



---

City of Kingston Third Crossing of the Cataraqui River -  
Parks Canada Environmental Impact Analysis  
Detailed Impact Analysis Report - Section 6

Project Report

December 2, 2019

**City of Kingston Third Crossing of the  
Cataraqui River  
Parks Canada Environmental Impact Analysis**

**Detailed Impact Analysis Report - Section 6**

**Table of Contents**

<b>6. Cumulative Effects</b>	<b>6-1</b>
6.1 Cumulative Effect Assessment Methodology	6-3
6.2 Cumulative Effects Assessment	6-3
6.2.1 Scoping	6-3
6.2.1.1 Regional Issues of Concern and Valued Components	6-3
6.2.1.2 Spatial Boundaries	6-3
6.2.1.3 Temporal Boundaries	6-4
6.2.1.4 Past, Current and Future Projects and Activities Relevant to the Cumulative Effects Assessment	6-5
6.2.2 Analysis of Effects	6-7
6.2.2.1 Greater Cataraqui Marsh Provincially Significant Wetland	6-8
6.2.2.2 Fish and Fish Habitat	6-8
6.2.2.3 Birds and Bird Habitat	6-8
6.2.2.4 Surface Water and Sediment Quality Cumulative Effects Assessment	6-9
6.2.2.5 Aquatic Wildlife and Vegetation	6-12
6.2.2.6 Species at Risk	6-13
6.2.2.7 Navigation	6-15
6.2.2.8 Aesthetic Value	6-15
6.2.2.9 Air Quality	6-16

## 6. Cumulative Effects

Cumulative effects are defined as “changes to the environment that are caused by an action (i.e., the Project) in combination with other past, present and future human actions” (Canadian Environmental Assessment Agency, 2004). Project-specific environmental effects (i.e., residual effects after mitigation) may not be significant on their own, but if those effects interact with the effects of another project or action, that cumulative effect could potentially be significant. Therefore, the purpose of the Cumulative Effects Assessment is to assess how the residual effects of the Project could potentially interact with the effects of other projects or actions, identify mitigation measures to prevent/minimize adverse cumulative effects and assess the significance of residual cumulative effects.

The Cumulative Effects Assessment Working Group and AXYS Environmental Consulting Ltd. (Hegmann et al., 1999) prepared a document entitled Cumulative Effects Assessment Practitioners’ Guide (herein referred to as “the Guide”) to provide guidance to those conducting CEAs for federal screenings under CEAA. The Guide identifies four ways that cumulative effects can occur. These include:

- **Physical-Chemical Transport** – a physical or chemical constituent is transported away from the activity under review, where it interacts with another activity (e.g., air emissions, sedimentation and wastewater effluent).
- **Nibbling Loss** – the gradual disturbance and loss of land or habitat (e.g., clearing of land for a new subdivision and new roads into a forested area).
- **Spatial and Temporal Crowding** - Cumulative effects can occur when too much is happening within too small an area and in too brief a period of time. A threshold may be exceeded, and the environment may not be able to recover to pre-disturbance conditions. This can occur quickly or gradually over a long period of time before the effects become apparent. Spatial crowding results in an overlap of effects among actions (e.g., noise from a highway adjacent to an industrial site, confluence of stack emission plumes, close proximity of timber harvesting, wildlife habitat and recreational use in a park). Temporal crowding may occur if effects from

---

City of Kingston Third Crossing of the Cataraqui River -  
Parks Canada Environmental Impact Analysis  
Detailed Impact Analysis Report - Section 6

different actions overlap or occur before the Valued Component has had time to recover.

- **Growth-Inducing Potential** – Each new action can induce further actions to occur. The effects of these spin-off actions (e.g., increased vehicle access into a previously inaccessible area) may add to the cumulative effects already occurring in the vicinity of the proposed action, creating a feedback effect.

Since development of the Guide, further guidance has been developed by CEAA in the form of the CEAA interim technical guidance document ‘Assessing Cumulative Environmental Effects under the Canadian Environmental Assessment Act, 2012’ (2018). The CEAA Operational Policy Statement on Assessing Cumulative Environmental Effects under CEAA 2012 was consulted for additional clarification. The interim technical guidance document provides further focus on the different types of potential cumulative effects that may result from the Project and past, present, and future activities. The interim technical guidance document identifies four (4) different types of cumulative effects:

- **Additive Cumulative Effects** - Defined as the sum of individual effects of two or more activities, often tied to easily measurable losses of habitat (i.e. area of vegetation cleared from project A plus area of vegetation cleared from project B)
- **Synergistic Cumulative Effects** - Defined as when the result of the interaction between two or more effects, combine to create greater or different magnitude of effect when compare to typical additive effects.
- **Compensatory Cumulative Effects** - Defined as when individual effects of two or more activities ‘offset’ each other. Occurs when one project has an adverse effect on a Valued or Secondary Component, and another has an equally positive or neutralizing impact.
- **Masking Cumulative Effects** - Occurs when the effects of a previous activity mask the effects of a proposed or new activity. The previous project may have a larger spatial effect then the proposed or new activity, the spatial boundaries of the new or proposed activity are typically lesser then the past activity and fall within the spatial boundaries of the past activity. If the past activity is terminated, then the masking cumulative

---

City of Kingston Third Crossing of the Cataraqui River -  
Parks Canada Environmental Impact Analysis  
Detailed Impact Analysis Report - Section 6

effect is no longer present. A follow-up program may be required to ensure that mitigation measures remain effective in managing cumulative effects when the earlier project is terminated.

## 6.1 Cumulative Effect Assessment Methodology

The Guide identifies five main steps to completing a Cumulative Effects Assessment, including:

1. **Scoping** – identify regional issues of concern, select appropriate regional Valued Components, identify spatial and temporal boundaries, identify other actions that may affect the same Valued Components, identify potential impacts due to actions and possible effects.
2. **Analysis of Effects** – complete the collection of regional baseline data, assess effects of the Project on selected Valued Components and assess the effects of all selected actions on selected Valued Components. Discuss pathway and type of cumulative effect.
3. **Identification of Mitigation** – Recommend mitigation measures to prevent or minimize potential adverse cumulative effects.
4. **Evaluation of Significance** – evaluate the significance of residual adverse cumulative effects.
5. **Follow-Up Monitoring** – recommend regional monitoring and effect management.

## 6.2 Cumulative Effects Assessment

### 6.2.1 Scoping

#### 6.2.1.1 Regional Issues of Concern and Valued Components

Valued Components have been previously identified in Section 1 of this DIA. These Valued and Secondary Components have been brought forward for further analysis within this Cumulative Effects Assessment since cumulative effects on these components could potentially result in regional issues of concern throughout the Study Area and nearby City of Kingston.

#### 6.2.1.2 Spatial Boundaries

The potential for interaction of other projects or human activities with the proposed Project varies depending on the geographic location of the other projects and actions and the nature of the Valued and Secondary

---

City of Kingston Third Crossing of the Cataraqui River -  
Parks Canada Environmental Impact Analysis  
Detailed Impact Analysis Report - Section 6

Components being considered (i.e., habitat range or area over which an action occurs).

Due to the nature of the Project, spatial boundaries vary depending on the component being discussed. For instance, aesthetic spatial boundaries are likely limited to the geographic boundaries of the Study Area as described in Section 1.7, whereas the spatial boundaries in regard to the Rideau Canal likely Valued Components extend beyond the ZOI due to the length of the component and connection to other regions that otherwise would not be impacted by the Project. Table 1-3 in Section 1 provides a list of Valued Components with numerous Figures, each Figure listed shows the spatial boundaries of one or more Valued Components.

For the purpose of this CEA the spatial boundaries from each Valued Component have been combined to create the largest possible spatial boundary, ensuring the outmost limits of each Valued Component will be considered. This method will create consistency throughout the CEA and align the spatial boundary with the Study Area defined previously in this document. The spatial boundary aligns with the following existing features:

- Highway 401 to the north
- La Salle Causeway to the south
- Montreal Street to the west
- Highway 15 to the east.

#### 6.2.1.3 Temporal Boundaries

In order for a cumulative effect to occur, the effects of other projects or actions must occur at the same time as effects of the Project. For example, a cumulative effect on noise levels in the Study Area could occur if another construction project was occurring at the same time as the proposed Project and the construction-generated noise from each project interacted to produce higher overall noise levels at sensitive receptors. However, if that other construction activity had taken place at some point in the past prior to any noise being generated by the construction or operation of the Project, then there would be no potential for cumulative effects. Therefore, the identification of temporal boundaries is necessary to define the period in time when cumulative effects could reasonably be expected to occur.

---

City of Kingston Third Crossing of the Cataraqui River -  
Parks Canada Environmental Impact Analysis  
Detailed Impact Analysis Report - Section 6

Accordingly, the temporal boundary for this Cumulative Effects Assessment has been broken into three time periods, pre-operations (site preparation, construction and site restoration and rehabilitation) and operations. These Project phases will occur over different time periods and may cause different distinct potential adverse effects and therefore, must each be evaluated separately. The Project has been designed for a minimum 100-year design life which means operation and maintenance activities can be expected to occur for at least 100 years. It is practically impossible to identify certain or reasonably foreseeable projects that far into the future. For the purposes of this Cumulative Effects Assessment, a review of the City of Kingston Official Plan and a discussion with City representatives determined that a five-year period is a suitable time period to be used when considering the Projects temporal boundaries. This time period is within the reasonable planning horizon for future projects/actions within the Study Area (i.e., the City of Kingston could reasonably be expected to have plans for future projects within that time period). Beyond this, it becomes difficult to predict the effects of future projects/actions with sufficient accuracy to have a meaningful Cumulative Effects Assessment.

#### 6.2.1.4 Past, Current and Future Projects and Activities Relevant to the Cumulative Effects Assessment

The definition of cumulative effects includes other actions occurring in the past, present and future. However, past and present actions (e.g., urban development of the City of Kingston or alterations to the Cataraqui River due to historical use for the Rideau Canal) have formed the baseline conditions for this DIA. Therefore, the adverse effects past or currently ongoing projects have been assessed as the baseline to which the potential adverse effects of the Project have been compared. A high-level discussion of historic activities has been included in the paragraphs below.

As referenced earlier, given the ecological resources of the Cataraqui River and the archaeological evidence found in nearby areas, the DIA study area, in all likelihood, would have been used and periodically inhabited by Indigenous Peoples for the last 10,000 years or more. The landscape evolved gradually over this period leading up to the arrival of the French in the 17th Century.

In addition, past industrialization surrounding the Cataraqui River has resulted in both contaminated soils along the river, as well as contaminated sediment within the riverbed. Therefore, projects that involve works within and around

---

City of Kingston Third Crossing of the Cataraqui River -  
Parks Canada Environmental Impact Analysis  
Detailed Impact Analysis Report - Section 6

the river could potentially expose this contamination and risk contaminating the river and/or groundwater. Regarding current and future projects, projects planned in the reasonably foreseeable future at the local, regional, provincial and federal level are to be considered in the cumulative effects assessment. Based on this understanding, two relevant projects have been identified and are included in this assessment:

- The proposed development of the Riverview Subdivision: Tamarack (Rideau) Corporation, is currently constructing Phase 1 and Phase 2 of the Riverview Subdivision east of Highway 15 and north of the Gore Road Library. Phase 3, which primarily consists of 69 residential lots and 2 walkway blocks is actively being processed. Phase 3 Pre-Servicing has been issued to facilitate the on-site works for the installation of underground infrastructure. The applicant is proposing to construct a sewage pumping station on the subject property in accordance with the recently completed Municipal Class EA (2017), which examined the required sanitary system upgrades within the Kingston East – Rideau Community Planning Area. The EA concluded such upgrades to the existing sanitary system, including a sewage pumping station area essential to ensure effective and reliable servicing for future development areas in the surrounding area. The proposed zoning by-law amendment complies with the general intent of the City’s Official Plan. Further the proposed public use and associated site-specific performance standards are consistent with other similar types of development within the City.
- Proposed roadway improvements to Highway 15: Highway 15 is a vital corridor in the City of Kingston, acting as the eastern gateway into the City and is the major north-south arterial. The City is currently undertaking a Municipal Class EA to review the current and future transportation needs for Highway 15 from south of Highway 401 to Highway 2. The overall purpose of the EA is to:
  - ♦ Consider improvements to Highway 15 to accommodate projected vehicular travel demand.
  - ♦ Consider active transportation and transit facilities to accommodate future development.
  - ♦ Consider aesthetic improvements and illumination throughout the corridor.

---

City of Kingston Third Crossing of the Cataraqui River -  
Parks Canada Environmental Impact Analysis  
Detailed Impact Analysis Report - Section 6

- ◆ Evaluate modifications to existing intersections and consider a potential roundabout at Highway 2 and Highway 15.

### 6.2.2 Analysis of Effects

This Cumulative Effects Assessment focuses on the key areas of concern, including the Project-specific effects with the potential to act in a cumulative fashion with other actions. The following Valued and Secondary Components were assessed as having potential residual effects within Section 5 of this document:

- Greater Cataraqui Marsh PSW
- Fish and Fish Habitat
- Birds and Bird Habitat
- Surface Water and Sediment Quality
- Aquatic Wildlife and Vegetation
- Species at Risk
- Archaeological and Cultural Heritage Resources
- Rideau Canals Commemorative Integrity
- Visitor Experience and Recreational Opportunities
- Navigation
- Hydrologic Processes
- Terrestrial Wildlife
- Terrestrial Vegetation
- Air Quality.

The following sections provide an analysis of whether potential cumulative effects exist, and if present, what pathway and type of cumulative effect is expected. As previously indicated this Cumulative Effects Assessment will focus on future activities. Only Valued and Secondary Components with potential residual effects falling within the spatial and temporal boundaries of the future projects identified in Section 6.2.1.4 will be considered within this Cumulative Effects Assessment. In some instances, an effect on one Valued



---

City of Kingston Third Crossing of the Cataraqui River -  
Parks Canada Environmental Impact Analysis  
Detailed Impact Analysis Report - Section 6

or Secondary Component may have additional effects on multiple Valued Components (i.e., a residual impact on water quality would cause residual impacts to multiple other Valued Components such as the Greater Cataraqui Marsh, fish habitat, aquatic vegetation, etc.).

#### 6.2.2.1 Greater Cataraqui Marsh Provincially Significant Wetland

The Kingston Third Crossing Project is expected to cause the temporary and permanent loss of wetland area. These losses account for the permanent footprint of the proposed crossing, as well as the area required temporarily to facilitate construction. None of the other projects described in Section 6.2.1.4 are expected to cause any direct area losses within the PSW. These projects, as well as any other potential future projects will likely be required to maintain a setback between their respective footprints and the PSW. While no cumulative effects are expected to occur to the Greater Cataraqui Marsh PSW, potential cumulative effects to the PSW related to water quality will be discussed within the Water and Sediment Quality Section.

#### 6.2.2.2 Fish and Fish Habitat

The Project is expected to cause a temporary and permanent loss of fish habitat. These losses account for the permanent footprint of the proposed crossing, as well as the area required temporarily to facilitate construction. None of the other projects described in Section 6.2.1.4 are expected to cause direct losses of fish or fish habitat. These projects, as well as any other potential future projects will likely be required to maintain a setback between the project footprints and the Cataraqui River. Potential cumulative effects to the fish and fish habitat related to water quality, noise and vibration will be discussed within these respective sections below.

#### 6.2.2.3 Birds and Bird Habitat

The Project is expected to cause the temporary loss of 1.93 ha of woodland and 0.2 ha of meadow/grass expected to support birds and bird habitat. These losses account for the permanent footprint of the proposed crossing, as well as the area required temporarily to facilitate construction. Additionally, the added lights from the proposed bridge has the potential to cause alterations to bird behavior in response to the increase amount of artificial light. The other projects described in Section 6.2.1.4 as well as any other future development projects are likely to cause similar effects to birds and bird habitat. These projects will likely lead to minor decreases in terrestrial vegetation supporting bird habitat and increases in ambient light during each

---

City of Kingston Third Crossing of the Cataraqui River -  
Parks Canada Environmental Impact Analysis  
Detailed Impact Analysis Report - Section 6

projects' operational phase. Therefore, a cumulative effect on bird and bird habitat is expected. This cumulative effect will likely be caused through both nibbling loss (vegetation loss) and possibly spatial/temporal crowding. Both of these cumulative effects are likely to have an additive effect, where the amount of vegetation loss or increases in ambient light can be correlated to the severity of effect to the birds behavior or available habitat.

Other potential cumulative effects to birds and bird habitat related to noise and vibration will be discussed within their respective CEA sections.

#### 6.2.2.3.1 Mitigation Measures

A comprehensive suite of mitigation measures has been previously described in Section 4.2.3. It is expected that other projects described within Section 6.2.4.1 of this CEA will be required to adapt similar mitigation measures in terms of ambient light colour, limiting vegetation clearing, and implementing setbacks to important habitat features for birds, and other terrestrial wildlife (i.e., snake hibernacula).

#### 6.2.2.3.2 Evaluation of Significance

The overall amount of vegetation and bird habitat proposed to be cleared to facilitate the two projects discussed in this Cumulative Effects Assessment is not considered to contribute to a significant cumulative effect given the Study Area possesses a variety of habitat types potentially used by birds, including the PSW, riparian areas, woodlands, thickets, residential areas, and a limited amount of fragmented meadow and therefore abundant retreat/alternative habitat is available within the Study Area.

#### 6.2.2.4 Surface Water and Sediment Quality Cumulative Effects Assessment

Surface water quality is of central importance to many Valued and Secondary Components to with residual, adverse effects are possible and are considered in the analysis of the Project, including:

- Greater Cataraqui Marsh PSW
- Fish and Fish Habitat
- Migratory Birds & Habitat
- Species at Risk
- Aquatic Habitat Quality

---

City of Kingston Third Crossing of the Cataraqui River -  
Parks Canada Environmental Impact Analysis  
Detailed Impact Analysis Report - Section 6

- Visitor Experience & Recreational Opportunities
- Hydrologic Processes
- Terrestrial Wildlife.

The Kingston Third Crossing Project has the potential to impact water quality by disturbing potentially contaminated sediment increasing contamination and TSS within the Cataraqui River, and potentially increasing cyanobacteria bacteria populations within the watercourse. It is unlikely that the other projects described in Section 6.2.1.4 would causes increase in the amount of sediment disturbed or entering the Cataraqui River due to requisite setbacks, vegetated buffers and other standard mitigation between the project footprints and the Cataraqui River. However, all projects require changes to the current stormwater management regime in the area and may increase the amount of stormwater entering the Study Area.

#### 6.2.2.4.1 Mitigation Measures related to Cumulative Effects to Water Quality

The Projects identified in Section 6.2.1.4 will have to manage water quantity such that post-development peak rates are equal to pre-development peak rates. Additionally, all projects will be required to treat stormwater to the same degree prior to discharge, in accordance with CRCA requirements which serves to limit the potential for cumulative effects.

The following projects are subject to implementation of stormwater best management practices:

- Roadside Ditches/Grassed Swales/Wet Swales
- Oil Grit Separators
- Peak Flow Control
- Dry Ponds (if applicable)
- Wet Ponds (if applicable)
- Supplemental Low Impact Development Measures, such as soil trenches, bioswales, vegetated filter strips and stone cooling trenches.

Additionally, all projects will be subject to the City of Kingston's Winter Plan, which manages the use of de-icing chemicals.



---

City of Kingston Third Crossing of the Cataraqui River -  
Parks Canada Environmental Impact Analysis  
Detailed Impact Analysis Report - Section 6

The lands adjacent to the Highway 15 Project corridor consist of a mixture of open space, pockets of naturalized green space and residential properties. The existing drainage system does not involve the treatment of runoff and largely consists of rural (open roadside ditches and cross culverts) and urban conveyance system (catch basin and storm sewer systems) moving discharge west before entering the Cataraqui River via numerous existing discharge points, including the 600-mm diameter storm sewer along Gore Road.

For the proposed road, south of John Marks Avenue, sub-surface drainage systems are recommended for inclusion in the roadway cross-section. This proposed system will be comprised of a series of catch basins, storm sewers and subdrains to collect and convey surface runoff and granular base material drainage to existing discharge locations. The rural roadway cross-section from John Marks Avenue to south of Highway 401 will be maintained as a semi-urban roadway cross-section. The drainage system for this section will consist of roadside ditches to convey flow to the existing discharge locations.

The strategy to provide water quality and water quantity control will include implementation of several water treatment measures, including grassed swales, oil grit separators, and peak flow control. It is the intent to provide enhanced water quality treatment and erosion control for the total paved area, rather than just the additional pavement area associated with the road improvements. Additionally, through discussion with the CRCA, the project is looking at opportunities to implement supplemental low impact development measures to those drainage segments discharging to watercourses within the CRCA regulated areas, with the intent of providing additional water quality and erosion control. These efforts are intended to minimize potential water quantity, water quality, and erosion impacts related to the proposed improvements. Salt from winter operations is not expected to have a residual effect as a result of the Project, based on the locations of the abutments. It could have an impact on water quality, as runoff enters stormwater management systems, however, although other projects involving road widening and roadworks are scheduled to occur within the Study Area, increases in salt application is expected to be marginal as a result of the widening of Highway 15, and the proposed subdivision.

The Riverview Way development is subject to City of Kingston Site Plan Control Guidelines, the main tenets are noted above. The site plan application

---

City of Kingston Third Crossing of the Cataraqui River -  
Parks Canada Environmental Impact Analysis  
Detailed Impact Analysis Report - Section 6

for this development is not available at this time, however it is expected that the SWM will utilize the existing drainage features along the south side of the site to release runoff to the Cataraqui River. The natural buffers between the Riverview Way Subdivision and the Cataraqui River are expected to provide the opportunity for further manage of water quality prior to discharge to the river.

During construction of all projects the erosion and sediment control requirements of the City of Kingston Site Plan Controls are required to be implemented, monitored and maintained. These measures are coordinated with the requirements of the CRCA, who provides input to development applications at the City of Kingston.

During construction and operation of all projects the unlikely event of a spill has the potential to affect the water quality downstream. During construction it will be the responsibility of the respective contractors to plan for and implement spill containment measures in accordance with provincial legislation. During operations the responsibility rests with the transportation firms moving bulk materials and Kingston Fire & Rescue. The installation of oil grit separator units at both projects provides some capacity to separate hydrophobic liquids, which would then be removed from the respective units. In all cases releases to the environment are subject to notification procedures set out in provincial legislation.

#### 6.2.2.4.2 Evaluation of Significance

Some degree of cumulative effect will exist with regards to water quantity and quality, however the implementation of similar SWM approaches for all projects is expected to limit the effect. Overall, the cumulative effect to water quality is not expected to be significant.

#### 6.2.2.5 Aquatic Wildlife and Vegetation

The Third Crossing Project is expected cause the temporary loss of wetland areas and permanently lost wetland vegetation and general aquatic habitat. These losses account for the permanent footprint of the proposed crossing, as well as the area required temporarily to facilitate construction. None of the other projects described in Section 6.2.1.4 are expected to cause residual effects to aquatic wildlife or vegetation. These projects, as well as any other potential future projects will likely be required to maintain a setback between the project footprints and the Cataraqui River. No cumulative effects are

---

City of Kingston Third Crossing of the Cataraqui River -  
Parks Canada Environmental Impact Analysis  
Detailed Impact Analysis Report - Section 6

expected to occur to aquatic habitat and vegetation. Potential cumulative effects to this Valued Component related to water quality, and noise and vibration will be discussed within their respective CEA sections. Potential cumulative effects to SAR aquatic wildlife will be discussed in separate sections.

#### 6.2.2.6 Species at Risk

##### 6.2.2.6.1 Species at Risk turtles

Residual effects have been identified within Section 5 for a number of SAR turtle species. Residual effects are similar and do not vary significantly across the different SAR turtle species. Potential residual effects to SAR turtles include the following:

- Potential nest excavation during construction and causeway removal.
- Disturbing or crushing hibernating individuals during construction.
- Reduced movement as a result of increased velocities or habitat connectivity.
- Potential for entrapment within the construction area.
- Potential for reduced availability of nesting habitat during construction.
- Potential for vehicle or machinery strikes during construction.

Other projects discussed in Section 6.2.1.4 are not likely to have an adverse effect on the habitat availability within the Study Area. Additionally, the other projects are not expected to have an overlapping construction phase with the Third Crossing Project. Therefore, cumulative effects related to impacts limited to the construction stage, within the Cataraqui River are not expected to incur any cumulative effects. It is worth noting that the reduction of potential nesting habitat and changes to movement corridors due to the Third Crossing Project may cause SAR turtles to have to venture further to find suitable nesting habitats during construction. This may lead to greater numbers of road mortalities along roadways adjacent to the Study Area, including Highway 15. Although Highway 15 is an existing road, the improvements to road infrastructure that all projects will bring to the Study Area may increase instances of chance road strikes on turtle species. However, once the Third Crossing Project is complete, the Cataraqui River is expected to continue to provide SAR turtles within the Study Area a suitable, safe, travel corridor to

---

City of Kingston Third Crossing of the Cataraqui River -  
Parks Canada Environmental Impact Analysis  
Detailed Impact Analysis Report - Section 6

search for nesting habitat. Increases in road mortalities are considered an additive cumulative effect caused by spatial crowding.

#### 6.2.2.6.1.1 Species at Risk Turtle Road Mortality Mitigation

It is expected that all infrastructure projects will implement similar mitigation measures to reduce the likelihood of road mortalities of SAR turtles. This may include posting signage warning motorists of times with increased likelihood of turtle crossings, integrating barriers into road designs to prevent turtles from accessing the roadway, and designing into the roadways ditches and banks at a suitable grade to prevent turtles from traversing the ditch.

#### 6.2.2.6.1.2 Significance Evaluation

Road mortality is a risk to all terrestrial animals on most roadways. Turtle road mortalities directly related to the operation of the Third Crossing Project are not expected to be significant, due to the limited possibility for turtles to access the bridge; the bridge approaches are expected to be suitably far from the river and will be graded and excluded properly. As such, risks related to the Third Crossing Project and turtle road mortality is tied to the increase in traffic flow on nearby roadways as facilitated by the bridge. Although all projects discussed within this Cumulative Effects Assessment have the potential to increase vehicle numbers within the Study Area, the majority of the infrastructure in the area is previously existing. The cumulative effect of the infrastructure projects within the Study Area are not expected to significantly impact the number of SAR turtle road mortalities within the Study Area.

#### 6.2.2.6.1.3 Follow up and Monitoring

Post construction monitoring associated with the Third Crossing Project is anticipated to assist in better understanding where turtle species are likely to nest, and therefore assist in understanding where turtle road mortalities may need further mitigation in regional area. Road mortality surveys focused on nearby roads could also be conducted to determine the overall cumulative effects of these projects on SAR turtle species, although not proposed as a condition of this DIA.

#### 6.2.2.6.2 Species at Risk Birds

The potential for cumulative effects for SAR birds are not expected to differ greatly from the general bird and bird habitat assessed previously within Section 6.2.2.3.

---

City of Kingston Third Crossing of the Cataraqui River -  
Parks Canada Environmental Impact Analysis  
Detailed Impact Analysis Report - Section 6

6.2.2.6.3 Species at Risk Bats

The potential for cumulative effects for SAR bats is not expected to differ greatly from the general bird and bird habitat assessed previously within Section 6.2.2.3.

6.2.2.6.4 Species at Risk Fish

The potential for cumulative effects for SAR fish is not expected to differ from the general fish or fish habitat assessed in Section 6.2.2.2.

6.2.2.6.5 Other Species at Risk

The potential for cumulative effects on the Monarch is not expected to differ greatly from the general bird or bird habitat assessed in Section 6.2.2.3.

6.2.2.7 Navigation

The potential for the Third Crossing Project to affect navigation within the Rideau Canal during pre-operational phases and once in operation has been acknowledged throughout Project development. Based on the proposed mitigation, which include construction timing and bridge design considerations, no constant effect to navigation is expected.

Due to the distance to the other future developments described in Section 6.2.1.4 from the navigation channel, no cumulative effects are anticipated.

6.2.2.8 Aesthetic Value

The Third Crossing Project will have a residual effect on the area's aesthetic value which are elaborated upon in Section 4 and contribute to the sense of place of the area. This acknowledgement has guided the current design in attempting to balance aesthetics with environmental effects and user needs. Guidelines prepared by PCA have been reflected in the Project's design guidelines and proposed structure to minimize the potential effect to aesthetic value.

The Riverview development along the west side of Highway 15 will be subject to the setback requirements of the CRCA and PCA to maintain a buffer between the development and the Rideau Canal. As such, the development will not contribute an effect on the aesthetic value of the Rideau Canal. The Highway 15 development will be centred upon the current Highway 15 Right of Way and is not expected to contribute an effect on the aesthetic value of the Rideau Canal either.



---

City of Kingston Third Crossing of the Cataraqui River -  
Parks Canada Environmental Impact Analysis  
Detailed Impact Analysis Report - Section 6

Based on the consideration of the aesthetic value throughout the development of the Third Crossing Project and the set back of the other two proposed developments considered in this assessment from the Cataraqui River and Rideau Canal, no cumulative effect to aesthetic value is expected.

#### 6.2.2.9 Air Quality

Air emissions, including dust are identified as having the potential to cause residual adverse effects as a result of the Project as well as the proposed roadway improvements to Highway 15. The temporal boundaries for these projects do not overlap, therefore cumulative adverse effect to Air Quality are not likely. However, both projects will improve transportation connectivity and contribute to the City of Kingston's Climate Action Plan goals of reducing GHG emission from 2011 levels. As after construction, the 14,000 metric tonnes per year reduction provided by the Project represents approximately 7% of the City's 2020 reduction goals and approximately 21% of the transportation sector goal as identified in Kingston's Climate Action Plan. Further, the Project will result in beneficial effects on transportation related vehicle emissions and air quality.

The Highway 15 project, from a transportation standpoint, is complementary to the Third Crossing Project as it is intended to provide improvements to the transportation network including walking, cycling and public transit at the eastern edge of the Third Crossing Project limits. It also provides capacity to accommodate the traffic flows from the Third Crossing Project, thereby limiting congestion and its associated vehicle idling and vehicle emissions. Accordingly, these projects are expected to have a long term, positive additive effect on air quality.