the proposed asphalt plant area is in adjacent ownership, and R.W. Tomlinson has no control over impacts to Monarch that may occur within this field by the adjacent owner, such as with hay removal.

Animal Movement Corridors

Amphibian movement corridors*:* Not present.

Deer movement corridors*:* Deer movement corridors are associated with significant deer wintering habitat (MNR 2012). There are no habitat features on or within the proposed development property that support significant deer winter use and therefore there is no significant deer movement corridor.

4.7 Fish Habitat

There is no fish habitat on, or within 120 m of, the proposed development site.

5. References

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6. Appendix – Species Lists

Avirauna Species

American Crow	3
American Goldfinch	3
American Robin	4
Baltimore Oriole	1
Bank Swallow	1
Black-and-white Warble	1
Black-capped Chickadee	3
Blue Jay	4
Brown Thrasher	2
Brown-headed Cowbird	1
Cedar Waxwing	3
Chimney Swift	3
Chipping Sparrow	3
Common Grackle	4
Common Yellowthroat	2
Eastern Meadowlark	1
Eastern Towhee	1
European Starling	2
Field Sparrow	3
Gray Catbird	1
Great Blue Heron	2
House Wren	1
Indigo Bunting	1
Killdeer	2
Mourning Dove	2
Northern Cardinal	4
Northern Flicker	1
Red-eyed Vireo	3
Red-winged Blackbird	2
Rock Pigeon (Feral Pige	2
Rose-breasted Grosbeal	2
Sharp-shinned Hawk	1
Song Sparrow	6
Tree Swallow	1
Turkey Vulture	4
Warbling Vireo	1
White-breasted Nuthat	1
Wild Turkey	7

Plant Species (non-native species are highlighted in gray).

Acer saccharum var. saccharum	Sugar Maple
Achillea millefolium	Yarrow
Agrostis stolonifera	Creeping Bentgrass
Alliaria petiolata	Garlic Mustard
Ambrosia artemisiifolia	Annual Ragweed
Antennaria neglecta	Field Pussytoes
Betula papyrifera	Paper Birch
Bromus inermis	Awnless Brome
Bromus japonicus	Japanese Brome
Carex bebbii	Bebb's Sedge
Carex granularis	Meadow Sedge
Carex pensylvanica	Pennsylvania Sedge
Carex rosea	Rosy Sedge
Carex vulpinoidea	Fox Sedge
Carya ovata	Shag-bark Hickory
Cichorium intybus	Chicory
Cirsium arvense	Canada Thistle
Cirsium vulgare	Bull Thistle
Conyza canadensis	Fleabane
Cornus foemina	Stiff Dogwood
Cornus sericea	Red-osier Dogwood
Cynanchum louiseae	Black Swallow-wort
Danthonia spicata	Poverty Oatgrass
Daucus carota	Wild Carrot
Echinochloa crus-galli	Barnyard Grass
Echinocystis lobata	Wild Mock-cucumber
Echium vulgare	Common Viper's-bugloss
Eleocharis compressa	Flat-stemmed Spike-rush
Elymus repens	Creeping Wild-rye
Eurybia macrophylla	Large-leaf Wood-aster
Festuca rubra ssp. rubra	Red Fescue
Fragaria vesca	Woodland Strawberry
Fragaria virginiana	Virginia Strawberry
Fraxinus americana	White Ash
Fraxinus pennsylvanica	Green Ash
Geum aleppicum	Yellow Avens
Glyceria striata	Fowl Manna-grass
Hordeum jubatum ssp. jubatum	
Hypericum punctatum	Common St. John's-wort
Inula helenium	Elecampane Flower
Juncus dudleyi	Dudley's Rush
Juniperus communis	Ground Juniper
Juniperus virginiana	Eastern Red Cedar
Lepidium campestre	Field Pepper-grass
Lepidium densiflorum	Dense-flower Pepper-grass
Lepidium virginicum	Poor-man's Pepper-grass
Leucanthemum vulgare	Oxeye Daisy
Lonicera tatarica	Tartarian Honeysuckle
Lycopus americanus	American Bugleweed
Medicago lupulina	Black Medic
Medicago sativa	Alfalfa
Melilotus albus	White Sweet Clover
Melilotus altissimus	Tall Yellow Sweetclover
Nepeta cataria	Catnip
Oenothera biennis	Common Evening-primrose
Origanum vulgare	Wild Marjoram
Ostrya virginiana	Eastern Hop-hornbeam
Packera paupercula	Balsam Ragwort
Parthenocissus inserta	Virginia Creeper
Pastinaca sativa	Wild Parsnip
Petasites frigidus var. palmatus	Western Sweet Coltsfoot
Phleum pratense	Meadow Timothy
Phragmites australis ssp. australis	European Reed
Pinus strobus	Eastern White Pine
Poa compressa	Canada Bluegrass
Poa pratensis ssp. pratensis	Kentucky Bluegrass
Populus deltoides ssp. deltoides	Eastern Cottonwood
Populus grandidentata	Large-tooth Aspen
Populus tremuloides	Trembling Aspen
Potentilla norvegica	Norwegian Cinquefoil
Potentilla recta	Sulphur Cinquefoil
Potentilla reptans	Creeping Cinquefoil
Prunella vulgaris ssp. lanceolata	Self-heal
Quercus alba	White Oak
Quercus macrocarpa	Bur Oak
Quercus muhlenbergii	Chinquapin Oak
Quercus rubra	Northern Red Oak
Ranunculus acris	Tall Butter-cup
Rhamnus cathartica	Buckthorn
Rhus aromatica	Fragrant Sumac
Rhus typhina	Staghorn Sumac
Rosa blanda	Smooth Rose
Rubus allegheniensis	Allegheny Blackberry
Rubus idaeus ssp. idaeus	Common Red Raspberry
Rudbeckia hirta var. hirta	Black-eyed Susan
Rumex crispus	Curly Dock
Saponaria officinalis	Bouncing-bet
Satureja hortensis	Summer Savory
Scirpus atrovirens	Dark-green Bulrush
Scirpus cyperinus	Cottongrass Bulrush
Securigera varia	Common Crown-vetch
Solidago canadensis	Canada Goldenrod
Solidago juncea	Early Goldenrod
Solidago ptarmicoides	Prairie Goldenrod
Sonchus arvensis ssp. arvensis	
Sporobolus neglectus	Small Dropseed
Symphyotrichum cordifolium	Heart-leaf Aster
Syringa vulgaris	Common Lilac
Thuja occidentalis	Eastern White Cedar
Tilia americana	American Basswood
Toxicodendron radicans	Climbing Poison Ivy
Tragopogon dubius	Meadow Goat's-beard
Trichostema brachiatum	False Pennyroyal
Trifolium campestre	Low Hop Clover
Trifolium hybridum	Alsike Clover
Trifolium pratense	Red Clover
Trifolium repens	White Clover
Vicia cracca	Tufted Vetch
Vitis riparia	Riverbank Grape
Zanthoxylum americanum	Northern Prickley Ash