

**City of Kingston Environmental Assessment,
Third Crossing of the Cataraqui River:
Preliminary Constraints Analysis**

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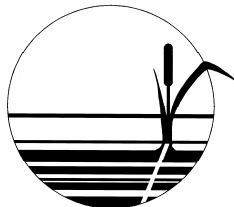


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1.0 INTRODUCTION

The City of Kingston has initiated an Environmental Assessment (EA) to evaluate the need for and the feasibility of implementing additional transportation capacity across the Cataraqui River, which forms part of the Rideau Canal (a designated UNESCO World Heritage Site, a National Historic Site, and a Canadian Heritage River). Although there have been access points identified previously, including the 2004 Kingston Transportation Master Plan, the EA study area extends along the shoreline and lands adjoining the Cataraqui River from the LaSalle Causeway – Highway 2 corridor in the south to Highway 401 to the north (Figure 1). The options being considered as part of this EA study include:

1. retain the status quo or “do nothing;”
2. increase the capacity of the LaSalle Causeway;
3. increase the capacity of Highway 401 from Montreal Street to Kingston Road (former Highway) 15; or
4. implement a new crossing at a location between the LaSalle Causeway (Highway 2) and Highway 401 through either a bridge or tunnel.

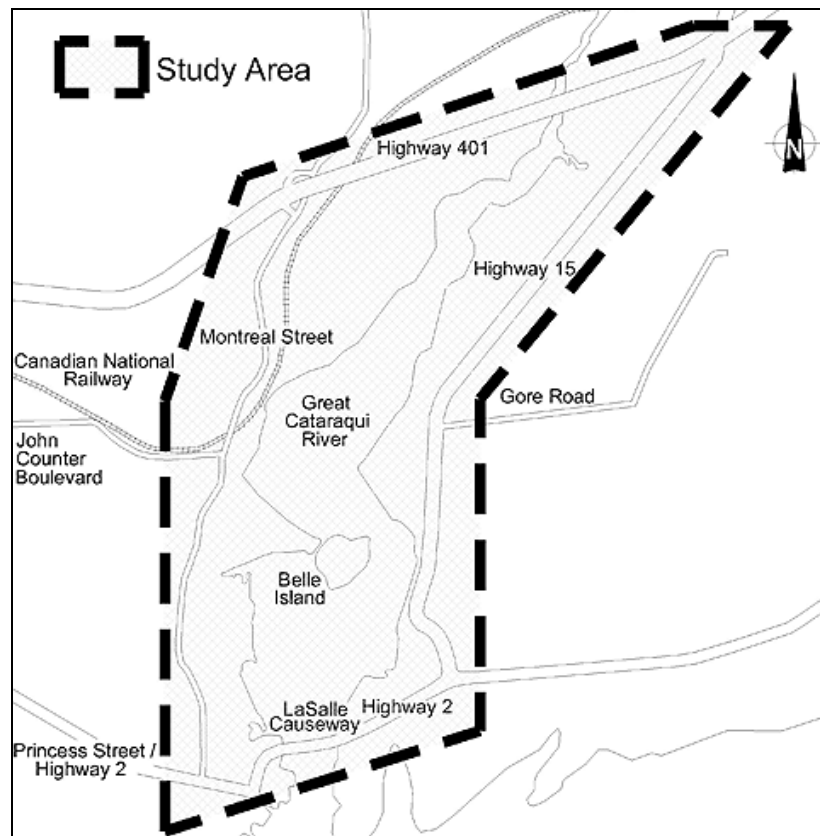


Figure 1. EA study area.

The focus of this report is to provide a constraints analysis of the natural heritage features within the EA study area, with an emphasis on the terrestrial and wetland features; aquatic and fisheries resources will be addressed in a complementary report prepared by others. The natural heritage features of importance from both provincial and national perspectives are being assessed as part of the EA study.

2.0 AVAILABLE NATURAL HERITAGE INFORMATION

The Cataraqui River is a major natural system passing through the City of Kingston. The alternative solutions being considered in the EA study that involve implementing additional crossing capacity across the Cataraqui River have the potential to impact aspects of this system. Available information on the natural heritage resources in the EA study area is organized in this report in terms of the interests expressed in the 2005 Provincial Policy Statement (PPS).

The 2005 PPS expresses provincial interests on several matters related to planning and development. Issued under Section 3 of the *Planning Act* (MMAH 2005), Section 2.1 of the 2005 PPS requires that municipalities consider natural heritage features in assessing development proposals, specifically:

Policy 2.1.3 states that:

Development and site alteration shall not be permitted in a) significant habitat of endangered and threatened species; b) significant wetlands in Ecoregions 5E, 6E and 7E; and c) significant coastal wetlands.

Policy 2.1.4 states that:

Development and site alteration shall not be permitted in: a) significant wetlands in the Canadian Shield north of Ecoregions 5E, 6E and 7E; (b) significant woodlands south and east of the Canadian Shield; c) significant valleylands south and east of the Canadian Shield; d) significant wildlife habitat; and e) significant areas of natural and scientific interest ... unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.

Policy 2.1.5 states that:

Development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements.

Policy 2.1.6 further states that:

Development and site alteration shall not be permitted on adjacent lands to the natural heritage features and areas ... unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions.

Adjacent lands are defined in the 2005 PPS, and vary with the natural heritage feature being considered. We note that adjacent land widths are currently being re-evaluated by the province, and will likely increase in regards to certain natural heritage features. Table 1 shows the nine natural heritage features in the 2005 PPS, including the current and proposed adjacent land width requirements.

Table 1
2005 PPS: Natural Heritage Features and Adjacent Lands Considerations

Natural Heritage Feature	Current Adjacent Lands	Proposed Adjacent Lands
Significant habitat of endangered and threatened species	50 metres	120 metres
Significant wetlands	120 metres	120 metres
Significant coastal wetlands	120 metres	120 metres
Significant wetlands on the Canadian Shield	120 metres	120 metres
Significant woodlands south and east of the Canadian Shield	50 metres	120 metres
Significant valleylands south and east of the Canadian Shield	50 metres	120 metres
Significant wildlife habitat	50 metres	120 metres
Significant areas of natural and scientific interest	50 metres	120 metres (life science ANSI) 50 metres (earth science ANSI)
Fish habitat	30 metres	120 metres

Within the EA study area, the following recognized natural heritage features are identified:

2.1 Significant Habitat of Endangered and Threatened Species

Species at risk are ranked according to their degree of rarity at both the provincial and federal levels. Provincial rankings are established by the Committee on the Status of Species at Risk in Ontario (COSSARO), and federal rankings by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). The City of Kingston has expressed its intent to comply with both lists.

The Cataraqui River has been the focus of many natural resource studies over the years, and its habitat, particularly that of the Greater Cataraqui Marsh, has been reported to support a high diversity of species. In the wetland evaluation (Muldal and Krannitz 1990), the Special Features component of the evaluation received the maximum number of points allowed, due to the number of provincially and regionally significant species observed.

The Natural Heritage Information Center (NHIC), maintained by the Ministry of Natural Resources, provides information on the occurrence of species at risk. A geographic query of the identified study area results in 14 element occurrences, including two Endangered species, five Threatened species, and one species that is of Special Concern at the provincial level (although Not at Risk at the federal level).

The Ministry of Natural Resources (Novacek 2009) also provided comments that indicate the potential for species at risk within the EA study area, noting the potential for one other Endangered species in lands adjacent to the EA study area (and this can be confirmed on NHIC where, by slightly expanding the query area, 19 element occurrences are recorded). As well, Novacek points out the potential for other species that are at some level of risk, but that are fairly common in this part of the province.

Table 2 lists the species that have been reported to have occurred within the study area. It should be recognized that NHIC occurrence reports do not provide specific location information, so the exact location of the species within the study area may not be known. As well, in many cases there are species present for which no report has been made.

The presence of species considered to be at risk is an important consideration because the provincial *Endangered Species Act* (ESA) 2007 came into effect on June 30, 2008. Highlights of this legislation include:

1. Species that are extirpated, endangered or threatened are protected. The habitat of endangered, threatened and extirpated species is also protected.
2. Enforcement and penalties provisions have been updated and are consistent with other more recent provincial legislation.
3. Species assessed as being at risk will automatically be added to the Species at Risk in Ontario List, and that list will be the source list of species to be protected under ESA 2007.

Several of the species listed in Table 2 are not considered to be at risk at either the provincial or national level. At risk species that have been reported may or may not be present, while others (not reported) may be present.

Table 2
Species at Risk (Known or Reported) in the EA Study Area¹

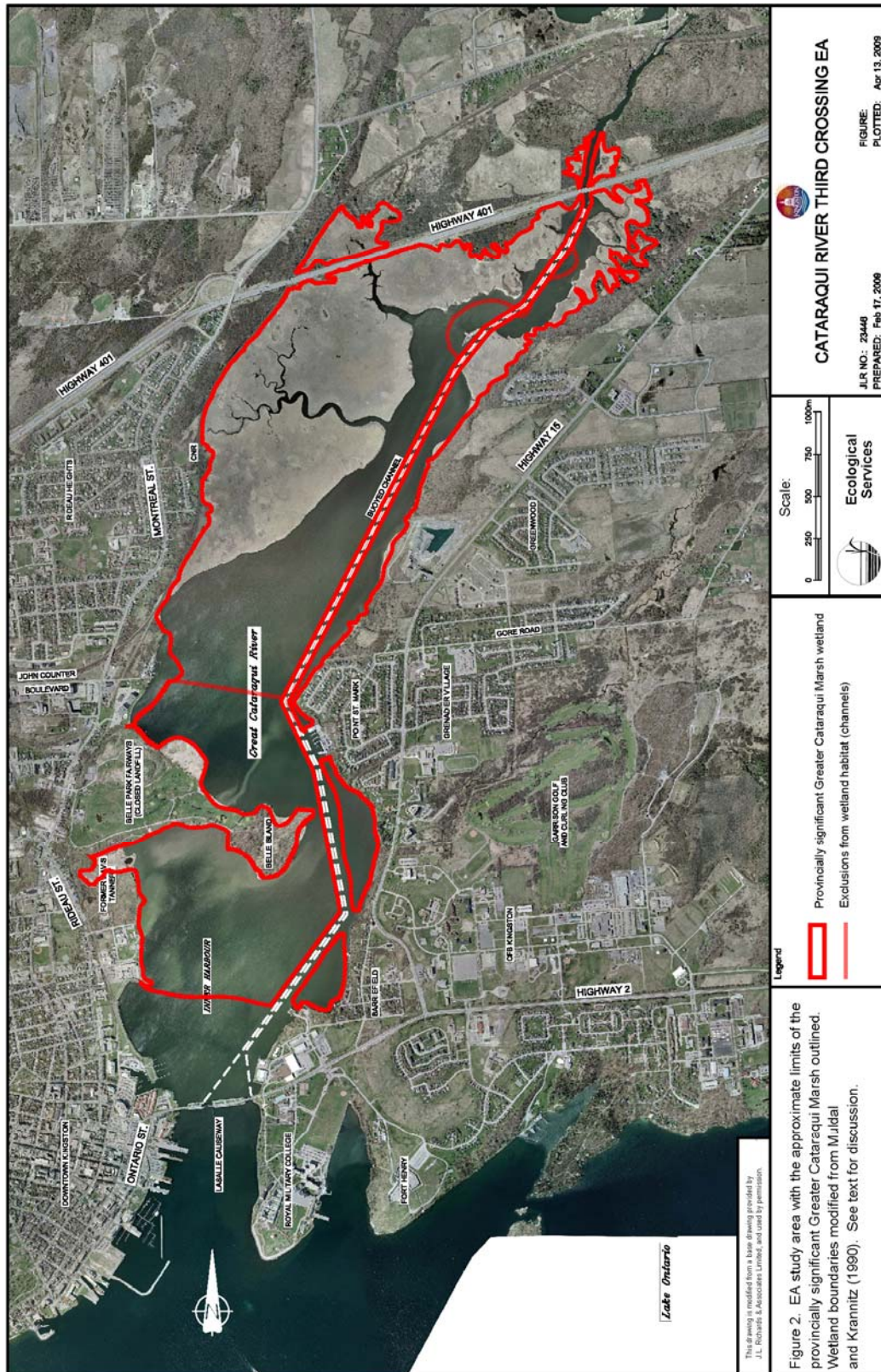
Species Name	Common Name	S-rank	COSEWIC	MNR	Date	Report Source
<i>Rallus elegans</i>	King Rail	S2B	END	END	1899	NHIC
<i>Colinus virginianus</i>	Northern Bobwhite	S1S2	END	END	1856	NHIC; Weir 2008 discusses.
<i>Ammodramus henslowii</i>	Henslow's Sparrow	S1B	END	END	1950, 1973	NHIC (outside of study area)
<i>Juglans cinerea</i>	Butternut	S3?	END	END		MNR; Catling 1985
<i>Anquilla rostrata</i>	American Eel	S1?	SC	END		MNR
<i>Ixobrychus exilis</i>	Least Bittern	S3B	THR	THR	1998	NHIC; Blancher 1984; Weir 2008
<i>Eurybia divaricata</i>	White Wood Aster	S2	THR	THR	1901	NHIC
<i>Sternotherus odoratus</i>	Stinkpot or Musk Turtle	S3	THR	THR	1936	NHIC; Blancher 1984
<i>Emydoidea blandingii</i>	Blanding's Turtle	S3	THR	THR	1983	NHIC; Blancher 1984
<i>Chilidonias niger</i>	Black Tern	S3B	NAR	SC	1991	NHIC; Blancher 1984; Muldal & Krannitz 1990; Weir 2008
<i>Graptemys geographica</i>	Map Turtle	S3	SC	SC		MNR; Blancher 1984
<i>Lampropeltis triangulum</i>	Milk Snake	S3	SC	SC		MNR; Blancher 1984.
<i>Chelydra serpentina</i>	Snapping Turtle	S3	SC		1983	Blancher 1984
<i>Callophrys gryneus</i>	Juniper Hairstreak	S2			1984	NHIC (outside of study area)
<i>Crataegus brainerdii</i>	Brainerd's Hawthorn	S2			1982	NHIC; Catling 1985
<i>Gentianella quinquefolia</i>	Stiff Gentian	S2			1983	NHIC (outside of study area)
<i>Hydroprogne caspia</i>	Caspian Tern	S3B	NAR	NAR	1990	Muldal & Krannitz 1990
<i>Carex albicans</i> var. <i>albicans</i>	White-tinged Sedge	S3			1982	NHIC
<i>Juncus secundus</i>	Secund Rush	S3			1982; 1984	NHIC; Catling 1985
<i>Najas guadalupensis</i>	Southern Naiad	S3			1982	NHIC; Catling 1985
<i>Juncus vaseyi</i>	Vasey's Rush	S3			1982	NHIC; Catling 1985
<i>Schoenoplectus smithii</i>	Smith's Club-rush	S3			1932	NHIC (outside of study area)
<i>Circus cyaneus</i>	Northern Harrier	S4B	NAR	NAR	1990	Muldal & Krannitz 1990
<i>Alisma gramineum</i>	Grass-leaved Water-Plantain	S4			n.d.	NHIC; Catling 1985; Muldal & Krannitz 1990

¹ Data modified from listings at the Natural Heritage Information Center web site, maintained by the Ministry of Natural Resources at: < http://nhic.mnr.gov.on.ca/nhic_.cfm > S-ranks range from S1 (Critically Imperiled), S2 (Imperiled), S3 (Vulnerable), S4 (Apparently Secure), to S5 (Secure); B indicates breeding status for bird species. END is an Endangered species; THR is a Threatened species; SC is a species of Special Concern; and NAR is a species that has been evaluated, but is considered Not at Risk.

2.2 Significant Wetlands

The Greater Cataraqui Marsh was evaluated by Muldal and Krannitz (1990) and determined to be a provincially significant wetland. The wetland evaluation has been touched on above, as field work within the habitat resulted in identification of many of the species at risk discussed in the preceding section of this report. The wetland was also the focus of an extensive study by Blancher (1985), who identified a broad array of plant and animal species; this report also analyzed the areas of the wetland that are of importance to these species. This latter information will be useful in determining the relative impacts of the options being considered as part of this EA study.

The wetland is extensive, and affects most of the study area. Figure 2 shows the extent of the wetland. It is important to recognize that the wetland is not limited to the areas of emergent marsh, but includes much of the Cataraqui River bed as well. The main boat channel is excluded from the wetland, as are a couple of minor deviations from the channel and a route on the west side that represents a dredged access route from the Rideau Canal navigation corridor to the marina near the foot of John Counter Boulevard.



2.3 Significant Coastal Wetlands

Although the Greater Cataraqui Marsh is a riverine wetland system, it is also considered to be a coastal wetland, as its water levels are largely controlled by Lake Ontario. Environment Canada notes that over two-thirds of southern Ontario's original wetland area has been lost over the past two centuries. Wetlands in coastal areas of the Great Lakes are especially at risk, however, due to high development pressure in urban areas, and stresses such as lake-wide water level regulation. The 2005 PPS defines coastal wetlands to include wetlands on any tributary to a Great Lake where the wetland is within the floodplain of the lake. This would include the Greater Cataraqui Marsh.

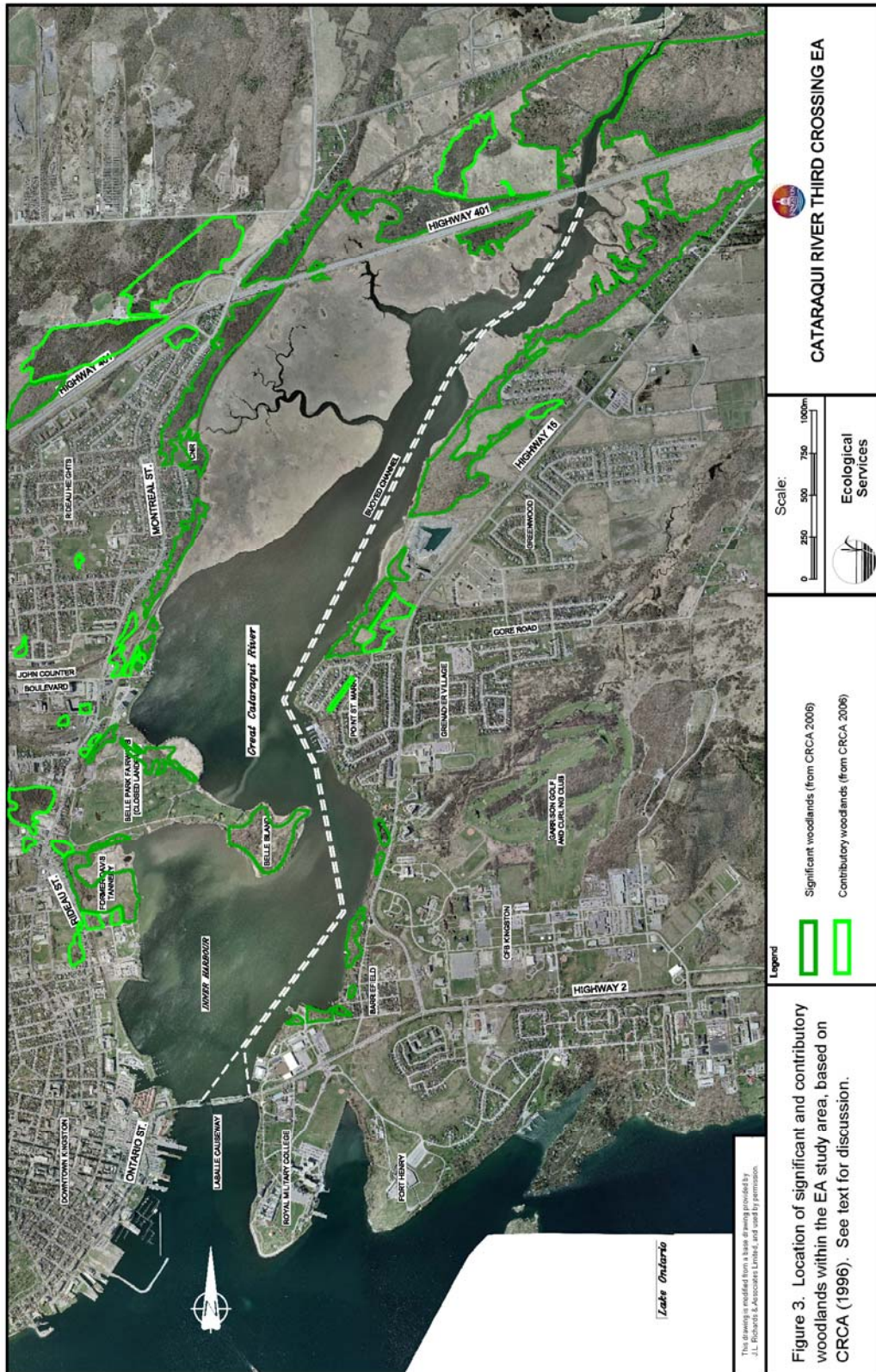
2.4 Significant Wetlands on the Canadian Shield

This is not applicable, as the Greater Cataraqui Marsh is not located on the Canadian Shield.

2.5 Significant Woodlands South and East of the Canadian Shield

The Cataraqui Region Conservation Authority (CRCA) undertook a natural heritage study in 2006, and identified significant and contributory woodlands, among other natural heritage features, in the City of Kingston. Figure 3 shows the approximate location of the woodlands identified by CRCA. Within the EA study area there are scattered patches that have been mapped as significant woodlands, as well as a few areas of contributory woodland. Consistent with their location within an urban area, they are generally narrow, remnant strips of vegetation, which are quite fragmented. It should be recognized that the CRCA study involved only limited field checking. The significance of any identified area of woodland as significant, indeed as woodland, should be taken as a tentative significance, subject to field assessment.

To be "significant" woodlands for the purposes of the 2005 PPS, the area must be "ecologically important in terms of features such as species composition, age of trees and stand history; functionally important due to its contribution to the broader landscape because of its location, size or due to the amount of forest cover in the planning area; or economically important due to site quality, species composition, or past management history" (MMAH 2005). In several areas, particularly where the woodland habitat borders the Cataraqui River and the Greater Cataraqui Marsh, the woodland is likely to be significant for its buffering function to sensitive adjacent habitats, and in some areas patches of woodland have already been identified as significant (e.g., Ecological Services 2008).



2.6 Significant Valleylands South and East of the Canadian Shield

Valleylands are defined in the 2005 PPS as natural areas that occur in a valley or other landform depression that has water flowing through or standing for some period of the year. Valleylands are often associated with rivers and creeks. CRCA (2006) identifies significant landscape features, including valleylands, in its assessment of natural heritage features in Kingston. No valleylands are identified within the EA study area.

2.7 Significant Wildlife Habitat

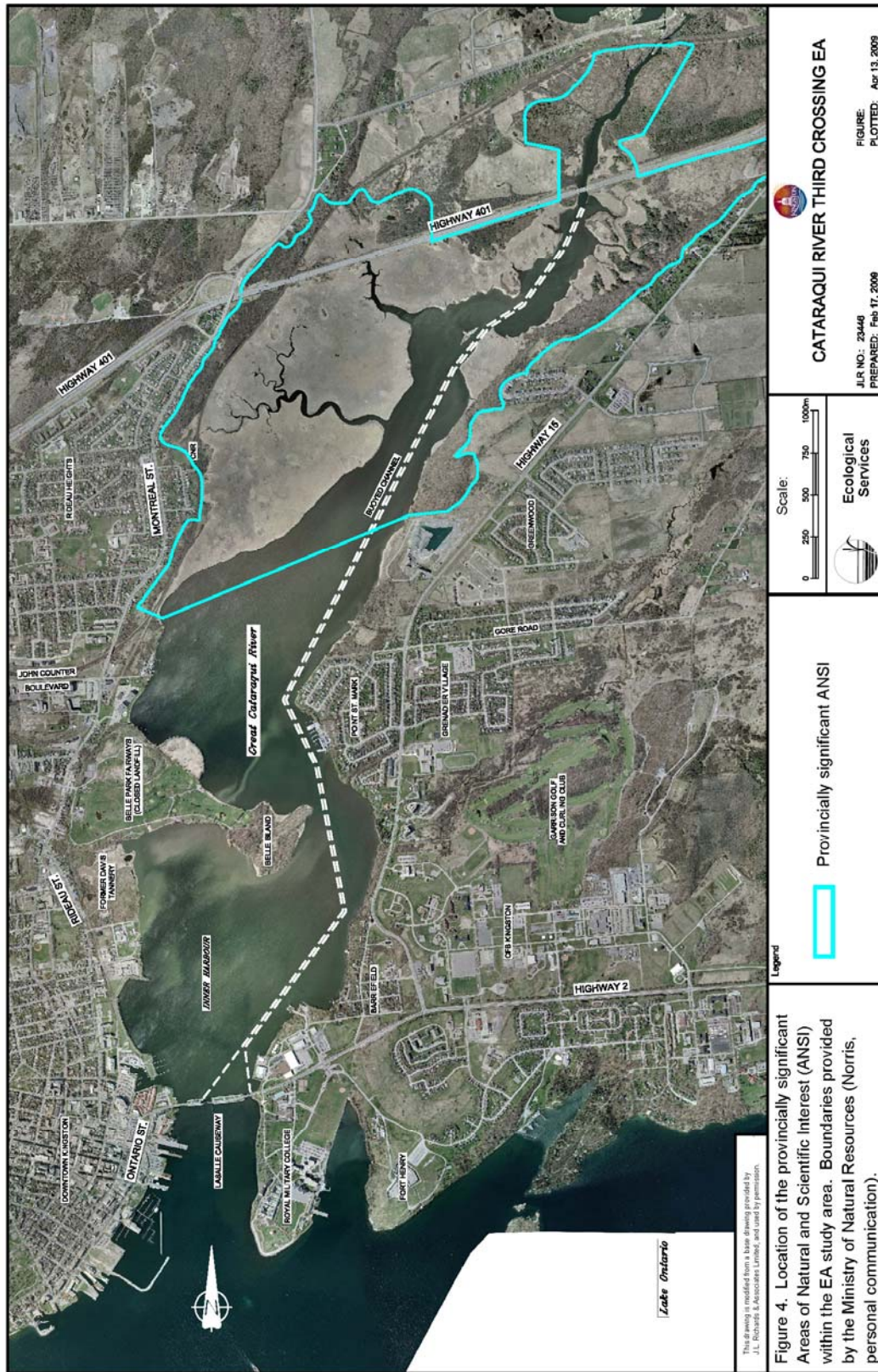
Wildlife habitat is broadly defined in the 2005 PPS as areas where plants, animals and other organisms live, including areas where species concentrate seasonally. Blancher (1984) recorded extensive use of the wetland and adjacent uplands by wildlife, including feeding areas for migratory waterfowl, the reported presence of some 206 bird species, at least 21 of which are dependent on the marsh for nesting habitat, as well as extensive use by fish for spawning and rearing. Sixteen species of herpetofauna were reported, and Blancher provided some preliminary perceptions of their populations. Finally, Blancher noted that he found little data regarding mammalian populations other than Muskrats, but included a list of 25 species observed or reported. (At-risk species have been included in Table 2.)

CRCA (2006) also assessed floral and faunal features, noting both migratory waterfowl sites and colonial waterbird sites, as well as (several historical and one recent) reports of sensitive species. This information was presented in a broad fashion, with no specific sites identified, but Weir (personal communication) confirms the importance of much of the study area for migratory and resident waterfowl.

It is clear that the Greater Cataraqui Marsh provides significant wildlife habitat to a wide range of species, although the value of the wildlife habitat does vary within the wetland. While specific location information is not available for each of the reported species, the significant wildlife habitat can generally be assumed to be captured within the wetland boundaries, as shown in Figure 2.

2.8 Significant Areas of Natural and Scientific Interest (ANSI)

ANSIs are “areas of land and water containing natural landscapes or features that have been identified as having life science or earth science values” (MMAH 2005). Both Macdonald (1987) and Ecological Services (2001) have included the Greater Cataraqui Marsh as a provincially significant life science ANSI, and this is confirmed by the NHIC database. Figure 4 depicts the ANSI boundary as recognized by the Ministry of Natural Resources (Norris, personal communication). The significant ANSI is less extensive than the wetland in some areas as it includes the emergent cattail portion of the wetland, but excludes much of the open water area of the wetland characterized by submergent aquatic vegetation. The ANSI is more extensive than the wetland in other



areas, as it includes areas of buffering upland woodlands on both sides of the Cataraqui River south of Highway 401, as well as woodland and wetland north of Highway 401.

2.9 Fish Habitat

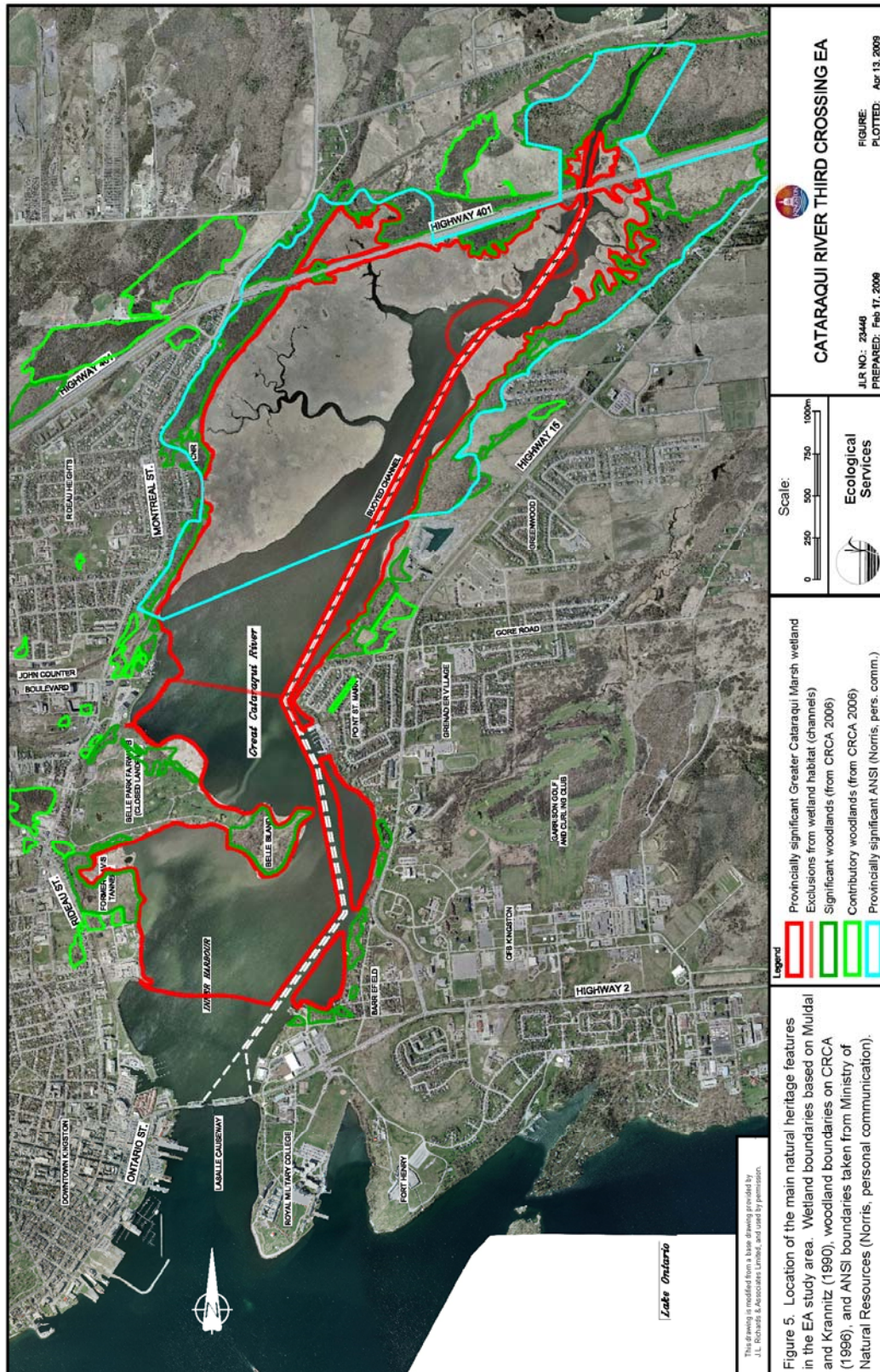
Fish habitat associated with the Cataraqui River and wetland is well documented by Complak (1982), Blancher (1984) and others. This natural heritage value will be addressed in a complementary report, prepared by others.

3.0 CROSSING OPTIONS

Figure 5 depicts the major terrestrial and wetland constraints to development by mapping the location of the main natural heritage areas within the EA study area. It should be reiterated that the species at risk cannot be precisely mapped as the NHIC information is not provided to that level of detail, and species, particularly animals, are not fixed in one position. Regardless, the species discussed in the preceding sections of this analysis have all been reported within the EA study area.

Of the alternatives being considered, the potential for impact to these natural heritage features varies, as follows:

1. Retain the status quo, or do nothing:
 - .1 There would be no impact to the identified natural heritage features.
2. Increase the capacity of the LaSalle Causeway:
 - .1 There could be impact to species at risk.
3. Increase the capacity of Highway 401:
 - .1 There could be impacts to the provincially significant wetland, potentially significant woodland habitat, the provincially significant ANSI, and to species at risk.
4. Implement a new crossing at a location between the LaSalle Causeway (Highway 2) and Highway 401 through either a bridge or tunnel:
 - .1 There could be impacts to the provincially significant wetland, significant woodlands, the provincially significant ANSI, and to species at risk, the degree of which will depend on the area of the preferred corridor. The following points should be considered:



- a) the ecological value of the terrestrial and wetland vegetation communities varies within the EA study area;
- b) some areas of the provincially significant wetland are more sensitive than other areas (e.g., emergent vegetation will typically support a greater diversity of plants and animals than will open-water aquatic vegetation);
- c) the significance of the identified woodlands requires ground truthing to ascertain its actual ecological value;
- d) most (not all) of the species at risk are associated with the provincially significant wetland, and some are historical sightings that have not been validated in many decades, and there are identification concerns for some plant species; and
- e) a tunnel crossing, if proposed, would be implemented by a cut-and-cover technique (not a boring technique), which could have a major impact on the wetland due to the required excavations.

4.0 CONCLUSION

The EA study area supports natural heritage features in the form of a provincially significant wetland, significant woodlands, a significant ANSI, and species at risk. Of the upland and wetland portions of the EA study area, the wetland is the most significant constraint on the landscape, due to its size and biological diversity, and to its support of many of the identified species at risk. From our previous extensive assessments of this wetland, and from the supporting evidence in numerous other studies and reports, the most valuable part of the wetland from the perspective of its features and functions, is the extensive cattail areas that extend from north of John Counter Boulevard to Highway 401. While the open water portions of the wetland provide valuable fish habitat, as well as loafing and feeding habitat for waterfowl, it is our opinion that they have less value in comparison. The emergent vegetation portions of the wetland (cattails dominating) provide critical habitat for hundreds of wetland-dependent plant and animal species, for feeding, nesting, nurseries and shelter, and for migratory and resident waterfowl.

Should this stage of the EA study recommend an alternative crossing solution that City Council approves, and in doing so require that the EA study proceed to completion under Phase 3 and Phase 4 of the Ontario Municipal Class EA process, the potential species at risk will need to be assessed in more detail for their potential presence and sensitivity. As well, field work will need to be undertaken along the identified preferred corridor area to assess its current condition and ecological integrity, as well as sensitivity to the proposed development.

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