Agenda Including Addeds
Ecological Community Advisory Committee

5th Meeting of the Ecological Community Advisory Committee

April 20, 2023, 4:30 PM

Advisory Committee Virtual Meeting - Please check the City website for current details

The City of London is situated on the traditional lands of the Anishinaabek (AUh-nish-in-ah-bek), Haudenosaunee (Ho-den-no-show-nee), Lūnaapéewak (Len-ah-pay-wuk) and Attawandaron (Add-a-won-da-run).

We honour and respect the history, languages and culture of the diverse Indigenous people who call this territory home. The City of London is currently home to many First Nations, Métis and Inuit today.

As representatives of the people of the City of London, we are grateful to have the opportunity to work and live in this territory.

The City of London is committed to making every effort to provide alternate formats and communication supports for meetings upon request. To make a request specific to this meeting, please contact advisorycommittee@london.ca.

Pages

1. Call to Order

1.1 Disclosures of Pecuniary Interest

2. Scheduled Items

3. Consent

3.1 4th Report of the Ecological Community Advisory Committee 2

4. Sub-Committees and Working Groups

5. Items for Discussion

5.1 Trails Advisory Group Representative and Alternate

5.2 Goldfish Brochure 3

5.3 (ADDED) Working Group Comments - 735 Southdale Road West *5*

5.4 (ADDED) Kensington Bridge EIS *11*

6. Adjournment

Ecological Community Advisory Committee

Report

4th Meeting of the Ecological Community Advisory Committee
March 16, 2023

Attendance

PRESENT: S. Levin (Chair), P. Baker, S. Evans, S. Hall, R. McGarry, K. Moser, G. Sankar, S. Sivakumar and V. Tai and H. Lysynski (Committee Clerk)

ABSENT: E. Dusenge, T. Hain, B. Krichker, K. Lee, M. Lima and S. Miklosi

ALSO PRESENT: A. Curtis, S. Butnari, M. Shepley, B. Page, B. Westlake-Power and E. Williamson

The meeting was called to order at 4:33 PM

1. Call to Order

1.1 Disclosures of Pecuniary Interest

That it BE NOTED that no pecuniary interests were disclosed.

2. Scheduled Items

None.

3. Consent

3.1 3rd Report of the Ecological Community Advisory Committee

That it BE NOTED that the 3rd Report of the Ecological Community Advisory Committee, from its meeting held on February 16, 2023, was received.

4. Sub-Committees and Working Groups

None.

5. Items for Discussion

5.1 Environmental Impact Study - 735 Southdale Road West

That a Working Group BE ESTABLISHED consisting of S. Levin (lead), S. Evans, S. Hall and G. Sankar, to review the Environmental Impact Study and the Hydrogeological Study for the property located at 735 Southdale Road West.

5.2 Activities Members would like to Undertake while on the Ecological Community Advisory Committee

That it BE NOTED that the Ecological Community Advisory Committee held a general discussion with respect to the activities the members would like to undertake.

5.3 (ADDED) 38 Exeter Road

That it BE NOTED that the Scoped Environmental Impact Study for the property located at 38 Exeter Road was received.

6. Adjournment

The meeting adjourned at 5:01 PM.

What's the problem?

You may bring a Goldfish into your home with the best intentions and then find yourself in the future with a need to find somewhere else for it to live. Goldfish are an invasive species, and bring with them a variety of problems:

- can grow to be 30-35 cm (12-14 in) and weigh several pounds
- can live for 30-40 years
- are messy and should not be kept in small containers
- need large containers as adults with water filtration, oxygen circulation and regular water changes.

Frequently Asked Questions

Q: I don't want to, or can't, take care of my Goldfish anymore. Can I just flush or release it outside?

A: Pet fish (alive or dead) should never be released outside or flushed down the drain. Released fish can become invasive and/or transmit diseases. Dead fish can also transmit diseases to wild fish. Live fish may survive being flushed and end up in the wild.

Q:. What should I do instead?

A: To find a new home for live fish, submit a classified ad or post on social media, offer your fish to a local school, look for a rescue, or ask pet stores if they will take it.

Q: Where can I find more information?

Learn more at these websites:
www.invasivespeciescentre.ca/goldfishw
ww.thamesriver.on.ca

Protecting our waterways

The problem with Goldfish – what you should know about this invasive species

Prepared by the City of London
Ecological Community
Advisory Committee

london.ca

London
CANADA

Why are Goldfish considered an invasive species?

Goldfish are from East Asia and do not belong in nature in North America

Dumping Goldfish creates a bigger problem

Dumped or flushed Goldfish harm native species by:

- growing and multiplying quickly
- eating other fish species' eggs and young
- eating plants and animals native species feed on
- stirring up mud, causing cloudy water that disturbs native fish and destroys their habitat.

Infestation: a growing problem

Goldfish infestations currently occur in London in the Thames River, Westminster Ponds, Sifton Bog, The Coves and other waterways.

Before you buy, consider alternatives to Goldfish

Other types of fish or amphibians are easier to keep as aquarium pets:

Betta fish

- Live 2-5 years
- Remain small, low-mess
- Solitary (easier to keep alone)

Freshwater tropical fish like Guppy, Danio, Tetra, Platy

- Live 1-5 years
- Most remain small in size
- Thrive in most water conditions
- May require a water heater
- Social (best kept in groups)

African dwarf frogs

- Live up to 5 years
- Remain small
- Breathe air from water's surface
- Social (best kept in groups)

ECAC WORKING GROUP COMMENTS ON EIS AND HYDROGEOLOGICAL STUDY
for **735 Southdale Road West**
S. Evans, S. Hall, S. Levin, G. Sankar

Received at ECAC's March, 2023 meeting

SUMMARY

1. The development setback from the wetlands is not adequate
2. The functioning of the PSW is unclear, is it surface fed/groundwater fed or combination of both.
3. Though the water balance on a site level might be maintained using LID measures, the wetland could be drier for longer periods because groundwater recharge will be reduced. A feature-based water balance calculation should be required instead of a site specific water balance.
4. Groundwater flows SE towards Communities 4 and 5 – impacts are not addressed
5. Storm Water Management - any pre to post requirements that need to be met at this site? It is not clear from the documents

We are not convinced that the EIS and Hydrogeology work make the case that the LID measures such as trails and plantings between the built-up area and the PSW will bring the post development water balance up to 80% as per minimum standards.

Wetland boundary and buffer (Community 4 and Community 5)

Community 5 is a 0.34 ha Maple Mineral Deciduous Swamp Ecosite (SWD3) located adjacent to the south edge of the Subject Lands. It is unclear if this the total size of the feature or just the part on the subject lands. The entire PSW is much larger. Albeit this PSW was complexed under old rules, it is still protected under the London Plan City Policy and should be protected in situ and not relocated.

We note that the consultant has assessed the boundary of the PSW and has submitted a revision to MNR for their review and approval. Even if the MTE assessment is accepted by MNRF (which may mean the application should be considered premature without MNRF acceptance) the proposal is still for a buffer less than included in the Environmental Management Guidelines.

The boundary should have been staked after a site visit by staff and consultant – it appears line on Figure 6 is not agreed to as of yet. Why was a request sent to the Ministry for a revision prior to staking with the City and UTRCA staff? As well, how did the proponent come up with the boundaries if floral investigations on both features were not done. Page 16 of the EIS states" **"Communities 4 and 5 were not inventoried as they are outside of the Legal Parcel."**

Further lack of clarity and shortage of data arises from Figure 7. It is unclear where the observer was for the amphibian calls. ECAC found it difficult to match what is shown in Appendix F with Figure 7. For example, it appears for the third survey, the call station was adjacent to the road. Regardless, based on the data collected using the Marsh Monitoring Protocol, Community 5 is very rich based on the calls heard (and despite the noise code 2).

Community 4 was too far away to meet the requirements of the March Monitoring protocol. This community should still be considered Candidate SWH. It may also be terrestrial crayfish habitat based on information on page 19 of the document, however, the site was not surveyed for this EIS.

A full 30 m buffer is not contemplated in the rendering shown in the document. Which is, despite the wording on page 25, not consistent with the EMGs. 30 m is not just "suggested" – it is a minimum. As well, as noted on page 25, "In the case of this development, the buffer area of the North Talbot PSW within the Subject Lands will remain in private ownership."

This is very problematic for monitoring and future maintenance of the features and functions of the adjacent communities, especially as SWH for amphibians. There remains a large number of uncertainties that will only be resolved later, after planning approvals are granted. We cite page 27 of the EIS which states: "A landscape plan for the park space will be provided at a later stage," and page 28 which indicates "LID measures will be developed at detail design." This uncertainty, plus the uncertain location of pedestrian movements, the extent of naturalization of the remaining buffer, ECAC cannot accept the conclusion in the Net Effects Table that there will be no negative impacts to the ecological feature and its function (Community 4 and 5).

Recommendation: There will be a need for strong conditions regarding the Natural Heritage Features in any draft plan and site plan agreement.

Terrestrial Crayfish

A single Terrestrial Crayfish chimney was observed in the 1a inclusion (MAM2) during field investigations [Figure 7]. Two chimneys were also observed along the edge of Community 5 (SWD3). Terrestrial Crayfish could also be present in Community 4 (the south portion of the North Talbot PSW), however this community could not be searched as it is outside the Legal Parcel. However, Community 4 remains Candidate SWH as noted on page 21.

Small wetland community 3

While known it is to be removed and relocated to the property to the South under that plan of subdivision, the statement on page 23 ("It is our opinion that small ponds such as these are not under-represented in London and not biologically important to be considered in this context," should be considered suspect especially when there is city policy to permit the relocation of small wetlands. Also, the 2006 inventory of Regionally Significant Vegetation Communities done by Bergsma and DeYoung indicated that **SAS made up only 0.21% of ecosites in London.**

HydroGeology, Stormwater Management and infiltration

Page 24 – "There are no other drainage features (i.e., municipal or agricultural drains, intermittent streams, headwater streams, manmade or natural ponds) located within or adjacent to the Subject Lands." Really? No natural ponds? What are community 4 and 5?

P. 27, ExP states that infiltration will be maintained in open space and green space areas. How will that happen during construction? Although it is possible that the post construction water balance may reach the 80% minimum, it appears very unlikely that it can be maintained during construction.

Page 28: It is proposed that runoff from impermeable surfaces (ex: rooftops) and infiltration in landscaped areas will contribute to the North Talbot PSW to maintain appropriate surface water levels post-development (EXP, 2022). ECAC is skeptical that this will provide the appropriate surface water levels. The quality will certainly change as run off from the surface parking lot will contain salts and oils. It is certainly unclear how runoff from the rooftops will be directed to the landscaped areas. Recommendation 24 indicates not even directing rooftop water to the PSW until "after the grounds have been vegetated and stable for housing and development adjacent to vegetation, roof leaders should be directed to the streets or nearby stabilized vegetated areas." It is also likely that over the long term, the LID measures will not be maintained by the private owner.

Recommendation: Detail design of the LID and other measures to achieve the water balance noted in EXP must be to the satisfaction of the City and UTRCA Hydrologists.

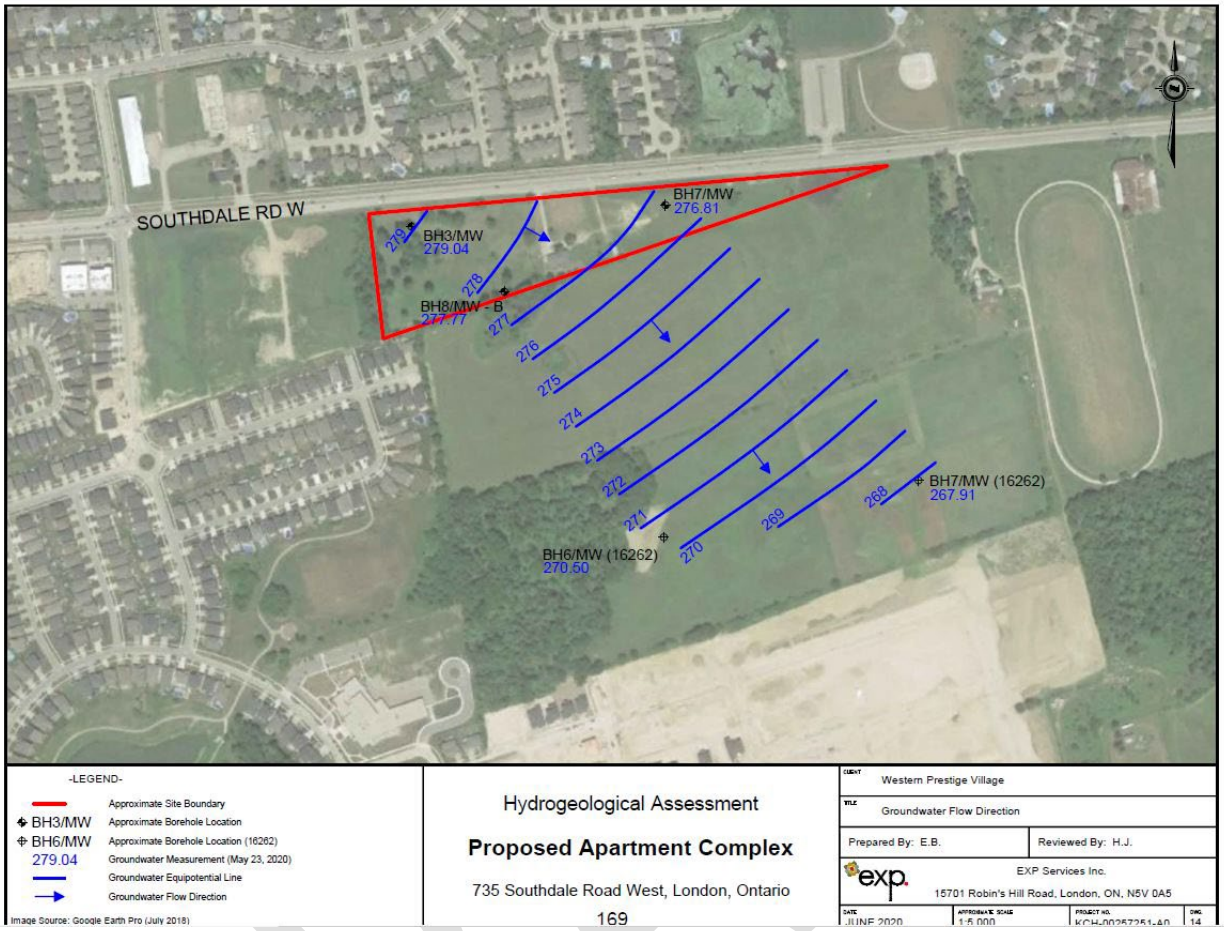
Stormwater management within the proposed development will include catch basins that direct flow from impervious surfaces (parking lots, rooftops, walkways, patios) offsite to an existing stormwater management (SWM) pond. Infiltration will be maintained in open space and green space areas (EXP, 2022). P.30

On P 31 it is stated that "The proposed development will likely result in increased run-off and decreased infiltration due to the construction of impermeable surfaces. The use of Low Impact Development (LID) strategies and secondary infiltration opportunities are recommended by EXP (2022) to maintain pre-development infiltration volumes and sustain the adjacent PSW. It is proposed that runoff from impermeable surfaces (ex: rooftops) and infiltration in landscaped areas will contribute to the North Talbot PSW to maintain appropriate surface water levels post-development (EXP, 2022). "

Unfortunately, as the EIS defers this to detail design, ECAC is unconvinced that stormwater will be managed in a way that will protect the existing features and functions, let alone provide a net benefit.

ECAC also recommends that there be water quality monitoring requirements that go beyond the usual three years. Recommendation 32 speaks to this issue. ECAC notes this is also left as a matter for later ("detail design") as noted in the EIS on page 34.

The groundwater flows SE from this site to the portions of the PSW to the south.



Construction Impacts

Clearly construction will be within the 30 m buffer. This is unacceptable.

How much excavation and dewatering will be done? Recommendation 21 is a recommendation dealing with sediment control at the discharge point of the dewatering system which comes from the 2021 report of EXP. This seems to suggest that the dewatering system will flow into the PSW. This is not acceptable. Any dewatering from late March to June will have a negative impact on the amphibian breeding in Community 5 which is SWH. Construction will also likely have impacts on groundwater flows causing much drier than natural conditions.

As noted in the document, all the important information as to avoidance of these negative impacts is awaiting detailed design.

There will likely also be additional digging for the sanitary outlet. Where is the hook up to the system? The proposed development will be connected to the future Talbot Village subdivision sanitary outlet to the south. Further details are provided in the Initial Proposal Report (Zelinka Priamo Ltd. et al, 2020. ECAC was not given this document and has not requested it.

Post construction

Snow removal and salting will likely run off into the buffer. There will be a path in the buffer and there will be easy access to the site by dogs off leash unless an off leash site (such as the Alto site on Fanshawe Park Road) is included as a requirement of the site plan

OTHER COMMENTS ON CONSULTANT's RECOMMENDATIONS IN SECTION 7.0

Rec 3 re invasive species removal – agree
Rec 4 re pathways – the location is significant. If it is in the reduced buffer, it must be as far away from the PSW as possible (i.e. the North side of the buffer)
Rec 5 re property demarcation – more important would be educational signage along the property boundary (as suggested in Recommendation 37) as any of the methods proposed by the consultant will not be a hard barrier to crossing. Crossing of the boundary will take place and make the effort to change behaviours with information about the PSW including permanent signage/ information in common areas of ALL buildings (similar to consultant Recommendation 38).

Recommendation 7 and 10 re the SAS to be relocated are in conflict. As the wetland is to be relocated to the property to the south (agreed to in a plan of subdivision with Southside), the new site MUST be created before the removal and relocation of the species in the SAS. It is not appropriate to remove species to the SWM facility on the other side of the road when it is not known what species and in what quantities are in the SAS nor when the move of any species remaining will be to the recreated wetland. The City must get the timelines right! In addition, Recommendation 10 suggests species in the SAS could be relocated to the Southwest Optimist Stormwater Management Pond and/ or the North Talbot PSW. Do either offer a suitable environment for these species?

Recommendation 11 is agreed to - just depends on when it takes place. The City controls the timing as the wetland is to be removed as part of the road widening.

Based on experience at 905 Sarnia Road, the new location for the wetland must be prepared ahead of time and perhaps as long as a year should pass before species in the SAS are relocated to the new site.

The relocated wetland site should be naturalized with native wetland species and include wildlife habitat features (variable water depths, logs, brush/rock piles, emergent vegetation, bird nesting boxes). Wetland relocation will need to be coordinated with the City of London and the south adjacent landowner.

Recommendation 9 re Terrestrial Crayfish – agree noting it is likely there are other chimneys on the lands adjacent to Community 5 outside of the subject lands.

Recommendation 19 regarding the location of stockpiled soils suggest it will be OK to locate them even closer to the PSW. This should not be permitted and regular inspection by the city must take place to ensure this does not happen.

The following recommendations are commendable but completely unenforceable.

Recommendation 30:

The use of chemical applications (such as commercial fertilizers) in landscaped and grassed areas
should be limited. Consider using heartier grass varieties that require less extensive watering or fertilizers (EXP, 2022).

Recommendation 31:

Limit the use of salts or other additives for ice and snow control on the roadways and parking areas
(EXP, 2022).

Where will the plowed snow from the roads within the complex be stored during the winter as to minimize runoff with potential higher concentration of salt into the PSW?

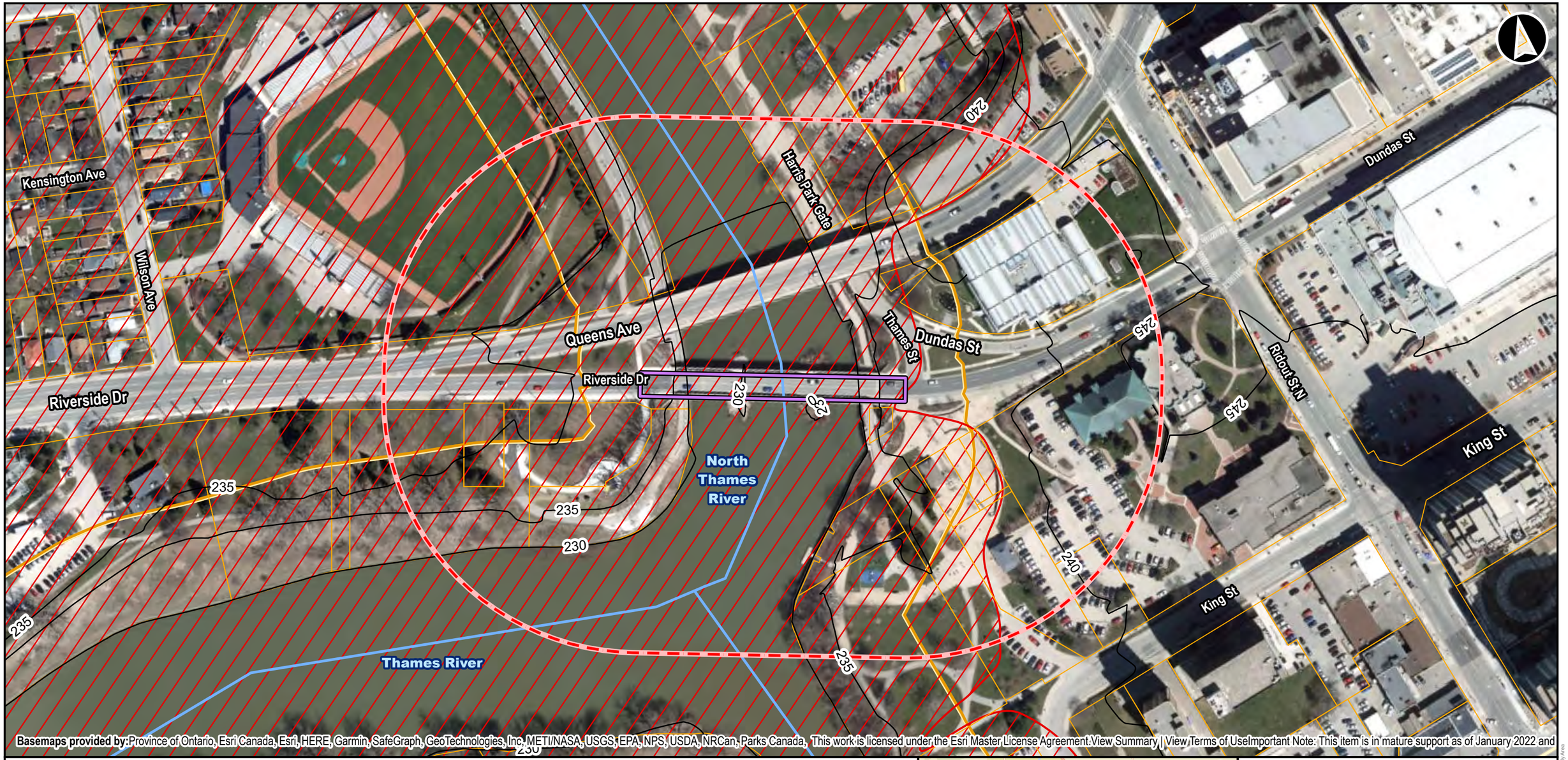
OTHER

Page 17 – it is continuously frustrating to see landowners subvert the protection of species at risk and their habitat by actions such as these

“Pastures and meadows in adjacent lands previously supported breeding Bobolink [THR] and Eastern Meadowlark [THR] (BioLogic, 1998; AECOM, 2018), but the majority of the adjacent lands have since been transitioned to row crops.”

Appendix A

Official Plan Mapping

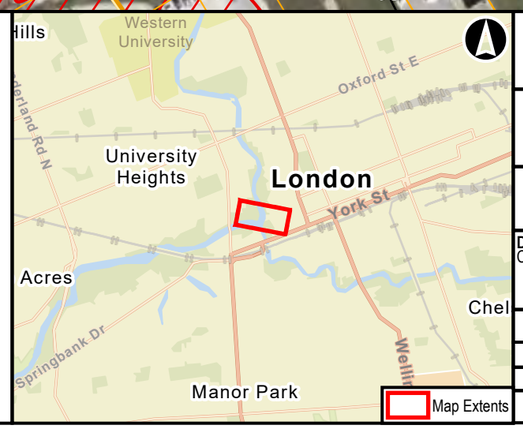


Legend

- Subject Lands
- Study Area
- UTRCA Regulation Limit (2022)
- Significant Valley Lands

General Features

- Parcel Limit
- Contour - Index (5m)
- District, County, or Regional Road
- Watercourse



Kensington Bridge Environmental Impact Study

Study Area

0 25 50 100 M

NAD 1983 UTM Zone 17N

Data Sources:
Contains Information licensed under the Open Government License Ontario.

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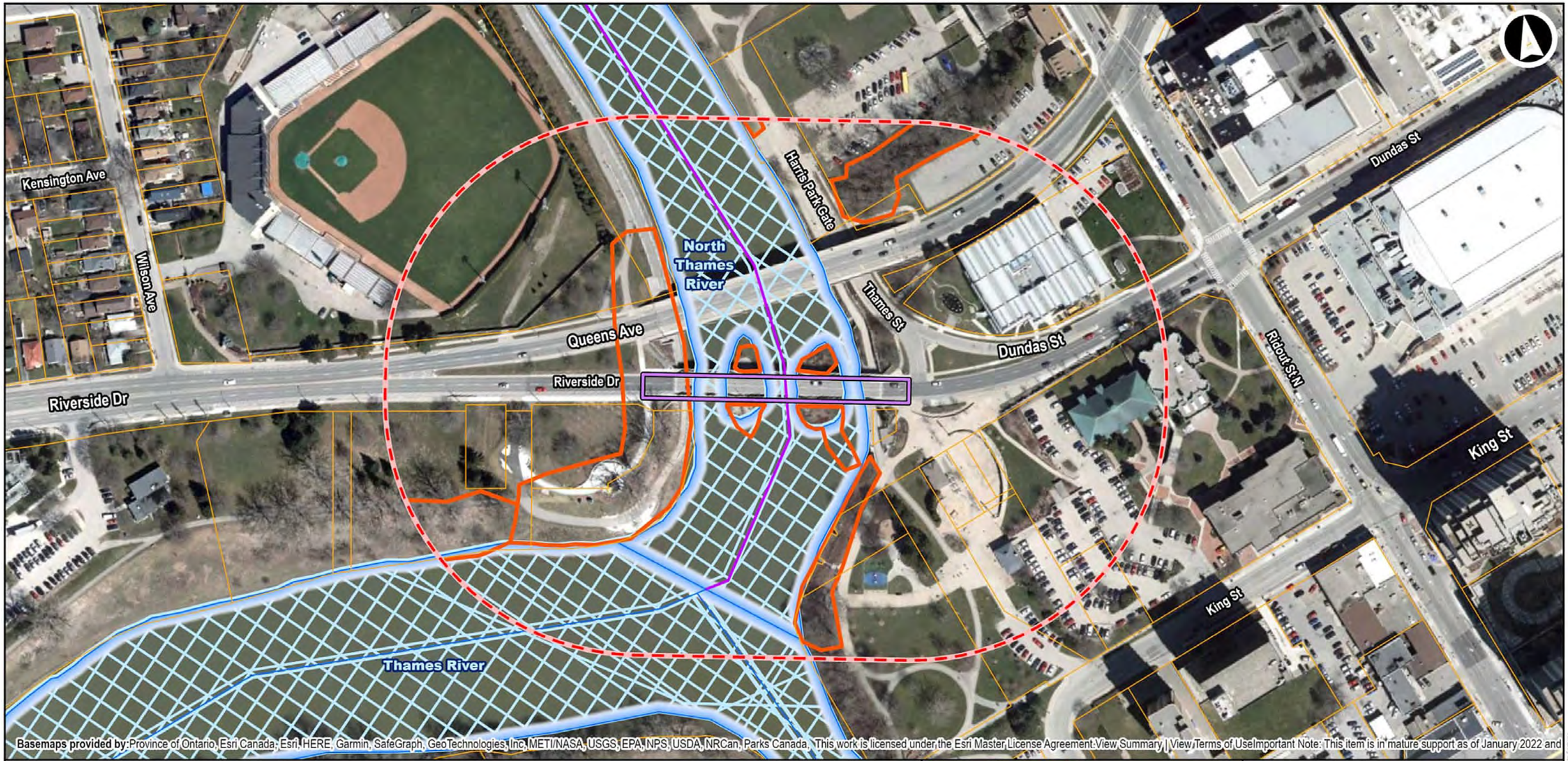
London CANADA

AECOM

Figure: 1



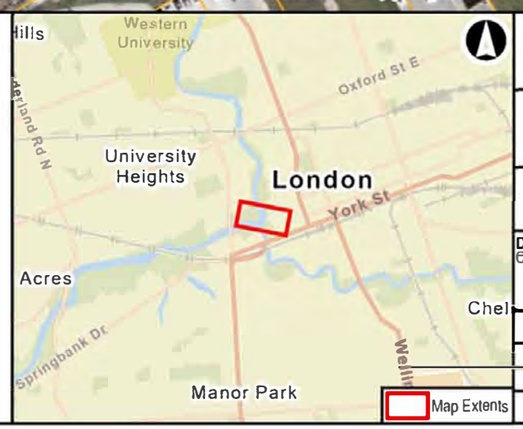
Basemaps provided by: Province of Ontario, Esri Canada, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA, NRCan, Parks Canada. This work is licensed under the Esri Master License Agreement: View Summary | View Terms of Use Important Note: This item is in mature support as of January 2022 and

Legend

- Subject Lands
- Study Area
- DFO SARA Critical Habitat - Black Redhorse & Silver Shiner
- Silver Shiner Critical Habitat
- Parcel Limit
- District, County, or Regional Road
- Waterbody
- Watercourse

Thermal Regime

- Cool/coldwater



Kensington Bridge Environmental Impact Study

Aquatic Features

0 25 50 100 M

NAD 1983 UTM Zone 17N

Data Sources:
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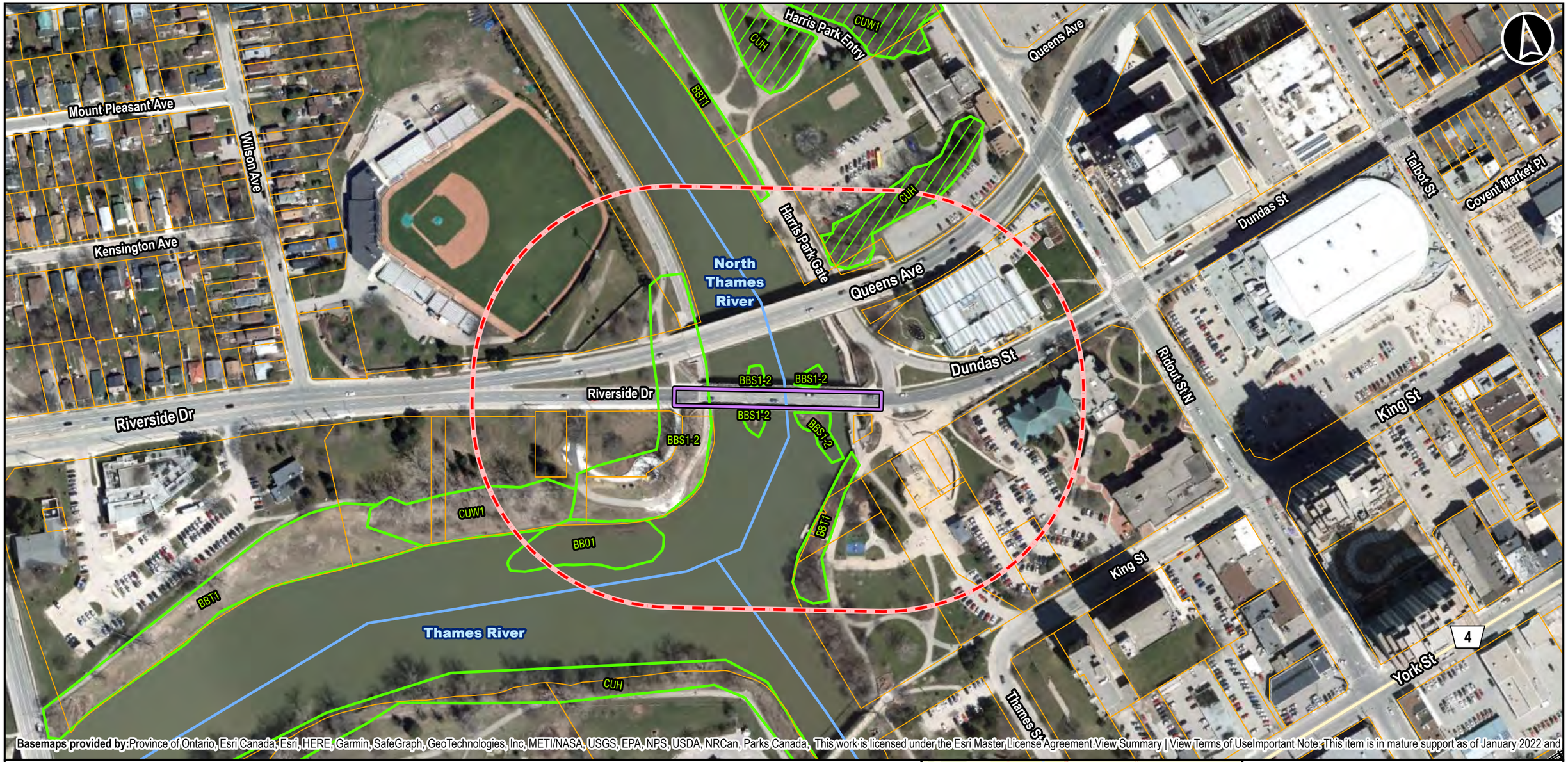
London CANADA

AECOM

Figure: 2



Legend

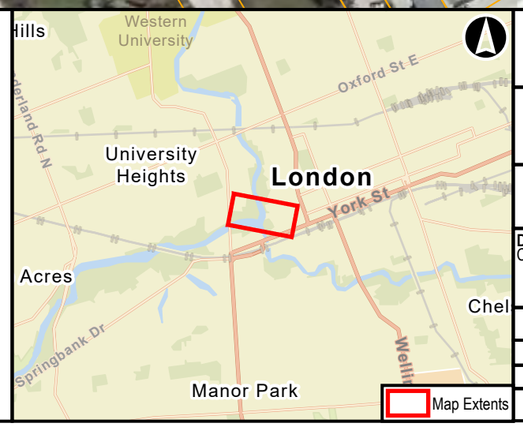
- Subject Lands
- Study Area

ELC Vegetation Code

- **BB01:** Mineral Open Beach/Bar
- **BBS1-2:** Willow Gravel Shrub Beach Bar
- **BBT1:** Mineral Treed Beach/Bar
- **CUH:** Cultural Hedgerow
- **FOD7:** Fresh-Moist Lowland Deciduous Forest
- **CUW1:** Mineral Cultural Woodland
- Delineated by Photo Interpretation

General Features

- Parcel Limit
- Railway
- District, County, or Regional Road
- Watercourse



Kensington Bridge Environmental Impact Study

ELC Vegetation Map

0 50 100 M

NAD 1983 UTM Zone 17N

Data Sources:
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AECOM

Figure: 3

Project Location: D:\projects\60672088\Kensington\Bridge\PLs\60672088-Kensington.aprx Layout: 04-ELC
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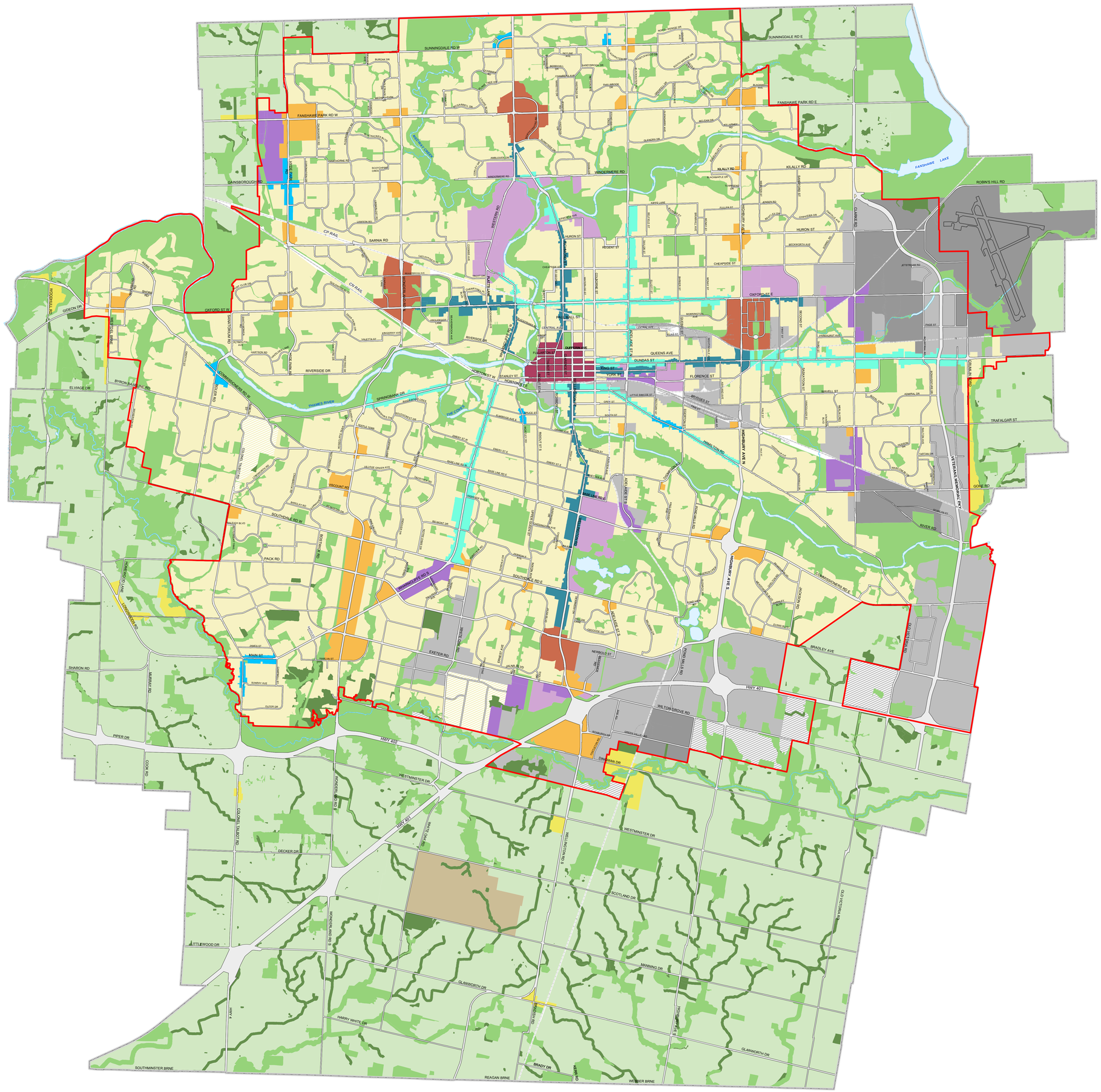
MAP 1 - PLACE TYPES



London
CANADA

LEGEND

PLACE TYPES

- Green Space
- Environmental Review
- Downtown
- Transit Village
- Rapid Transit Corridor
- Urban Corridor
- Shopping Area
- Main Street
- Neighbourhoods
- Institutional
- Heavy Industrial
- Light Industrial
- Commercial Industrial
- Future Community Growth
- Future Industrial Growth
- Farmland
- Rural Neighbourhoods
- Waste Management Resource Recovery Area
- Urban Growth Boundary

BASE MAP FEATURES

- Streets (See Map 3)
- Railways
- Water Courses/Ponds

0 500 1,000 2,000 3,000 4,000 Metres

1:30,000

ADOPTED BY COUNCIL ON JUNE 23, 2016

APPROVED BY THE MINISTRY OF MUNICIPAL AFFAIRS ON DECEMBER 28, 2016

LONDON PLAN CONSOLIDATED MAY 25, 2022

THIS MAP MUST BE READ IN CONJUNCTION WITH THE TEXT OF THE LONDON PLAN

While every effort has been made to ensure that the mapping is accurate, a reader should verify all information contained in this map before acting upon it by contacting the City Clerk's Office, Suite 308, 300 Dufferin Avenue, London, Ontario, N6B 1Z2 or by calling (519) 661-2500 extension 4939

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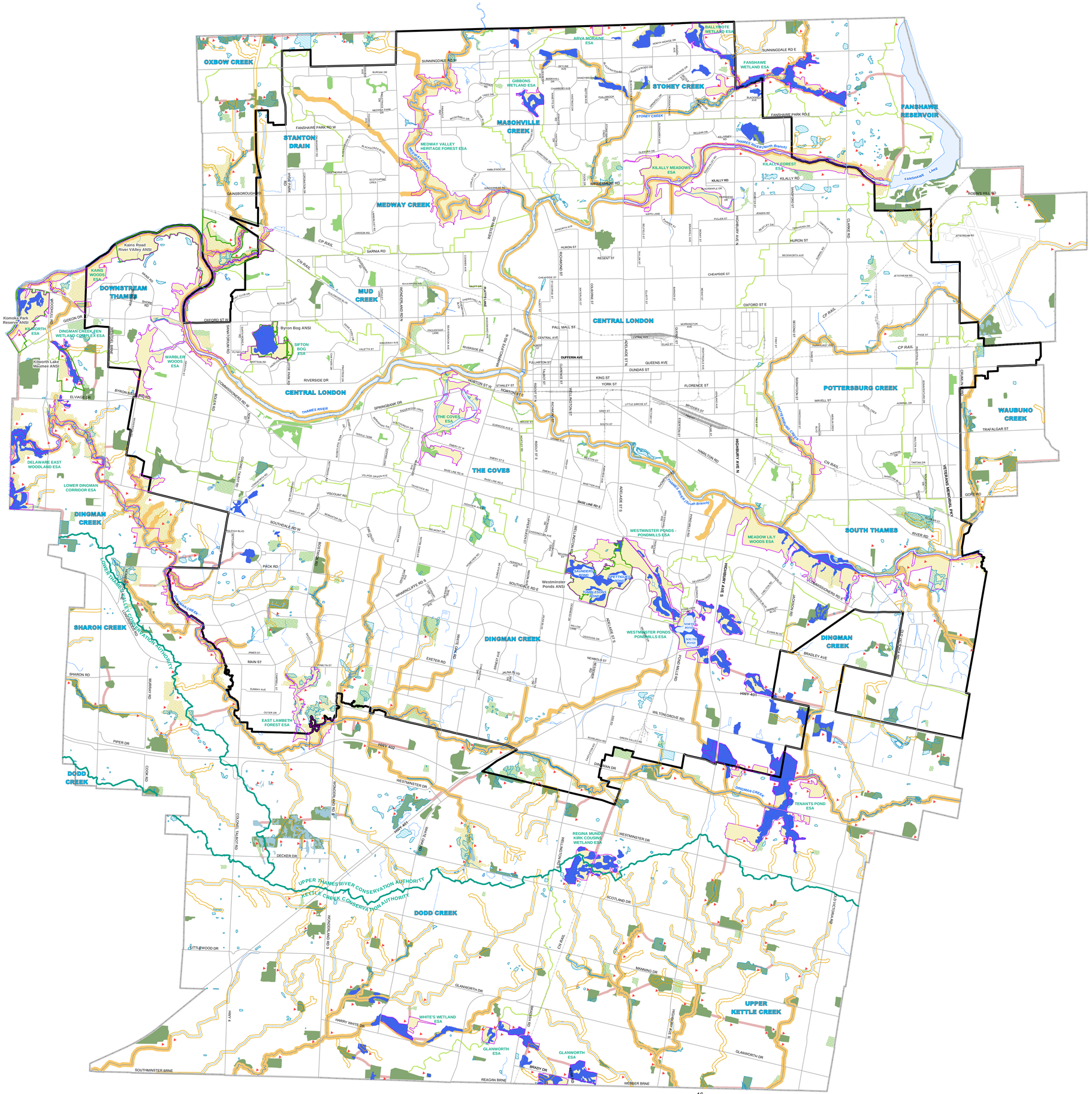
MAP 5 - NATURAL HERITAGE



LEGEND

NATURAL HERITAGE SYSTEM

- Provincially Significant Wetlands
- Wetlands
- Unevaluated Wetlands
- Significant Woodlands
- Woodlands
- Significant Valleylands
- Valleylands
- Areas of Natural and Scientific Interest
- NAME Environmentally Significant Areas (ESA)
- Potential ESAs
- Upland Corridors
- Potential Naturalization Areas
- Unevaluated Vegetation Patches

BASE MAP FEATURES

- Streets (See Map 3)
- Railways
- Urban Growth Boundary
- Water Courses/Ponds
- Water Bodies
- Conservation Authority Boundary
- Subwatershed Boundary
- STONEY CREEK Subwatershed Name

ADOPTED BY COUNCIL ON JUNE 23, 2016

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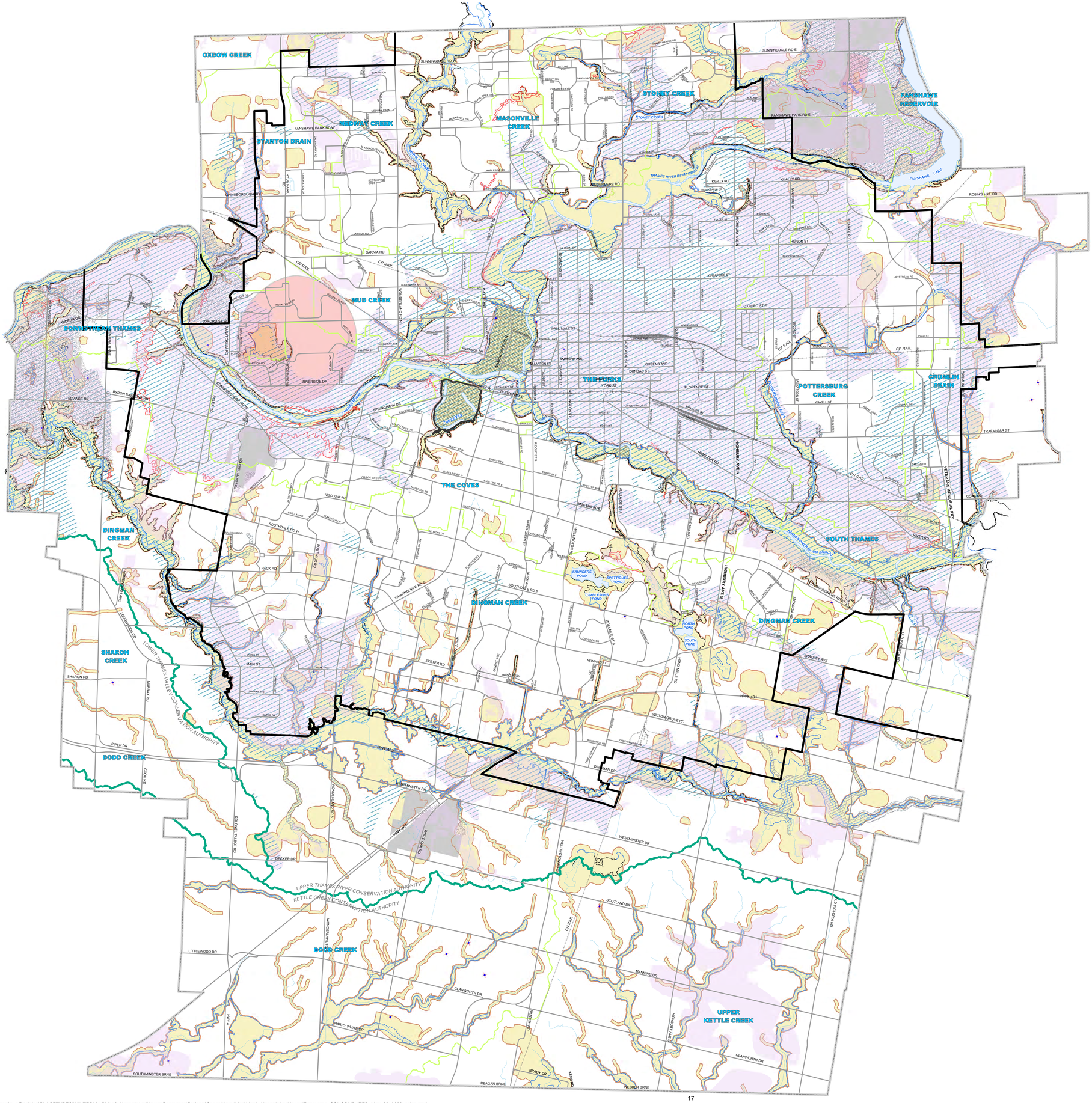
MAP 6 - HAZARDS AND NATURAL RESOURCES



London
CANADA

LEGEND

HAZARDS

- Regulatory Flood Line
  - *NOTE 1: Flood Lines shown on this map are approximate.The precise delineation of flood plain mapping is available from the Conservation Authority having jurisdiction.*
  - *NOTE 2: Flood Fringe mapping for certain areas of the City is available from the Upper Thames Conservation Authority.*
- Special Policy Areas
- Potential Special Policy Areas
- Riverine Erosion Hazard Limit for Confined Systems
  - *NOTE: Steep Slopes Outside the Riverine Erosion Hazard Limit on the map are approximate. Precise delineation is available from the Conservation Authority having jurisdiction.*
- Riverine Erosion Hazard Limit for Unconfined Systems
- Maximum Hazard Line
- Conservation Authority Regulation Limit
- Abandoned Oil/Gas Wells

NATURAL RESOURCES

- Aggregate Resource Areas
- Extractive Industrial Areas
- Wellhead Protection Areas
- Emergency Municipal Water Wells
- Significant Groundwater Recharge Areas
- Highly Vulnerable Aquifers

BASE MAP FEATURES

- Streets (See Map 3)
- Railways
- Urban Growth Boundary
- Water Courses/Ponds
- Water Bodies
- Conservation Authority Boundary
- Subwatershed Boundary
- STONEY CREEK Subwatershed Name

0 500 1,000 2,000 3,000 4,000 Metres

1:30,000

ADOPTED BY COUNCIL ON JUNE 23, 2016

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Appendix B

Agency Correspondence

AECOM Imagine it. Delivered.

AECOM Canada Ltd.
50 Sportsworld Crossing Road, Suite 290
Kitchener, ON N2P 0A4
Canada

T: 519.650.5313
F: 519.650.3424
www.aecom.com

Project Name:	Kensington Bridge Class Environmental Assessment (EA)	Date of Meeting:	June 23, 2022
		Time:	1:00 PM
		Project #:	60672088
Attendees:	Marnie Shepley, City of London Jessica Schnaithmann, Land Use Regulations Officer, Upper Thames River Conservation Authority (UTRCA) Michael Funk, UTRCA Jessica Walker, Terrestrial Lead, AECOM Johanna Perz, Terrestrial Ecologist, AECOM	Location:	Virtual Conference Meeting
		Prepared By:	Johanna Perz
Regarding:	Environmental Impact Study (EIS) Scoping Meeting		

MEETING MINUTES:

- Project background:
  - Schedule C Class EA for Kensington Bridge (Riverside Drive) rehabilitation or replacement
  - Alternatives include 1) do nothing, 2) removal, 3) rehabilitation and 4) replacement
  - Rehabilitation is likely preferred given the cultural value of Kensington Bridge
- Many previous studies including the One River Master Plan Forks of the Thames EIS (Matrix Solutions, 2019) and London Rapid Transit Project EIS (WSP, 2018)
  - Previously conducted field investigations included Ecological Land Classification (ELC), botanical inventories, breeding bird surveys, fish and fish habitat surveys, etc.
- As such, work plan for the Kensington Bridge EA Project will be a site visit conducted by one team consisting of an aquatic biologist and terrestrial ecologist. Site visit will include the following:
  - Confirmatory ELC and botanical inventory;
  - Incidental wildlife observations;
  - Barn Swallow (*Hirundo rustica*) nest searches given that this species, listed as Threatened under the Endangered Species Act (ESA), has been previously recorded nesting under the Kensington Bridge (Matrix Solutions, 2019; WSP, 2018); and
  - Identification of turtle nesting habitat given known occurrences of Species at Risk (SAR) and Species of Conservation Concern (SOCC) turtles in the vicinity of Kensington Bridge.
- AECOM acknowledged known occurrence of Spiny Softshell (*Apalone spinifera*), listed as Endangered under the ESA, in the vicinity of the Kensington Bridge (Matrix Solutions, 2019; WSP, 2018); it was not included in the list of SAR provided in the EIS scoping letter

- City of London confirmed agreement with proposed work plan; however, inquired about SAR mussel compensation
- AECOM acknowledged that the need for any future studies/compensation with respect to SAR mussels will be identified, to be completed at the detail design phase of the Project, in the EIS
- Other questions from the City of London will be deferred until preferred alternative identified
- UTRCA noted that a permit will be required as works are proposed within UTRCA Regulated Are
- UTRCA confirmed approval for the work plan and will defer review of the EIS to the City of London
- City of London noted uncertainty of the Environmental and Ecological Planning Advisory Committee (EEPAC) involvement with EIS review; AECOM's previous experience is a presentation following EIS submission

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James MacKay, Ecologist
Shane Butnari, Ecologist
City of London
206 Dundas Street,
London, Ontario
N6A 1G7

May 9, 2022

Project #
60672088

Dear Mr. MacKay and Mr. Butnari,

Subject: Kensington Bridge Environmental Assessment - Environmental Impact Study Scoping

1. Background

AECOM Canada Ltd. (AECOM) has been retained by the City of London (the City) to provide professional consulting services for a Class 'C' Environmental Assessment for the rehabilitation or replacement of Structure No. 1-BR-06 (Kensington Bridge) in London, Ontario (the Project). Constructed in 1930, the Kensington Bridge is located on Riverside Drive and crosses over the north branch of the Thames River. The bridge is a three-span, simply supported concrete deck on riveted-steel pony truss structure. The substructure includes reinforced concrete abutments and piers placed on spread footings. The overall span length for the bridge is 97.38 m and overall width of the bridge is 14.94 m including the sidewalks (Bridge Check Canada Ltd., 2018). The Thames Valley Parkway is located below the end spans of the bridge along both the east and west sides of the river. The structure underwent major rehabilitations in 1960, 1985 and 1996. Other maintenance work on the bridge has been frequent over the last decade.

The City has requested that an Environmental Impact Study (EIS) be completed, consistent with London Plan policies, the Provincial Policy Statement (2020) and the City's Environmental Management Guidelines (2021) to demonstrate no negative impacts to natural heritage features and functions. The EIS will characterize terrestrial and aquatic existing conditions, identify environmental constraints, provide a high-level impact assessment based on the preferred alternative, and outline potential mitigation measures and/or regulatory approvals that may be required. The purpose of this scoping letter is to outline and obtain agreement regarding the issues to be addressed and the scope of an EIS in support of the Project. This letter provides a summary of background information and a workplan to prepare an EIS for review by the City of London, the Upper Thames River Conservation Authority (UTRCA) and other applicable agencies (i.e., Technical Advisory Committee, Environmental and Ecological Planning Advisory Committee [EEPAC]).

2. Study Area and Official Plan Designations

The Study Area includes the existing Kensington Bridge, plus an additional 120 m area of investigation in accordance with the London Plan requirements (**Attachment A**). These lands will be assessed as a part of the EIS. The London Plan (2020) identifies the land use designations ("Place Types") within the Study Area (Map 1; Place Types) as Green Space and Downtown.

Map 5 (Natural Heritage) and Map 6 (Hazards and Natural Resources) of the London Plan (2020) identify the following features within the Study Area:

- Significant Valleylands; and,
- Highly Vulnerable Aquifers.

Additionally, portions of the Study Area fall within Regulatory Flood Line, Potential Policy Areas, and UTRCA Regulation Limits.

3. Aquatic Background Information Review

AECOM has undertaken a preliminary review of available aquatic background data for the Study Area using several available sources, including the following:

- Fisheries and Oceans Canada (DFO) online Aquatic Species at Risk (SAR) mapping application (DFO, 2021);
- Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry (NDMNRF)'s Make-a-Map: Natural Heritage Areas application and Natural Heritage Information Centre (NHIC) records (NDMNRF, 2021a);
- NDMNRF's Land Information Ontario (LIO) GeoHub database (NDMNRF, 2021b);
- The London Plan (City of London, 2020);
- London Rapid Transit Project – Environmental Impact Study (WSP, 2018);
- One River Mater Plan Forks of the Thames- Environmental Impact Study (Matrix Solutions Inc., 2019); and
- 2017 Watershed Report Card – The Forks (UTRCA, 2017).

The Kensington Bridge and associated Study Area is situated within the Upper Thames River Watershed. The Study Area is located approximately 100 m upstream of where the North and South Thames Rivers meet, known as "The Forks".

According to the 2017 Watershed Report Card for the Forks, this watershed contains nine main watercourses, including the Thames River. Most watercourses within the Forks consist of natural (76%), permanent (64%), warm-water systems (55%); however, buried watercourses represent the second most common watercourse and flow type (19%) respectively. The Forks watershed contains 63 species of fish, including four species of game fish, and 24 species of mussels.

The Kensington Bridge and associated Study Area crosses the Thames River. Based on the review of the resources listed above, there is potential for four aquatic SAR and six aquatic Species of Conservation Concern (SOCC) to occur in the vicinity of the Study Area, with two species having Critical Habitat within the Study Area (**Table 1**).

Table 1: Aquatic Species at Risk Records in the Vicinity of the Study Area

Taxon	Common Name	Scientific Name	S-Rank	ESA Status[1]	SARA (Sch. 1) Status[1]	Source[2]	Last Observation Year[3]
Fish	Black Redhorse*	*Moxostoma duquesnei*	S2	THR	THR	DFO	N/A
	Northern Brook Lamprey	*Ichthyomyzon fossor*	S3	SC	SC	NHIC	N/A

Taxon	Common Name	Scientific Name	S-Rank	ESA Status[1]	SARA (Sch. 1) Status[1]	Source[2]	Last Observation Year[3]
	Northern Sunfish (Great Lakes - Upper St. Lawrence populations)	*Lepomis peltastes pop. 2*	S3	SC	SC	DFO	N/A
	Lake Sturgeon (Great Lakes - Upper St. Lawrence River population)	*Acipenser fulvescens pop. 3*	S2	THR	0	NHIC	N/A
	Silver Shiner*	*Notropis photogenis*	S2S3	THR	THR	DFO, NHIC	N/A
	Spotted Sucker	*Minytrema melanops*	S2	SC	SC	NHIC	N/A
Molluscs	Elktoe	*Alasmidonta marginata*	S3	0	0	NHIC	N/A
	Purple Wartyback	*Cyclonaias tuberculata*	S3	0	0	NHIC	N/A
	Round Pigtoe	*Pleurobema sintoxia*	S1	END	END	DFO	N/A
	Wavy-rayed Lampmussel	*Lampsilis fasciola*	S1	SC	SC	NHIC, DFO, WSP (2018)	2017

* Critical Habitat
[1]SC: Special Concern
THR: Threatened
END: Endangered
NAR: Not at Risk
[2]NHIC: Natural Heritage Information Centre – Make-a-Map Application
DFO: Fisheries and Oceans Canada – Aquatic SAR mapping
WSP: London Rapid Transit Project – Environmental Impact Study (WSP, 2018)
[3]Records shown are within the past 20 years (2001 – 2021), or there is no associated date. Older records are considered historical and have been excluded.

4. Terrestrial Background Information Review

AECOM has undertaken a preliminary review of the available background data within the vicinity of the Study Area using the following available sources:

- NDMNRF's Make-a-Map: Natural Heritage Areas application and Natural Heritage Information Centre (NHIC) records (NDMNRF, 2021a);
- NDMNRF's LIO GeoHub database (NDMNRF, 2021b);
- Ontario Reptile and Amphibian Atlas (ORAA; Ontario Nature, 2019);
- Ontario Breeding Bird Atlas (OBBA; Bird Studies Canada et al., 2006);
- Ontario Butterfly Atlas (OBA; Macnaughton et al., 2021);
- DFO
- Bat Conservation International (BCI) species profiles and range maps (BCI, 2019);
- iNaturalist (2022);
- eBird Hotspots (2022);
- The London Plan (City of London, 2020);
- London Rapid Transit Project – Environmental Impact Study (WSP, 2018); and
- One River Mater Plan Forks of the Thames- Environmental Impact Study (Matrix Solutions Inc., 2019).

Table 2. Terrestrial SAR and SOCC Records within the Vicinity of the Study Area

Taxon	Common Name	Scientific Name	S-Rank	ESA Status[1]	SARA (Sch. 1) Status[1]	Source[2]	Last Observation Year[3]
Birds	Bald Eagle	*Haliaeetus leucocephalus*	S2N,S4B	SC	0	ebird, WSP (2018)	2022
	Common Nighthawk	*Chordeiles minor*	S4B	SC	THR	ebird, OBBA	2020
	Eastern Wood-pewee	*Contopus virens*	S4B	SC	SC	OBBA	N/A
	Great Egret	*Ardea alba*	S2B	0	0	ebird, iNat	2021
	Peregrine Falcon	*Falco peregrinus*	S3B	SC	SC	ebird, NHIC	2022
	Purple Martin	*Progne subis*	S3S4B	0	0	OBBA	N/A
	Redhead	*Aythya americana*	S2B,S4N	0	0	ebird	2021
	Wood Thrush	*Hylocichla mustelina*	S4B	SC	THR	ebird, NHIC, OBBA	2021
Insects	American Bumble Bee	*Bombus pensylvanicus*	S3S4	0	0	NHIC	N/A
	Hackberry Emperor	*Asterocampa celtis*	S3	0	0	OBA	2021
	Monarch	*Danaus plexippus*	S2N,S4B	SC	SC	OBA, WSP (2018)	2021
	Reversed Haploa	*Haploa reversa*	S1?	0	0	NHIC	N/A
	Tawny Emperor	*Asterocampa clyton*	S3	0	0	OBA	2021
	Yellow-banded Bumble Bee	*Bombus terricola*	S3S5	SC	0	NHIC	N/A
Plants	Broad Beech Fern	*Phegopteris hexagonoptera*	S3	SC	0	NHIC	N/A
	Eastern Green-violet	*Hybanthus concolor*	S2	0	0	NHIC	N/A

Taxon	Common Name	Scientific Name	S-Rank	ESA Status[1]	SARA (Sch. 1) Status[1]	Source[2]	Last Observation Year[3]
	Eastern Stiff Goldenrod	*Solidago rigida ssp. rigida*	S3	0	0	NHIC	N/A
	False Foxglove Sun Moth	*Pyrrhia aurantiago*	S1	0	0	NHIC	N/A
	Hairy-fruited Sedge	*Carex trichocarpa*	S3	0	0	NHIC	N/A
Reptiles	Eastern Ribbonsnake	*Thamnophis sauritus*	S4	SC	SC	NHIC	N/A
	Northern Map Turtle	*Graptemys geographica*	S3	SC	SC	ORAA, NHIC, WSP (2018)	2018
	Snapping Turtle	*Chelydra serpentina*	S4	SC	SC	ORAA, NHIC, WSP (2018)	2019

[1]SC: Special Concern
THR: Threatened
END: Endangered
EXP: Extirpated
NAR: Not at Risk
[2]NHIC: Natural Heritage Information Centre- Make-a-Map Application
eBird: eBird Hotspots
iNat: iNaturalist
ORAA: Ontario Reptile and Amphibian Atlas
OBA: Ontario Butterfly Atlas
WSP: London Rapid Transit Project – Environmental Impact Study (WSP, 2018)
[3]Records shown are within the past 20 years (2001 – 2021), or there is no associated date. Older records are considered historical and have been excluded.

5. Issues and Concerns to be Addressed

Based on a review of existing information, the following are identified as key issues to be address in the Project EIS:

- Potential Impacts to the Natural Heritage System where features occur in proximity to proposed restoration or rehabilitation activities:
  - Temporary impacts to aquatic or terrestrial habitat including direct and indirect vegetation removal/damage; and,
  - Potential erosion and sedimentation as a result of rehabilitation activities required on the banks of the Thames River;
  - Temporary impacts to Species at Risk habitat or Significant Wildlife Habitat;
- Scoping the level of effort to adequately address long-term planning needs, including the need for:
  - A High-Level Impact Assessment including a net effects exercise or site-specific Mitigation Measures; or,
  - Recommendations for An Environmental Management Plan, including a SAR mitigation measures at the detailed design stage.
- Identification of regulatory approvals or registration based on the project's designation as a "health and safety project" under the *Endangered Species Act, 2007*.

6. Work Plan

The following details the work plan for investigations and assessments required to complete the Scoped EIS.

- **Background Information Review** – AECOM has reviewed natural heritage background information within the Study Area including, but not limited to, the NDMNRF NHIC online database, the LIO

database, DFO Aquatic SAR online mapping, the London Plan (2020) and applicable online ecological databases. Previously completed studies including the London Rapid Transit Project – Environmental Impact Study (WSP, 2018) and One River Mater Plan Forks of the Thames- Environmental Impact Study (Matrix Solutions Inc., 2019) were also used to obtain natural heritage information. A preliminary review of background information indicates the potential presence of aquatic and terrestrial SAR, as well as SOCC as described in **Section 3** and **Section 4**. Critical Habitat for two aquatic species was identified as outlined in **Table 1**. Information requests regarding natural heritage features, SAR, and SOCC have been submitted to the NDMNRF, Ministry of Environment, Conservation, and Parks, and the UTRCA on April 14, 2021.

Field Investigations – AECOM will undertake a single site visit to confirm the results of the background information review and document natural heritage site characteristics not identified in the background review. No species-specific surveys have been included in this scope; however, Barn Swallow nest searches, surveys to characterize habitat related to turtle nesting, and preliminary surveys to confirm background data have been included and will be completed during the site visit.

Reporting – An EIS will be prepared to summarize the findings of the existing terrestrial and aquatic conditions and identify any environmental constraints with consideration given to the proposed works. A high-level assessment of potential impacts to existing natural heritage features will be undertaken related to the potential options and further fieldwork will be recommended if applicable. Additionally, a list of high-level mitigation measures will be incorporated into the memo, including measures related to SAR (e.g., bridge netting to prevent Barn Swallow access). A list of possible regulatory approvals will be provided for the proposed works as part of the EIS. The EIS will identify potential regulatory permit/approvals for the preferred alternative during the detailed design and permitting phase of the Project (both of which were not included in the scope of work at this time).

An EIS will be prepared in accordance with the City of London's Environmental Management Guidelines. This EIS will include results of the work plan identified above to characterize the existing conditions of the Subject Lands and associated features. An assessment of potential impacts to existing natural heritage features will be undertaken for the proposed works. This net-effects exercise will also include high-level recommendations for the implementation of avoidance, mitigation and compensation recommendations for the preferred alternative.

7. EIS Scoping Checklist

A draft EIS Issues Summary Checklist Report is provided in **Attachment B**. We respectfully request your comment and agreement regarding the above outlined scope, as well as a meeting with you and the appropriate City of London, UTRCA, EEPAC and other relevant parties, as you see fit.

If you have any questions or concerns, please do not hesitate to contact the undersigned.

Sincerely,
AECOM Canada Ltd.

Jessica Ballie, B.Sc. (Hons)
Junior Terrestrial Ecologist
Jessica.Ballie@aecom.com

Jessica R Walker, B.Sc. (Hons.)
Senior Terrestrial Ecologist
Jessica.Walker@aecom.com

References

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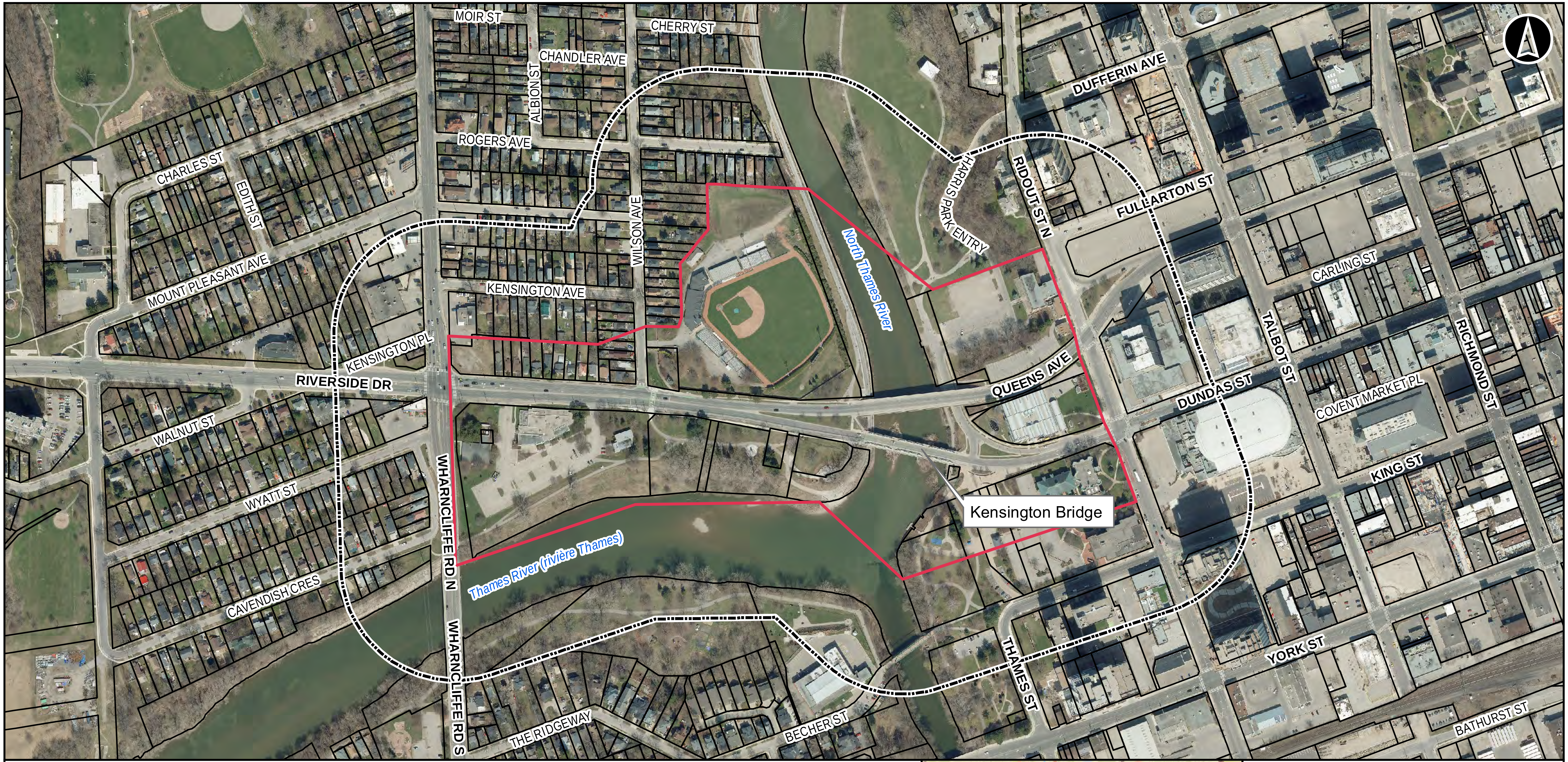
ATTACHMENT A
Study Area



Legend

- Parcel
- Subject Lands
- Study Area

Consulting Services for the Kensington Bridge Class 'C' Environmental Assessment Study

Study Area

0 50 100 200 300
Meters
DATUM: NAD 1983 UTM Zone 17N

Mar 11, 2022	1:4,000 * when printed 11"x17"	Source: MNRF, MECP, City of London Image: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c)
P#: 60672088	V#: 00	

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Figure 1

ATTACHMENT B
EIS Checklist

APPENDIX B - Environmental Study Scoping Checklist

Application/Project Name: _____

Proponent: _____ **Date:** _____

Proposed Project Works: _____

Study Type: _____

Lead Consultant: _____

Key Contact: _____

Subconsultants: _____

Technical Review Team:

☐ Ecologist Planner: _____ ☐ Province – Species at Risk: _____

☐ Planner for the File: _____ ☐ Province - Other: _____

☐ Conservation Authority: _____ Contact: _____

☐ EEPAC: _____ ☐ Other: _____

☐ Project Manager, Environmental Assessment:_____

☐ First Nation(s): _____

Subject Lands and Study Area:

Location/Address and Size (ha) of Subject Lands:

_____

Study Area Size (approximate ha): _____ ☐ Map (attached): _____

Position of Site in Subwatershed: _____

Tributary Fact Sheet:_____

Is the proposed location within the vicinity of the Thames River (<120 m)? ☐ Yes ☐ No

If Yes, initiate engagement with local First Nation communities. Consultation activity to be provided at Application Review stage.

Policy:

☐ Study must demonstrate how it conforms to the Provincial Policy Statement

☐ Study must demonstrate how it conforms to *The London Plan*

Map 1 Place Types:

☐ Green Space ☐ Environmental Review

Other Place Types: _____

Map 4 Active Mobility Network:

☐ Pathway placement and future trail accesses shall be considered as part of this study.

Map 5 Natural Heritage System:

(Subject Lands and Study Area delineated on current aerial photographs)

☐ Provincially Significant Wetland Name: _____

☐ Wetlands ☐ Unevaluated Wetlands*

☐ Area of Natural & Scientific Interest Name: _____

☐ Environmentally Significant Area Name: _____

☐ Potential ESAs ☐ Upland Corridors

☐ Significant Woodlands ☐ Woodlands

☐ Significant Valleylands ☐ Valleylands

☐ Unevaluated Vegetation Patches ☐ Potential Naturalization Areas

Patch No. _____

** ELC (air photo interpretation and / or previous studies) may identify potential wetlands or other potential features not captured on Map 5.*

Map 6 Hazards and Natural Resources:

☐ Maximum Hazard Line ☐ Conservation Authority Regulation Limit (and text based regulatory limit) – Project falls under *Conservation Authority Act* Section 28

Required Field Investigations:

Aquatic:

☐ Aquatic Habitat Assessment: _____

☐ Fish Community (Collection): _____

☐ Spawning Surveys: _____

☐ Benthic Invertebrate Survey: _____

☐ Mussels: _____

☐ Other: _____

Wetlands:

☐ Wetland Delineation: _____

☐ Wetland Evaluation (OWES): _____

☐ Other: _____

Terrestrial (Wetland, Upland and Lowland):

☐ Vegetation Communities (ELC): _____

☐ Botanical Inventories ☐ Winter ☐ Spring ☐ Summer ☐ Fall

☐ Breeding Bird Surveys (type & frequency): _____

☐ Raptor Surveys: _____ ☐ Shoreline Birds: _____

☐ Crepuscular Surveys: _____ ☐ Grassland Surveys: _____

☐ Amphibian Surveys (type & frequency): _____

☐ Reptile Surveys:

- ☐ Turtle (type & frequency): _____
- ☐ Snake (type & frequency): _____
- ☐ Other (type & frequency): _____

☐ Bat Habitat, Cavity & Acoustic Surveys:_____

☐ Mammal Surveys: _____

- ☐ Winter Wildlife Surveys: _____

☐ Butterflies (Lepidoptera): _____

☐ Dragonflies / Damselflies (Odonata): _____

☐ Species at Risk Specific Surveys: _____

☐ Species of Conservation Concern Surveys: _____

☐ Significant Wildlife Habitat Surveys: _____

☐ Other field investigations: _____

Supporting Concurrent Studies/Investigations:

☐ Hydrogeological/Groundwater: _____

☐ Surface Water/Hydrology: _____

☐ Water Balance: _____

☐ Fluvial Geomorphological: _____

☐ Geotechnical: _____

☐ Tree Inventory: _____

☐ Other: _____

Evaluation of Significance:

Federal:

☐ Fish Habitat ☐ Other Federal: _____

☐ Species at Risk (*SARA*)

Provincial:

☐ Provincially Significant Wetlands
☐ Significant Valleylands
☐ Areas of Natural & Scientific Interest
☐ Water Resource Systems
☐ Species at Risk (*ESA*): _____
☐ Significant Woodlands
☐ Significant Wildlife Habitat Ecoregion 7E
☐ Fish Habitat

Municipal/London:

☐ Environmentally Significant Areas (ESAs), Potential ESAs
☐ Significant Woodlands, Woodlands
☐ Significant Valleylands, Valleylands
☐ Wetlands, Unevaluated Wetlands
☐ Significant Wildlife Habitat
☐ Unevaluated Vegetation Patches
☐ Other Vegetation Patches >0.5 ha
☐ Potential Naturalization Area
☐ Other: _____

Impact Assessment:

☐ Impact Assessment Required
☐ Net Effects Table Required

Environmental Management Recommendations:

☐ Environmental Management Plan: _____
☐ Specifications & Conditions of Approval: _____
☐ Other: _____

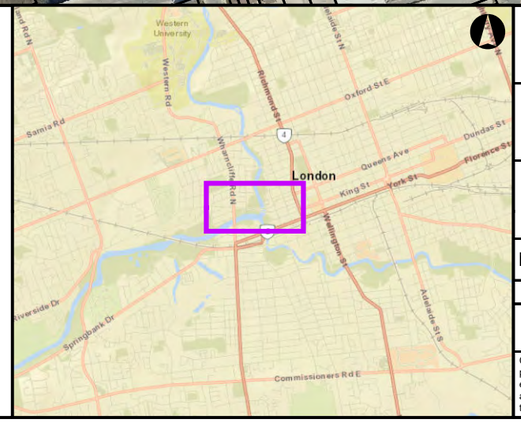
Environmental Monitoring:

☐ Baseline Monitoring: _____
☐ Construction Monitoring: _____
☐ Post-Construction Monitoring: _____

Additional Requirements and Notes:

Legend

- Parcel
- Subject Lands
- Study Area



Consulting Services for the Kensington Bridge Class 'C' Environmental Assessment Study

Study Area

0 50 100 200 300

Meters
DATUM: NAD 1983 UTM Zone 17N

Mar 11, 2022	1:4,000 * when printed 11"x17"	Source: MNRF, MECP, City of London Image: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c)
P#: 60672088	V#: 00	

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Figure 1

Ingriselli, Amy

From: Ballie, Jessica
Sent: April 27, 2022 2:01 PM
To: Van Adrichem Walker, Jessica; Ingriselli, Amy
Subject: Fw: [EXTERNAL] Re: Kensington Bridge Environmental Impact Study – Request for Natural Heritage Information
Attachments: Kensington Bridge EIS - Regulations Mapping (2022).pdf; Kensington Bridge EIS - Natural Heritage (2022).pdf; External Fish Report Forks of the Thames - UTRCA.pdf; Fish Data Map - Forks of the Thames .JPG; Kensington Bridge EIS - Thermal Regime (2022).pdf

Hi Walker and Amy,

Please see the response from UTRCA below.

Thanks.

Jessica Ballie

Junior Terrestrial Ecologist, AECOM, Markham ON
D +1-416-706-4396
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Click here to connect with me on LinkedIn
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aecom.com
Delivering a better world
LinkedIn | Twitter | Facebook | Instagram

From: Sarbjit Singh <singhs@thamesriver.on.ca>
Sent: Wednesday, April 27, 2022 1:50 PM
To: Ballie, Jessica <Jessica.Ballie@aecom.com>
Cc: Cari Ramsey <RamseyC@thamesriver.on.ca>; Jenna Allain <AllainJ@thamesriver.on.ca>; Michelle Fletcher <fletcherm@thamesriver.on.ca>
Subject: [EXTERNAL] Re: Kensington Bridge Environmental Impact Study – Request for Natural Heritage Information

Hi Jessica,

Thank you for contacting the UTRCA. Please see below for the requested information:

Natural Hazards

The regulations mapping is attached. Please note that the hazards mapping is used for as "flagging tool"; and, in case the hazards are greater than what is shown in the mapping, the text of the regulation prevails (O. Reg 157/06). Please note that the map should be printed on a legal size paper (8 1/2 x 14 inches) for the scales to be accurate.

Natural Heritage

The mapping is attached. Please note that the map should be printed on a legal size paper (8 1/2 x 14 inches) for the scales to be accurate. The data is from the Middlesex Natural Heritage Study (2014).

Fish Sampling

Please see the attached Fish Data Map and Fish Sampling report.

Thermal Regime
The North Thames River, South Thames River, and Thames River are classified as "Cool or Cold" water streams. Please note that:

> The current temperature layer is not based directly on the temperature of the water. It is based on the temperature preference of the fish found at that location. At each site there will often be several species caught, and they will often not all have the same temperature preference (cold, cool, warm). To attempt to make sure all existing species at a location can continue to exist there we base our protections on the most sensitive species, the ones with the coldest temperature preference. To do this we only use fish records from July and August (when the water is hottest) and we assign the temperature preference based on the fish at that location that has the coldest temperature preference.
>
> The rationale is that when our watercourses are at their hottest fish that are most sensitive to warmer temperatures will leave areas that are too hot and move to the coldest areas they can access. So if during July or August we catch a fish species that prefers cold water then we assume that location can support fish that prefer cold water. When development occurs in that area we therefore want to ensure that the development incorporates measures that will allow that watercourse to continue to support that species that prefers cold water (e.g. keep or add trees shading the water, maintain groundwater inputs, etc.).
>
> Because we are trying to protect the ability of existing species to stay in a location we assign temperature preference based on the coldest species, even if there are more species that prefer a warmer temperature than that species.
>
> Due to the fact that planning policy places the same protections on cold water and cool water the thermal layer in geoportal combines cold and cool water. But if you click one that layer in geoportal and look at the info on the left hand side of the screen you can see if there was a cold water species or a cool water species.

Additional Information

- No mussel and no benthic records are available for the area**.**
- Please contact the MNRF for ESA for most up-to-date information.
- Please contact DFO for SARA for most up-to-date information.

I hope that the above helps. Please advise for any questions or concerns. Thank you.

Sarbjit Singh, EIT
Land Use Regulations Assistant
1424 Clarke Rd, London, ON N5V 5B9
Tel: 519-451-2800 Ext. 245
Email:singhs@thamesriver.on.ca
Web:www.thamesriver.on.ca
UPPER THAMES RIVER
CONSERVATION AUTHORITY

All UTRCA offices and buildings are closed to the public to help protect the public and staff from COVID-19. I am working remotely during this time and will be monitoring all messages and emails. We apologize for any inconvenience this may cause.

>>> "Ballie, Jessica" <Jessica.Ballie@aecom.com> 2022-04-14 3:20 PM >>>
Dear Jenna Allain,

Please find attached a formal information request letter. AECOM has been retained to complete an Environmental Impact Study for the Kensington Bridge in London, Ontario. The purpose of the attached letter is to request additional natural heritage information to be considered as part of the background review process for the Project.

Thank you in advance for any assistance you may provide. Please let me know if you have any questions or require any additional information in order to process our request.

Thank you,
Jessica Ballie
Junior Terrestrial Ecologist, AECOM, Markham ON
D +1-416-706-4396
Jessica.Ballie@aecom.com
Click here to connect with me on LinkedIn
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North Thames River

Sampled: 30/04/2021 **Site Code: UT.TF011** Latitude: 42.987428

Agency: Location: North Thames River Cummings Ave - 1 d/s Black Longitude: -81.258093

			Species at Risk (SAR) Status				Status in the Thames River Watershed	
			Provincial		Federal			
Common Name	Scientific Name	# Observed	ESA2017	Srank	SARA	COSEWIC	Abundance	Distribution
Greenside Darter	Etheostoma blennioides		---	S4	Special Concern	Not at Risk	Abundant	widespread

North Thames River

Sampled: 29/05/2018 **Site Code: UT.TF011** Latitude: 42.987428

Agency: UTRCA Location: North Thames River Cummings Ave - 1 d/s Black Longitude: -81.258093

			Species at Risk (SAR) Status				Status in the Thames River Watershed	
			Provincial		Federal			
Common Name	Scientific Name	# Observed	ESA2017	Srank	SARA	COSEWIC	Abundance	Distribution
Rainbow Darter	Etheostoma caeruleum	Few	---	S4	---	---	Uncommon	localized

North Thames River

Sampled: 15/10/2007 **Site Code: UT.TF011** Latitude: 42.987428

Agency: UTRCA Location: North Thames River Cummings Ave - 1 d/s Black Longitude: -81.258093

			Species at Risk (SAR) Status				Status in the Thames River Watershed	
			Provincial		Federal			
Common Name	Scientific Name	# Observed	ESA2017	Srank	SARA	COSEWIC	Abundance	Distribution
White Sucker	Catostomus commersonii	Few	---	S5	---	---		
Rock Bass	Ambloplites rupestris	Abundant	---	S5	---	---	Abundant	widespread
Central Stoneroller	Campostoma anomalum	Abundant	---	S4	---	Not at Risk	Abundant	widespread
Spotfin Shiner	Cyprinella spiloptera	Many	---	S4	---	---	Abundant	widespread
Greenside Darter	Etheostoma blennioides	Abundant	---	S4	Special Concern	Not at Risk	Abundant	widespread
Rainbow Darter	Etheostoma caeruleum	Few	---	S4	---	---	Uncommon	localized
Smallmouth Bass	Micropterus dolomieu	Abundant	---	S5	---	---	Abundant	widespread
River Chub	Nocomis micropogon	Abundant	---	S4	---	Not at Risk	Common	widespread
Mimic Shiner	Notropis volucellus	Few	---	S5	---	---	Abundant	widespread
Logperch	Percina caprodes	Few	---	S5	---	---	Common	widespread
Longnose Dace	Rhinichthys cataractae	Few	---	S5	---	---	Common	widespread
Striped Shiner	Luxilus chrysocephalus	Many	---	S4	---	Not at Risk	Abundant	widespread
Northern Hog Sucker	Hypentelium nigricans	Abundant	---	S4	---	---	Abundant	widespread

North Thames River

Sampled: **31/08/2015** **Site Code:** **UT.TF011** Latitude: 42.987428

Agency: UTRCA Location: North Thames River Cummings Ave - 1 d/s Black Longitude: -81.258093

			Species at Risk (SAR) Status				Status in the Thames River Watershed	
			Provincial		Federal			
Common Name	Scientific Name	# Observed	ESA2017	Srank	SARA	COSEWIC	Abundance	Distribution
Rock Bass	Ambloplites rupestris	Few	---	S5	---	---	Abundant	widespread
Spotfin Shiner	Cyprinella spiloptera	Few	---	S4	---	---	Abundant	widespread
Greenside Darter	Etheostoma blennioides	Abundant	---	S4	Special Concern	Not at Risk	Abundant	widespread
Rainbow Darter	Etheostoma caeruleum	Few	---	S4	---	---	Uncommon	localized
Smallmouth Bass	Micropterus dolomieu	Few	---	S5	---	---	Abundant	widespread
Golden Redhorse	Moxostoma erythrurum	Few	---	S4	---	Not at Risk	Abundant	widespread
Rosyface Shiner	Notropis rubellus	Few	---	S4	---	Not at Risk	Abundant	widespread
Logperch	Percina caprodes	Few	---	S5	---	---	Common	widespread
Longnose Dace	Rhinichthys cataractae	Few	---	S5	---	---	Common	widespread
Striped Shiner	Luxilus chrysocephalus	Few	---	S4	---	Not at Risk	Abundant	widespread
Northern Hog Sucker	Hypentelium nigricans	Few	---	S4	---	---	Abundant	widespread

North Thames River

Sampled: **15/05/2012** **Site Code:** **UT.TF011** Latitude: 42.987428

Agency: UTRCA Location: North Thames River Cummings Ave - 1 d/s Black Longitude: -81.258093

			Species at Risk (SAR) Status				Status in the Thames River Watershed	
			Provincial		Federal			
Common Name	Scientific Name	# Observed	ESA2017	Srank	SARA	COSEWIC	Abundance	Distribution
Greenside Darter	Etheostoma blennioides	Few	---	S4	Special Concern	Not at Risk	Abundant	widespread
Mimic Shiner	Notropis volucellus	Unknown	---	S5	---	---	Abundant	widespread

Thames River

Sampled: 28/05/2015 **Site Code: UT.TF019** Latitude: 42.980057

Agency: UTRCA Location: Thames River Cavendish Cr - 2 East Longitude: -81.264243

			Species at Risk (SAR) Status				Status in the Thames River Watershed	
			Provincial		Federal			
Common Name	Scientific Name	# Observed	ESA2017	Srank	SARA	COSEWIC	Abundance	Distribution
Creek Chub	Semotilus atromaculatus	Few	---	S5	---	---	Abundant	widespread
Rock Bass	Ambloplites rupestris	Few	---	S5	---	---	Abundant	widespread
Greenside Darter	Etheostoma blennioides	Many	---	S4	Special Concern	Not at Risk	Abundant	widespread
Smallmouth Bass	Micropterus dolomieu	Few	---	S5	---	---	Abundant	widespread
Shorthead Redhorse	Moxostoma macrolepidotum	Few	---	S5	---	---	Common	widespread

Thames River

Sampled: 24/08/2015 **Site Code: UT.TF019** Latitude: 42.980057

Agency: UTRCA Location: Thames River Cavendish Cr - 2 East Longitude: -81.264243

			Species at Risk (SAR) Status				Status in the Thames River Watershed	
			Provincial		Federal			
Common Name	Scientific Name	# Observed	ESA2017	Srank	SARA	COSEWIC	Abundance	Distribution
White Sucker	Catostomus commersonii	Many	---	S5	---	---		
Johnny Darter	Etheostoma nigrum	Abundant	---	S5	---	---	Abundant	widespread
Rock Bass	Ambloplites rupestris	Few	---	S5	---	---	Abundant	widespread
Central Stoneroller	Campostoma anomalum	Few	---	S4	---	Not at Risk	Abundant	widespread
Spotfin Shiner	Cyprinella spiloptera	Few	---	S4	---	---	Abundant	widespread
Greenside Darter	Etheostoma blennioides	Abundant	---	S4	Special Concern	Not at Risk	Abundant	widespread
Rainbow Darter	Etheostoma caeruleum	Few	---	S4	---	---	Uncommon	localized
Smallmouth Bass	Micropterus dolomieu	Few	---	S5	---	---	Abundant	widespread
Silver Shiner	Notropis photogenis	Few	Threatened	S2S3	Special Concern	Threatened	Uncommon	localized
Rosyface Shiner	Notropis rubellus	Few	---	S4	---	Not at Risk	Abundant	widespread
Yellow Perch	Perca flavescens	Few	---	S5	---	---	Common	widespread
Common Shiner	Luxilus cornutus	Few	---	S5	---	---	Abundant	widespread
	Percina maculata	Many	---	S4	---	---	Abundant	widespread
Bluntnose Minnow	Pimephales notatus	Few	---	S5	---	Not at Risk	Abundant	widespread

Thames River

Sampled: 05/05/2005 **Site Code: UT.TF020** Latitude: 42.978935

Agency: DFO SAR Database 2005 Location: Thames River Cavendish Cr - 1 West Longitude: -81.266569

			Species at Risk (SAR) Status				Status in the Thames River Watershed	
			Provincial		Federal			
Common Name	Scientific Name	# Observed	ESA2017	Srank	SARA	COSEWIC	Abundance	Distribution
White Sucker	Catostomus commersonii	Unknown	---	S5	---	---		
Rock Bass	Ambloplites rupestris	Unknown	---	S5	---	---	Abundant	widespread
Common Carp	Cyprinus carpio	Unknown	---	SNA	---	---	Abundant	widespread
Smallmouth Bass	Micropterus dolomieu	Unknown	---	S5	---	---	Abundant	widespread
Black Redhorse	Moxostoma duquesnei	Unknown	Threatened	S2	No Status	Threatened	Uncommon	localized
Golden Redhorse	Moxostoma erythrurum	Unknown	---	S4	---	Not at Risk	Abundant	widespread
Shorthead Redhorse	Moxostoma macrolepidotum	Unknown	---	S5	---	---	Common	widespread
Rosyface Shiner	Notropis rubellus	Unknown	---	S4	---	Not at Risk	Abundant	widespread
Mimic Shiner	Notropis volucellus	Unknown	---	S5	---	---	Abundant	widespread
Silver Redhorse	Moxostoma anisurum	Unknown	---	S4	---	---	Common	localized
Striped Shiner	Luxilus chrysocephalus	Unknown	---	S4	---	Not at Risk	Abundant	widespread
Bluntnose Minnow	Pimephales notatus	Unknown	---	S5	---	Not at Risk	Abundant	widespread

Thames River

Sampled: 28/05/2015 **Site Code: UT.TF020** Latitude: 42.978935

Agency: UTRCA Location: Thames River Cavendish Cr - 1 West Longitude: -81.266569

			Species at Risk (SAR) Status				Status in the Thames River Watershed	
			Provincial		Federal			
Common Name	Scientific Name	# Observed	ESA2017	Srank	SARA	COSEWIC	Abundance	Distribution
Johnny Darter	Etheostoma nigrum	Few	---	S5	---	---	Abundant	widespread
Rock Bass	Ambloplites rupestris	Few	---	S5	---	---	Abundant	widespread
Common Carp	Cyprinus carpio	Few	---	SNA	---	---	Abundant	widespread
Greenside Darter	Etheostoma blennioides	Many	---	S4	Special Concern	Not at Risk	Abundant	widespread
Smallmouth Bass	Micropterus dolomieu	Few	---	S5	---	---	Abundant	widespread
Golden Redhorse	Moxostoma erythrurum	Few	---	S4	---	Not at Risk	Abundant	widespread
Logperch	Percina caprodes	Few	---	S5	---	---	Common	widespread

Thames River

Sampled: **19/08/2015** **Site Code:** **UT.TF020** Latitude: 42.978935

Agency: UTRCA Location: Thames River Cavendish Cr - 1 West Longitude: -81.266569

			Species at Risk (SAR) Status				Status in the Thames River Watershed	
			Provincial		Federal			
Common Name	Scientific Name	# Observed	ESA2017	Srank	SARA	COSEWIC	Abundance	Distribution
Johnny Darter	Etheostoma nigrum	Many	---	S5	---	---	Abundant	widespread
Rock Bass	Ambloplites rupestris	Few	---	S5	---	---	Abundant	widespread
Greenside Darter	Etheostoma blennioides	Abundant	---	S4	Special Concern	Not at Risk	Abundant	widespread
Rainbow Darter	Etheostoma caeruleum	Many	---	S4	---	---	Uncommon	localized
Smallmouth Bass	Micropterus dolomieu	Few	---	S5	---	---	Abundant	widespread
Stonecat	Noturus flavus	Few	---	S4	---	---	Abundant	widespread
	Percina maculata	Few	---	S4	---	---	Abundant	widespread

Thames River

Sampled: **24/08/2015** **Site Code:** **UT.TF020** Latitude: 42.978935

Agency: UTRCA Location: Thames River Cavendish Cr - 1 West Longitude: -81.266569

			Species at Risk (SAR) Status				Status in the Thames River Watershed	
			Provincial		Federal			
Common Name	Scientific Name	# Observed	ESA2017	Srank	SARA	COSEWIC	Abundance	Distribution
Johnny Darter	Etheostoma nigrum	Few	---	S5	---	---	Abundant	widespread
Greenside Darter	Etheostoma blennioides	Abundant	---	S4	Special Concern	Not at Risk	Abundant	widespread
Rainbow Darter	Etheostoma caeruleum	Few	---	S4	---	---	Uncommon	localized
Smallmouth Bass	Micropterus dolomieu	Few	---	S5	---	---	Abundant	widespread
Rosyface Shiner	Notropis rubellus	Few	---	S4	---	Not at Risk	Abundant	widespread
Mimic Shiner	Notropis volucellus	Few	---	S5	---	---	Abundant	widespread
Logperch	Percina caprodes	Few	---	S5	---	---	Common	widespread
Common Shiner	Luxilus cornutus	Few	---	S5	---	---	Abundant	widespread
	Percina maculata	Few	---	S4	---	---	Abundant	widespread

North Thames River

Sampled: **18/08/1974** **Site Code:** **UT.TF024** Latitude: 42.983369

Agency: ROM Location: North Thames River Labatt Park Longitude: -81.256972

			Species at Risk (SAR) Status				Status in the Thames River Watershed	
			Provincial		Federal			
Common Name	Scientific Name	# Observed	ESA2017	Srank	SARA	COSEWIC	Abundance	Distribution
Greenside Darter	Etheostoma blennioides	Unknown	---	S4	Special Concern	Not at Risk	Abundant	widespread

North Thames River

Sampled: 21/08/2015 **Site Code: UT.TF024** Latitude: 42.983369

Agency: UTRCA Location: North Thames River Labatt Park Longitude: -81.256972

			Species at Risk (SAR) Status				Status in the Thames River Watershed	
			Provincial		Federal			
Common Name	Scientific Name	# Observed	ESA2017	Srank	SARA	COSEWIC	Abundance	Distribution
White Sucker	Catostomus commersonii	Few	---	S5	---	---		
Johnny Darter	Etheostoma nigrum	Few	---	S5	---	---	Abundant	widespread
Rock Bass	Ambloplites rupestris	Few	---	S5	---	---	Abundant	widespread
Central Stoneroller	Campostoma anomalum	Few	---	S4	---	Not at Risk	Abundant	widespread
Spotfin Shiner	Cyprinella spiloptera	Few	---	S4	---	---	Abundant	widespread
Common Carp	Cyprinus carpio	Few	---	SNA	---	---	Abundant	widespread
Greenside Darter	Etheostoma blennioides	Abundant	---	S4	Special Concern	Not at Risk	Abundant	widespread
Rainbow Darter	Etheostoma caeruleum	Few	---	S4	---	---	Uncommon	localized
Pumpkinseed	Lepomis gibbosus	Few	---	S5	---	---	Abundant	widespread
Smallmouth Bass	Micropterus dolomieu	Many	---	S5	---	---	Abundant	widespread
Mimic Shiner	Notropis volucellus	Few	---	S5	---	---	Abundant	widespread
Logperch	Percina caprodes	Few	---	S5	---	---	Common	widespread
Longnose Dace	Rhinichthys cataractae	Few	---	S5	---	---	Common	widespread
	Percina maculata	Few	---	S4	---	---	Abundant	widespread
Northern Hog Sucker	Hypentelium nigricans	Few	---	S4	---	---	Abundant	widespread

Thames River

Sampled: **11/05/2005** **Site Code:** **UT.TF030** Latitude: 42.981474

Agency: DFO SAR Database 2005 Location: Thames River Forks South at Labatts Park Longitude: -81.25862

			Species at Risk (SAR) Status				Status in the Thames River Watershed	
			Provincial		Federal			
Common Name	Scientific Name	# Observed	ESA2017	Srank	SARA	COSEWIC	Abundance	Distribution
White Sucker	Catostomus commersonii	Unknown	---	S5	---	---		
Johnny Darter	Etheostoma nigrum	Unknown	---	S5	---	---	Abundant	widespread
Rock Bass	Ambloplites rupestris	Unknown	---	S5	---	---	Abundant	widespread
Quillback	Carpiodes cyprinus	Unknown	---	S4	---	---	Uncommon	widespread
Greenside Darter	Etheostoma blennioides	Unknown	---	S4	Special Concern	Not at Risk	Abundant	widespread
Smallmouth Bass	Micropterus dolomieu	Unknown	---	S5	---	---	Abundant	widespread
Black Redhorse	Moxostoma duquesnei	Unknown	Threatened	S2	No Status	Threatened	Uncommon	localized
Golden Redhorse	Moxostoma erythrurum	Unknown	---	S4	---	Not at Risk	Abundant	widespread
Shorthead Redhorse	Moxostoma macrolepidotum	Unknown	---	S5	---	---	Common	widespread
Greater Redhorse	Moxostoma valenciennesi	Unknown	---	S3	---	---	Common	localized
Rosyface Shiner	Notropis rubellus	Unknown	---	S4	---	Not at Risk	Abundant	widespread
Mimic Shiner	Notropis volucellus	Unknown	---	S5	---	---	Abundant	widespread
Silver Redhorse	Moxostoma anisurum	Unknown	---	S4	---	---	Common	localized
Northern Hog Sucker	Hypentelium nigricans	Unknown	---	S4	---	---	Abundant	widespread

Thames River

Sampled: 26/05/2005 **Site Code: UT.TF030** Latitude: 42.981474

Agency: DFO SAR Database 2005 Location: Thames River Forks South at Labatts Park Longitude: -81.25862

			Species at Risk (SAR) Status				Status in the Thames River Watershed	
			Provincial		Federal			
Common Name	Scientific Name	# Observed	ESA2017	Srank	SARA	COSEWIC	Abundance	Distribution
White Sucker	Catostomus commersonii	Unknown	---	S5	---	---		
Quillback	Carpiodes cyprinus	Unknown	---	S4	---	---	Uncommon	widespread
Common Carp	Cyprinus carpio	Unknown	---	SNA	---	---	Abundant	widespread
Smallmouth Bass	Micropterus dolomieu	Unknown	---	S5	---	---	Abundant	widespread
Spotted Sucker	Minytrema melanops	Unknown	Special Concern	S2	Special Concern	Special Concern	Rare	localized
Black Redhorse	Moxostoma duquesnei	Unknown	Threatened	S2	No Status	Threatened	Uncommon	localized
Golden Redhorse	Moxostoma erythrurum	Unknown	---	S4	---	Not at Risk	Abundant	widespread
Shorthead Redhorse	Moxostoma macrolepidotum	Unknown	---	S5	---	---	Common	widespread
Silver Redhorse	Moxostoma anisurum	Unknown	---	S4	---	---	Common	localized
Northern Hog Sucker	Hypentelium nigricans	Unknown	---	S4	---	---	Abundant	widespread
Walleye	Sander vitreus	Unknown	---	---	---	---	Uncommon	locally common

Thames River

Sampled: **21/08/2015** **Site Code:** **UT.TF030** Latitude: 42.981474

Agency: UTRCA Location: Thames River Forks South at Labatts Park Longitude: -81.25862

			Species at Risk (SAR) Status				Status in the Thames River Watershed	
			Provincial		Federal			
Common Name	Scientific Name	# Observed	ESA2017	Srank	SARA	COSEWIC	Abundance	Distribution
White Sucker	Catostomus commersonii	Few	---	S5	---	---		
Johnny Darter	Etheostoma nigrum	Few	---	S5	---	---	Abundant	widespread
Creek Chub	Semotilus atromaculatus	Few	---	S5	---	---	Abundant	widespread
Rock Bass	Ambloplites rupestris	Few	---	S5	---	---	Abundant	widespread
Spotfin Shiner	Cyprinella spiloptera	Few	---	S4	---	---	Abundant	widespread
Common Carp	Cyprinus carpio	Few	---	SNA	---	---	Abundant	widespread
Greenside Darter	Etheostoma blennioides	Many	---	S4	Special Concern	Not at Risk	Abundant	widespread
Rainbow Darter	Etheostoma caeruleum	Few	---	S4	---	---	Uncommon	localized
Smallmouth Bass	Micropterus dolomieu	Few	---	S5	---	---	Abundant	widespread
Mimic Shiner	Notropis volucellus	Few	---	S5	---	---	Abundant	widespread
Logperch	Percina caprodes	Few	---	S5	---	---	Common	widespread
Striped Shiner	Luxilus chrysocephalus	Few	---	S4	---	Not at Risk	Abundant	widespread
	Percina maculata	Few	---	S4	---	---	Abundant	widespread
Bluntnose Minnow	Pimephales notatus	Many	---	S5	---	Not at Risk	Abundant	widespread

Thames River

Sampled: **24/08/2015** **Site Code:** **UT.TF030** Latitude: 42.981474

Agency: UTRCA Location: Thames River Forks South at Labatts Park Longitude: -81.25862

			Species at Risk (SAR) Status				Status in the Thames River Watershed	
			Provincial		Federal			
Common Name	Scientific Name	# Observed	ESA2017	Srank	SARA	COSEWIC	Abundance	Distribution
Central Stoneroller	Campostoma anomalum	Few	---	S4	---	Not at Risk	Abundant	widespread
Spotfin Shiner	Cyprinella spiloptera	Few	---	S4	---	---	Abundant	widespread
Greenside Darter	Etheostoma blennioides	Few	---	S4	Special Concern	Not at Risk	Abundant	widespread
Smallmouth Bass	Micropterus dolomieu	Abundant	---	S5	---	---	Abundant	widespread
Largemouth Bass	Micropterus salmoides	Few	---	S5	---	---	Abundant	widespread
Mimic Shiner	Notropis volucellus	Few	---	S5	---	---	Abundant	widespread
Logperch	Percina caprodes	Few	---	S5	---	---	Common	widespread
Striped Shiner	Luxilus chrysocephalus	Few	---	S4	---	Not at Risk	Abundant	widespread

South Thames River

Sampled: 21/08/2015 **Site Code: UT.TF036** Latitude: 42.980596

Agency: UTRCA Location: South Thames River upstream of the Forks Longitude: -81.256813

			Species at Risk (SAR) Status				Status in the Thames River Watershed	
			Provincial		Federal			
Common Name	Scientific Name	# Observed	ESA2017	Srank	SARA	COSEWIC	Abundance	Distribution
Johnny Darter	Etheostoma nigrum	Few	---	S5	---	---	Abundant	widespread
Rock Bass	Ambloplites rupestris	Few	---	S5	---	---	Abundant	widespread
Greenside Darter	Etheostoma blennioides	Abundant	---	S4	Special Concern	Not at Risk	Abundant	widespread
Rainbow Darter	Etheostoma caeruleum	Many	---	S4	---	---	Uncommon	localized
Smallmouth Bass	Micropterus dolomieu	Many	---	S5	---	---	Abundant	widespread
Golden Redhorse	Moxostoma erythrurum	Few	---	S4	---	Not at Risk	Abundant	widespread
River Chub	Nocomis micropogon	Few	---	S4	---	Not at Risk	Common	widespread
Logperch	Percina caprodes	Few	---	S5	---	---	Common	widespread
	Percina maculata	Few	---	S4	---	---	Abundant	widespread

North Thames River

Sampled: 04/09/2015 **Site Code: UT.TF037** Latitude: 42.991225

Agency: UTRCA Location: North Thames River Ann St Longitude: -81.259568

			Species at Risk (SAR) Status				Status in the Thames River Watershed	
			Provincial		Federal			
Common Name	Scientific Name	# Observed	ESA2017	Srank	SARA	COSEWIC	Abundance	Distribution
White Sucker	Catostomus commersonii	Few	---	S5	---	---		
Rock Bass	Ambloplites rupestris	Many	---	S5	---	---	Abundant	widespread
Central Stoneroller	Campostoma anomalum	Few	---	S4	---	Not at Risk	Abundant	widespread
Spotfin Shiner	Cyprinella spiloptera	Many	---	S4	---	---	Abundant	widespread
Northern Pike	Esox lucius	Few	---	S5	---	---	Common	widespread
Greenside Darter	Etheostoma blennioides	Abundant	---	S4	Special Concern	Not at Risk	Abundant	widespread
Rainbow Darter	Etheostoma caeruleum	Abundant	---	S4	---	---	Uncommon	localized
Smallmouth Bass	Micropterus dolomieu	Abundant	---	S5	---	---	Abundant	widespread
River Chub	Nocomis micropogon	Few	---	S4	---	Not at Risk	Common	widespread
Silver Shiner	Notropis photogenis	Few	Threatened	S2S3	Special Concern	Threatened	Uncommon	localized
Yellow Perch	Perca flavescens	Few	---	S5	---	---	Common	widespread
Logperch	Percina caprodes	Many	---	S5	---	---	Common	widespread
Common Shiner	Luxilus cornutus	Few	---	S5	---	---	Abundant	widespread
	Percina maculata	Few	---	S4	---	---	Abundant	widespread
Northern Hog Sucker	Hypentelium nigricans	Many	---	S4	---	---	Abundant	widespread
Bluntnose Minnow	Pimephales notatus	Few	---	S5	---	Not at Risk	Abundant	widespread

North Thames River

Sampled: 31/08/2015 **Site Code: UT.TF038** Latitude: 42.989896

Agency: UTRCA Location: North Thames River Cummings Ave - 2 Blackfriar Longitude: -81.25776

			Species at Risk (SAR) Status				Status in the Thames River Watershed	
			Provincial		Federal			
Common Name	Scientific Name	# Observed	ESA2017	Srank	SARA	COSEWIC	Abundance	Distribution
Johnny Darter	Etheostoma nigrum	Few	---	S5	---	---	Abundant	widespread
Rock Bass	Ambloplites rupestris	Few	---	S5	---	---	Abundant	widespread
Greenside Darter	Etheostoma blennioides	Many	---	S4	Special Concern	Not at Risk	Abundant	widespread
Smallmouth Bass	Micropterus dolomieu	Few	---	S5	---	---	Abundant	widespread
	Percina maculata	Few	---	S4	---	---	Abundant	widespread
Northern Hog Sucker	Hypentelium nigricans	Few	---	S4	---	---	Abundant	widespread

Thames River

Sampled: 24/08/2015 **Site Code: UT.TF039** Latitude: 42.981071

Agency: UTRCA Location: Thames River Warncliffe Rd Longitude: -81.26177

			Species at Risk (SAR) Status				Status in the Thames River Watershed	
			Provincial		Federal			
Common Name	Scientific Name	# Observed	ESA2017	Srank	SARA	COSEWIC	Abundance	Distribution
Johnny Darter	Etheostoma nigrum	Few	---	S5	---	---	Abundant	widespread
Rock Bass	Ambloplites rupestris	Few	---	S5	---	---	Abundant	widespread
Spotfin Shiner	Cyprinella spiloptera	Few	---	S4	---	---	Abundant	widespread
Greenside Darter	Etheostoma blennioides	Abundant	---	S4	Special Concern	Not at Risk	Abundant	widespread
Rainbow Darter	Etheostoma caeruleum	Few	---	S4	---	---	Uncommon	localized
Smallmouth Bass	Micropterus dolomieu	Many	---	S5	---	---	Abundant	widespread
Mimic Shiner	Notropis volucellus	Few	---	S5	---	---	Abundant	widespread
Stonecat	Noturus flavus	Few	---	S4	---	---	Abundant	widespread
Logperch	Percina caprodes	Few	---	S5	---	---	Common	widespread
Striped Shiner	Luxilus chrysocephalus	Few	---	S4	---	Not at Risk	Abundant	widespread
Common Shiner	Luxilus cornutus	Few	---	S5	---	---	Abundant	widespread
	Percina maculata	Few	---	S4	---	---	Abundant	widespread
Bluntnose Minnow	Pimephales notatus	Few	---	S5	---	Not at Risk	Abundant	widespread

South Thames River

Sampled: **10/05/2015** **Site Code:** **UT.TF040** Latitude: 42.977066

Agency: UTRCA Location: South of Horton St Longitude: -81.252727

			Species at Risk (SAR) Status				Status in the Thames River Watershed	
			Provincial		Federal			
Common Name	Scientific Name	# Observed	ESA2017	Srank	SARA	COSEWIC	Abundance	Distribution
Mooneye	Hiodon tergisus	Few	---	S4	---	---	Uncommon	locally common

North Thames River Tributary

Sampled: **14/12/2011** **Site Code:** **UT.TF116** Latitude: 42.990391

Agency: UTRCA Location: Accessed from Anne St south of Oxford St Longitude: -81.257823

			Species at Risk (SAR) Status				Status in the Thames River Watershed	
			Provincial		Federal			
Common Name	Scientific Name	# Observed	ESA2017	Srank	SARA	COSEWIC	Abundance	Distribution
Gizzard Shad	Dorosoma cepedianum	Abundant	---	S4	---	---	Common	locally common

COSEWIC Status: The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) asseses species for their consideration for legal protection and recover (or management) under the Species at Risk Act (SARA).

Extinct: A wildife species that no longer exists.

Extirpated: A wildlife species no longer existing in the wild in Canada, but exists elsewhere.

Endangered: A wildlife species facing imminent extirpation or extinction.

Threatened: A wildlife species likely to become endangered if limiting factors are not reversed.

Special Concern: A wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.

Not at Risk: A wildlife species that has been evaulated and found to be not at risk of extinction given the current cirumstances.

Data Deficient: A category that applies when the available information is insufficient (a) to resolve a wildlife species' eligibility for assessment or (b) to permit an assessment of the wildlife species' risk of extinction.

Reference: www.cosewic.gc.ca (current to November 2011)

SARA Status: The federal at risk designation for species under the Species at Risk Act (SARA)

Reference: www.sararegistry.gc.ca (current to December 2011)

ESA 2007 / SARO Status: Species at Risk in Ontario (SARO) are designated be the Ontario Ministry of Natural Resources and Forestry (OMNRF) in accordance with the provincial Endangered Species Act (ESA) through the Committee on the Status of Species at Risk in Ontario (COSSARO).

Extirpated: A native species that no longer exists in the wild in Ontario but still occurs elsewhere.

Endangered: A native species facing imminent extirpation or extinction in Ontario.

Threatened: A native species that is at risk of becoming endangered in Ontario.

Special Concern: A native species that is sensitive to human activities or natural events which may cause it to become endangered or thereatened.

Reference: www.ontario.ca/speciesatrisk (current to Janurary 2012)

Provincial Rank (SRANK): Privincial (or Subnational) ranks are used by the Natural Hertiage Information Centre (NHIC) to set protection priorities for rare species and natural communities. These ranks are assigned to consider only those factors within the political boundaries of Onatio.

SX Presumed Extirpated: Species or community is believed to be extirpated from the nation or state/province. Not located despite intensive searches of historical sites and other appropriate habitat, and vitually no likelihood that it will be rediscovered.

SH Possibly Extirpated (Historical): Species or community occurred historically in the nation or state/province, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20-40 years. A species or community could become NH or SH without such a 20-40 year delay if the only known occurrences in a nation or state/province were destroyed or if it had been extensively and unsuccessfully looked for. The NH or SH rank is reserved for species or communities for which some effort has been made to relocate occurrences, rather than simply using this status for all elements not known from verified extant occurences.

S1 Critically imperiled: Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.

S2 Imperiled: Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.

S3 Vulnerable: Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

S4 Apparently Secure: Uncommon but not rare; some cause for long-term concern due to declines or other factors.

S5 Secure: Common, widespread, and abundant in the nation or state/province.

SNR Unranked: Nation or state/province conservation status not yet assessed.

SU Unrankable: Currently unrankable due to lack of lack of information or substantially conflicting information about status or trends.

SNA Not Applicable: A conservation stutus rank is not applicable because the species is not a suitable target for conservation activities.

S#S# Range Rank: A numeric range rank (e.g. S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g. SU is used rather than S1S4).

Reference: http://nhci.mnr.gov.on.ca/MNR/nhic/nhic.cfm (current to March 2012)

Abundance: Referes to the relative abundance of the species found wihtin the waters of the Upper Thames River watershed based on sampling results. Some species may be underrepresented as they are difficult to capture with commonly used sampling methods.

Abundant: Occurred in >25% of the sampling records.

Common: Occurred in 10-25% of the sampling records.

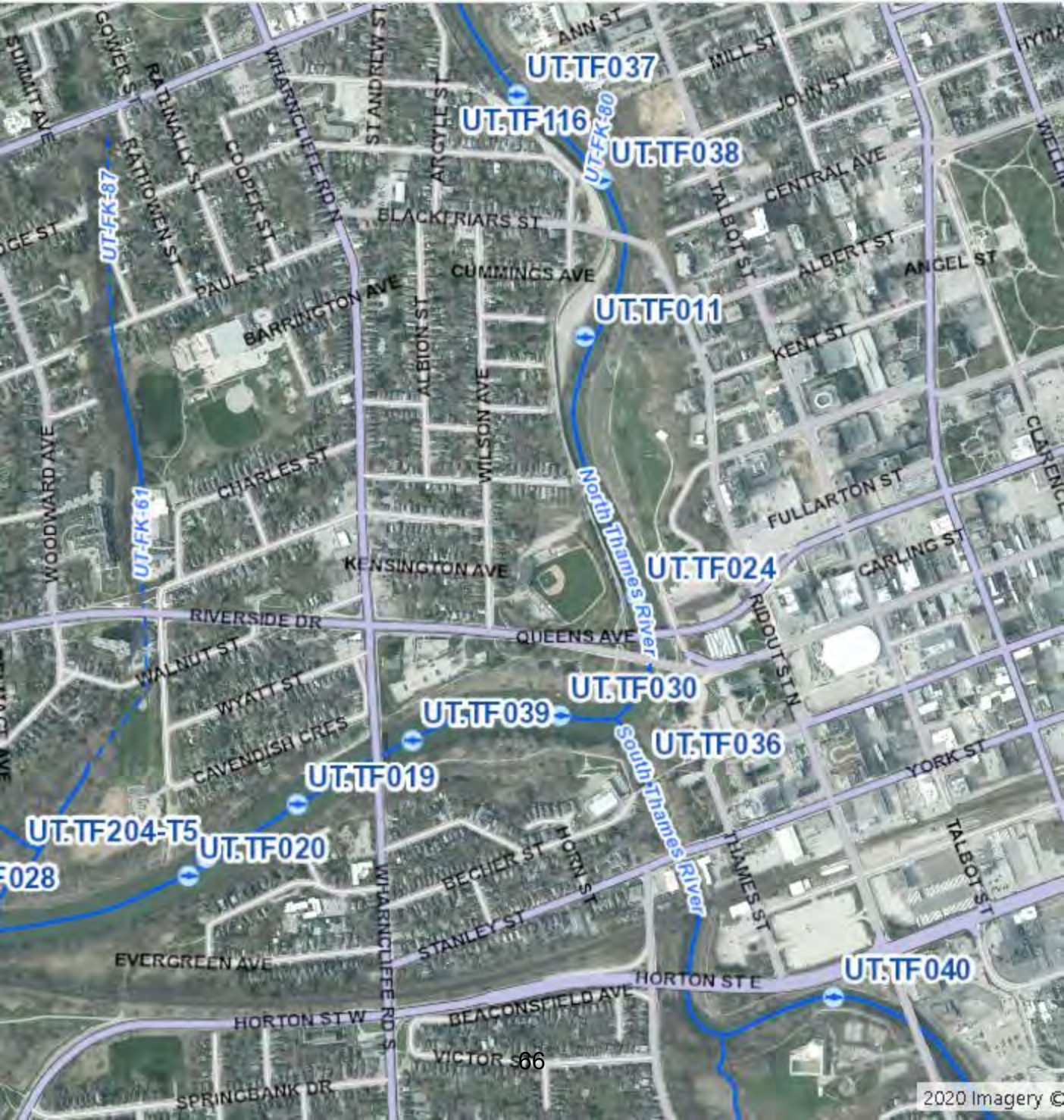
Uncommon: Occurred in <10% of the sampling records.

Distribution: Based on the number of Upper Thames Watershed Report Card subwatersheds in which a species has been recorded.

Throughout: Recorded in >20 subwatersheds.

Widespread: Recorded in 10-20 subwatersheds.

Localized: Recorded in <10 subwatersheds.


UT.TF037
UT.TF116
UT.TF038
UT.TF011
UT.TF024
UT.TF030
UT.TF039
UT.TF036
UT.TF019
UT.TF204-T5
UT.TF020
UT.TF040
UT-FK-87
UT-FK-61
UT-FK-80
North Thames River
South Thames River
ANN ST
MILL ST
JOHN ST
CENTRAL AVE
ALBERT ST
ANGEL ST
KENT ST
FULLARTON ST
CARLING ST
BLACKFRIARS ST
CUMMINGS AVE
BARRINGTON AVE
PAUL ST
COOPER ST
RATHNALLY ST
RATTOWEN ST
WHARNCLIFFE RD N
STANDREW ST
ARGYLE ST
ALBION ST
WILSON AVE
TALBOT ST
SUMMIT AVE
GOWER ST
WOODWARD AVE
CHARLES ST
KENSINGTON AVE
RIVERSIDE DR
QUEENS AVE
WALNUT ST
WYATT ST
CAVENDISH CRES
RIDOUT ST N
YORK ST
THAMES ST
TALBOT ST
HORN ST
BECHER ST
STANLEY ST
EVERGREEN AVE
WHARNCLIFFE RD S
HORTON ST W
HORTON ST E
BEACONSFIELD AVE
VICTOR ST
SPRINGBANK DR
2020 Imagery ©

Regulated Areas

Regulation under s.28 of the *Conservation Authorities Act*

Development, interference with wetlands, and alterations to shorelines and watercourses. O.Reg 157/06, 97/04.

Legend

- UTRCA Watershed (2017 LiDAR)
- Watercourse (UTRCA)
  - Open
  - Tiled
- Middlesex NHSS Woodland (2014)
  - Candidate for Ecologicallly Important
  - Ecologicallly Important
  - Significant Ecologicallly Important
- Middlesex NHSS Vegetation Patch (2
  - No Patch Criteria Met
  - 1+ Patch Criteria Met

The mapping is for information screening purposes only, and shows the approximate regulation limits. The text of Ontario Regulation 157/06 supersedes the mapping as represented by this data layer. This mapping is subject to change. A site specific determination may be made by the UTRCA.

This layer is the approximate limit for areas regulated under Ontario Regulation 157/06 - Upper Thames River Conservation Authority: Development, Interference with Wetlands and Alterations to Shorelines and Watercourses, which came into effect May 4, 2006.

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This map is not a substitute for professional advice. Please contact UTRCA staff for any changes, updates and amendments to the information provided.

This document is not a Plan of Survey.

UPPER THAMES RIVER CONSERVATION AUTHORITY

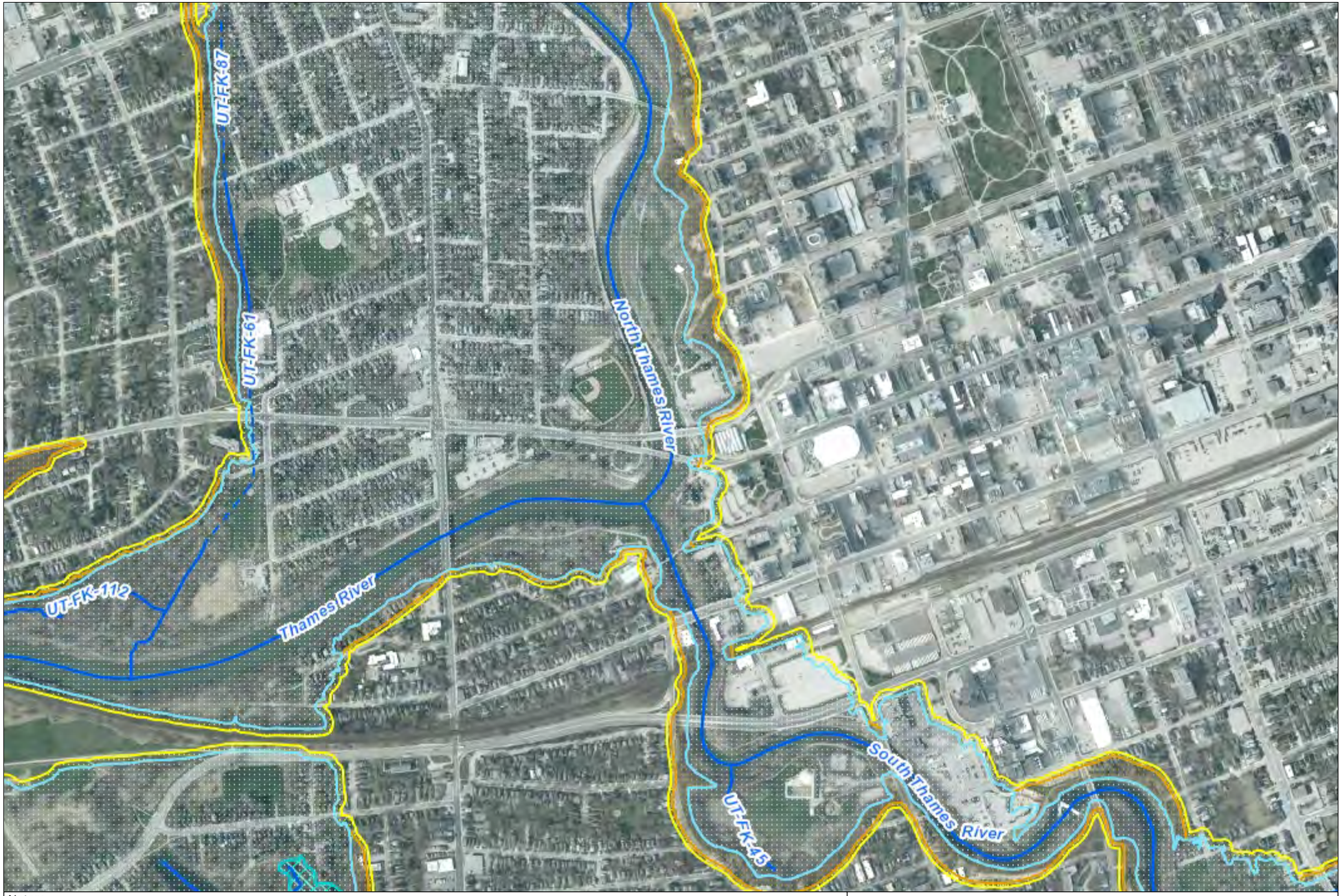
Notes:
Kensington Bridge EIS - Natural Heritage

Created By: SS April 27, 2022

* Please note: Any reference to scale on this map is only appropriate when it is printed landscape on legal-sized (8.5" x 14") paper.

0 200 400 800
metres
1:10,000

N



Regulated Areas

Regulation under s.28 of the Conservation Authorities Act

Development, interference with wetlands, and alterations to shorelines and watercourses. O.Reg 157/06, 97/04.

Legend

- UTRCA Watershed (2017 LiDAR)
- Watercourse (UTRCA)
  - Open
  - Tiled
- Regulated Wetland
- Flooding Hazard Limit
- Erosion Hazard Limit
- Regulation Limit 2021

The mapping is for information screening purposes only, and shows the approximate regulation limits. The text of Ontario Regulation 157/06 supersedes the mapping as represented by this data layer. This mapping is subject to change. A site specific determination may be made by the UTRCA.

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UPPER THAMES RIVER CONSERVATION AUTHORITY

Notes:

Kensington Bridge EIS - UTRCA Regulation Mapping

Created By: SS April 27, 2022

* Please note: Any reference to scale on this map is only appropriate when it is printed landscape on legal-sized (8.5" x 14") paper.

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metres

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Regulated Areas

Regulation under s.28 of the Conservation Authorities Act

Development, interference with wetlands, and alterations to shorelines and watercourses. O.Reg 157/06, 97/04.

Legend

- UTRCA Watershed (2017 LiDAR)
- Watercourse Thermal Regime (UTR(
  - Cool or Cold
  - Warm
- Watercourse (UTRCA)
  - Open
  - Tiled

The mapping is for information screening purposes only, and shows the approximate regulation limits. The text of Ontario Regulation 157/06 supersedes the mapping as represented by this data layer. This mapping is subject to change. A site specific determination may be made by the UTRCA.

This layer is the approximate limit for areas regulated under Ontario Regulation 157/06 - Upper Thames River Conservation Authority: Development, Interference with Wetlands and Alterations to Shorelines and Watercourses, which came into effect May 4, 2006.

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UPPER THAMES RIVER CONSERVATION AUTHORITY

Notes:
Kensington Bridge EIS - Thermal Regime

Created By: SS April 27, 2022

* Please note: Any reference to scale on this map is only appropriate when it is printed landscape on legal-sized (8.5" x 14") paper.

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metres

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Appendix C

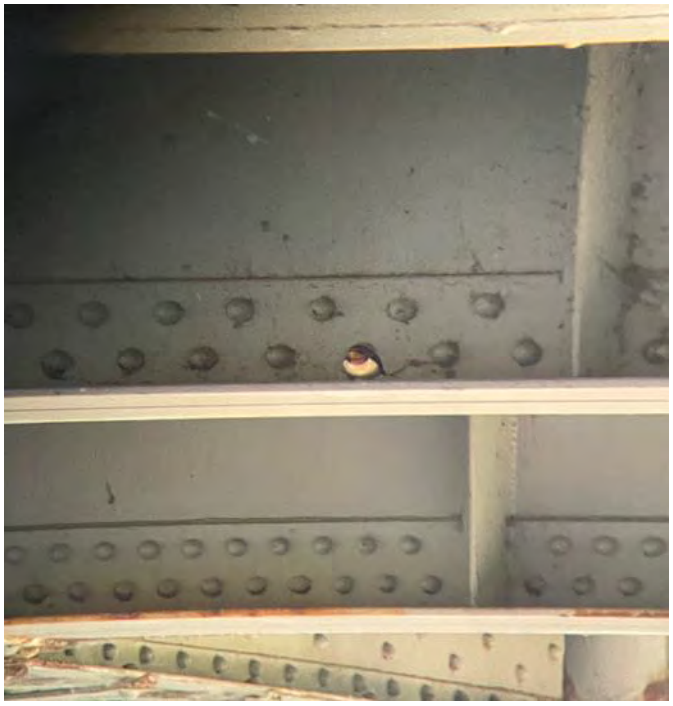
Photographic Log

AECOM

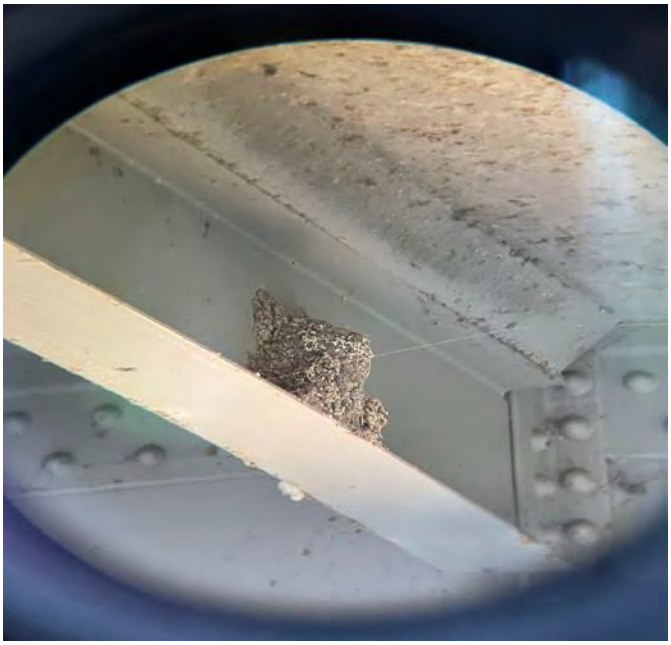
Photographic Log

Client Name:	Report Name	Project No.
City of London	Kensington Bridge Environmental Impact Study	60672088

Photograph 1.
Multiple barn swallow nests under Kensington Bridge.



Photograph 2.
Barn swallow perched under Kensington Bridge



Photograph 3.
Close up view of barn swallow nest under Kensington Bridge

Photograph 4.
Spiny softshell basking in sun in Thames River

Photograph 5. ↑
Mineral Open Beach/Bar (BBO1) vegetation community

Photograph 6. ↑
Willow Gravel Shrub Beach Bar (BBS1-2) vegetation community

Photograph 7. ↑
Mineral Treed Beach/Bar (BBT1) vegetation community

Photograph 8. ↑
View of North Thames River and Kensington Bridge

Photograph 9. ↑
Spiny softshell nesting habitat on the bank of the North Thames River

Photograph 10. ↑
Cultural meadow (CUM) inclusion to the Mineral Treed Beach/Bar (BBT1) community

Photograph 11. ↑
Cultural meadow (CUM) inclusion to the Mineral Treed Beach/Bar (BBT1) community. View of the North Thames River.

Photograph 12. ↑
Mineral Cultural Woodland (CUW1) vegetation community

Photograph 13. ↑
Edge of Cottonwood Mineral Treed Shoreline vegetation community and start of Fresh-Moist Lowland Deciduous Forest (FOD7) vegetation community

Photograph 14. ↑
Willow Gravel Shrub Beach Bar (BBS1-2) vegetation community, on the banks of the North Thames River under the bridge.

Photograph 15. ↑
Willow Gravel Shrub Beach Bar (BBS1-2) vegetation community, and hard-engineered retaining structures on the banks of the North Thames River.

Photograph 16. ↑
Riparian cultural meadow (CUM) inclusion to the Mineral Treed Beach/Bar (BBT1) community.

Photograph 17. ↑
Cultural meadow (CUM) inclusion to the Mineral Treed Beach/Bar (BBT1) community, and view of the river and riparian vegetation

Photograph 18. ↑
Willow Gravel Shrub Beach Bar (BBS1-2) vegetation community and Mineral Open Beach/Bar. (BBO1) vegetation community in riparian zone of the river.

Photograph 19. ↑
View of Kensington Bridge and centre pier, and general view of the North Thames River in the area of the Subject Lands.

Photograph 20. ↑
General view of the North Thames River, hard-engineered banks and riparian vegetation upstream of the bridge.

Appendix D

Vascular Plant List

Appendix D: Vascular Plant List

Family	Scientific Name	Common Name	CC	CW	Native Status	Invasive (Y/N)	Tall-grass Species (Y/N)	SRANK	COSEWIC	SARO	MD	BBO1	BBS1-2	BBT1	CUW1	Grand Total
	Amelanchier canadensis													X	X	2
	Aster spp.												X	X		2
	Salix sp											X	X	X		3
	Solidago spp.											X	X	X		3
	Poa sp.												X			1
		(blank)												X		1
Aceraceae	Acer negundo	Manitoba Maple	0	0	N	Y	0	S5			X			X	X	2
	Acer saccharum	Sugar Maple	4	3	N	N	0	S5			C			X	X	2
Anacardiaceae	Rhus glabra	Smooth Sumac	7	5	N	N	0	S5			R			X	X	2
	Rhus typhina	Staghorn Sumac	1	3	N	N	0	S5			C			X	X	2
Apiaceae	Daucus carota	Wild Carrot	0	5	I	N	0	SE5			IC		X	X	X	3
Apocynaceae	Asclepias syriaca	Common Milkweed	0	5	N	N	0	S5			C		X	X		2
Asteraceae	Ambrosia trifida	Great Ragweed	0	0	N	N	0	S5			C		X	X		2
	Arctium minus	Common Burdock	0	3	I	N	0	SE5			IC		X	X	X	3
	Cichorium intybus	Wild Chicory	0	3	I	N	0	SE5			IC		X	X		2
	Cirsium vulgare	Bull Thistle	0	3	I	N	0	SE5			C		X	X	X	3
	Eutrochium maculatum	Spotted Joe Pye Weed	3	-5	N	N	0	S5					X			1
	Helianthus tuberosus	Jerusalem Artichoke	1	0	N	N	0	SU			X		X			1
	Leucanthemum vulgare	Oxeye Daisy	0	5	I	N	0	SE5			IR			X	X	2
	Matricaria discoidea	Pineappleweed	0	3	I	N	0	SE5			IX		X	X		2
	Tanacetum vulgare	Common Tansy	0	5	I	N	0	SE5			IX		X	X		2
	Taraxacum officinale	Common Dandelion	0	3	I	N	0	SE5			IC	X	X	X		3
Balsaminaceae	Impatiens glandulifera	Purple Jewelweed	0	-3	I	Y	0	SE4			IR		X			1
Bignoniaceae	Catalpa speciosa	Northern Catalpa	0	3	I	N	0	SE1					X			1
Brassicaceae	Erysimum cheiranthoides	Wormseed Wallflower	0	3	N	N	0	S5			IR		X	X		2
	Hesperis matronalis	Dame's Rocket	0	3	I	Y	0	SE5			IX			X	X	2
	Lepidium densiflorum	Common Peppergrass	0	3	I	N	0	SE5					X			1
	Thlaspi arvense	Field Pennycress	0	5	I	N	0	SE5			IC	X	X			2
Caryophyllaceae	Silene vulgaris	Bladder Campion	0	5	I	N	0	SE5			IX		X	X		2
Clusiaceae	Hypericum perforatum	Common St. John's-wort	0	5	I	Y	Y	SE5			IC		X	X		2
Convolvulaceae	Calystegia spithamaea	Low False Bindweed	7	5	N	N	0	S4S5				X	X	X		3
	Convolvulus arvensis	Field Bindweed	0	5	I	N	0	SE5			IX		X			1
Cupressaceae	Thuja occidentalis	Eastern White Cedar	4	-3	N	N	0	S5			C			X		1
Euphorbiaceae	Euphorbia virgata	Leafy Spurge	0	5	I	Y	0	SE5?			IX		X	X		2
Fabaceae	Lotus corniculatus	Garden Bird's-foot Trefoil	0	3	I	Y	0	SE5			X	X	X	X		3
	Robinia pseudoacacia	Black Locust	0	3	I	Y	0	SE5			IC			X	X	2
Fagaceae	Quercus rubra	Northern Red Oak	6	3	N	N	0	S5			C			X	X	2
Juglandaceae	Juglans nigra	Black Walnut	5	3	N	N	0	S4?			X			X	X	2
Liliaceae	Hemerocallis fulva	Orange Daylily	0	5	I	Y	0	SE5			IX		X			1
Lythraceae	Lythrum salicaria	Purple Loosestrife	0	-5	I	Y	0	SE5			IC	X	X	X		3
Moraceae	Morus alba	White Mulberry	0	0	I	Y	0	SE5			X			X	X	2
Oleaceae	Fraxinus pennsylvanica	Red Ash	3	-3	N	N	0	S4			X			X	X	2
Oxalidaceae	Oxalis stricta	Upright Yellow Wood-sorrel	0	3	N	N	0	S5			X		X	X		2
Phytolaccaceae	Phytolacca americana	Common Pokeweed	3	3	N	N	0	S4			X		X	X		2
Pinaceae	Larix laricina	Tamarack	7	-3	N	N	0	S5			X				X	1
	Picea abies	Norway Spruce	0	5	I	N	0	SE3			IX				X	1
	Pinus strobus	Eastern White Pine	4	3	N	N	0	S5			X			X	X	2
Plantaginaceae	Plantago lanceolata	English Plantain	0	3	I	N	0	SE5			IC		X	X	X	3
	Plantago major	Common Plantain	0	3	I	N	0	SE5			IC		X	X	X	3
Platanaceae	Platanus occidentalis	Sycamore	8	-3	N	N	0	S4			C		X	X		2
Poaceae	Bromus inermis	Smooth Brome	0	5	I	Y	0	SE5			IC		X	X		2
	Dactylis glomerata	Orchard Grass	0	3	I	N	0	SE5			IC		X	X		2
Rhamnaceae	Rhamnus cathartica	European Buckthorn	0	0	I	Y	0	SE5			X			X	X	2
Rosaceae	Fragaria virginiana	Wild Strawberry	2	3	N	N	Y	S5			C		X	X	X	3
	Rubus idaeus	Red Raspberry	2	3	N	N	0	S5				X	X	X		3
	Spiraea japonica	Japanese Meadowsweet	0	5	I	N	0	SE1			IR		X	X		2
Salicaceae	Populus alba	White Poplar	0	5	I	Y	0	SE5			IX			X	X	2
	Populus deltoides	Eastern Cottonwood	4	0	N	N	0	S5			C			X	X	2
	Salix interior	Sandbar Willow	1	-3	N	N	0	S5			C	X	X			2
Tiliaceae	Tilia americana	Basswood	4	3	N	N	0	S5			C			X	X	2
Ulmaceae	Celtis occidentalis	Common Hackberry	8	0	N	N	0	S4			X		X	X	X	3
	Ulmus glabra	Scotch Elm	0	3	I	N	0	SE1			C			X	X	2
Urticaceae	Urtica dioica	Stinging Nettle	2	0	N	N	0	S5					X			1
Violaceae	Viola sororia	Woolly Blue Violet	4	0	N	N	0	S5			C		X	X		2
Vitaceae	Parthenocissus vitacea	Thicket Creeper	4	3	N	N	0	S5			X		X		X	2
	Vitis riparia	Riverbank Grape	0	0	N	N	0	S5			C		X		X	2
Grand Total												9	44	51	29	133

Appendix D: Vascular Plant List

Floristic Summary and Analysis for Entire Study Area		
Summary		Percent (%)
Total Species:	66	
Native Species:	29	43.93939394
Introduced Species:	31	46.96969697
Invasive Species:	13	19.6969697
ESA Status		
END	0	0
THR	0	0
SC	0	0
COSEWIC Status		
END	0	0
THR	0	0
SC	0	0
Provincially Rare (S-rank of S1-S3)		
S1	0	0
S1?	0	0
S1S2	0	0
S1S3	0	0
S2	0	0
S2?	0	0
S2S3	0	0
S2S4	0	0
S3	0	0
S3?	0	0
S3S4	0	0
Total S1-S3:	0	0
Co-efficient of Conservatism and Floral Quality Index		
Co-efficient of Conservatism (CC) (average):	1.566666667	
CC 0 to 3	46	
CC 4 to 6	9	13.63636364
CC 7 to 8	5	7.575757576
CC 9 to 10	0	0
Floral Quality Index (FQI)		
FQI:	8.436758198	
Presence of Wetland Species		
Upland (5)	16	24.24242424
Facultative Upland (2 to 4)	26	39.39393939
Facultative (1 to -1)	10	15.15151515
Facultative Wetland (-2 to -4)	6	9.090909091
Obligate Wetland (-5)	2	3.03030303

Floristic Summary and Analysis Per ELC								
Summary								
Total Species:				9	44	51	29	13
Native Species:				3	17	22	15	5
Introduced Species:				4	23	24	13	6
Invasive Species:				2	0	0	0	0
ESA Status								
END				0	0	0	0	0
THR				0	0	0	0	0
SC				0	0	0	0	0
COSEWIC Status								
END				0	0	0	0	0
THR				0	0	0	0	0
SC				0	0	0	0	0
Provincially Rare (S-rank of S1-S3)								
S1				0	0	0	0	0
S1?				0	0	0	0	0
S1S2				0	0	0	0	0
S1S3				0	0	0	0	0
S2				0	0	0	0	0
S2?				0	0	0	0	0
S2S3				0	0	0	0	0
S2S4				0	0	0	0	0
S3				0	0	0	0	0
S3?				0	0	0	0	0
S3S4				0	0	0	0	0
Total S1-S3:				0	0	0	0	0
Co-efficient of Conservatism and Floral Quality Index								
Co-efficient of Conservatism (CC) (average):				1.428571429	1.125	1.652173913	2.107142857	1.545454545
CC 0 to 3				6	35	34	18	9
CC 4 to 6				0	5	0	0	2
CC 7 to 8				1	3	4	3	1
CC 9 to 10				0	0	0	0	0
Floral Quality Index (FQI)								
FQI:				2.474358297	4.638493829	7.74938256	8.160929194	3.45574142
Presence of Wetland Species								
Wetness Value (CW) (average):				1.571428571	2.3	2.5	2.285714286	0.636363636
Upland (5)				2	12	12	5	3
Facultative Upland (2 to 4)				3	17	23	15	2
Facultative (1 to -1)				0	6	7	6	2
Facultative Wetland (-2 to -4)				1	9	10	8	5
Obligate Wetland (-5)				1	2	1	0	1

Appendix E

Species at Risk Habitat Assessment

SWH Ecoregion 7E Criterion Schedule

Table F1 Seasonal Concentration Areas of Animals.

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Candidate Habitat Present Within the Study Area	Confirmed Habitat Found Within the Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria		
Waterfowl Stopover and Staging Areas (Terrestrial) **Rationale;** Habitat important to migrating waterfowl.	American Black Duck Northern Pintail Gadwall Blue-winged Teal Green-winged Teal American Wigeon Northern Shoveler Tundra Swan	CUM1 CUT1 - Plus evidence of annual spring flooding from melt water or run-off within these Ecosites. - Fields with waste grain in the Long Point, Rondeau, Lk. St. Clair, Grand Bend and Pt. Pelee areas may be important to Tundra Swans.	Fields with sheet water during Spring (mid- March to May). • Fields flooding during spring melt and run-off provide important invertebrate foraging habitat for migrating waterfowl. • Agricultural fields with waste grains are commonly used by waterfowl, these are not considered SWH unless they have spring sheet water available. Information Sources • Anecdotal information from the landowner, adjacent landowners or local naturalist clubs may be good information in determining occurrence. • Reports and other information available from Conservation Authorities (CAs) • Sites documented through waterfowl planning processes (eg. EHJV implementation plan) • Field Naturalist Clubs • Ducks Unlimited Canada • Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area	Studies carried out and verified presence of an annual concentration of any listed species, evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” • Any mixed species aggregations of 100 • or more individuals required. • The area of the flooded field ecosite habitat plus a 100-300m radius buffer dependant on local site conditions and adjacent land use is the significant wildlife habitat. • Annual use of habitat is documented from information sources or field studies (annual use can be based on studies or determined by past surveys with species numbers and dates). • SWHMIST Index #7 provides development effects and mitigation measures.	**No** There are no flooded fields present within the Subject Land.	**Not applicable**
Waterfowl Stopover and Staging Areas (Aquatic) **Rationale;** Important for local and migrant waterfowl populations during the spring or fall migration or both periods combined. Sites identified are usually only one of a few in the eco-district.	Northern Shoveler American Wigeon Gadwall Green-winged Teal Blue-winged Teal Hooded Merganser Common Merganser Lesser Scaup Greater Scaup Long-tailed Duck Surf Scoter White-winged Scoter Black Scoter Ring-necked duck Common Goldeneye Bufflehead Redhead Ruddy Duck Red-breasted Merganser Brant Canvasback Ruddy Duck	MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7	Information Sources • Environment Canada • Naturalist clubs often are aware of staging/stopover areas. • OMNRF Wetland Evaluations indicate presence of locally and regionally significant waterfowl staging. • Sites documented through waterfowl planning processes (eg. EHJV implementation plan) • Ducks Unlimited projects • Element occurrence specification by Nature Serve: http://www.natureserve.org • Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area	Studies carried out and verified presence of: • Aggregations of 100 or more of listed species for 7 days, results in > 700 waterfowl use days. • Areas with annual staging of ruddy ducks, canvasbacks, and redheads are SWH • The combined area of the ELC ecosites and a 100m radius area is the SWH • Wetland area and shorelines associated with sites identified within the SWHTG Appendix K are significant wildlife habitat. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” • Annual Use of Habitat is Documented from Information Sources or Field Studies (Annual can be based on completed studies or determined from past surveys with species numbers and dates recorded). • SWH MIST Index #7 provides development effects and mitigation measures.	**No** There are no large areas of standing water on the Subject Land.	**Not applicable**

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Candidate Habitat Present Within the Study Area	Confirmed Habitat Found Within the Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria		
Shorebird Migratory Stopover Area **Rationale;** High quality shorebird stopover habitat is extremely rare and typically has a long history of use.	Greater Yellowlegs Lesser Yellowlegs Marbled Godwit Hudsonian Godwit Black-bellied Plover American Golden-Plover Semipalmated Plover Solitary Sandpiper Spotted Sandpiper Semipalmated Sandpiper Pectoral Sandpiper White-rumped Sandpiper Baird's Sandpiper Least Sandpiper Purple Sandpiper Stilt Sandpiper Short-billed Dowitcher Red-necked Phalarope Whimbrel Ruddy Turnstone Sanderling Dunlin	BBO1 BBO2 BBS1 BBS2 BBT1 BBT2 SDO1 SDS2 SDT1 MAM1 MAM2 MAM3 MAM4 MAM5	Shorelines of lakes, rivers and wetlands, including beach areas, bars and seasonally flooded, muddy and un-vegetated shoreline habitats. Great Lakes coastal shorelines, including groynes and other forms of armour rock lakeshores, are extremely important for migratory shorebirds in May to mid-June and early July to October. Sewage treatment ponds and storm water ponds do not qualify as a SWH, Information Sources • Western hemisphere shorebird reserve network. • Canadian Wildlife Service (CWS) Ontario Shorebird Survey. • Bird Studies Canada • Ontario Nature • Local birders and naturalist clubs • NHIC Shorebird Migratory Concentration Area	Studies confirming: • Presence of 3 or more of listed species and > 1000 shorebird use days during spring or fall migration period. (shorebird use days are the accumulated number of shorebirds counted per day over the course of the fall or spring migration period) • Whimbrel stop briefly (<24hrs) during spring migration, any site with >100 Whimbrel used for 3 years or more is significant. • The area of significant shorebird habitat includes the mapped ELC shoreline ecosites plus a 100m radius area • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" • SWH MIST Index #8 provides development effects and mitigation measures.	**No** Shoreline habitat is not large enough to support large populations of shorebirds.	**Not applicable**
Raptor Wintering Area **Rationale;** Sites used by multiple species, a high number of individuals and used annually are most significant	Rough-legged Hawk Red-tailed Hawk Northern Harrier American Kestrel Snowy Owl **Special Concern:** Short-eared Owl Bald Eagle	**Hawks/Owls** Combination of ELC Community Series; need to have present one Community Series from each land class; Forest: FOD, FOM, FOC. Upland: CUM; CUT; CUS; CUW. **Bald Eagle:** Forest community Series: FOD, FOM, FOC, SWD, SWM or SWC on shoreline areas adjacent to large rivers or lakes with open water (hunting areas).	The habitat provides a combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors. Raptor wintering(hawk/owl) sites need to be > 20 ha with a combination of forest and upland.. Least disturbed sites, idle/fallow or lightly grazed field/meadow (>15ha) with adjacent woodlands Field area of the habitat is to be wind swept with limited snow depth or accumulation. Eagle sites have open water and large trees and snags available for roosting. Information Sources: • OMNR Ecologist or Biologist • Naturalist club • Natural Heritage Information Center (NHIC) Raptor Winter Concentration Area • Data from Bird Studies Canada, most notably for Short-eared Owls. • Results of Christmas Bird Counts. • Reports and other information available from Conservation Authorities.	Studies confirm the use of these habitats by: • One or more Short-eared Owls or; One of more Bald Eagles or; At least 10 individuals and two of listed hawk/owl species. • To be significant a site must be used regularly (3 in 5 years) for a minimum of 20 days by the above number of birds. • The habitat area for an Eagle winter site is the shoreline forest ecosites directly adjacent to the prime hunting area. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" • SWH MIST Index #10 and #11 provides development effects and mitigation measures.	**No** The forested areas within the Study area are not greater than 20ha in size therefore would not be considered Raptor wintering habitat.	**Not applicable**

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Candidate Habitat Present Within the Study Area	Confirmed Habitat Found Within the Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria		
Bat Hibernacula **Rationale;** Bat hibernacula are rare habitats in all Ontario landscapes.	Big Brown Bat Tri-colored Bat	Bat Hibernacula may be found in these ecosites: CCR1 CCR2 CCA1 CCA2 (Note: buildings are not considered to be SWH)	Hibernacula may be found in caves, mine shafts, underground foundations and Karsts. Active mine sites should not be considered as SWH. The locations of bat hibernacula are relatively poorly known. Information Sources • OMNR for possible locations and contact for local experts • Natural Heritage Information Center (NHIC) Bat Hibernaculum • Ministry of Northern Development and Mines for location of mine shafts. • Clubs that explore caves (eg. Sierra Club) • University Biology Departments with bat experts.	• All sites with confirmed hibernating bats are SWH. • The area includes 200m radius around the entrance of the hibernaculum for most development types and 1000m for wind farms. • Studies are to be conducted during the peak swarming period (Aug. – Sept.). Surveys should be conducted following methods outlined in the "Guideline for Wind Power Projects Potential Impacts to Bats and Bat Habitats". • SWH MIST Index #1 provides development effects and mitigation measures.	**No** There are no caves, mine shafts or underground karsts within the Study Area.	**Not applicable**
Bat Maternity Colonies **Rationale;** Known locations of forested bat maternity colonies is extremely rare in all Ontario landscapes.	Big Brown Bat Silver-haired Bat	Maternity colonies considered SWH are found in forested Ecosites. All ELC Ecosites in ELC Community Series: FOD FOM SWD SWM	Maternity colonies can be found in tree cavities, vegetation and often in buildlings (buildings are not considered to be SWH). Maternity roosts are not found in caves and mines in Ontario. • Maternity colonies located in Mature deciduous or mixed forest stands with >10/ha large diameter (>25cm dbh) wildlife trees • Female Bats prefer wildlife tree (snags) in early stages of decay, class 1-3 or class 1 or 2. • Silver-haired Bats prefer older mixed or deciduous forest and form maternity colonies in tree cavities and small hollows. Older forest areas with at least 21 snags/ha are preferred Information Sources • OMNR for possible locations and contact for local experts • University Biology Departments with bat experts.	• Maternity Colonies with confirmed use by; – >10 Big Brown Bats – >5 Adult Female Silver-haired Bats • The area of the habitat includes the entire woodland or the forest stand ELC Ecosite containing the maternity colonies. • Evaluation methods for maternity colonies should be conducted following methods outlined in the "Bats and Bat Habitats: Guidelines for Wind Power Projects"". • SWH MIST Index #12 provides development effects and mitigation measures.	**No** Deciduous forests of suitable size are not present within the Study Area.	**Not Applicable**
Turtle Wintering Areas **Rationale;** Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant.	Midland Painted Turtle **Special Concern:** Northern Map Turtle Snapping Turtle	Snapping and Midland Painted turtles; ELC Community Classes; SW, MA, OA and SA. ELC Community Series; FEO and BOO Northern Map Turtle - Open Water areas such as deeper rivers or streams and lakes with current can also be used as over-wintering habitat.	For most turtles, wintering areas are in the same general area as their core habitat. Water has to be deep enough not to freeze and have soft mud substrates. • Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate Dissolved Oxygen. • Man-made ponds such as sewage lagoons or storm water ponds should not be considered SWH. Information Sources • EIS studies carried out by Conservation Authorities. • Field Naturalist Clubs • OMNRF Ecologist or Biologist • Natural Heritage Information Center (NHIC)	• Presence of 5 over-wintering Midland Painted Turtles is significant. • One or more Northern Map Turtle or Snapping Turtle over-wintering within a wetland is significant. • The mapped ELC ecosite area with the over wintering turtles is the SWH. If the hibernation site is within a stream or river, the deep-water pool where the turtles are over wintering is the SWH. • Over wintering areas may be identified by searching for congregations (Basking Areas) of turtles on warm, sunny days during the fall (Sept. – Oct.) or spring (Mar. – May). Congregation of turtles is more common where wintering areas are limited and therefore significant. • SWH MIST Index #28 provides development effects and mitigation measures for turtle wintering habitat.	**Yes** The Thames River provides habitat candidate wintering habitat.	**Candidate Habitat** Surveys to confirm significance were not completed; however, the Thames River is deep enough in some sections that it may provide suitable wintering habitat for turtles.

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Candidate Habitat Present Within the Study Area	Confirmed Habitat Found Within the Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria		
Reptile Hibernaculum **Rationale;** Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant.	**Snakes:** Eastern Gartersnake Northern Watersnake Northern Red-bellied Snake Northern Brownsnake Smooth Green Snake Northern Ring-necked Snake **Special Concern:** Milksnake Eastern Ribbonsnake	For all snakes, habitat may be found in any ecosite other than very wet ones. Talus, Rock Barren, Crevice and Cave, and Alvar sites may be directly related to these habitats. Observations of congregations of snakes on sunny warm days in the spring or fall is a good indicator.	For snakes, hibernation takes place in sites located below frost lines in burrows, rock crevices and other natural or naturalized locations. The existence of features that go below frost line; such as rock piles or slopes, old stone fences, and abandoned crumbling foundations assist in identifying candidate SWH. Areas of broken and fissured rock are particularly valuable since they provide access to subterranean sites below the frost line. Wetlands can also be important over-wintering habitat in conifer or shrub swamps and swales, poor fens, or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover. Information Sources • In spring, local residents or landowners may have observed the emergence of snakes on their property (e.g.old dug wells). • Reports and other information available from Conservation Authorities. • Field Naturalist Clubs • University herpetologists. • Natural Heritage Information Center (NHIC)	Studies confirming: • Presence of snake hibernacula used by a minimum of five individuals of a snake sp. or; individuals of two or more snake spp. • Congregations of a minimum of five individuals of a snake sp. or; individuals of two or more snake spp. near potential hibernacula (eg. foundation or rocky slope) on sunny warm days in Spring (Apr/May) and Fall (Sept/Oct). • Note: If there are Special Concern Species present, then site is SWH • Note: Sites for hibernation possess specific habitat parameters (e.g., temperature, humidity, etc.) and consequently are used annually, often by many of the same individuals of a local population [i.e., strong hibernation site fidelity.]. Other critical life processes (e.g., mating) often take place in close proximity to hibernacula. The feature in which the hibernacula is located plus a 30 m buffer is the SWH • SWH MIST Index #13 provides development effects and mitigation measures for snake hibernacula.	**No** There are no naturalized habitats with large rock piles or abandoned foundations within the Study Area.	**Not Applicable**
Colonially - Nesting Bird Breeding Habitat (Bank and Cliff) **Rationale;** Historical use and number of nests in a colony make this habitat significant. An identified colony can be very important to local populations. All swallow population are declining in Ontario.	Cliff Swallow Northern Rough-winged Swallow (this species is not colonial but can be found in Cliff Swallow colonies).	Eroding banks, sandy hills, borrow pits, steep slopes, and sand piles, cliff faces, bridge abutments, silos, barns (Cliff Swallows). Habitat found in the following ecosites: CUM1 CUT1 CUS1 BLO1 BLS1 BLT1 CLO1 CLS1 CLT1	• Any site or areas with exposed soil banks, undisturbed or naturally eroding that is not a licensed/permitted aggregate area. • Does not include man-made structures (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, soil or aggregate stockpiles. • Does not include a licensed/permitted Mineral Aggregate Operation. Information Sources • Reports and other information available from Conservation Authorities • Ontario Breeding Bird Atlas. • Bird Studies Canada; *NatureCounts* http://www.birdscanada.org/birdmon/ • Field Naturalist Clubs.	Studies confirming: • Presence of 1 or more nesting sites with 8 or more cliff swallow pairs and/or rough-winged swallow pairs during the breeding season. • A colony identified as SWH will include a 50m radius habitat area from the peripheral nests • Field surveys to observe and count swallow nests are to be completed during the breeding season (May-June). Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” • SWH MIST Index #4 provides development effects and mitigation measures	**No** There are no suitable areas with exposed soil banks or naturally eroding cliffs within the Study Area.	**Not applicable**
Colonially - Nesting Bird Breeding Habitat (Tree/Shrubs) **Rationale;** Large colonies are important to local bird population, typically sites are only known colony in area and are used annually.	Great Blue Heron Black-crowned Night-Heron Great Egret Green Heron	SWM2 SWM3 SWM5 SWM6 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7 FET1	• Nests in live or dead standing trees in wetlands, lakes, islands, and peninsulas. Shrubs and occasionally emergent vegetation may also be used. • Most nests in trees are 11 to 15 m from ground, near the top of the tree. Information Sources • Ontario Breeding Bird Atlas, colonial nest records. • Ontario Heronry Inventory 1991 available from Bird Studies Canada or NHIC (OMNRF). • Natural Heritage Information Center (NHIC) Mixed Wader Nesting Colony • Aerial photographs can help identify large heronries. • Reports and other information available from Conservation Authorities • MNRF District Offices. • Local naturalist clubs.	Studies confirming: • Presence of 2 or more active nests of Great Blue Heron or other listed species. • The habitat extends from the edge of the colony and a minimum 300 m radius or extend of the Forest Ecosite containing the colony or any island <15.0ha with a colony is the SWH • Confirmation of active heronries are to be achieved through site visits conducted during the nesting season (April to August) or by evidence such as the presence of fresh guano, dead young and/or eggshells • SWH MIST Index #5 provides development effects and mitigation measures.	**No** Suitable wetland communities are not anticipated within the Study Area.	**Not applicable**

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Candidate Habitat Present Within the Study Area	Confirmed Habitat Found Within the Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria		
Colonially - Nesting Bird Breeding Habitat (Ground) **Rationale;** Colonies are important to local bird population, typically sites are only known colony in area and are used annually.	Herring Gull Great Black-backed Gull Little Gull Ring-billed Gull Common Tern Caspian Tern Brewer's Blackbird	Any rocky island or peninsula (natural or artificial) within a lake or large river (two-lined on a 1;50,000 NTS map). Close proximity to watercourses in open fields or pastures with scattered trees or shrubs (Brewer's Blackbird) MAM1 – 6; MAS1 – 3; CUM CUT CUS	• Nesting colonies of gulls and terns are on islands or peninsulas associated with open water or in marshy areas. • Brewers Blackbird colonies are found loosely on the ground in or in low bushes in close proximity to streams and irrigation ditches within farmlands. Information Sources • Ontario Breeding Bird Atlas , rare/colonial species records. • Canadian Wildlife Service • Reports and other information available from Conservation Authorities • Natural Heritage Information Center (NHIC) Colonial Waterbird Nesting Area • MNRF District Offices. • Field Naturalist Clubs.	Studies confirming: • Presence of > 25 active nests for Herring Gulls or Ring-billed Gulls, >5 active nests for Common Tern or >2 active nests for Caspian Tern. • Presence of 5 or more pairs for Brewer's Blackbird • Any active nesting colony of one or more Little Gull, and Great Black-backed Gull is significant. • The edge of the colony and a minimum 150m radius area of habitat, or the extent of the ELC ecosites containing the colony or any island <3.0ha with a colony is the SWH • Studies would be done during May/June when actively nesting. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" • SWH MIST Index #6 provides development effects and mitigation measures.	**No** Suitable communities are not anticipated to be large enough to support sufficient populations of Colonially nesting ground species.	**Not applicable**
Migratory Butterfly Stopover Areas **Rationale:** Butterfly stopover areas are extremely rare habitats and are biologically important for butterfly species that migrate south for the winter.	Painted Lady Red Admiral Special Concern Monarch	Combination of ELC Community Series; need to have present one Community Series from each landclass: Field: CUM CUT CUS Forest: FOC FOD FOM CUP Anecdotally, a candidate sight for butterfly stopover will have a history of butterflies being observed.	A butterfly stopover area will be a minimum of 10 ha in size with a combination of field and forest habitat present, and will be located within 5 km of Lake Erie and Ontario [cxlix]. • The habitat is typically a combination of field and forest, and provides the butterflies with a location to rest prior to their long migration south [xxxii, xxxiii, xxxiv, xxxv, xxxvi]. • The habitat should not be disturbed, fields/meadows with an abundance of preferred nectar plants and woodland edge providing shelter are requirements for this habitat. • Stopover areas usually provide protection from the elements and are often spits of land or areas with the shortest distance to cross the Great Lakes. Information Sources • MNRF district Offices • Natural Heritage Information Center (NHIC) • Agriculture Canada in Ottawa may have list of butterfly experts. • Field Naturalist Clubs • Toronto Entomologists Association • Conservation Authorities	Studies confirm: • The presence of Monarch Use Days (MUD) during fall migration (Aug/Oct). MUD is based on the number of days a site is used by Monarchs, multiplied by the number of individuals using the site. Numbers of butterflies can range from 100-500/day[xxxvii], significant variation can occur between years and multiple years of sampling should occur [xl, xlii]. • Observational studies are to be completed and need to be done frequently during the migration period to estimate MUD • MUD of >5000 **or** >3000 with the presence of Painted Ladies or Red Admiral's is to be considered significant. SWH MIST [cxlix] Index #16 provides development effects and mitigation measures.	**No** Areas larger than 10 ha containing a combination of field and forest habitat are not present within the Study Area.	**Not applicable**
Landbird Migratory Stopover Areas **Rationale:** Sites with a high diversity of species as well as high numbers are most significant.	All migratory songbirds. Canadian Wildlife Service Ontario website: http://www.ec.gc.ca/nature/default.asp?lang=En&n=421B7A9D-1 All migrant raptors species: Ontario Ministry of Natural Resources: Fish and Wildlife Conservation Act, 1997. Schedule 7: Specially	All Ecosites associated with these ELC Community Series; FOC FOM FOD SWC SWM SWD	Woodlots need to be >5 ha in size and within 5 km of Lake Ontario and Erie. If woodlands are rare in an area of shoreline, woodland fragments 2-5ha can be considered for this habitat. • If multiple woodlands are located along the shoreline those Woodlands <2km from Lake Erie and Lake Ontario are more significant • Sites have a variety of habitats; forest, grassland and wetland complexes . • The largest sites are more significant • Woodlots and forest fragments are important habitats to migrating birds, these features located along the shore and located within 5km of Lake Erie and Lake Ontario are Candidate SWH [cxlviii].	Studies confirm: • Use of the woodlot by >200 birds/day and with >35 spp with at least 10 bird spp. recorded on at least 5 different survey dates. This abundance and diversity of migrant bird species is considered above average and significant. • Studies should be completed during spring (March to May) and fall (Aug to Oct) migration using standardized assessment techniques. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" • SWH MIST Index #9 provides development effects and mitigation measures.	**No** There are no woodlots larger than 5 ha in size that can support greater than 200 birds a day within the Study Area.	**Not applicable**

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Candidate Habitat Present Within the Study Area	Confirmed Habitat Found Within the Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria		
	Protected Birds (Raptors)		Information Sources • Bird Studies Canada • Ontario Nature • Local birders and naturalist club • Ontario Important Bird Areas (IBA) Program			
Deer Winter Congregation Areas **Rationale:** Deer movement during winter in the southern areas of Ecoregion 7E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands to reduce or avoid the impacts of winter conditions.	White-tailed Deer	All Forested Ecosites with these ELC Community Series; FOC FOM FOD SWC SWM SWD Conifer plantations much smaller than 50 ha may also be used.	• Woodlots >100 ha in size or if large woodlots are rare in a planning area woodlots>50ha. • Deer movement during winter in the southern areas Ecoregion 7E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands. • Large woodlots > 100ha and up to 1500 ha are known to be used annually by densities of deer that range from 0.1-1.5 deer/ha. • Woodlots with high densities of deer due to artificial feeding are not significant. Information Sources • MNRF District Offices. • LIO/NRVIS	Studies confirm: • Deer management is an MNRF responsibility, deer winter congregation areas considered significant will be mapped by MNRF. • Use of the woodlot by white-tailed deer will be determined by MNRF, all woodlots exceeding the area criteria are significant, unless determined not to be significant by MNRF • Studies should be completed during winter (Jan/Feb) when >20cm of snow is on the ground using aerial survey techniques , ground or road surveys, or a pellet count deer density survey. • SWH MIST Index #2 provides development effects and mitigation measures.	**No** There are no woodlots greater than 50 ha in size within the Study Area or the general vicinity. There were no mapped Deer Winter Congregation Areas as defined by MNRF within the Study Area.	**Not applicable**

Table F2 Rare Vegetation Communities.

Rare Vegetation Community	CANDIDATE SWH			CONFIRMED SWH	Candidate Habitat within the Study Area	Confirmed Habitat within the Study Area
	ELC Ecosite Code	Habitat Description	Detailed Information and Sources	Defining Criteria		
Cliffs and Talus Slopes **Rationale;** Cliffs and Talus Slopes are extremely rare habitats in Ontario.	Any ELC Ecosite within Community Series: TAO CLO TAS CLS TAT CLT	A Cliff is vertical to near vertical bedrock >3m in height. A Talus Slope is rock rubble at the base of a cliff made up of coarse rocky debris	Most cliff and talus slopes occur along the Niagara Escarpment. Information Sources • The Niagara Escarpment Commission has detailed information on location of these habitats. • OMNRF Districts • Natural Heritage Information Center (NHIC) has location information available their website • Field Naturalist Clubs • Conservation Authorities	• Confirm any ELC Vegetation Type for Cliffs or Talus Slopes • SWH MIST Index #21 provides development effects and mitigation measures.	**No** There are no cliffs within the Study Area.	**Not applicable**
Sand Barren **Rationale;** Sand barrens are rare in Ontario and support rare species. Most Sand Barrens have been lost due to cottage development and forestry	ELC Ecosites: SBO1 SBS1 SBT1 Vegetation cover varies from patchy and barren to continuous meadow (SBO1), thicket-like (SBS1), or more closed and treed (SBT1). Tree cover always ≤ 60%.	Sand Barrens typically are exposed sand, generally sparsely vegetated and caused by lack of moisture, periodic fires and erosion. Usually located within other types of natural habitat such as forest or savannah. Vegetation can vary from patchy and barren to tree covered but less than 60%.	A sand barren area >0.5ha in size. nformation Sources • OMNRF Districts. • Natural Heritage Information Center (NHIC) has location information available on their website • Field Naturalist Clubs • Conservation Authorities	• Confirm any ELC Vegetation Type for Sands Barrens lxxviii • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics). • SWHMIST Index #20 provides development effects and mitigation measures.	**No** There are no sand barren ecosites within the Study Area.	**Not applicable**
Alvar **Rationale;** Alvars are extremely rare habitats in Ecoregion 7E.	ALO1 ALS1 ALT1 FOC1 FOC2 CUM2 CUS2 CUT2-1 CUW2 **Five Alvar Indicator Species:** 1)Carex crawei 2)Panicum philadelphicum 3)Elocharis compressa 4)Scutellaria parvula 5)Trichostema brachiatum These indicator species are very specific to Alvars within Ecoregion 7E.	An alvar is typically a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil. The hydrology of alvars is complex, with alternating periods of inundation and drought. Vegetation cover varies from sparse lichen-moss associations to grasslands and shrublands and comprising a number of characteristic or indicator plant. Undisturbed alvars can be phyto- and zoogeographically diverse, supporting many uncommon or are relict plant and animals species. Vegetation cover varies from patchy to barren with a less than 60% tree cover.	An Alvar site > 0.5 ha in size. Alvar is particularly rare in Ecoregion 7E where the only known sites are found in the western islands of Lake Erie.cxcix Information Sources • Alvars of Ontario (2000), Federation of Ontario Naturalists. • Ontario Nature – Conserving Great Lakes Alvars. • Natural Heritage Information Center (NHIC) has location information available on their website • OMNRF Staff. • Field Naturalist Clubs. • Conservation Authorities.	Field studies identify four of the five **Alvar Indicator Species** at a Candidate Alvar site is Significant. • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics). • The alvar must be in excellent condition and fit in with surrounding landscape with few conflicting land uses. • SWH MIST Index #17 provides development effects and mitigation measures.	**No** There are no alvars within the Study Area.	**Not applicable**

Rare Vegetation Community	CANDIDATE SWH			CONFIRMED SWH	Candidate Habitat within the Study Area	Confirmed Habitat within the Study Area
	ELC Ecosite Code	Habitat Description	Detailed Information and Sources	Defining Criteria		
Old Growth Forest **Rationale;** Due to historic logging practices and land clearance for agriculture, old growth forest is rare in Ecoregion 7E.	Forest Community Series: FOD FOC FOM SWD SWC SWM	Old-growth forests are characterized by heavy mortality or turnover of over-storey trees resulting in mosaic of gaps that encourage development of multi-layered canopy and an abundance of snags and downed woody debris.	• Woodland area is >0.5 ha. Information Sources • OMNRF Forest Resource Inventory mapping • OMNRF Districts. • Field Naturalist Clubs • Conservation Authorities • Sustainable Forestry Licence (SFL) companies will possibly know locations through field operations. • Municipal forestry departments	Field Studies will determine: • If dominant trees species of the ecosite are >140 years old, then area containing these trees is Significant Wildlife Habitat. • The forested area containing the old growth characteristics will have experienced no recognizable forestry activities (cut steps will not be present) • The area of forest ecosites combined or an eco-element within an ecosite that contain the old growth characteristics is the SWH. • Determine ELC vegetation types for the forest area containing the old growth characteristics[lxxviii]. • SWH MIST Index #23 provides development effects and mitigation measures.	**No** There are no old growth forests within the Study Area.	**Not applicable**
Savannah **Rationale:** Savannahs are extremely rare habitats in Ontario.	TPS1 TPS2 TPW1 TPW2 CUS2	A Savannah is a tallgrass prairie habitat that has tree cover between 25 – 60%. In ecoregion 7E, known Tallgrass Prairie and savannah remnants are scattered between Lake Huron and Lake Erie, near Lake St. Clair, north of and along the Lake Erie shoreline, in Brantford and in the Toronto area (north of Lake Ontario).	No minimum size to site Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. Information Sources • Natural Heritage Information Center (NHIC) has location data available on their website. • OMNRF Districts. • Field Naturalists Clubs. • Conservation Authorities.	Field studies confirm one or more of the Savannah indicator species listed in Appendix N should be present. Note: Savannah plant spp. list from Ecoregion 7E should be used • Area of the ELC Ecosite is the SWH. • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics). • SWH MIST Index #18 provides development effects and mitigation measures.	**No** There are no savannah ecosites within the Study Area.	**Not applicable**
Tallgrass Prairie **Rationale:** Tallgrass Prairies are extremely rare habitats in Ontario.	TPO1 TPO2	A Tallgrass Prairie has ground cover dominated by prairie grasses. An open Tallgrass Prairie habitat has < 25% tree cover. In ecoregion 7E, known Tallgrass Prairie and savannah remnants are scattered between Lake Huron and Lake Erie, near Lake St. Clair, north of and along the Lake Erie shoreline, in Brantford and in the Toronto area (north of Lake Ontario).	No minimum size to site. Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. Information Sources • OMNRF Districts. • Natural Heritage Information Center (NHIC) has location data available on their website. • Field Naturalists Clubs. • Conservation Authorities	Field studies confirm one or more of the Prairie indicator species listed in Appendix N should be present. Note: Prairie plant spp. list from Ecoregion 7E should be used • Area of the ELC Ecosite is the SWH • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics). • SWH MIST Index #19 provides development effects and mitigation measures.	**No** There are no tallgrass prairie ecosites within the Study Area.	**Not applicable**

Rare Vegetation Community	CANDIDATE SWH			CONFIRMED SWH	Candidate Habitat within the Study Area	Confirmed Habitat within the Study Area
	ELC Ecosite Code	Habitat Description	Detailed Information and Sources	Defining Criteria		
Other Rare Vegetation Communities **Rationale:** Plant communities that often contain rare species which depend on the habitat for survival.	Provincially Rare S1, S2 and S3 vegetation communities are listed in Appendix M of the SWHTG. Any ELC Ecosite Code that has a possible ELC Vegetation Type that is Provincially Rare is Candidate SWH.	Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps.	ELC Ecosite codes that have the potential to be a rare ELC Vegetation Type as outlined in appendix M The OMNRF/NHIC will have up to date listing for rare vegetation communities. Information Sources • OMNRF Districts. • Natural Heritage Information Center (NHIC) has location data available on their website. • Field Naturalists Clubs. • Conservation Authorities	Field studies should confirm if an ELC Vegetation Type is a rare vegetation community based on listing within Appendix M of SWHTG. • Area of the ELC Vegetation Type polygon is the SWH. • SWH MIST Index #37 provides development effects and mitigation measures.	**No** There are no rare communities found within the Study Area.	**Not applicable**

Table F3 Specialized Habitats of Wildlife considered SWH.

Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Candidate Habitat within the Study Area	Confirmed Habitat within the Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria		
Waterfowl Nesting Area **Rationale;** Important to local waterfowl populations, sites with greatest number of species and highest number of individuals are significant.	American Black Duck Northern Pintail Northern Shoveler Gadwall Blue-winged Teal Green-winged Teal Wood Duck Hooded Merganser Mallard	All upland habitats located adjacent to these wetland ELC Ecosites are Candidate SWH: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SWT1 SWT2 SWD1 SWD2 SWD3 SWD4 **Note: includes adjacency to Provincially Significant Wetlands**	A waterfowl nesting area extends 120 m from a wetland (> 0.5 ha) or a wetland (>0.5 ha) with small wetlands (<0.5ha) within 120m or a cluster of 3 or more small (<0.5 ha) wetlands within 120 m of each individual wetland where waterfowl nesting is known to occur. • Upland areas should be at least 120m wide so that predators such as racoons, skunks, and foxes have difficulty finding nests. • Wood Ducks and Hooded Mergansers utilize large diameter trees (>40cm dbh) in woodlands for cavity nest sites. Information Sources • Ducks Unlimited staff may know the locations of particularly productive nesting sites. • OMNRF Wetland Evaluations for indication of significant waterfowl nesting habitat. • Reports and other information available from Conservation Authorities	Studies confirmed: • Presence of 3 or more nesting pairs for listed species excluding Mallards , or; • Presence of 10 or more nesting pairs for listed species including Mallards • Any active nesting site of an American Black Duck is considered significant. • Nesting studies should be completed during the spring breeding season (April - June). Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” • A field study confirming waterfowl nesting habitat will determine the boundary of the waterfowl nesting habitat for the SWH, this may be greater or less than 120 m from the wetland and will provide enough habitat for waterfowl to successfully nest. • SWH MIST Index #25 provides development effects and mitigation measures.	**No** Suitable wetland communities are not anticipated within the Study Area.	**Not Applicable**
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat **Rationale;** Nest sites are fairly uncommon in Ecoregion 7E and are used annually by these species. Many suitable nesting locations may be lost due to increasing shoreline development pressures and scarcity of habitat.	Osprey **Special Concern** Bald Eagle	ELC Forest Community Series: FOD, FOM, FOC, SWD, SWM and SWC directly adjacent to riparian areas – rivers, lakes, ponds and wetlands	Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water. • Osprey nests are usually at the top a tree whereas Bald Eagle nests are typically in super canopy trees in a notch within the tree’s canopy. • Nests located on man-made objects are not to be included as SWH (e.g. telephone poles and constructed nesting platforms). Information Sources • Natural Heritage Information Center (NHIC) compiles all known nesting sites for Bald Eagles in Ontario. • MNRF values information (LIO/NRVIS) will list known nesting locations, Note: data from NRVIS is provided as a point and does not represent all the habitat. • Nature Counts, Ontario Nest Records Scheme data. • OMNRF Districts. • Check the Ontario Breeding Bird Atlas or Rare Breeding Birds in Ontario for species documented • Reports and other information available from Conservation Authorities • Field naturalist Clubs	Studies confirm the use of these nests by: • One or more active Osprey or Bald Eagle nests in an area. • Some species have more than one nest in a given area and priority is given to the primary nest with alternate nests included within the area of the SWH. • For an Osprey, the active nest and a 300 m radius around the nest or the contiguous woodland stand is the SWH , maintaining undisturbed shorelines with large trees within this area is important. • For a Bald Eagle the active nest and a 400-800 m radius around the nest is the SWH. Area of the habitat from 400-800m is dependant on site lines from the nest to the development and inclusion of perching and foraging habitat • To be significant a site must be used annually. When found inactive, the site must be known to be inactive for ≥ 3 years or suspected of not being used for >5 years before being considered not significant. • Observational studies to determine nest site use, perching sites and foraging	**Candidate** Treed communities are present adjacent to the Thames River and may provide nesting, foraging and perching habitat for Bald Eagle or Osprey.	Not Present There were no bald eagle or osprey nests observed within the treed communities adjacent to the Thames River. Forested communities adjacent to the Thames are small and highly fragmented and unlikely to support bald eagle or osprey.

Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Candidate Habitat within the Study Area	Confirmed Habitat within the Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria		
				areas need to be done from mid March to mid August. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" SWH MIST Index #26 provides development effects and mitigation measures		
Woodland Raptor Nesting Habitat **<u>Rationale:</u>** Nests sites for these species are rarely identified; these area sensitive habitats are often used annually by these species.	Northern Goshawk Cooper's Hawk Sharp-shinned Hawk Red-shouldered Hawk Barred Owl Broad-winged Hawk	May be found in all forested ELC Ecosites. May also be found in SWC, SWM, SWD and CUP3	All natural or conifer plantation woodland/forest stands combined >30ha or with >4 ha of interior habitat. Interior habitat determined with a 200m buffer • Stick nests found in a variety of intermediate-aged to mature conifer, deciduous or mixed forests within tops or crotches of trees. Species such as Coopers hawk nest along forest edges sometimes on peninsulas or small off-shore islands. • In disturbed sites, nests may be used again, or a new nest will be in close proximity to old nest. <u>Information Sources</u> • OMNRF Districts. • Check the Ontario Breeding Bird Atlas or Rare Breeding Birds in Ontario for species documented. • Check data from Bird Studies Canada. • Reports and other information available from Conservation Authorities •	Studies confirm: • Presence of 1 or more active nests from species list is considered significant. • Red-shouldered Hawk and Northern Goshawk – A 400m radius around the nest or 28 ha habitat area would be applied where optimal habitat is irregularly shaped around the nest). • Barred Owl – A 200m radius around the nest is the SWH. • Broad-winged Hawk and Coopers Hawk,– A 100m radius around the nest is the SWH. • Sharp-Shinned Hawk – A 50m radius around the nest is the SWH. • Conduct field investigations from mid-March to end of May. The use of call broadcasts can help in locating territorial (courting/nesting) raptors and facilitate the discovery of nests by narrowing down the search area. • SWH MIST Index #27 provides development effects and mitigation measures.	**No** There are no large forest/woodland communities larger than 30 ha present within the Study Area	**Not Applicable**
Turtle Nesting Areas **<u>Rationale;</u>** These habitats are rare and when identified will often be the only breeding site for local populations of turtles.	Midland Painted Turtle <u>Special Concern Species</u> Northern Map Turtle Snapping Turtle	Exposed mineral soil (sand or gravel) areas adjacent (<100m) or within the following ELC Ecosites: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 BOO1 FEO1	• Best nesting habitat for turtles are close to water and away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals. • For an area to function as a turtle-nesting area, it must provide sand and gravel that turtles are able to dig in and are located in open, sunny areas. Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH. • Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used. <u>Information Sources</u> • Use Ontario Soil Survey reports and maps to help find suitable substrate for nesting turtles (well-drained sands and fine gravels). • Check the Ontario Herpetofaunal Atlas records (or other similar atlases) for uncommon turtles; location information may help to find potential nesting habitat for them. • Natural Heritage Information Center (NHIC) • Field Naturalist Clubs	Studies confirm: • Presence of 5 or more nesting Midland Painted Turtles • One or more Northern Map Turtle or Snapping Turtle nesting is a SWH. • The area or collection of sites within an area of exposed mineral soils where the turtles nest, plus a radius of 30-100m around the nesting area dependent on slope, riparian vegetation and adjacent land use is the SWH. • Travel routes from wetland to nesting area are to be considered within the SWH as a part of the 30-100m area of habitat. • Field investigations should be conducted in prime nesting season typically late spring to early summer. Observational studies observing the turtles nesting is a recommended method. • SWH MIST Index #28 provides development effects and mitigation measures for turtle nesting habitat.	**Candidate** There are Mineral Open Beach/Bar (BBO1BB) and willow gravel shrub beach bar (BBS1-2) communities present within the Study Area.	Candidate Habitat Sandy, sun exposure areas are present within the Study Area and may provide nesting opportunities for turtles within the Study Area.

Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Candidate Habitat within the Study Area	Confirmed Habitat within the Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria		
Seeps and Springs **Rationale;** Seeps/Springs are typical of headwater areas and are often at the source of coldwater streams.	Wild Turkey Ruffed Grouse Spruce Grouse White-tailed Deer Salamander spp.	Seeps/Springs are areas where ground water comes to the surface. Often they are found within headwater areas within forested habitats. Any forested Ecosite within the headwater areas of a stream could have seeps/springs.	Any forested area (with <25% meadow/field/pasture) within the headwaters of a stream or river system. • Seeps and springs are important feeding and drinking areas especially in the winter will typically support a variety of plant and animal species. Information Sources • Topographical Map. • Thermography. • Hydrological surveys conducted by Conservation Authorities and MOE. • Field Naturalists Clubs and landowners. • Municipalities and Conservation Authorities may have drainage maps and headwater areas mapped.	Field Studies confirm: • Presence of a site with 2 or more seeps/springs should be considered SWH. • The area of a ELC forest ecosite or ecoelement within ecosite containing the seeps/springs is the SWH. The protection of the recharge area considering the slope, vegetation, height of trees and groundwater condition need to be considered in delineation the habitat. • SWH MIST Index #30 provides development effects and mitigation measures	**No** There are no forested communities with seeps or springs within the Study Area.	**Not Applicable**
Amphibian Breeding Habitat (Woodland). **Rationale:** These habitats are extremely important to amphibian biodiversity within a landscape and often represent the only breeding habitat for local amphibian populations	Eastern Newt Blue-spotted Salamander Spotted Salamander Gray Treefrog Spring Peeper Western Chorus Frog Wood Frog	All Ecosites associated with these ELC Community Series; FOC FOM FOD SWC SWM SWD Breeding pools within the woodland or the shortest distance from forest habitat are more significant because they are more likely to be used due to reduced risk to migrating amphibians	• Presence of a wetland, pond or woodland pool(including vernal pools) >500m within or adjacent (within 120m) to a woodland (no minimum size).[clxxxii, lxiii, lxv, lxvi, lxvii, lxviii, lxix, lxx.] Some small wetlands may not be mapped and may be important breeding pools for amphibians. • Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat [cxlviii] Information Sources • Ontario Herpetofauna Summary Atlas (or other similar atlases) for records • Local landowners may also provide assistance as they may hear spring-time choruses of amphibians on their property. • OMNRF Districts and wetland evaluations • Field Naturalist Clubs • Canadian Wildlife Service Amphibian Road Call Survey • Ontario Vernal Pool Association: http://www.ontariovernalpools.org	Studies confirm; • Presence of breeding population of 1 or more of the listed salamander species or 2 or more of the listed frog species with at least 20 individuals (adults, juveniles, eggs/larval masses) or 2 or more of the listed frog species with Call Level Codes of 3. • A combination of observation study and call count survey will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the woodland/wetlands. • The habitat is the wetland area plus a 230m radius of area. If a wetland area is adjacent to a woodland, a travel corridor connecting the wetland to the woodland is to be included in the habitat. • SWH MIST [cxlix] Index #14 provides development effects and mitigation measures.	**No** There are no woodlands with permanent ponds or wetlands present within the Study Area.	**Not Applicable**
Amphibian Breeding Habitat (Wetlands) **Rationale;** Wetlands supporting breeding for these amphibian species are extremely important and fairly rare within Central Ontario landscapes.	Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Treefrog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog	ELC Community Classes SW, MA, FE, BO, OA and SA. Typically these wetland ecosites will be isolated (>120m) from woodland ecosites, however larger wetlands containing predominantly aquatic species (e.g. Bull Frog) may be adjacent to woodlands.	• Wetlands>500m2 (about 25m diameter)) ,supporting high species diversity are significant; some small or ephemeral habitats may not be identified on MNRF mapping and could be important amphibian breeding habitats. • Presence of shrubs and logs increase significance of pond for some amphibian species because of available structure for calling, foraging, escape and concealment from predators. • Bullfrogs require permanent water bodies with abundant emergent vegetation. Information Sources • Ontario Herpetofaunal Summary Atlas (or other similar atlases) •Canadian Wildlife Service Amphibian Road Surveys	Studies confirm: •Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog/toad species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog/toad species with Call Level Codes of 3. or; Wetland with confirmed breeding Bullfrogs are significant. The ELC ecosite wetland area and the shoreline are the SWH. • A combination of observational study and call count surveys [cviii] will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the	**No** There are no wetlands greater than 500m^2 present within the Study Area.	**Not Applicable**

Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Candidate Habitat within the Study Area	Confirmed Habitat within the Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria		
	Bullfrog		and Backyard Amphibian Call Count. •OMNRF Districts and wetland evaluations. •Reports and other information available from Conservation Authorities.	wetlands. • If a SWH is determined for Amphibian Breeding Habitat (Wetlands) then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. • SWH MIST cxlix Index #15 provides development effects and mitigation measures.		

Table F4. Habitats of Species of Conservation Concern considered SWH.

Wildlife	Species	CANDIDATE SWH		CONFIRMED SWH	Candidate Habitat within the Study Area	Confirmed Habitat within the Study Area
		ELC Ecosite	Habitat Criteria and Information Sources	Defining Criteria		
Woodland Area-Sensitive Bird Breeding Habitat **Rationale:** Large, natural blocks of mature woodland habitat within the settled areas of Southern Ontario are important habitats for area sensitive interior forest song birds.	Yellow-bellied Sapsucker Red-breasted Nuthatch Veery Blue-headed Vireo Northern Parula Black-throated Green Warbler Blackburnian Warbler Black-throated Blue Warbler Ovenbird Scarlet Tanager Winter Wren Pileated Woodpecker Special Concern: Cerulean Warbler Canada Warbler	All Ecosites associated with these ELC Community Series; FOC FOM FOD SWC SWM SWD	• Habitats where interior forest breeding birds are breeding, typically large mature (>60 yrs old) forest stands or woodlots >30 ha. , • Interior forest habitat is at least 200 m from forest edge habitat. Information Sources • Local birder clubs. • Canadian Wildlife Service (CWS) for the location of forest bird monitoring. • Bird Studies Canada conducted a 3-year study of 287 woodlands to determine the effects of forest fragmentation on forest birds and to determine what forests were of greatest value to interior species • Reports and other information available from Conservation Authorities	Studies confirm: • Presence of nesting or breeding pairs of 3 or more of the listed wildlife species. • Note: any site with breeding Cerulean Warblers or Canada Warbler is to be considered SWH. • Conduct field investigations in spring and early summer when birds are singing and defending their territories. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” • SWH MIST cxlix Index #34 provides development effects and mitigation measures.	**No** There are no forests greater than 60 years that are greater than 30ha in size present within the Study Area.	**Not Applicable**
Marsh Breeding Bird Habitat **Rationale:** Wetlands for these bird species are typically productive and fairly rare in Southern Ontario landscapes.	American Bittern Virginia Rail Sora Common Moorhen American Coot Pied-billed Grebe Marsh Wren Sedge Wren Common Loon Green Heron Trumpeter Swan **Special Concern:** Black Tern Yellow Rail	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SAS1 SAM1 SAF1 FEO1 BOO1 For Green Heron: All SW, MA and CUM1 sites.	• Nesting occurs in wetlands. • All wetland habitat is to be considered as long as there is shallow water with emergent aquatic vegetation present cxxiv. • For Green Heron, habitat is at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees. Less frequently, it may be found in upland shrubs or forest a considerable distance from water. Information Sources • OMNRF District and wetland evaluations. • Field Naturalist clubs • Natural Heritage Information Centre (NHIC) Records. • Reports and other information available from Conservation Authorities. • Ontario Breeding Bird Atlas.	Studies confirm: • Presence of 5 or more nesting pairs of Sedge Wren or Marsh Wren **or** breeding by any combination of 4 or more of the listed species. • Note: any wetland with breeding of 1 or more Black Terns, Trumpeter Swan, Green Heron or Yellow Rail is SWH. • Area of the ELC ecosite is the SWH. • Breeding surveys should be done in May/June when these species are actively nesting in wetland habitats. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” • SWH MIST Index #35 provides development effects and mitigation measures	**No** Suitable wetland habitats are not present within the Study Area.	**Not Applicable**
Open Country Bird Breeding Habitat **Rationale:** This wildlife habitat is declining throughout Ontario and North America. Species such as the Upland Sandpiper have declined significantly the past 40 years based on CWS (2004) trend records.	Upland Sandpiper Grasshopper Sparrow Vesper Sparrow Northern Harrier Savannah Sparrow **Special Concern** Short-eared Owl	CUM1 CUM2	Large grassland areas (includes natural and cultural fields and meadows) >30 ha. • Grasslands not Class 1 or 2 agricultural lands, and not being actively used for farming (i.e. no row cropping or intensive hay or livestock pasturing in the last 5 years). • Grassland sites considered significant should have a history of longevity, either abandoned fields, mature hayfields and pasturelands that are at least 5 years or older. • The Indicator bird species are area sensitive requiring larger grassland areas than the common grassland species. Information Sources Agricultural land classification maps, Ministry of Agriculture. Local bird clubs. Ontario Breeding Bird Atlas EIS Reports and other information available from Conservation Authorities.	Field Studies confirm: ·Presence of nesting or breeding of 2 or more of the listed species. · A field with 1 or more breeding Short-eared Owls is to be considered SWH. • The area of SWH is the contiguous ELC ecosite field areas. • Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”ccxi • SWH MIST cxlix Index #32 provides development effects and mitigation measures	**No** There are no large grasslands areas greater than 30ha in size within the Study Area.	**Not Applicable**

Wildlife	Species	CANDIDATE SWH		CONFIRMED SWH	Candidate Habitat within the Study Area	Confirmed Habitat within the Study Area
		ELC Ecosite	Habitat Criteria and Information Sources	Defining Criteria		
Shrub/Early Successional Bird Breeding Habitat **Rationale;** This wildlife habitat is declining throughout Ontario and North America. The Brown Thrasher has declined significantly over the past 40 years based on CWS (2004) trend records.	Indicator Spp: Brown Thrasher Clay-coloured Sparrow Common Spp. Field Sparrow Black-billed Cuckoo Eastern Towhee Willow Flycatcher **Special Concern:** Yellow-breasted Chat Golden-winged Warbler	CUT1 CUT2 CUS1 CUS2 CUW1 CUW2 Patches of shrub ecosites can be complexed into a larger habitat for some bird species	Large field areas succeeding to shrub and thicket habitats >10ha in size. • Shrub land or early successional fields, not class 1 or 2 agricultural lands, not being actively used for farming (i.e. no row-cropping, haying or live-stock pasturing in the last 5 years). • Shrub thicket habitats (>10 ha) are most likely to support and sustain a diversity of these species clxxiii. • Shrub and thicket habitat sites considered significant should have a history of longevity, either abandoned fields or pasturelands. Information Sources • Agricultural land classification maps, Ministry of Agriculture. • Local bird clubs. • Ontario Breeding Bird Atlas • Reports and other information available from Conservation Authorities.	Field Studies confirm: • Presence of nesting or breeding of 1 of the indicator species and at least 2 of the common species. • A habitat with breeding Yellow-breasted Chat or Golden-winged Warbler is to be considered as Significant Wildlife Habitat. • The area of the SWH is the contiguous ELC ecosite field/thicket area. • Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” • SWH MIST • cxlix Index #33 provides development effects and mitigation measures.	**No** There are no large fields containing shrub and thicket habitats greater than 10ha in size within the Study Area.	**Not Applicable**
Terrestrial Crayfish; **Rationale:** Terrestrial Crayfish are only found within SW Ontario in Canada and their habitats are very rare.	Chimney or Digger Crayfish; (*Fallicambarus fodiens*) Devil Crawfish or Meadow Crayfish; (*Cambarus Diogenes*)	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 MAS1 MAS2 MAS3 SWD SWT SWM	Wet meadow and edges of shallow marshes (no minimum size) should be surveyed for terrestrial crayfish. • Constructs burrows in marshes, mudflats, meadows, the ground can’t be found far from water. • Both species are a semi-terrestrial burrower which spends most of its life within burrows consisting of a network of tunnels. Usually the soil is not too moist so that the tunnel is well formed. Information Sources • Information sources from “Conservation Status of Freshwater Crayfishes” by Dr. Premek Hamr for the WWF and CNF March 1998	Studies Confirm: • •Presence of 1 or more individuals of species listed or their chimneys (burrows) in suitable meadow marsh, swamp or moist terrestrial sites cci • Area of ELC ecosite or an Habitat ecoelement area of meadow marsh or swamp within the larger ecosite area is the SWH. • Surveys should be done April to August in temporary or permanent water. Note the presence of burrows or chimneys are often the only indicator of presence, observance or collection of individuals is very difficult cci • SWH MIST cxlix Index #36 provides development effects and mitigation measures.	**Yes** The Mineral Open Beach/Bar (BBO1BB) and cultural meadow (CUM1) communities found within the Study Area may provide potential habitat for terrestrial crayfish	**Not Applicable** No terrestrial crayfish or their burrows were observed during field investigations.
Special Concern and Rare Wildlife Species **Rationale:** These species are quite rare or have experienced significant population declines in Ontario.	All Special Concern and Provincially Rare (S1-S3, SH) plant and animal species. Lists of these species are tracked by the Natural Heritage Information Centre (NHIC).	All plant and animal element occurrences (EO) within a 1 or 10km grid. Older element occurrences were recorded prior to GPS being available, therefore location information may lack accuracy	• When an element occurrence is identified within a 1 or 10 km grid for a Special Concern or provincially Rare species; linking candidate habitat on the site needs to be completed to ELC Ecosites lxxviii • Information Sources • Natural Heritage Information Centre (NHIC) will have Special Concern and Provincially Rare (S1-S3, SH) species lists with element occurrences data. • NHIC Website “Get Information” : http://nhic.mnr.gov.on.ca • Ontario Breeding Bird Atlas• • Expert advice should be sought as many of the rare spp. have little information available about their requirements.	Studies Confirm: • Assessment/inventory of the site for the identified special concern or rare species needs to be completed during the time of year when the species is present or easily identifiable. • The area of the habitat to the finest ELC scale that protects the habitat form and function is the SWH, this must be delineated through detailed field studies. The habitat needs be easily mapped and cover an important life stage component for a species e.g. specific nesting habitat or foraging habitat. • SWH MIST Index #37 provides development effects and mitigation measures.	**Yes** The background review identified the following species as possible SOCC present within the Study Area: • Bald eagle • Common nighthawk • Eastern wood-pewee • Northern brook lamprey • Northern sunfish • Spotted sucker • Monarch • Yellow-banded bumble bee • Broad beech fern • Eastern ribbonsnake • Northern map turtle • Snapping turtle	**Candidate Habitat** The following species remains as candidate as species specific surveys were not completed: Eastern Wood Pewee Northern Brook Lamprey Northern Brook Lamprey Northern Sunfish Spotted Sucker Monarch Eastern Ribbonsnake Northern Map Turtle Snapping Turtle

Table F5 Animal Movement Corridors

Habitat	SPECIES	CANDIDATE SWH		CONFIRMED SWH	Candidate Habitat Present Within the Study Area	Confirmed Habitat Present within the Study Area
		ELC Eco-sites	Habitat Criteria and Information Sources	Defining Criteria		
Amphibian Movement Corridors **<u>Rationale;</u>** Movement corridors for amphibians moving from their terrestrial habitat to breeding habitat can be extremely important for local populations.	Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Treefrog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	Corridors may be found in all ecosites associated with water. • Corridors will be determined based on identifying the significant breeding habitat for these species in Table 1.1	Movement corridors between breeding habitat and summer habitat. Movement corridors must be determined when Amphibian breeding habitat is confirmed as SWH from Table 1.2.2 (Amphibian Breeding Habitat – Wetland) of this Schedule. Information Sources •MNRF District Office. •Natural Heritage Information Centre (NHIC). •Reports and other information available from Conservation Authorities. •Field Naturalist Clubs.	• Field Studies must be conducted at the time of year when species are expected to be migrating or entering breeding sites. * Corridors should consist of native vegetation, with several layers of vegetation. Corridors unbroken by roads, waterways or bodies, and undeveloped areas are most significant cxlix • Corridors should have at least 15m of vegetation on both sides of waterway cxlix or be up to 200m wide cxlix of woodland habitat and with gaps <20m cxlix. • Shorter corridors are more significant than longer corridors, however amphibians must be able to get to and from their summer and breeding habitat cxlix. • SWH MIST cxlix Index #40 provides development effects and mitigation measures	**No** There are no movement corridors present within the Study Area.	**Not applicable**

Table F6 Significant Wildlife Habitat Exceptions for Ecodistricts within Eco-Region 7E

Habitat	SPECIES	CANDIDATE SWH		CONFIRMED SWH	Candidate Habitat Present Within the Study Area	Confirmed Habitat Present within the Study Area
		ELC Eco-sites	Habitat Criteria and Information Sources	Defining Criteria		
7E-2	**Bat Migratory Stopover Area** Rationale: Stopover areas for long distance migrant bats are important during fall migration. Hoary Bat Eastern Red Bat Silver-haired Bat	No specific ELC types.	• Long distance migratory bats typically migrate during late summer and early fall from summer breeding habitats throughout Ontario to southern wintering areas. Their annual fall migration may concentrate these species of bats at stopover areas. • This is the only known bat migratory stopover habitats based on current information. <u>Information Sources</u> • OMNRF for possible locations and contact for local experts • University of Waterloo, Biology Department	• Long Point (42°35'N, 80°30'E, to 42°33'N, 80°03'E) has been identified as a significant stop-over habitat for fall migrating Silver-haired Bats, due to significant increases in abundance, activity and feeding that was documented during fall migration ccxv. • The confirmation criteria and habitat areas for this SWH are still being determined. • SWH MIST cxlix Index #38 provides development effects and mitigation measures	**No** The Study Area is located within ecoregion 7E-5	**Not Applicable**

Appendix F

Significant Wildlife Habitat Assessment

Taxonomy	Species	ESA Status	SARA Status	COSEWIC Status	Preferred Habitat[1, 2]	Associated ELC Communities	Known Species Range[1, 2]	Source Identifying Species Record	Suitable Habitat Identified During Background Review	Species/Habitat Observed During Field Investigations	Conclusions/ Recommendations
Birds	Bald Eagle *Haliaeetus leucocephalus*	SC	No Status	Not at Risk	Bald Eagles nest in a variety of habitats and forest types, almost always near a major lake or river where they do most of their hunting. While fish are their main source of food, Bald Eagles can easily catch prey up to the size of ducks, and frequently feed on dead animals, including White-tailed Deer. They usually nest in large trees such as pine and poplar. During the winter, Bald Eagles sometimes congregate near open water such as the St. Lawrence River, or in places with a high deer population where carcasses might be found.	**FOC, FOM, FOD, SWC, SWM** and **SWD**. Nests typically located near major bodies of water.	In Ontario, they nest throughout the north, with the highest density in the northwest near Lake of the Woods. Historically they were also relatively common in southern Ontario, especially along the shore of Lake Erie, but this population was all but wiped out 50 years ago. After an intensive re-introduction program and environmental clean-up efforts, the species has rebounded and can once again be seen in much of its former southern Ontario range.	ebird, WSP (2018)	**Low Probability**; Small deciduous forests along the Thames River are unlikely to provide habitat for nesting. Foraging and hunting opportunities may be present within the Thames.	Bald eagle and suitable nesting habitat was not observed during field investigations	No further considerations are required for this species.
Birds	Bank Swallow *Riparia riparia*	THR	THR Schedule 1	THR	Bank Swallows nest in burrows in natural and human-made settings where there are vertical faces in silt and sand deposits. Many nests are on banks of rivers and lakes, but they are also found in active sand and gravel pits or former ones where the banks remain suitable. The birds breed in colonies ranging from several to a few thousand pairs. The Bank Swallow breeds in a wide variety of natural and artificial sites with vertical banks, including riverbanks, lake and ocean bluffs, aggregate pits, road cuts, and stock piles of soil. Sand-silt substrates are preferred for excavating nest burrows. Breeding sites tend to be somewhat ephemeral due to the dynamic nature of bank erosion. Breeding sites are often situated near open terrestrial habitat used for aerial foraging (e.g., grasslands, meadows, pastures, and agricultural cropland). Large wetlands are used as communal nocturnal roost sites during post-breeding, migration, and wintering periods.		The Bank Swallow is found all across southern Ontario, with sparser populations scattered across northern Ontario. The largest populations are found along the Lake Erie and Lake Ontario shorelines, and the Saugeen River (which flows into Lake Huron). In North America, it breeds widely across the northern two-thirds of the U.S., north to the treeline. It breeds in all Canadian provinces and territories, except perhaps Nunavut.	ebird, OBBA	**Low Probability**; Vertical, eroding sand-silt banks are not anticipated within the portion of the Thames that falls within the Study Area.	Bank swallow and suitable nesting habitat was not observed during field investigations	No further considerations are required for this species.
Birds	Barn Swallow *Hirundo rustica*	SC	THR Schedule 1	SC	Barn Swallows often live in close association with humans, building their cup-shaped mud nests almost exclusively on human-made structures such as open barns, under bridges, and in culverts. The species is attracted to open structures that include ledges where they can build their nests, which are often re-used from year to year. They prefer unpainted, rough-cut wood, since the mud does not adhere as well to smooth surfaces. Before European colonization, Barn Swallows nested mostly in caves, holes, crevices, and ledges in cliff faces. Following European settlement, they shifted largely to nesting in and on artificial structures, including barns and other outbuildings, garages, houses, bridges, and road culverts. Barn Swallows prefer various types of open habitats for foraging, including grassy fields, pastures, various kinds of agricultural crops, lake and river shorelines, cleared rights-of-way, cottage areas and farmyards, islands, wetlands, and subarctic tundra.	**TPO, CUM1, MAM, MAS, OAO, SAS1, SAM1, SAF1**; containing or adjacent structures that are suitable for nesting.	The Barn Swallow may be found throughout southern Ontario and can range as far north as Hudson Bay, wherever suitable locations for nests exist. The Barn Swallow has become closely associated with human rural settlements. It breeds across much of North America south of the treeline, south to central Mexico. In Canada, it is known to breed in all provinces and territories.	ebird, NHIC, OBBA, WSP (2018)	**High Probability**; The Kensington Bridge provides nesting habitat for barn swallow.	Barn Swallows were observed actively nesting under Kensington Bridge. Photos can be seen in Appendix C.	Additionally barn swallow nesting surveys will be required to confirm the number of active barn swallow nests. A Notice of Activity and Barn Swallow Mitigation Plan will be required in advance of any bridge rehabilitation works that require disturbance and/or removal of barn swallows and/or their nests.
Birds	Bobolink *Dolichonyx oryzivorus*	THR	THR Schedule 1	SC	Historically, Bobolinks lived in North American tallgrass prairie and other open meadows. With the clearing of native prairies, Bobolinks moved to living in hayfields. Bobolinks often build their small nests on the ground in dense grasses. Both parents usually tend to their young, sometimes with a third Bobolink helping. Most of this prairie was converted to agricultural land over a century ago, and at the same time the forests of eastern North America were cleared to hayfields and meadows that provided habitat for the birds. Since the conversion of the prairie to cropland and the clearing of the eastern forests, the Bobolink has nested in forage crops (e.g., hayfields and pastures dominated by a variety of species, such as clover, Timothy, Kentucky Bluegrass, and broadleaved plants). The Bobolink also occurs in various grassland habitats including wet prairie, graminoid peatlands, and abandoned fields dominated by tall grasses, remnants of uncultivated virgin prairie (tall-grass prairie), no-till cropland, small-grain fields, restored surface mining sites, and irrigated fields in arid regions. It is generally not abundant in short-grass prairie, Alfalfa fields, or in row crop monocultures (e.g., corn, soybean, wheat), although its use of Alfalfa may vary with region.	**TPO, TPS, CUM1** and **MAM2**.	The Bobolink breeds across North America. In Ontario, it is widely distributed throughout most of the province south of the boreal forest, although it may be found in the north where suitable habitat exists. The breeding range of the Bobolink in North America includes the southern part of all Canadian provinces from British Columbia to Newfoundland and Labrador and south to the northwestern, north-central and northeastern U.S.	OBBA	**Low Probability**; There are no cultural meadow communities at least 5 ha in size are present within the study area.	There was no suitable habitat for this species observed during field investigations. No bobolinks were observed during field investigations.	No further considerations are required for this species.

Taxonomy	Species	ESA Status	SARA Status	COSEWIC Status	Preferred Habitat[1, 2]	Associated ELC Communities	Known Species Range[1, 2]	Source Identifying Species Record	Suitable Habitat Identified During Background Review	Species/Habitat Observed During Field Investigations	Conclusions/ Recommendations
Birds	Chimney Swift *Chaetura pelagica*	THR	THR Schedule 1	THR	Before European settlement, Chimney Swifts mainly nested on cave walls and in hollow trees or tree cavities in old growth forests. However, due to the land clearing associated with colonization, hollow trees became increasingly rare, which led Chimney Swifts to move into house chimneys. Today, they are more likely to be found in and around urban settlements where they nest and roost (rest or sleep) in chimneys and other manmade structures. It is likely that a small portion of the population continues to use hollow trees. They also tend to stay close to water as this is where the flying insects they eat congregate. The Chimney Swift spends the major part of the day in flight feeding on insects. In the northern part of the breeding range, the Chimney Swift favours sites where the ambient temperature is relatively stable.	**TPO, CUM1, MAM, MAS, OAO, SAS1, SAM1, SAF1** containing or adjacent structures with suitable nesting habitat (i.e. chimneys).	The Chimney Swift breeds in eastern North America, possibly as far north as southern Newfoundland. In Ontario, it is most widely distributed in the Carolinian zone in the south and southwest of the province, but has been detected throughout most of the province south of the 49th parallel. The Chimney Swift breeds mainly in eastern North America, from southern Canada down to Texas and Florida. The species breeds in east central Saskatchewan, southern Manitoba, southern Ontario, southern Quebec, New Brunswick, Nova Scotia, and possibly in Prince Edward Island and southwestern Newfoundland.	ebird, NHIC, OBBA, WSP (2018)	**Moderate Probability**; Older buildings with potentially suitable chimneys for nesting and roosting may be present within the study area. Foraging habitat of open or shallow water is also present within the study area.	This species and it's suitable habitat was not observed during field investigations.	No further considerations are required for this species.
Birds	Common Nighthawk *Chordeiles minor*	SC	THR Schedule 1	SC	Traditional Common Nighthawk habitat consists of open areas with little to no ground vegetation, such as logged or burned-over areas, forest clearings, rock barrens, peat bogs, lakeshores, and mine tailings. Although the species also nests in cultivated fields, orchards, urban parks, mine tailings, and along gravel roads and railways, they tend to occupy natural sites. The Common Nighthawk nests in a wide range of open, vegetation-free habitats, including dunes, beaches, recently harvested forests, rocky outcrops, grasslands, pastures, marshes, and river banks. This species also inhabits mixed and coniferous forests. The Common Nighthawk probably benefited from the newly-opened habitats created by the massive deforestation associated with the arrival of European settlers in eastern Canada and United States. The appearance of gravel roofs contributed to the expansion of the Common Nighthawk's habitat in North America.	**SD, BB, RB, CUM, BO, FOM, FOC** and **FOD** with openings with little vegetation.	The range of the Common Nighthawk spans most of North and Central America. In Canada, the species is found in all provinces and territories except Nunavut. In Ontario, the Common Nighthawk occurs throughout the province except for the coastal regions of James Bay and Hudson Bay.	ebird, OBBA	**Low Probability**; Suitable habitat for the species is not anticipated within the Study Area.	This species and suitable habitat were not observed during field investigations.	Although this species is not anticipated within the proposed Limits of Work, vegetation removal will occur outside of the breeding bird window (April 1 - August 31) to avoid incidental take and limit disturbance to breeding birds or their nests in compliance with the Migratory Birds Convention Act.
Birds	Eastern Meadowlark *Sturnella magna*	THR	THR Schedule 1	THR	Eastern Meadowlarks breed primarily in moderately tall grasslands, such as pastures and hayfields, but are also found in alfalfa fields, weedy borders of croplands, roadsides, orchards, airports, shrubby overgrown fields, or other open areas. Small trees, shrubs, or fence posts are used as elevated song perches. Eastern Meadowlarks prefer grassland habitats, including native prairies and savannahs, as well as non-native pastures, hayfields, weedy meadows, herbaceous fencerows, and airfields.	**TPO, TPS, CUM1, CUS**, and **MAM2** with elevated song perches.	In Ontario, the Eastern Meadowlark is primarily found south of the Canadian Shield but it also inhabits the Lake Nipissing, Timiskaming, and Lake of the Woods areas. Including all subspecies, the Eastern Meadowlark's global breeding range extends from central and eastern North America, south through parts of South America. However, there is only one subspecies in Canada and the neighbouring northeastern U.S. In Canada, the bulk of the population breeds in southern Ontario.	NHIC, OBBA	**Low Probability**; There are no cultural meadow communities at least 5 ha in size are present within the study area.	This species and suitable habitat was not observed during field investigations.	Although this species is not anticipated within the proposed Limits of Work, vegetation removal will occur outside of the breeding bird window (April 1 - August 31) to avoid incidental take and limit disturbance to breeding birds or their nests in compliance with the Migratory Birds Convention Act.
Birds	Eastern Wood-pewee *Contopus virens*	SC	SC Schedule 1	SC	The Eastern Wood-pewee lives in the mid-canopy layer of forest clearings and edges of deciduous and mixed forests. It is most abundant in intermediate-age mature forest stands with little understory vegetation. During migration, a variety of habitats are used, including forest edges and early successional clearings.	**FOC, FOM, FOD, SWD, SWM** and **CUW**.	The Eastern Wood-pewee is found across most of southern and central Ontario, and in northern Ontario as far north as Red Lake, Lake Nipigon, and Timmins. The breeding range of the Eastern Wood-pewee covers much of south-central and eastern North America.	OBBA	**Moderate Probability**; The study area contains small patches of deciduous forest areas.	This species was not observed during field investigations.	Vegetation removal will occur outside of the breeding bird window (April 1 - August 31) to avoid incidental take and limit disturbance to breeding birds or their nests in compliance with the Migratory Birds Convention Act.

Taxonomy	Species	ESA Status	SARA Status	COSEWIC Status	Preferred Habitat[1, 2]	Associated ELC Communities	Known Species Range[1, 2]	Source Identifying Species Record	Suitable Habitat Identified During Background Review	Species/Habitat Observed During Field Investigations	Conclusions/ Recommendations
Birds	Peregrine Falcon *Falco peregrinus* Peregrine Falcon (anatum/tundrius) *Falco peregrinus anatum/tundrius*	SC	SC Schedule 1	Not At Risk	Peregrine Falcons usually nest on tall, steep cliff ledges close to large bodies of water. Although most people associate Peregrine Falcons with rugged wilderness, some of these birds have adapted well to city life. Urban peregrines raise their young on ledges of tall buildings, even in busy downtown areas. Cities offer peregrines a good year-round supply of pigeons and starlings to feed on. The Peregrine Falcon is found in various types of habitats, from Arctic tundra to coastal areas and from prairies to urban centres. It usually nests alone on cliff ledges or crevices, preferably 50 to 200 m in height, but sometimes on the ledges of tall buildings or bridges, always near good foraging areas. Suitable nesting sites are usually dispersed, but can be common locally in some areas. The natural nesting habitat has not changed significantly since the population crash and is still largely available. In addition, structures built by humans in both rural and urban areas provide the Peregrine Falcon with other potential nesting sites. And though urbanization and other land uses have had a significant impact on some areas where they feed, Peregrine Falcons can usually modify their diet based on the prey species present in a given area.	**CLO**	The historic North American distribution of the eastern subspecies is east of the Rocky Mountains and south of the tree line. Although Peregrine Falcons now nest in and around Toronto and several other southern Ontario cities, the majority of Ontario's breeding population is found around Lake Superior in northwestern Ontario. The anatum Peregrine Falcon breeds in the interior of Alaska and throughout northern Canada up to southern Greenland, and across continental North America up to northern Mexico. In Canada it is found in all territories and provinces except Prince Edward Island, Nunavut, and the Island of Newfoundland. The tundrius Peregrine Falcon breeds in Alaska and throughout northern Canada up to Greenland. In Canada, it breeds from northern Yukon, the low Arctic islands, northern Northwest Territories, and northern Nunavut up to Baffin Island, Hudson Bay, Ungava, and northern Labrador.	ebird, NHIC	**Low Probability**; Large cliff areas are not found within the Study Area.	This species and suitable habitat were not observed during field investigations.	Although this species is not anticipated within the proposed Limits of Work, vegetation removal will occur outside of the breeding bird window (April 1 - August 31) to avoid incidental take and limit disturbance to breeding birds or their nests in compliance with the Migratory Birds Convention Act.
Birds	Wood Thrush *Hylocichla mustelina*	SC	THR Schedule 1	THR	The Wood Thrush lives in mature deciduous and mixed (conifer-deciduous) forests. They seek moist stands of trees with well-developed undergrowth and tall trees for singing perches. These birds prefer large forests, but will also use smaller stands of trees. They build their nests in living saplings, trees, or shrubs, usually in Sugar Maple or American Beech. In Canada, the Wood Thrush nests mainly in second-growth and mature deciduous and mixed forests, with saplings and well-developed understory layers. This species prefers large forest mosaics, but may also nest in small forest fragments.	**FOD** and **FOM** that are greater than 1 ha in size.	The Wood Thrush is found all across southern Ontario. It is also found, but less common, along the north shore of Lake Huron, as far west as the southeastern tip of Lake Superior. There is a very small population near Lake of the Woods in northwestern Ontario, and there have been scattered sightings in the mixed forest of northern Ontario. The Wood Thrush breeds in southeastern Canada from southern Ontario east to Nova Scotia.	ebird, NHIC, OBBA	**Low Probability;** There are no large mature forests found within the Study Area.	This species was not observed during field investigations	Although this species is not anticipated within the proposed Limits of Work, vegetation removal will occur outside of the breeding bird window (April 1 - August 31) to avoid incidental take and limit disturbance to breeding birds or their nests in compliance with the Migratory Birds Convention Act.
Fish	Black Redhorse *Moxostoma duquesnei*	THR	THR Schedule 1	THR	In Ontario, the Black Redhorse lives in pools and riffle areas of medium-sized rivers and streams that are usually less than two metres deep. These rivers usually have few aquatic plants, a moderate to fast current, and a sandy or gravel bottom. In the spring, it migrates to breeding habitat where eggs are laid on gravel in fast water. The winter is spent in deeper pools. Adults feed on crustaceans and aquatic insects, while the young fish feed on plankton. The Black Redhorse is found in medium-size rivers, where the river bed is composed of sand or gravel and bedrock substrates, where siltation is minimal and where the current is fairly strong. The Black Redhorse has typically been caught in waters that are oxygen rich and fertile which have a mean temperature of 20 °C in July.		In Canada, the Black Redhorse is found only in southwestern Ontario at a few locations in the Bayfield River, Maitland River, Ausable River, Grand River, Thames River, and Spencer Creek watersheds. In Canada, this fish in found in the Great Lakes basin; it has been seen in Catfish Creek and in the Grand, Thames, and Maitland Rivers. Its distribution extends into the United States, in the Mississippi River system.	DFO	**High Probability;** There are suitable substrates, velocities, and a known population within this area of the North Thames River	Surveys were not completed for this species during field investigations.	Avoid in-water work to minimize potential disturbance, or harm to individuals or habitat.
Fish	Lake Sturgeon (Great Lakes-Upper St. Lawrence River populations) *Acipenser fulvescens*	END	No Status	THR	The Lake Sturgeon lives almost exclusively in freshwater lakes and rivers with soft bottoms of mud, sand, or gravel. They are usually found at depths of five to 20 metres. They spawn in relatively shallow, fast-flowing water (usually below waterfalls, rapids, or dams) with gravel and boulders at the bottom. However, they will spawn in deeper water where habitat is available. They also are known to spawn on open shoals in large rivers with strong currents. The species occupies a wide variety of aquatic ecosystem types (e.g., stepped-gradient Boreal Shield rivers, low-gradient meandering Prairie rivers, low gradient Hudson lowland rivers, Great Lakes and associated tributaries). Lake Sturgeon requires a variety of habitats to complete its lifecycle, and the species has evolved to exploit typical upstream to downstream hydraulic and substrate gradients. Hatch is contingent on aeration by flowing water, after which larvae apparently require gravel substrate in which to bury and remain while development continues. Once the yolk sac is absorbed, larvae drift downstream via water currents. Habitat requirements at the age-0 stage are not well understood, but may not be as strict as previously assumed. Aside from the requirement of adequate benthic prey items, the habitat requirements for middle to later life stages (juveniles and adults) are not particularly narrow. Habitat trends vary across the species' range. In some areas, the construction of dams has ceased but, in other areas, it is expected to continue into the foreseeable future. Sediment and water quality has improved in many areas formerly impacted by pollution from the pulp-and-paper industry.	**OAO**. Large lakes/rivers > 20m deep with soft mud, sand, or gravel bottoms required.	In North America, Lake Sturgeon can be found from Alberta to the St. Lawrence drainage of Quebec and from the southern Hudson Bay to the lower Mississippi. In Ontario, the Lake Sturgeon is found in the rivers of the Hudson Bay basin, the Great Lakes basin, and their major connecting waterways, including the St. Lawrence River. There are three distinct populations in Ontario: Great Lakes - Upper St. Lawrence, Saskatchewan - Nelson River, and Southern Hudson Bay - James Bay.	NHIC	**Low Probabilty;** Flow and conditions for important life-function habittat in this reach of the North River are negligible for this species. No records or habitat were identified by DFO. This reach may however provide access to upstream habitat, if any.	Surveys were not completed for this species during field investigations.	Avoid in-water work to minimize potential disturbance, or harm to individuals or habitat.

Taxonomy	Species	ESA Status	SARA Status	COSEWIC Status	Preferred Habitat[1, 2]	Associated ELC Communities	Known Species Range[1, 2]	Source Identifying Species Record	Suitable Habitat Identified During Background Review	Species/Habitat Observed During Field Investigations	Conclusions/ Recommendations
Fish	Northern Brook Lamprey *Ichthyomyzon fossor*	SC	SC Schedule 1	SC	The Northern Brook Lamprey inhabits clear, coolwater streams. The larval stage requires soft substrates such as silt and sand for burrowing which are often found in the slow-moving portions of a stream. Adults are found in areas associated with spawning, including fast flowing riffles comprised of rock or gravel. Spawning occurs in May and June. The males construct small, often inconspicuous, nests by picking up pebbles with their mouths and moving them to form the rims of shallow depressions. The sticky eggs are deposited in the nest and adhere to the substrate.	**OAO** characterized as clear, coolwater streams with silt and sand substrates.	The Northern Brook Lamprey lives in the eastern United States in the upper Mississippi and southern Hudson Bay drainages, ranging from Manitoba and the Great Lakes region south to Missouri, and east to the St. Lawrence River in Quebec. In Ontario, it lives in rivers draining into Lakes Superior, Huron, and Erie, and the Ottawa River. In Canada, the Northern Brook Lamprey occurs in the Great Lakes Basin, in some areas of the St. Lawrence River system, and in the Nelson River drainage of Manitoba. It is known that this species has disappeared from, or is now very rare in, Lake Ontario.	NHIC	**Low Probabilty;** Flow and conditions for important life-function habitat in this reach of the North River are negligible for this species. No records or habitat were identified by DFO, and the records retrieved were dated. The substrate and fluctuating flows provide only negligible habitat.	Surveys were not completed for this species during field investigations.	Avoid in-water work to minimize potential disturbance, or harm to individuals or habitat.
Fish	Northern Sunfish (Great Lakes - Upper St.Lawrence populations) *Lepomis peltastes*	SC	SC Schedule 1	SC	In Ontario, the Northern Sunfish lives in shallow vegetated areas of quiet, slow flowing rivers and streams, as well as warm lakes and ponds, with sandy banks or rocky bottoms. Northern Sunfish prefer to be near aquatic vegetation where they can avoid strong currents. During the breeding season, males guard their nests which are made by digging saucer like depressions in gravel or cobble substrates. It eats mostly aquatic insect larvae and algae, but is known for feeding at the water's surface more frequently than other sunfish. Northern Sunfish usually occurs in clear waters and is considered intolerant of siltation. Substrate usually consists of sand and gravel, as in the Thames River.		In Canada, the Northern Sunfish only lives in Ontario and Quebec. The Great Lakes - Upper St. Lawrence populations are found throughout southern Ontario including waters flowing into Lake Huron, Georgian Bay, Lake St. Clair, Lake Erie, and Lake Ontario, as well as rivers and small lakes in eastern Ontario. In Canada, Northern Sunfish range includes northwestern Ontario, south and central Ontario, and southern Québec. Because Northern Sunfish is found in Canada in two National Freshwater Biogeographic Zones it is assessed as two designatable units.	DFO	**High Probability;** There are suitable substrates, velocities, and a known population within this area of the North Thames River	Surveys were not completed for this species during field investigations.	Avoid in-water work to minimize potential disturbance, or harm to individuals or habitat.
Fish	Silver Shiner *Notropis photogenis*	THR	THR Schedule 1	THR	Silver Shiners prefer moderate to large size streams with swift currents that are free of weeds and have clean gravel or boulder bottoms. They live in schools and feed on crustaceans and adult flies that fall in the water or fly just above the surface. In June or July, they spawn by scattering their eggs over gravel riffles. This fish is found in moderate to large, deep, relatively clear streams with swift currents, and moderate to high gradients. Stream widths at capture sites in an Ontario study mostly ranged from 30 to 100 m. Most capture sites were in deep swift riffles and faster currents of pools below the riffles. Stream substrate at capture sites was of gravel, pebble, cobble, boulder, sand, mud, and clay; probably the type of substrate is not very important. The species may avoid areas with submersed vegetation. Stream sections where the water temperature is warmer may be preferred by the fish in the spring. Although spawning habitat has not been observed in Ontario, in the U.S. the fish spawns on riffles.	**OAO** characterized as moderate to large streams with swift currents, no weeds, and gravel or boulder substrates.	In Ontario, it is found in the Thames and Grand Rivers, and in Bronte Creek and Sixteen Mile Creek, which flow into Lake Ontario. In Canada, it occurs only in southern Ontario, in the watersheds of the Grand and Thames rivers and Bronte Creek, and in the drainages of the Great Lakes Erie, St. Clair, and Ontario. The species was first reported from Canada in 1973, though older collections have since been found. It appears that the fish populations in Canada have been reproductively isolated from the U.S. populations for a long time, and it is not likely that the two groups will come in contact. The Silver Shiner was found to be locally abundant in the Grand and Thames river watersheds in 1979. The species occurs almost continually throughout each river section within its range, but is rare in, or absent from, smaller tributary streams and slow-flowing sections of the main rivers.	DFO, NHIC	**High Probability;** There are suitable substrates, velocities, and a known population within this area of the North Thames River	Surveys were not completed for this species during field investigations.	Avoid in-water work to minimize potential disturbance, or harm to individuals or habitat. Avoid, or minimize as much as possible, vegetation removal in riparian areas.
Fish	Spotted Sucker *Minytrema melanops*	SC	SC Schedule 1	SC	The Spotted Sucker usually inhabits clear creeks and small- to moderate-sized rivers with sand, gravel, or hard-clay bottoms, usually free of silt. However, in Ontario it has frequently been found in turbid habitats. In late spring and early summer, Spotted Suckers move to rocky riffle areas of streams to breed. The fish inhabits all types of slow-flowing bodies of water. It favours slow-moving streams and prefers clear water with a minimum of suspended solids, but has been found in the East Sydenham River, where turbidity is moderate to heavy. It may be more tolerant of siltation than some other sucker species, especially if siltation is only periodically heavy.	**OAO** characterized as creeks or small to moderate sized rivers with clear water and sand, gravel, or hard-clay substrates.	The Spotted Sucker's range is restricted to the fresh waters of eastern and central North America from the lower Great Lakes east to Pennsylvania, south to the Gulf Coast and Florida, and west to Texas. In Canada, this species is limited to southwestern Ontario, where it is found in Lake St. Clair and western Lake Erie as well as the Detroit, St. Clair, Sydenham, and Thames rivers. The Spotted Sucker is restricted to the freshwaters of central and eastern North America. The Canadian distribution is limited to southwestern Ontario, where it occurs in Lake St. Clair, in the western basin of Lake Erie, and in the Thames and East Sydenham rivers. The Spotted Sucker has been collected from six Ontario locations since the 1994 status report, three of which are new locations.	NHIC	**High Probability;** There are suitable substrates, velocities, and a known population within this area of the North Thames River	Surveys were not completed for this species during field investigations.	Avoid in-water work to minimize potential disturbance, or harm to individuals or habitat.

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Insects	Monarch *Danaus plexippus*	SC	SC Schedule 1	END	Throughout their life cycle, Monarchs use three different types of habitat. Only the caterpillars feed on milkweed plants and are confined to meadows and open areas where milkweed grows. Adult butterflies can be found in more diverse habitats where they feed on nectar from a variety of wildflowers. Milkweeds (numerous species) are the sole food plant for Monarch caterpillars. These plants grow predominantly in open and periodically disturbed habitats such as roadsides, fields, wetlands, prairies, and open forests. Milkweeds are often planted outside their native range, and sometimes wayward Monarchs are observed at these patches. Monarchs require staging areas which are used to rest, feed, and avoid inclement weather during migration. In Canada, they are found along the north shores of the Great Lakes where Monarchs roost in trees before crossing large areas of open water.	**AI, TP,** and **CUM** where milkweed plants are present.	The Monarch's range extends from Central America to southern Canada. In Canada, Monarchs are most abundant in southern Ontario and Quebec where milkweed plants and breeding habitat are widespread. During late summer and fall, Monarchs from Ontario migrate to central Mexico where they spend the winter months. During migration, groups of Monarchs numbering in the thousands can be seen along the north shores of Lake Ontario and Lake Erie. The overall native range of the Monarch occurs from Central America northward through the continental United States to southern Canada, and from the Atlantic Coast westward to the Pacific Coast. The Canadian range of occurrence includes portions of all ten provinces and the Northwest Territories. Monarchs are loosely divided into eastern and western subgroups based on their migratory routes and overwintering sites. Eastern Monarchs breed from Alberta east to Nova Scotia and migrate south to overwinter in the mountains of Central Mexico. The breeding range in Canada is south of the 50° latitude in Ontario, Quebec, and the Maritimes. Each fall hundreds of thousands of Monarchs migrate through Long Point in southern Ontario but it's unknown what proportion of the Canadian population these individuals represent.	OBA, WSP (2018)	**Moderate Probability;** Milkweed and flowering plants used for foraging are anticipated within the Study Area.	This species was not observed during field investigations however common milkweed was observed within the BBS1-2 and BBT1 communities. Milkweed is a primary food source for monarch.	Vegetation removal within natural features is limited to the right-of way and is not anticipated to significant impact monarch habitat.
Insects	Rusty-patched Bumble Bee *Bombus affinis*	END	END Schedule 1	END	This species, like other bumble bees, can be found in open habitat such as mixed farmland, urban settings, savannah, open woods, and sand dunes. The most recent sightings have been in oak savannah, which contains both woodland and grassland flora and fauna. The Rusty-patched Bumble Bee has been recorded from diverse habitats including marshes. It has been recorded feeding from a variety of plant genera for pollen and nectar. It usually nests underground in abandoned rodent burrows.	**CUM, TPO, TPS, TPW, CUS, SDO, SDS,** and **SDT**.	The Rusty-patched Bumble Bee was once widespread and common in eastern North America, found from southern Ontario south to Georgia and west to the Dakotas. The species has suffered rapid, severe declines throughout its entire range since the 1970s with only a handful of specimens collected in recent years in Ontario. The only sightings of this bee in Canada since 2002 have been at The Pinery Provincial Park on Lake Huron.	NHIC	**Low Probability;** The Study Area is located along the Thames River and contains cultural meadow communities that may provide habitat for this species.	This species was not observed during field investigations	Vegetation removal within natural features is limited to the right-of way and is not anticipated to significant impact rusty-patched bumble bee habitat.
Insects	Yellow-banded Bumble Bee *Bombus terricola*	SC	SC Schedule 1	SC	This species is a forage and habitat generalist, able to use a variety of nectaring plants and environmental conditions. It can be found in mixed woodlands, particularly for nesting and overwintering, as well as a variety of open habitat such as native grasslands, farmlands, and urban areas. Nest sites are often underground in abandoned rodent burrows or decomposing logs. Yellow-banded Bumble Bee occurs in a diverse range of habitats, including montane meadows, prairie grasslands, and boreal habitats. It has been recorded foraging on flowers for pollen and nectar from a variety of plant genera. Yellow-banded Bumble Bee queens overwinter underground and in decomposing organic material such as rotting logs.		The Yellow-banded Bumble Bee has a large range throughout much of Canada and parts of the United States. The Yellow-banded Bumble Bee ranges from the Mixedwood Plains of southern Ontario to the Hudson Bay Lowlands in the north. In southern Ontario, it is still observed but is less common than it was historically after steep declines. Less is known about historical or recent abundance of Yellow-banded Bumble Bee in the northern portion of its range. Yellow-banded Bumble Bee occurs in eastern North America from New Jersey to Newfoundland and Labrador, and west through the northern United States and most of Canada to southern Northwest Territories, southeastern Yukon, and eastern British Columbia.	NHIC	**Low Probability;** The Study Area is located along the Thames River and contains cultural meadow communities that may provide habitat for this species.	This species was not observed during field investigations	Vegetation removal within natural features is limited to the right-of way and is not anticipated to significant impact yellow-banded bumble bee habitat.

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Mammals	Eastern Small-footed Myotis (Eastern Small-footed Bat) *Myotis leibii*	END	N/A	N/A	In the spring and summer, Eastern Small-footed Bats will roost in a variety of habitats, including in or under rocks, in rock outcrops, in buildings, under bridges, or in caves, mines, or hollow trees. These bats often change their roosting locations every day. At night, they hunt for insects to eat, including beetles, mosquitos, moths, and flies. In the winter, these bats hibernate, most often in caves and abandoned mines. They seem to choose colder and drier sites than similar bats and will return to the same spot each year.		The Eastern Small-footed Bat has been found from south of Georgian Bay to Lake Erie and east to the Pembroke area. There are also records from the Bruce Peninsula, the Espanola area, and Lake Superior Provincial Park. Most documented sightings are of bats in their winter hibernation sites.	BCI	**Moderate Probability;** Residential buildings and wooded vegetation communities within the Study Area may provide suitable candidate habitat for Species at Risk bats.	This species was not observed during field investigations. However, species specific surveys were not completed.	Impacts to potential bat habitat are not anticipated. Tree removal should be completed outside of the roosting season to avoid contravention of the ESA.
Mammals	Little Brown Myotis (Little Brown Bat) *Myotis lucifugus*	END	END Schedule 1	END	Bats are nocturnal. During the day they roost in trees and buildings. They often select attics, abandoned buildings, and barns for summer colonies where they can raise their young. Bats can squeeze through very tiny spaces (as small as six millimetres across) and this is how they access many roosting areas. Little Brown Bats hibernate from October or November to March or April, most often in caves or abandoned mines that are humid and remain above freezing. Their specific physiological requirements limit the number of suitable sites for overwintering. In the east, large numbers (i.e., >3000 bats) of several species typically overwinter in relatively few hibernacula. In the west, there are fewer known hibernacula, and numbers appear lower per site. Females establish summer maternity colonies, often in buildings or large-diameter trees. Foraging occurs over water, along waterways, and forest edges. Large open fields or clearcuts generally are avoided. In autumn, bats return to hibernacula, which may be hundreds of kilometres from their summering areas, swarm near the entrance, mate, and then enter that hibernaculum, or travel to different hibernacula to overwinter.		The Little Brown Bat is widespread in southern Ontario and found as far north as Moose Factory and Favourable Lake. In Canada, *Myotis lucifugus* occurs from Newfoundland to British Columbia, and northward to near the treeline in Labrador, Northwest Territories and Yukon.	BCI	**Moderate Probability;** Residential buildings and wooded vegetation communities within the Study Area may provide suitable candidate habitat for Species at Risk bats.	This species was not observed during field investigations. However, species specific surveys were not completed.	Impacts to potential bat habitat are not anticipated. Tree removal should be completed outside of the roosting season to avoid contravention of the ESA.
Mammals	Northern Myotis (Northern Long-eared Bat) *Myotis septentrionalis*	END	END Schedule 1	END	Northern Long-eared Bats are associated with boreal forests, choosing to roost under loose bark and in the cavities of trees. These bats hibernate from October or November to March or April. The Northern Long-eared Bat overwinters in cold and humid hibernacula (caves/mines). Their specific physiological requirements limit the number of suitable sites for overwintering. In the east, large numbers (i.e., >3000 bats) of several species typically overwinter in relatively few hibernacula. In the west, there are fewer known hibernacula, and numbers appear lower per site. Females establish summer maternity colonies in buildings or large-diameter trees. Foraging occurs along waterways, forest edges, and in gaps in the forest. Large open fields or clearcuts generally are avoided. In autumn, bats return to hibernacula, which may be hundreds of kilometres from their summering areas, swarm near the entrance, mate, and then enter that hibernaculum, or travel to different hibernacula to overwinter.	**FOC, FOM, FOD, SWC, SWM,** and **SWD** where suitable roosting (i.e. cavity trees and trees with loose bark) habitat is available.	The Northern Long-eared Bat is found throughout forested areas in southern Ontario, to the north shore of Lake Superior and occasionally as far north as Moosonee, and west to Lake Nipigon. In Canada, *Myotis septentrionalis* occurs from Newfoundland to British Columbia, and northward to near the treeline in Labrador, Northwest Territories, and Yukon.	BCI	**Moderate Probability;** Residential buildings and wooded vegetation communities within the Study Area may provide suitable candidate habitat for Species at Risk bats.	This species was not observed during field investigations. However, species specific surveys were not completed.	Impacts to potential bat habitat are not anticipated. Tree removal should be completed outside of the roosting season to avoid contravention of the ESA.
Mammals	Tri-colored Bat *Perimyotis subflavus*	END	END Schedule 1	END	During the summer, the Tri-colored Bat is found in a variety of forested habitats. It forms day roosts and maternity colonies in older forest and occasionally in barns or other structures. They forage over water and along streams in the forest. Tri-colored Bats eat flying insects and spiders gleaned from webs. At the end of the summer they travel to a location where they swarm; it is generally near the cave or underground location where they will overwinter. They overwinter in caves where they typically roost by themselves rather than part of a group. The Tri-colored Bat overwinters in cold and humid hibernacula (caves/mines). Their specific physiological requirements limit the number of suitable sites for overwintering. In the east, large numbers (i.e., >3000 bats) of several species typically overwinter in relatively few hibernacula. In the west, there are fewer known hibernacula, and numbers appear lower per site. Females establish summer maternity colonies in buildings or large-diameter trees. Foraging occurs over water, along waterways, and forest edges. Large open fields or clearcuts generally are avoided. In autumn, bats return to hibernacula, which may be hundreds of kilometres from their summering areas, swarm near the entrance, mate, and then enter that hibernaculum, or travel to different hibernacula to overwinter.		This bat is found in southern Ontario and as far north as Espanola near Sudbury. Because it is very rare, it has a scattered distribution. It is also found from eastern North America down to Central America. In Canada, *Perimyotis subflavus* occurs in Nova Scotia, New Brunswick, Quebec, and Ontario.	BCI	**Moderate Probability;** Residential buildings and wooded vegetation communities within the Study Area may provide suitable candidate habitat for Species at Risk bats.	This species was not observed during field investigations. However, species specific surveys were not completed.	Impacts to potential bat habitat are not anticipated. Tree removal should be completed outside of the roosting season to avoid contravention of the ESA.

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Molluscs	Round Pigtoe *Pleurobema sintoxia*	END	END Schedule 1	END	The Round Pigtoe is usually found in rivers of various sizes with deep water and sandy, rocky, or mud bottoms. Like all freshwater mussels, this species feeds on algae and bacteria that it filters out of the water. Mussel larvae are parasitic and must attach to a fish host, where they consume nutrients from the fish body until they transform into juvenile mussels and drop off. Known fish hosts of the Round Pigtoe include: Bluegill, Spotfin Shiner, Bluntnose Minnow, and Northern Redbelly Dace. The presence of fish hosts is one of the key features for an area to support a healthy mussel population. The Round Pigtoe appears to be a habitat generalist. It may be found in small, medium-sized, and large rivers with moderate flows on mixed substrates of gravel, cobble, boulder, sand, and mud. In Lake Erie and Lake St. Clair, it occurs in shallow (<1 m) nearshore areas with firm sandy substrates. In large rivers it is often found at depths greater than 3 m.	**OAO** rivers with deep water and sandy, rocky or mud substrates.	In Canada, Round Pigtoe are found only in southwestern Ontario, mainly in the St. Clair River delta and the Sydenham River, but small populations still exist in the Grand and Thames rivers and in shallow areas near the shorelines of Lake Erie and Lake St. Clair. The Round Pigtoe was historically distributed from New York and Ontario in the east to South Dakota, Kansas, and Oklahoma in the west and south to Arkansas and Alabama. In Canada, it was known from the Niagara, Detroit, Grand, Thames, and Sydenham rivers as well as Lake Erie and Lake St. Clair.	DFO	**High Probability;** There are suitable substrates, velocities, and a known population within this area of the North Thames River	Surveys were not completed for this species during field investigations.	Avoid in-water work to minimize potential disturbance, or harm to individuals or habitat.
Molluscs	Wavy-rayed Lampmussel *Lampsilis fasciola*	THR	SC Schedule 1	SC	The Wavy-rayed Lampmussel is usually found in small to medium rivers with clear water. It lives in shallow riffle areas with clean gravel or sand bottoms. Like all mussels, this species filters water to find food, such as bacteria and algae. Mussel larvae are parasitic and must attach to a fish host, where they consume nutrients from the fish body until they transform into juvenile mussels and drop off. The Wavy-rayed Lampmussel's fish hosts are the Largemouth Bass and Smallmouth Bass. The presence of fish hosts is one of the key features for an area to support a healthy mussel population. The mussel inhabits clear rivers and streams of a variety of sizes, where the water flow is steady and the substrate is stable. It is typically found in gravel or sand substrates, often stabilized with cobble or boulders, in and around riffle areas up to 1 m in depth. It is most abundant in small to medium-sized streams. Even in optimal habitats, it accounts for only 2-4% of the abundance of the mussel community. Its presence at sites that invariably support a great diversity of other mussel species suggests that it cannot tolerate sub-optimal conditions. Habitats in Great Lakes waters are now heavily infested with Zebra Mussels and can no longer be utilized.	**OAO** characterized as small to medium rivers with clean water and riffles with gravel or sand substrates.	In Canada, the Wavy-rayed Lampmussel is found only in Ontario in the Grand, upper Thames, Maitland, Ausable, and St. Clair rivers, and the Lake St. Clair delta. It has disappeared from Lake Erie, the Detroit River, and most of Lake St. Clair, and may also be gone from the Sydenham River. The Wavy-rayed Lampmussel was formerly found throughout the Ohio and Mississippi river systems, the upper Allegheny River drainage in New York, lakes Erie and St. Clair and their drainages, and in tributaries of Lake Michigan, lower Lake Huron, and Lake Ontario, including the Niagara River. All Canadian populations are restricted to the upper Grand River and limited sections of the Thames, Sydenham, and possibly the Ausable rivers, all in Ontario. It appears to have been extirpated from western Lake Erie, Lake St. Clair, and the Detroit River due to competition from Zebra Mussels. Its distribution in the Grand River has become restricted to a ~40 km stretch of the upper river, whereas once it occurred in the upper and middle reaches. It has probably always been rare in the Thames and Sydenham rivers, where it currently survives in 8 km and 5 km reaches, respectively.	NHIC, DFO, WSP (2018)	**High Probability;** There are suitable substrates, velocities, and a known population within this area of the North Thames River	Surveys were not completed for this species during field investigations.	Avoid in-water work to minimize potential disturbance, or harm to individuals or habitat.
Plants	American Chestnut *Castanea dentata*	END	END Schedule 1	END	The American Chestnut prefers drier upland deciduous forests with sandy, acidic to neutral soils. In Ontario, it is only found in the Carolinian Zone between Lake Erie and Lake Huron. The species grows alongside Red Oak, Black Cherry, Sugar Maple, American Beech, and other deciduous tree species.	**FOD** with dry sandy soil.	The American Chestnut has almost disappeared from eastern North America due to an epidemic caused by a fungal disease called the chestnut blight (*Cryphonectria parasitica*). In Canada, the American Chestnut is restricted primarily to southwestern Ontario. This species occurs throughout eastern North America from southern Maine to southern Ontario and Michigan, south to Georgia to Mississippi. Remnants of once large populations of this tree still survive across most of its historical range in southern Ontario as well as most of the states within its range to the south.	NHIC	**Moderate Probability**; Deciduous forest communities with sandy loam soil types may be present within the study area which provides habitat for American chestnut.	This species was not observed during field investigations	No further considerations are required for this species.
Plants	Broad Beech Fern *Phegopteris hexagonoptera*	SC	SC Schedule 3	SC	The Broad Beech Fern prefers to grow in rich soils in deciduous forests, often in areas dominated by maple and beech trees. It requires moist soil and usually grows in full shade.	**FOD5** and **FOD6** with moist soils and closed canopies.	The Broad Beech Fern grows in eastern North America from the southern Great Lakes region west to southeast Kansas and northeast Oklahoma, south to northeast Texas and the Gulf Coast, and east to the Atlantic coast. In Ontario, the species is found in forest remnants in southern Muskoka, along Lake Erie, and in the eastern Lake Ontario-St. Lawrence River region. In Canada, this plant is at the northern limit of its climatic range. In Canada, the fern is found only in southern Ontario and southern Quebec. Several Canadian populations of Broad Beech Fern have disappeared.	NHIC	**Moderate Probability**; A CUW1 woodland community with sandy loam soil types is present within the study area which provides habitat for broad beech fern.	This species was not observed during field investigations	No further considerations are required for this species.

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Reptiles	Eastern Foxsnake (Carolinian population) *Pantherophis gloydi*	END	END Schedule 1	THR	Eastern Foxsnakes in the Carolinian population are usually found in old fields, marshes, along hedgerows, drainage canals, and shorelines. Females lay their eggs in rotting logs, manure, or compost piles, which naturally incubate the eggs until they hatch. During the winter, Eastern Foxsnakes hibernate in groups in deep cracks in the bedrock and in some man-made structures. Eastern Foxsnakes in the Essex-Kent and Haldimand-Norfolk regions use mainly unforested, early successional vegetation communities (e.g., old field, prairie, marsh, dune-shoreline) as habitat during the active season. Hedgerows bordering farm fields and riparian zones along drainage canals are regularly used. In some areas of intensive farming, these linear habitat strips likely make up the bulk of habitat available for foxsnakes.		The Eastern Foxsnake is only found in Ontario, Michigan, and Ohio. Ontario contains 70% of their range in two distinct populations: the Carolinian population in southwestern Ontario and the eastern Georgian Bay population. Within Ontario, the species' distribution is highly disjunct, occupying three discrete regions along the Lake Erie-Lake Huron waterway shoreline. The three regional populations from south to north are (1) Essex-Kent, (2) Haldimand-Norfolk, and (3) Georgian Bay Coast.	ORAA	**Moderate Probability;** The study area falls along the Thames River and provides shoreline habitat.	This species was not observed during field investigations; however species specific surveys were not completed.	Temporary reptile exclusion fencing following the MECP (2021) guidance on Reptile and Amphibian Exclusion Fencing is recommended to prevent this species from entering the work area during construction.
Reptiles	Eastern Hog-nosed Snake *Heterodon platirhinos*	THR	THR Schedule 1	THR	The Eastern Hog-nosed Snake specializes in hunting and eating toads, and usually only occurs where toads can be found. Eastern Hog-nosed Snakes prefer sandy, well-drained habitats such as beaches and dry forests where they can lay their eggs and hibernate. They use their up-turned snout to dig burrows below the frost line in the sand where eggs are deposited. The Eastern Hog-nosed Snake prefers habitats with sandy, well-drained soil and open vegetative cover, such as open woods, brushland, fields, forest edges, and disturbed sites. The species is often found near water. Eastern Hog-nosed Snakes in shoreline areas often rely on driftwood and other ground cover in beach and beach dune habitats, where toads, their prey of choice, are found. South of Parry Sound, in the Georgian Bay region, the species appears to prefer fields and forest habitats that have been modified by people rather than rock, wetland, or aquatic habitats. They can live in slightly cooler areas if there are exposed south-facing sandy slopes that provide soil conditions that are warm enough for incubation. The types of habitats preferred by Eastern Hog-nosed Snakes have declined or disappeared because the habitats have soils favourable for agriculture or for beach and water-related recreation.	**BBO** and **FOD**. Sandy soils required.	The Eastern Hog-nosed Snake is only found in eastern North America. In Canada, it is restricted to two geographically distinct areas in southern and south-central Ontario: the Carolinian region of southwestern Ontario and the Great Lakes–St. Lawrence region of central Ontario south of the French River and Lake Nipissing and east of Georgian Bay. The Eastern Hog-nosed Snake has been extirpated from the regional municipalities of Halton, Peel, and York, as well as from Pelee Island and from Point Pelee National Park of Canada. In addition, the records from Bruce, Grey, and Prince Edward counties are considered historical; the species may be extirpated from these areas as well as from Hastings and Durham counties.	ORAA	**Moderate Probability**; The Study Area is along the Thames River which provides forest edge habitat and shoreline areas.	This species was not observed during field investigations; however, species specific surveys were not completed.	Temporary reptile exclusion fencing following the MECP (2021) guidance on Reptile and Amphibian Exclusion Fencing is recommended to prevent this species from entering the work area during construction.
Reptiles	Eastern Ribbonsnake (Great Lakes population; Northern Ribbonsnake) *Thamnophis sauritus*	SC	SC Schedule 1	SC	The Eastern Ribbonsnake is usually found close to water, especially in marshes, where it hunts for frogs and small fish. A good swimmer, it will dive in shallow water, especially if it is fleeing from a potential predator. At the onset of cold weather, these snakes congregate in underground burrows or rock crevices to hibernate together. Eastern Ribbonsnakes are found in a variety of wetland habitats with both flowing and standing water such as marshes, bogs, fens, ponds, lake shorelines, and wet meadows. Most sightings of Eastern Ribbonsnakes outside of the overwintering period occur near the water's edge. Eastern Ribbonsnakes spend winter in underground hibernacula where they must avoid freezing and dessication. They may hibernate in well-drained sites or in areas close to water and may even be completely submerged inside their hibernacula. Some Eastern Ribbonsnakes may move considerable distances from water to overwinter in forested areas, but the extent of movements to their hibernation sites is not known.	**FOC, FOM, FOD, SWC, SWM, SWD, MAM, MAS, OAO, SAS, SAM,** and **SAF** containing or near year round standing or flowing water.	The Eastern Ribbonsnake is found from southern Ontario west to Michigan and Wisconsin (isolated pockets), south to Illinois and Ohio, and east to New York State and Nova Scotia, where there is an isolated population. In Ontario, this snake occurs throughout southern and eastern Ontario and is locally common in parts of the Bruce Peninsula, Georgian Bay, and eastern Ontario. There are four recognized sub-species of the Eastern Ribbonsnake; of these only the Northern Ribbonsnake (*T. s. septentrionalis*) occurs in Canada. Eastern Ribbonsnakes occur at the northern limit of their range in Canada, where there are two geographically distinct populations that are each considered a designatable unit. The Great Lakes population occurs in southern Ontario and extreme southern Quebec and is contiguous with the species' main USA range.	NHIC	**Moderate Probability**; Forests and wetlands close to year-round standing or flowing water are present within the Study Area.	This species was not observed during field investigations; however, species specific surveys were not completed.	Temporary reptile exclusion fencing following the MECP (2021) guidance on Reptile and Amphibian Exclusion Fencing is recommended to prevent this species from entering the work area during construction.
Reptiles	Northern Map Turtle *Graptemys geographica*	SC	SC Schedule 1	SC	The Northern Map Turtle inhabits rivers and lakeshores where it basks on emergent rocks and fallen trees throughout the spring and summer. In winter, the turtles hibernate on the bottom of deep, slow-moving sections of river. They require high-quality water that supports the female's mollusc prey. Their habitat must contain suitable basking sites, such as rocks and deadheads, with an unobstructed view from which a turtle can drop immediately into the water if startled. The Northern Map Turtle inhabits both lakes and rivers, showing a preference for slow moving currents, muddy bottoms, and abundant aquatic vegetation. These turtles need suitable basking sites (such as rocks and logs) and exposure to the sun for at least part of the day.	**OAO, SA** with emergent rocks and fallen trees suitable habitat for prey.	The Northern Map Turtle's range extends from the Great Lakes region west to Oklahoma and Kansas, south to Louisiana, and east to the Adirondack and Appalachian mountain barrier. In Canada, it is found in southwestern Quebec and southern Ontario. In southern Ontario, it lives primarily on the shores of Georgian Bay, Lake St. Clair, Lake Erie, and Lake Ontario, and along larger rivers including the Thames, Grand, and Ottawa. It reaches its northern limit in southern Ontario and southwestern Quebec, where it is associated with the Great Lakes Basin and the St. Lawrence River.	ORAA, NHIC, WSP (2018)	**Moderate Probability**; The Study Area is located along the Thames River	This species was not observed during field investigations; however, species specific surveys were not completed.	Temporary reptile exclusion fencing following the MECP (2021) guidance on Reptile and Amphibian Exclusion Fencing is recommended to prevent this species from entering the work area during construction.

Taxonomy	Species	ESA Status	SARA Status	COSEWIC Status	Preferred Habitat[1, 2]	Associated ELC Communities	Known Species Range[1, 2]	Source Identifying Species Record	Suitable Habitat Identified During Background Review	Species/Habitat Observed During Field Investigations	Conclusions/ Recommendations
Reptiles	Snapping Turtle *Chelydra serpentina*	SC	SC Schedule 1	SC	Snapping Turtles spend most of their lives in water. They prefer shallow waters so they can hide under the soft mud and leaf litter, with only their noses exposed to the surface to breathe. During the nesting season, from early to mid summer, females travel overland in search of a suitable nesting site, usually gravelly or sandy areas along streams. Snapping Turtles often take advantage of man-made structures for nest sites, including roads (especially gravel shoulders), dams, and aggregate pits. Although Snapping Turtles have been observed in shallow water in almost every kind of freshwater habitat, the preferred habitat of the species is characterized by slow-moving water with a soft mud bottom and dense aquatic vegetation. Established populations are most often located in ponds, sloughs, shallow bays or river edges, and slow streams, or areas combining several of these wetland habitats. Individual turtles will persist in urbanized water bodies, such as golf course ponds and irrigation canals, but it is unlikely that a population could become established in such habitats. The Snapping Turtle can occur in highly polluted waterways, but environmental contamination is known to reduce the already low reproductive output of this species. Basking on offshore logs and protruding rocks can be common in Snapping Turtles, depending on environmental temperature. Females generally nest on sand or gravel banks along waterways. Upon emergence from the nest in early fall, hatchling Snapping Turtles usually move to water, after which they bury themselves under leaf litter or debris. Snapping Turtles overwinter underwater, buried beneath logs, sticks or overhanging banks in small streams that flow continuously throughout the winter. They can also hibernate buried in deep mud in marshy areas or beneath floating mats of vegetation. Snapping Turtle habitat is diminishing in both quantity and quality in Canada, with losses primarily due to conversion of wetlands to agriculture and urban development.	**OAO, SA** near gravelly or sandy areas.	The Snapping Turtle's range extends from Ecuador to Canada. The Snapping Turtle's range is contracting. In Canada, the species is widespread from Nova Scotia to southeastern Saskatchewan, though it is absent from northwestern Ontario, where summers are likely too cool for Snapping Turtle embryos to complete development successfully. The Snapping Turtle is therefore present in mainland Nova Scotia, southern New Brunswick, southern and central Quebec, southern and central Ontario, southern Manitoba, and southeastern Saskatchewan, primarily in the Qu'Appelle watershed.	ORAA, NHIC, WSP (2018)	**Moderate Probability**; The Thames River provides shallow water communities near areas with sandy loam soil type habitats which are present within the Study Area. Streams and marsh communities are also present within the study area.	This species was not observed during field investigations; however, species specific surveys were not completed.	Temporary reptile exclusion fencing following the MECP (2021) guidance on Reptile and Amphibian Exclusion Fencing is recommended to prevent this species from entering the work area during construction.
Reptiles	Spiny Softshell *Apalone spinifera*	END	END Schedule 1	END	Spiny Softshells are highly aquatic turtles that rarely travel far from water. They are found primarily in rivers and lakes but also in creeks and even ditches and ponds near rivers. Key habitat requirements are open sand or gravel nesting areas, shallow muddy or sandy areas to bury in, deep pools for hibernation, areas for basking, and suitable habitat for crayfish and other food species. These habitat features may be distributed over an extensive area, as long as the intervening habitat doesn't prevent the turtles from traveling between them. Spiny Softshell inhabits a wide variety of aquatic habitats, including rivers, marshy creeks, oxbows, lakes, and impoundments. Common habitat features include a soft bottom with sparse aquatic vegetation, as well as sandbars or mudflats. Overwintering sites are generally in well oxygenated lakes and rivers.	**OAO** characterized as rivers with nearby open sand or gravel nesting areas, shallow muddy or sandy substrates, deep pools, basking areas and suitable habitat for food species.	In Canada, the Spiny Softshell is found only in Quebec and southwestern Ontario in the Lake St. Clair, Lake Erie, and western Lake Ontario watersheds. The majority of Spiny Softshells in Ontario are found in the Thames and Sydenham rivers and at two sites in Lake Erie. The size of the home range of this turtle depends on availability of habitat features such as nesting and hibernation sites. Some turtles travel up to 30 kilometres in a year from one part of their home range to another. Globally, the Spiny Softshell occurs in eastern North America from the New England states through extreme southern Quebec and Ontario, west to Nebraska, south to Texas, and across the Gulf states to the Atlantic. The Canadian population is divided into two geographically distinct subpopulations: a Great Lakes/St. Lawrence subpopulation in southern Quebec and a Carolinian subpopulation in southern Ontario.	NHIC, WSP (2018)	**High Probability**; The Thames River is known to be suitable habitat for spiny softshells.	This species and its preferred breeding habitat were observed within the Study Area. Photos of this species and its habitat can be found in Appendix C.	Construction activities should be limited to the deck and roadways to the extent possible. Temporary reptile exclusion fencing following the MECP (2021) guidance on Reptile and Amphibian Exclusion Fencing is recommended to prevent this species from entering the work area during construction. Should construction be required within the Thames and riparian communities, additional surveys may be required to confirm habitat within the Study Area and identify permitting/approval requirements.