



## REPORT

# Natural Environment Assessment of the Proposed Amendment to Re-Designate a Portion of the Brampton Brick Cheltenham Quarry Under the Niagara Escarpment Plan

Submitted to:

**Brampton Brick Limited**

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October 6, 2022



## Distribution List

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Species at Risk Screening

## 1.0 INTRODUCTION

Golder Associates Ltd., a member of WSP (Golder) was retained by Brampton Brick to complete an assessment of a 14.68 hectare (ha) land parcel to the north of the existing Cheltenham Quarry located at 14504 Mississauga Road, Caledon, Ontario (the 14.68 ha parcel is herein referred to as the site). The site is currently designated as 'Escarpment Protection Area' under the Niagara Escarpment Plan (NEP) (MMAH 2017a). Brampton Brick is seeking to submit an amendment to the Niagara Escarpment Commission to re-designate the site to Escarpment Rural Area. Subject to approval of this amendment, Brampton Brick would then apply to designate the site from Escarpment Rural Area to Mineral Resource Extraction Area. As part of this application, Brampton Brick would agree to surrender a portion of their current licence under the Aggregates Resources Act (ARA) for a parcel of comparable size located to the southwest (referred to as Phase 3), and licence the new site once its NEP designation has been changed.

The purpose of this report is to assess the following Escarpment Protection Area and Escarpment Rural Area criteria for designation as outlined in Sections 1.4.2 and 1.5.2 of the Niagara Escarpment Plan and to provide a determination on the most appropriate Niagara Escarpment Plan designation for the site. Note that only the criteria specific to the natural environment/ecology are discussed in this report.

### 1) Escarpment Protection Area Criteria for Designation

- Areas of Natural and Scientific Interest (Life Science) (ANSI), or environmentally sensitive or environmentally significant areas identified by municipalities or conservation authorities.

### 2) Escarpment Rural Area Criteria for Designation

- Lands in the vicinity of the Escarpment which are of ecological importance to the Escarpment environment.
- Lands that have potential for enhanced ecological values through natural succession processes or due to their proximity to other ecologically sensitive lands, areas or features.

This report provides our assessment of the technical information related to the above criteria for the site. Please see the report entitled "Brampton Brick – Proposed Niagara Escarpment Plan Amendment - 14504 Mississauga Road" (MHBC Planning 2022) for a complete analysis of the applicable Niagara Escarpment Plan policies.

This report also provides an overview of the natural heritage values of the site compared to the Phase 3 lands of the existing approved ARA licence (Figure 1).

## 2.0 METHODS

### 2.1 Species at Risk Screening

A background information search and literature review were conducted to gather data about the local area and identify significant natural features and species at risk (SAR) that have been reported as occurring, or potentially occurring in the local landscape. The background review was completed for the site and the study area (an area of 120 m surrounding the site) and included the following sources:

- Natural Heritage Information Centre (NHIC) database, maintained by the Ministry of Natural Resources and Forestry (MNRF) (NHIC 2021)
- Land Information Ontario (LIO) geospatial data (MNRF 2022a)
- Species at Risk Public Registry (ECCC 2022)
- Species at Risk in Ontario (SARO) List (MECP 2022)
- Breeding Bird Atlas of Ontario (OBBA) (Cadman et al. 2007)
- Atlas of the Mammals of Ontario (Dobbyn 1994)
- Ontario Reptile and Amphibian Atlas (Ontario Nature 2022)
- Bat Conservation International (BCI) range maps (BCI 2022)
- Ontario Butterfly Atlas (Jones et al. 2022)
- eBird species maps (eBird 2022)
- iNaturalist occurrence maps (iNaturalist 2022)
- MNRF LIO Aquatic Resources Area Layer (MNRF 2021b)
- MNRF Fish On-Line (MNRF 2022c)
- DFO Aquatic SAR Maps (DFO 2022)
- Vascular Plants at Risk in Ontario (Leslie 2018)
- Greenbelt Plan (MMAH 2017b)
- The Region of Peel Official Plan (2021)
- Aerial imagery

A desktop SAR screening was conducted for species listed under the *Endangered Species Act* (ESA) and the *Species at Risk Act* (SARA). An assessment was then conducted to determine which SAR had potential habitat in the study area. Species with ranges overlapping the study area, or recent occurrence records in the vicinity, were screened by comparing their habitat requirements to habitat conditions in the study area, as interpreted from aerial imagery.

The potential for the species to occur was determined through a probability of occurrence. A ranking of low indicates no suitable habitat availability for that species in the study area and no specimens identified. Moderate probability indicates more potential for the species to occur, as suitable habitat appeared to be present in the study area, but no occurrence of the species has been recorded. Alternatively, a moderate probability could indicate an observation of

a species, but there is no suitable habitat on the site or in the study area. High potential indicates a known species recorded in the study area (based on the background data review) and good quality habitat is expected to be present. The desktop assessment was updated based on the results of the site reconnaissance.

## 2.2 Site Reconnaissance

A site reconnaissance was completed on June 20, 2022 to assess the existing natural environment conditions on the site and within the study area. The site reconnaissance included a high-level plant community assessment using the Ecological Land Classification (ELC) System for southern Ontario (Lee et al. 1998), and identification of dominant plant species, where possible. Wildlife habitat on the site and within the study area was characterized, with a focus on potential habitats for SAR identified during the desktop SAR screening. The SAR screening was refined based on the habitat assessment during the site reconnaissance. Any habitat identified during ground-truthing with potential to provide suitable conditions for additional SAR not already identified through the desktop screening, was also assessed and recorded.

## 3.0 EXISTING CONDITIONS

The site is bound to the east by Mississauga Road, with agricultural lands further to the east, in the study area, and to the south by the active Cheltenham Quarry. The site is dominated by agricultural lands that appeared to be tile drained. There is a low area along the southern perimeter that likely carries flow following storm events, but was dry at the time of the site reconnaissance. Offsite, there is a meadow marsh dominated by reed canary grass (*Phalaris arundinacea*) with cattail (*Typha* sp.) in the northwest corner of the study area.

There are several small areas of cultural meadow along the field edges and around the residential area in the east-central portion of the site dominated by Kentucky bluegrass (*Poa pratensis*) and reed canary grass. There is a larger cultural meadow in the northwest corner of the site dominated by grasses with goldenrod, field horsetail (*Equisetum arvense*) and scattered immature white pine (*Pinus strobus*) and white spruce (*Picea glauca*). There is a house and two barns in the residential area. There is a cultural woodland dominated by immature white ash with scattered white pine (*Pinus strobus*) and white spruce (*Picea glauca*) in the central portion of the site.

Offsite, to the northwest in the study area, there is a deciduous forest dominated by red oak (*Quercus rubra*) and basswood (*Tilia americana*) which extends to the north. In the south and southwest portions of the study area, there is also a deciduous forest dominated by sugar maple (*Acer saccharum*) and white ash.

According to LIO mapping (MNR 2022a), a tributary of the Credit River crosses the site from west to east through the central portion of the site near the residential area. West of the residential area, no defined channel or water was observed during the site reconnaissance. East of the residential area a broad, flat channel approximately 5 m in width was observed during the site reconnaissance. This area was characterized by a low-lying meadow marsh dominated by reed canary grass and phragmites (*Phragmites australis*). No flowing water was observed and the tributary was assessed to be an intermittent feature. Although the tributary appears to be connected to the Credit River, it was assessed to have low potential to provide fish habitat based on the intermittent nature. A drainage swale, which was dry at the time of the site reconnaissance, was also identified bisecting the southwest agricultural field. Off-site, in the northwest corner of the study area, two additional tributaries of the Credit River were confirmed to be present.

### 3.1 Species at Risk

There is moderate or high potential for 18 SAR to occur on the site or in the study area (Appendix A). Of these, ten species are designated as threatened or endangered under the ESA and receive individual and habitat protection on private land in Ontario under the Act: Jefferson salamander (*Ambystoma jeffersonianum*), unisexual *Ambystoma* – Jefferson salamander dependent population (*Ambystoma laterale* - (2) *jeffersonianum*), barn swallow (*Hirundo rustica*), red-headed woodpecker (*Melanerpes erythrocephalus*), eastern small-footed myotis (*Myotis leibii*), little brown myotis (*Myotis lucifugus*), northern myotis (*Myotis septentrionalis*), tri-colored bat (*Perimyotis subflavus*), American columbo (*Frasera caroliniensis*) and butternut (*Juglans cinerea*).

The remaining eight species are designated special concern under the ESA or are only designated under the SARA and do not receive individual or habitat protection on private land in Ontario under either Act: western chorus frog (*Pseudacris triseriata*), monarch (*Danaus plexippus*), Canada warbler (*Cardellina canadensis*), common nighthawk (*Chordeiles minor*), eastern wood-pewee (*Contopus virens*), golden-winged warbler (*Vermivora chrysoptera*), wood thrush (*Hylocichla mustelina*), and American hart's-tongue fern (*Asplenium scolopendrium*).

Of these SAR, only barn swallow, eastern small-footed myotis, monarch, common nighthawk and golden-winged warbler have potential to occur on the site.

### 4.0 COMPARISON OF THE SITE AND PHASE 3 PROPERTY

Based on a high-level desktop review, the majority of the Phase 3 property (Figure 1) is comprised of upland forest communities, wetlands and a watercourse. The watercourse flows to a pond on Phase 3, and ultimately drains to the Credit River. The following natural heritage features were identified as occurring, or with the potential to occur, on Phase 3:

- Wetlands
- Potential significant woodlands
- Fish habitat
- Potential significant wildlife habitat
- Potential SAR habitat, including for SAR bats

The following natural heritage features were identified on the site:

- Potential significant wildlife habitat
- Potential SAR habitat, for barn swallow, eastern small-footed myotis

Overall, because the site is dominated by an agricultural field, there are far fewer significant natural heritage features that would be potentially impacted by the proposed extraction, as compared to Phase 3. Prior to extraction, Phase 3 would have to be cleared. In addition, access to and from Phase 3 from the area of the quarry currently being extracted would require crossing the watercourse.

## 5.0 ASSESSMENT

The site is not located within the core areas of the greenland system as defined in the Region of Peel Official Plan.

There are CVC regulated areas on the site associated with watercourses.

There is no ANSI on the site.

Based on this assessment, there are no environmentally sensitive or environmentally significant areas identified by municipalities or the CVC on the site. Due to existing disturbances to the south and east of the site, in the study area (e.g., agriculture, road, quarry), these lands do not have ecological importance. The woodlands to the west and north of the site, in the study area, could be considered ecologically important. Although the site is not connected to other ecologically sensitive lands, areas or features, it is in relatively close proximity to the Caledon Mountain Slope Forest Life Science ANSI and the Caledon Mountain Wetland Complex Provincially Significant Wetland (PSW). Also, as the site is currently in agricultural use, there is potential for enhanced ecological values through natural succession.

## 6.0 SUMMARY

- The site does not meet the criteria for Escarpment Protection Area Criteria under the NEP as there is no Area of Natural and Scientific Interest (Life Science), or environmentally sensitive or environmentally significant areas identified by municipalities or conservation authorities.
- The site meets the criteria for Escarpment Rural Area Criteria under the NEP as there is potential for enhanced ecological values through natural succession and it is in close proximity to other ecologically sensitive lands, areas or features (i.e., Caledon Mountain Slope Forest Life Science ANSI and the Caledon Mountain PSW).
- Due to existing disturbances to the south and east of the site, in the study area (e.g., agriculture, road, quarry), these lands do not have ecological importance. The woodlands to the west and north of the site, in the study area, could be considered ecologically important.
- Extraction on the site will be less disruptive to the natural environment than Phase 3 as there are fewer significant natural heritage features.



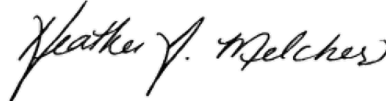
## 7.0 CLOSURE

We trust that this report meets your current needs. Please contact the undersigned with any comments or questions.

### **Golder Associates Ltd.**



Amber Sabourin, HBSc (Env)  
*Ecologist*



Heather Melcher, MSc  
*Director, Ecology Ontario Earth and Environment*

AVS/HM/sg

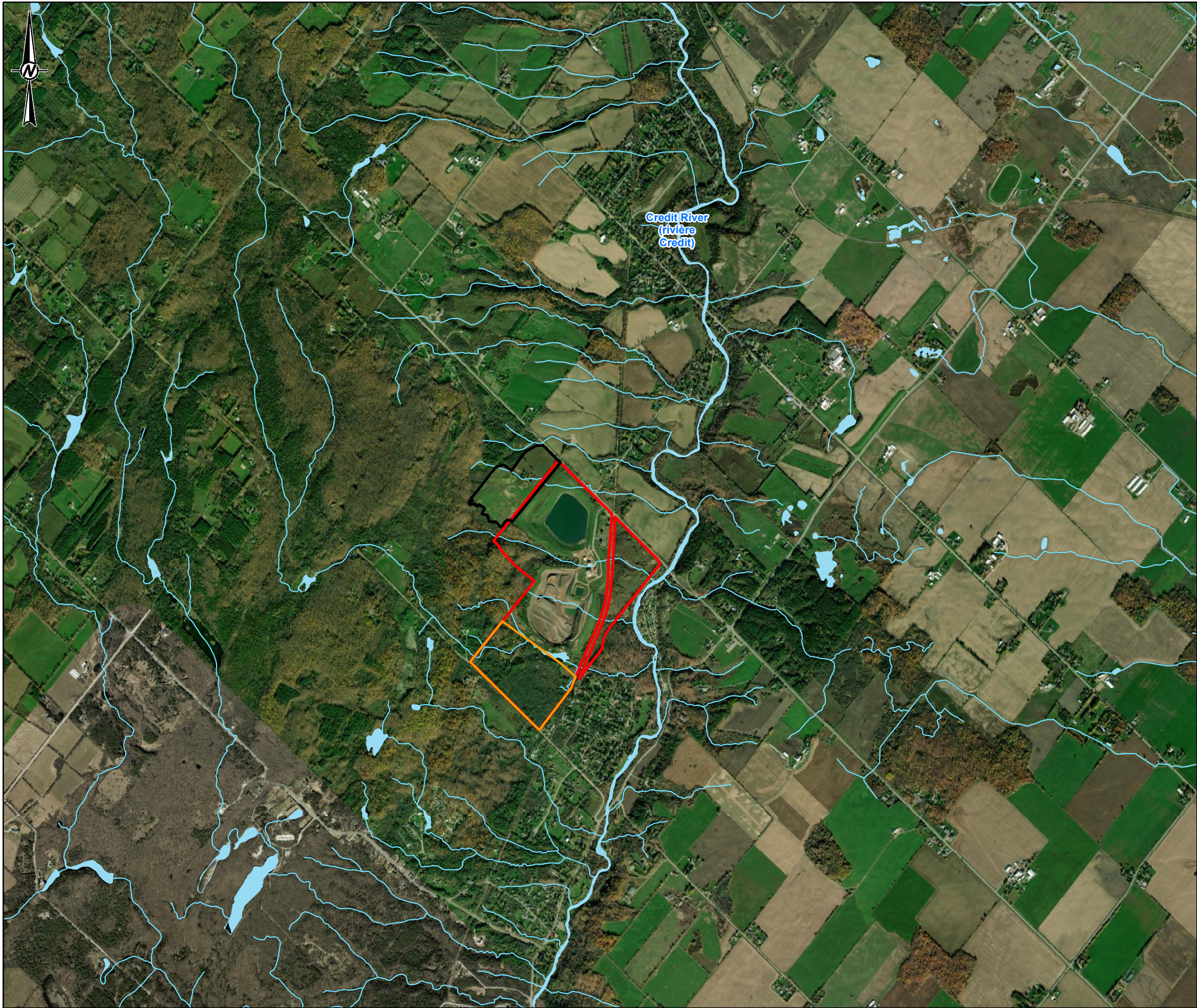
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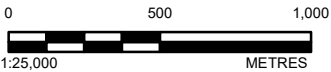
WATERCOURSE

WATERBODY

BRAMPTON BRICK CHELTENHAM QUARRY

SITE

PHASE 3



REFERENCE(S)  
1. BASEDATA OBTAINED FROM THE MNRF LIO 2022  
2. IMAGERY SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY  
SOURCE: ESRI, MAXAR, EARTHSTAR GEOGRAPHICS, AND THE GIS USER COMMUNITY  
3. PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: UTM ZONE 17N

CLIENT  
BRAMPTON BRICK LIMITED

PROJECT  
GEOLOGICAL ASSESSMENT  
CHELTENHAM QUARRY, BRAMPTON, ONTARIO

TITLE  
CHELTENHAM QUARRY AND ADJOINING LANDS

CONSULTANT

YYYY-MM-DD

2022-08-23

wsp

GOLDER

DESIGNED

JR

PREPARED

JR

REVIEWED

AVS

APPROVED

HM

PROJECT NO.

22525525

CONTROL

0002

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FIGURE

1



**APPENDIX A**

# Species at Risk Screening

ATTACHMENT A  
Species at Risk Screening

Taxon	Common Name	Scientific Name	Endangered Species Act <sup>1</sup>	Species at Risk Act (Sch 1) <sup>2</sup>	COSEWIC <sup>3</sup>	Provincial (SRank) <sup>4</sup>	Habitat Requirements <sup>5</sup>	Potential to Occur on Site or in the Study Area	Rationale for Potential to Occur on Site or in the Study Area
Amphibian	Jefferson salamander	<i>Ambystoma jeffersonianum</i>	END	END	END	S2	In Ontario, Jefferson salamander is found only in southern Ontario, along southern portions of the Niagara Escarpment and western portions of the Oak Ridges Moraine. Jefferson salamander prefers moist, well-drained deciduous and mixed forests with a closed canopy. It overwinters underground in mammal burrows and rock fissures and moves to vernal pools and ephemeral wetlands in the early spring to breed. Breeding ponds are typically located in or near to forested habitats, and contain submerged debris (i.e. sticks, vegetation) for egg attachment sites. Ephemeral breeding pools need to have water until at least mid-summer (mid to late July) (Jefferson Salamander Recovery Team 2010).	Moderate	Off-site, mature deciduous forest in the south and southwest portions of the study area on the Niagara Escarpment may provide suitable summer habitat. However, no suitable breeding ponds were identified on the site or within the study area. There are occurrence records in the vicinity of the study area.
Amphibian	Unisexual Ambystoma – Jefferson Salamander dependent population,	<i>Ambystoma laterale</i> - (2) <i>jeffersonianum</i>	END	END	END	—	In Ontario, the unisexual Jefferson salamander is found within deciduous or mixed forests containing, or adjacent to, suitable breeding ponds. Breeding ponds are normally ephemeral pools that dry in late summer. Terrestrial habitat is in moist woodlands, where the salamanders find shelter under fallen trees or rocks, as well as in mammal burrows. Adults forage during humid conditions at night on the forest floor within 1 km of the breeding pond. These salamanders also require terrestrial overwintering sites below the frost line (COSEWIC 2016).	Moderate	Off-site, mature deciduous forest in the south and southwest portions of the study area on the Niagara Escarpment may provide suitable summer habitat. However, no suitable breeding ponds were identified on the site or within the study area. There are occurrence records in the vicinity of the study area.
Amphibian	Western chorus frog - Great Lakes St. Lawrence / Canadian Shield population	<i>Pseudacris triseriata</i>	—	THR	THR	S3	In Ontario, habitat of this amphibian species typically consists of marshes or wooded wetlands, particularly those with dense shrub layers and grasses, as this species is a poor climber. They will breed in almost any fishless pond including roadside ditches, gravel pits and flooded swales in meadows. This species hibernates in terrestrial habitats under rocks, dead trees or leaves, in loose soil or in animal burrows. During hibernation, this species is tolerant of flooding (Environment Canada 2015).	Moderate	Off-site, the marsh area in the northwest corner of the study area contains potential suitable breeding habitat with of vegetation.
Arthropod	Monarch	<i>Danaus plexippus</i>	SC	SC	END	S2N, S4B	In Ontario, monarch is found throughout the northern and southern regions of the province. This butterfly is found wherever there is milkweed ( <i>Asclepias</i> spp.) plants for its caterpillars and wildflowers that supply a nectar source for adults. It is often found on abandoned farmland, meadows, open wetlands, prairies and roadsides, but also in city gardens and parks. Important staging areas during migration occur along the north shores of the Great Lakes (COSEWIC 2010).	High	Milkweed was recorded in the cultural meadow in the northwest corner of the study area and may provide host plants for caterpillars.
Bird	Bank swallow	<i>Riparia riparia</i>	THR	THR	THR	S4B	In Ontario, bank swallow breeds in a variety of natural and anthropogenic habitats, including lake bluffs, stream and riverbanks, sand and gravel pits, and roadcuts. Nests are generally built in a vertical or near-vertical bank. Breeding sites are typically located near open foraging sites such as rivers, lakes, grasslands, agricultural fields, wetlands and riparian woods. Forested areas are generally avoided (Garrison 1999).	Low	No cliffs, or significant slopes on site suitable for nesting. Escarpment and the pit are both outside of this site.

ATTACHMENT A  
Species at Risk Screening

Taxon	Common Name	Scientific Name	Endangered Species Act <sup>1</sup>	Species at Risk Act (Sch 1) <sup>2</sup>	COSEWIC <sup>3</sup>	Provincial (SRank) <sup>4</sup>	Habitat Requirements <sup>5</sup>	Potential to Occur on Site or in the Study Area	Rationale for Potential to Occur on Site or in the Study Area
Bird	Barn swallow	<i>Hirundo rustica</i>	THR	THR	SC	S4B	In Ontario, barn swallow breeds in areas that contain a suitable nesting structure, open areas for foraging, and a body of water. This species nests in human made structures including barns, buildings, sheds, bridges, and culverts. Preferred foraging habitat includes grassy fields, pastures, agricultural cropland, lake and river shorelines, cleared rights-of-way, and wetlands (COSEWIC 2011). Mud nests are fastened to vertical walls or built on a ledge underneath an overhang. Suitable nests from previous years are reused (Brown and Brown 2019).	High	Buildings present in the residential portion of the site could provide nesting habitat, and large open fields provide feeding habitat.
Bird	Black tern	<i>Chlidonias niger</i>	SC	—	NAR	S3B	In Ontario, black tern breeds in freshwater marshlands where it forms small colonies. It prefers marshes or marsh complexes greater than 20 ha in area and which are not surrounded by wooded area. Black terns are sensitive to the presence of agricultural activities. The black tern nests in wetlands with an even combination of open water and emergent vegetation, and still waters of 0.5-1.2 m deep. Preferred nest sites have short dense vegetation or tall sparse vegetation often consisting of cattails, bulrushes and occasionally burreed or other marshland plants. Black terns also require posts or snags for perching (Weseloh 2007).	Low	Agricultural activities present right next to marsh area, which is also too small for this species and surrounded by wooded areas.
Bird	Bobolink	<i>Dolichonyx oryzivorus</i>	THR	THR	THR	S4B	In Ontario, bobolink breeds in grasslands or graminoid dominated hayfields with tall vegetation (Gabhauer 2007). Bobolink prefers grassland habitat with a forb component and a moderate litter layer. They have low tolerance for presence of woody vegetation and are sensitive to frequent mowing within the breeding season. They are most abundant in established, but regularly maintained, hayfields, but also breed in lightly grazed pastures, old or fallow fields, cultural meadows and newly planted hayfields. Their nest is woven from grasses and forbs. It is built on the ground, in dense vegetation, usually under the cover of one or more forbs (Renfrew et al. 2015).	Low	No suitable grassland habitat was identified on the site or in the study area.
Bird	Canada warbler	<i>Cardellina canadensis</i>	SC	THR	THR	S4B	In Ontario, breeding habitat for Canada warbler consists of moist mixed forests with a well-developed shrubby understory. This includes low-lying areas such as cedar and alder swamps, and riparian thickets (McLaren 2007). It is also found in densely vegetated regenerating forest openings. Suitable habitat often contains a developed moss layer and an uneven forest floor. Nests are well concealed on or near the ground in dense shrub or fern cover, often in stumps, fallen logs, overhanging stream banks or mossy hummocks (Reitsma et al. 2010).	Moderate	Suitable habitat may be found in the deciduous forest off-site, in the south portion of the study area.
Bird	Chimney swift	<i>Chaetura pelagica</i>	THR	THR	THR	S3B	In Ontario, chimney swift breeding habitat is varied and includes urban, suburban, rural and wooded sites. They are most commonly associated with towns and cities with large concentrations of chimneys. Preferred nesting sites are dark, sheltered spots with a vertical surface to which the bird can grip. Unused chimneys are the primary nesting and roosting structure, but other anthropogenic structures and large diameter cavity trees are also used (COSEWIC 2007).	Low	Country houses and other buildings present on site do not have large chimneys for nesting.

ATTACHMENT A  
Species at Risk Screening

Taxon	Common Name	Scientific Name	Endangered Species Act <sup>1</sup>	Species at Risk Act (Sch 1) <sup>2</sup>	COSEWIC <sup>3</sup>	Provincial (SRank) <sup>4</sup>	Habitat Requirements <sup>5</sup>	Potential to Occur on Site or in the Study Area	Rationale for Potential to Occur on Site or in the Study Area
Bird	Common nighthawk	<i>Chordeiles minor</i>	SC	THR	SC	S4B	In Ontario, these aerial foragers require areas with large open habitat. This includes farmland, open woodlands, clearcuts, burns, rock outcrops, alvars, bogs, fens, prairies, gravel pits and gravel rooftops in cities (Sandilands 2007)	Moderate	Potential suitable foraging habitat present on site.
Bird	Eastern meadowlark	<i>Sturnella magna</i>	THR	THR	THR	S4B	In Ontario, eastern meadowlark breeds in pastures, hayfields, meadows and old fields. Eastern meadowlark prefers moderately tall grasslands with abundant litter cover, high grass proportion, and a forb component (Hull 2019). They prefer well drained sites or slopes, and sites with different cover layers (Roseberry and Klimstra 1970).	Low	No suitable grassland habitat was identified on the site or in the study area.
Bird	Eastern whip-poor-will	<i>Antrostomus vociferus</i>	THR	THR	THR	S4B	In Ontario, whip-poor-will breeds in semi-open forests with little ground cover. Breeding habitat is dependent on forest structure rather than species composition, and is found on rock and sand barrens, open conifer plantations and post-disturbance regenerating forest. Territory size ranges from 3 to 11 ha (COSEWIC 2009). No nest is constructed, and eggs are laid directly on the leaf litter (Mills 2007).	Low	Open forested habitat suitable for breeding not present at this site.
Bird	Eastern wood-pewee	<i>Contopus virens</i>	SC	SC	SC	S4B	In Ontario, eastern wood-pewee inhabits a wide variety of wooded upland and lowland habitats, including deciduous, coniferous, or mixed forests. It occurs most frequently in forests with some degree of openness. Intermediate-aged forests with a relatively sparse midstory are preferred. In younger forests with a relatively dense midstory, it tends to inhabit the edges. Also occurs in anthropogenic habitats providing an open forested aspect such as parks and suburban neighborhoods. Nest is constructed atop a horizontal branch, 1-2 m above the ground, in a wide variety of deciduous and coniferous trees (COSEWIC 2012).	Moderate	Off-site, the deciduous forest in the northwest portion of the study area and off-site in the south portion of the study area may provide suitable nesting habitat.
Bird	Golden-winged warbler	<i>Vermivora chrysoptera</i>	SC	THR	THR	S4B	In Ontario, golden-winged warbler breeds in regenerating scrub habitat with dense ground cover and a patchwork of shrubs, usually surrounded by forest. Their preferred habitat is characteristic of a successional landscape associated with natural or anthropogenic disturbance such as rights-of-way, and field edges or openings resulting from logging or burning. The nest of the golden-winged warbler is built on the ground at the base of a shrub or leafy plant, often at the shaded edge of the forest or at the edge of a forest opening (Confer et al. 2011).	Moderate	The cultural meadow in the northwest portion of the site may provide suitable successional habitat.
Bird	Grasshopper sparrow <i>pratensis</i> subspecies	<i>Ammodramus savannarum</i> (pratensis subspecies)	SC	SC	SC	S4B	In Ontario, grasshopper sparrow is found in medium to large grasslands with low herbaceous cover and few shrubs. It also uses a wide variety of agricultural fields, including cereal crops and pastures. Close-grazed pastures and limestone plains (e.g. Carden and Napanee Plains) support highest density of this bird in the province (COSEWIC 2013).	Low	No suitable grassland habitat was identified on the site or in the study area.



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Bird	Henslow's sparrow	<i>Ammodramus henslowii</i>	END	END	END	SHB	In Ontario, Henslow's sparrow breeds in large grasslands with low disturbance, such as lightly grazed and ungrazed pastures, fallow hayfields, grassy swales in open farmland, and wet meadows. Preferred habitat contains tall, dense grass cover, typically over 30 cm high, with a high percentage of ground cover, and a thick mat of dead plant material. Henslow's sparrow generally avoids areas with emergent woody shrubs or trees, and fence lines. Areas of standing water or ephemerally wet patches appear to be important. This species breeds more frequently in patches of habitat greater than 30 ha and preferably greater than 100 ha (COSEWIC 2011).	Low	No suitable grassland habitat was identified on the site or in the study area.
Bird	Least bittern	<i>Ixobrychus exilis</i>	THR	THR	THR	S4B	In Ontario, least bittern breeds in marshes, usually greater than 5 ha, with emergent vegetation, relatively stable water levels and areas of open water. Preferred habitat has water less than 1 m deep (usually 10 – 50 cm). Nests are built in tall stands of dense emergent or woody vegetation (Woodliffe 2007). Clarity of water is important as siltation, turbidity, or excessive eutrophication hinders foraging efficiency (COSEWIC 2009).	Low	Marsh area too small for this species.
Bird	Northern bobwhite	<i>Colinus virginianus</i>	END	END	END	S1	In Ontario, northern bobwhite breeds in early successional habitats. This species requires a combination of three habitat types: woody cover, cropland and grassland. Croplands provide foraging habitat, grassland and fields are used for nesting, and dense brush provides both winter forage and year-round cover. These birds' nest on the ground in a shallow depression lined with grasses and other dead vegetation (Brennan et al. 2014).	Low	Although a suitable combination of habitat types present on site, the grasslands may be too small.
Bird	Olive-sided flycatcher	<i>Contopus cooperi</i>	SC	THR	SC	S4B	In Ontario, olive-sided flycatcher breeding habitat consists of natural openings in coniferous or mixed forests, including bogs, burns, riparian zones, and cutover areas. They are also found in semi-open forest stands and early successional forest when tall snags and residual live trees are present. In the boreal forest it is often associated with muskeg, bogs, fens and swamps dominated by spruce and tamarack. Open areas with tall trees or snags for perching are used for foraging (COSEWIC 2007). Nests are usually built on horizontal branches of conifers (Peck and James 1987).	Low	Small forested section at the northwest corner of the property does not contain open features required by this species.
Bird	Red-headed woodpecker	<i>Melanerpes erythrocephalus</i>	END	END	END	S4B	In Ontario, red-headed woodpecker breeds in open, deciduous woodlands or woodland edges and are often found in parks, cemeteries, golf courses, orchards and savannahs (Woodliffe 2007). They may also breed in forest clearings or open agricultural areas provided that large trees are available for nesting. They prefer forests with little or no understory vegetation. They are often associated with beech or oak forests, beaver ponds and swamp forests where snags are numerous. Nests are excavated in the trunks of large dead trees (Frei et al. 2017).	Moderate	Off-site, the deciduous forest to the northwest in the study area and in the south portion of the study area may provide suitable nesting habitat.

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Bird	Wood thrush	<i>Hylocichla mustelina</i>	SC	THR	THR	S4B	In Ontario, wood thrush breeds in moist, deciduous hardwood or mixed stands that are often previously disturbed, with a dense deciduous undergrowth and with tall trees for singing perches. This species selects nesting sites with the following characteristics: lower elevations with trees less than 16 m in height, a closed canopy cover (>70 %), a high variety of deciduous tree species, moderate subcanopy and shrub density, shade, fairly open forest floor, moist soil, and decaying leaf litter (COSEWIC 2012).	Moderate	Off-site, the deciduous forest to the northwest in the study area and in the south portion of the study area may provide suitable nesting habitat.
Fish	Redside dace	<i>Clinostomus elongatus</i>	END	END	END	S2	In Ontario, reddsides are small cool water species common in the USA but less so in Canada, is found in tributaries of western Lake Ontario, Lake Erie, Lake Huron and Lake Simcoe. They are found in pools and slow-moving areas of small headwater streams with clear to turbid water. Overhanging grasses, shrubs, and undercut banks, are an important part of their habitat, as are instream boulders and large woody debris. Preferred substrates are variable and include silt, sand, gravel and boulders. Spawning occurs in shallow riffle areas (Redside Dace Recovery Team 2010).	Low	No reddsides were found using the Aquatic Species at Risk mapping tool from the DFO.
Mammal	Eastern small-footed myotis	<i>Myotis leibii</i>	END	—	—	S2S3	In Ontario, eastern small-footed myotis is not known to roost in trees, but there is very little known about its roosting habits. The species generally roosts on the ground under rocks, in rock crevices, talus slopes and rock piles, but it occasionally inhabits buildings. Entrances of caves or abandoned mines where humidity is low, and temperatures are cool and sometimes subfreezing may be used as hibernacula (Humphrey 2017).	Moderate	A few small rock piles were identified in the hedgerow and cultural woodland on the site that may provide roosting habitat.
Mammal	Little brown myotis	<i>Myotis lucifugus</i>	END	END	END	S3	In Ontario, this species' range is extensive and covers much of the province. It will roost in both natural and man-made structures. Roosting colonies require a number of large dead trees, in specific stages of decay and that project above the canopy in relatively open areas. May form nursery colonies in the attics of buildings within 1 km of water. Caves or abandoned mines may be used as hibernacula, but high humidity and stable above freezing temperatures are required (ECCC 2018).	Moderate	The deciduous forest off-site in the northwest portion of the study area and off-site in the south portion of the study area may provide suitable natural roosting habitat.
Mammal	Northern myotis	<i>Myotis septentrionalis</i>	END	END	END	S3	In Ontario, this species' range is extensive and covers much of the province. It will usually roost in hollows, crevices, and under loose bark of mature trees. Roosts may be established in the main trunk or a large branch of either living or dead trees. Caves or abandoned mines may be used as hibernacula, but high humidity and stable above freezing temperatures are required (ECCC 2018).	Moderate	Off-site, the deciduous forest to the northwest in the study area and in the south portion of the study area may provide suitable nesting habitat.

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Mammal	Tri-colored bat	<i>Perimyotis subflavus</i>	END	END	END	S3?	In Ontario, tri-colored bat may roost in foliage, in clumps of old leaves, hanging moss or squirrel nests. They are occasionally found in buildings although there are no records of this in Canada. They typically feed over aquatic areas with an affinity to large-bodied water and will likely roost in close proximity to these. Hibernation sites are found deep within caves or mines in areas of relatively warm temperatures. These bats have strong roost fidelity to their winter hibernation sites and may choose the exact same spot in a cave or mine from year to year (ECCC 2018).	Moderate	Off-site, the deciduous forest to the northwest in the study area and in the south portion of the study area may provide suitable nesting habitat.
Reptile	Midland painted turtle	<i>Chrysemys picta marginata</i>	—	SC	SC	S4	In Ontario, painted turtles use waterbodies, such as ponds, marshes, lakes and slow-moving creeks, with a soft bottom and abundant basking sites and aquatic vegetation. This species hibernates on the bottom of waterbodies (Ontario Nature 2018).	Low	The structure of the marsh on the site is not suitable for turtles.
Reptile	Milksnake	<i>Lampropeltis triangulum</i>	NAR	SC	SC	S4	In Ontario, milksnake uses a wide range of habitats including prairies, pastures, hayfields, wetlands and various forest types, and is well-known in rural areas where it frequents older buildings. Proximity to water and cover enhances habitat suitability. Hibernation takes place in mammal burrows, hollow logs, gravel or soil banks, and old foundations (COSEWIC 2014).	Moderate	All types of habitat used by this species are present on site.
Reptile	Snapping turtle	<i>Chelydra serpentina</i>	SC	SC	SC	S4	In Ontario, snapping turtle uses a wide range of waterbodies, but shows preference for areas with shallow, slow-moving water, soft substrates and dense aquatic vegetation. Hibernation takes place in soft substrates under water. Nesting sites consist of sand or gravel banks along waterways or roadways (COSEWIC 2008).	Low	Marsh not suitable aquatic habitat for this species.
Vascular Plant	American columbo	<i>Frasera caroliniensis</i>	END	END	END	S2	In Ontario, American columbo is most commonly associated with open deciduous forested slopes, but it can also be found in thickets, swamps and clearings. It is often associated with oak, hickory and sassafras trees. American columbo grows on a wide variety of soils, particularly dry mesic to mesic clay and clay loam soils (Environment Canada 2019).	Moderate	Off-site, the deciduous forest in the south and southwest portions of the study area may provide suitable habitat.
Vascular Plant	American hart's-tongue fern	<i>Asplenium scolopendrium</i>	SC	SC	SC	S3	In Ontario, American hart's-tongue fern grows on thin calcareous soils on or near dolomitic limestone of the Niagara Escarpment, and occasionally on open talus/scree slopes. Most populations are found on steep, moderately moist slopes that face north to northeast and are under a hardwood canopy cover (Environment Canada 2013).	Moderate	Off-site, the deciduous forest in the south and southwest portions of the study area may provide suitable habitat.
Vascular Plant	Broad beech fern	<i>Phegopteris hexagonoptera</i>	SC	—	SC	S3	In Ontario, broad beech fern inhabits rich, undisturbed mature deciduous forest dominated by beech and maple. It typically grows in moist to wet, sandy soils of lower valley slopes and occasionally swamps (van Overbeeke et al. 2013).	Low	No suitable forest habitat identified on the site or in the study area. Sandy soils are unlikely to be found in close proximity to the escarpment.

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Vascular Plant	Butternut	<i>Juglans cinerea</i>	END	END	END	S2?	In Ontario, butternut is found along stream banks, on wooded valley slopes, and in deciduous and mixed forests. It is commonly associated with beech, maple, oak and hickory (Voss and Reznicek 2012). Butternut prefers moist, fertile, well-drained soils, but can also be found in rocky limestone soils. This species is shade intolerant (Farrar 1995).	Moderate	Off-site, the deciduous forest to the northwest in the study area and in the south portion of the study area may provide suitable habitat.
Vascular Plant	Dense blazing star	<i>Liatris spicata</i>	THR	THR	THR	S2	In Ontario, dense blazing star is found mainly in moist tall-grass prairies, oak savannahs, wet meadows and along roadsides in full sun in open areas (COSEWIC 2010). It grows in moist to wet, sandy calcareous soils (WDNR 2019). It is primarily restricted to southwestern Ontario.	Low	No suitable prairie, wet meadow or savannah habitat identified on the site.
Vascular Plant	Downy yellow false foxglove	<i>Aureolaria virginica</i>	END	—	END	S1	In Ontario, downy yellow false foxglove grows in dry open woods and savannahs (Oldham and Brinker 2009).	Low	Dry open woods or savannahs not identified on site.
Vascular Plant	Eastern flowering dogwood	<i>Cornus florida</i>	END	END	END	S2?	In Ontario, eastern flowering dogwood grows in the understory of dry to rich deciduous forests, especially on hillsides and riverbanks. It prefers sandy acidic soils but occasionally is found in loams, clays and organic soils (Waldron 2003). This species is restricted to the Carolinian zone of southern Ontario.	Low	No suitable forest habitat identified on the site. In addition, no individuals identified during site visit.
Vascular Plant	Fern-leaved yellow false foxglove	<i>Aureolaria pedicularia</i>	THR	—	THR	S2?	In Ontario, fern-leaved yellow false foxglove grows in dry open woods and thickets, often on sand, as well as in savannahs (Oldham and Brinker 2009).	Low	Dry open woods or savannahs not identified on site.
Vascular Plant	Hoary mountain-mint	<i>Pycnanthemum incanum</i>	END	END	END	S1	In Ontario, hoary mountain-mint is found in open, dry, sandy-clay habitats in open-canopied deciduous woods of dry Black oak and White oak, on relatively warm slopes (Hoary Mountain-Mint Recovery Team 2011).	Low	No suitable forest habitat identified on the site.
Vascular Plant	Large toothwort	<i>Cardamine maxima</i>	—	—	—	S3	In Ontario, large toothwort grows in rich woods, and ravines, bottomlands, stream banks (FNA 2007).	Low	There does not appear to be potential suitable habitat for this species on the site or in the study area.
Vascular Plant	Red mulberry	<i>Morus rubra</i>	END	END	END	S2	In Ontario, red mulberry occurs in moist forested habitats including floodplains, bottomlands, the slopes and ravines along the southern portion of the Niagara escarpment and in swales on some western Lake Erie sand spits. This species is moderately shade tolerant but grows best in forest openings (Parks Canada Agency 2011). This species is restricted to the Carolinian zone of southwestern Ontario.	Low	No suitable forest habitat identified on the site. In addition, no individuals identified during site visit.
Vascular Plant	Smooth yellow false foxglove	<i>Aureolaria flava</i>	THR	—	THR	S2?	Smooth yellow false foxglove is generally found in dry, open upland oak savannas and woodlands (Arkansas Native Plant Society 2019; Canada 2019).	Low	Dry open woods or savannahs not identified on site.



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