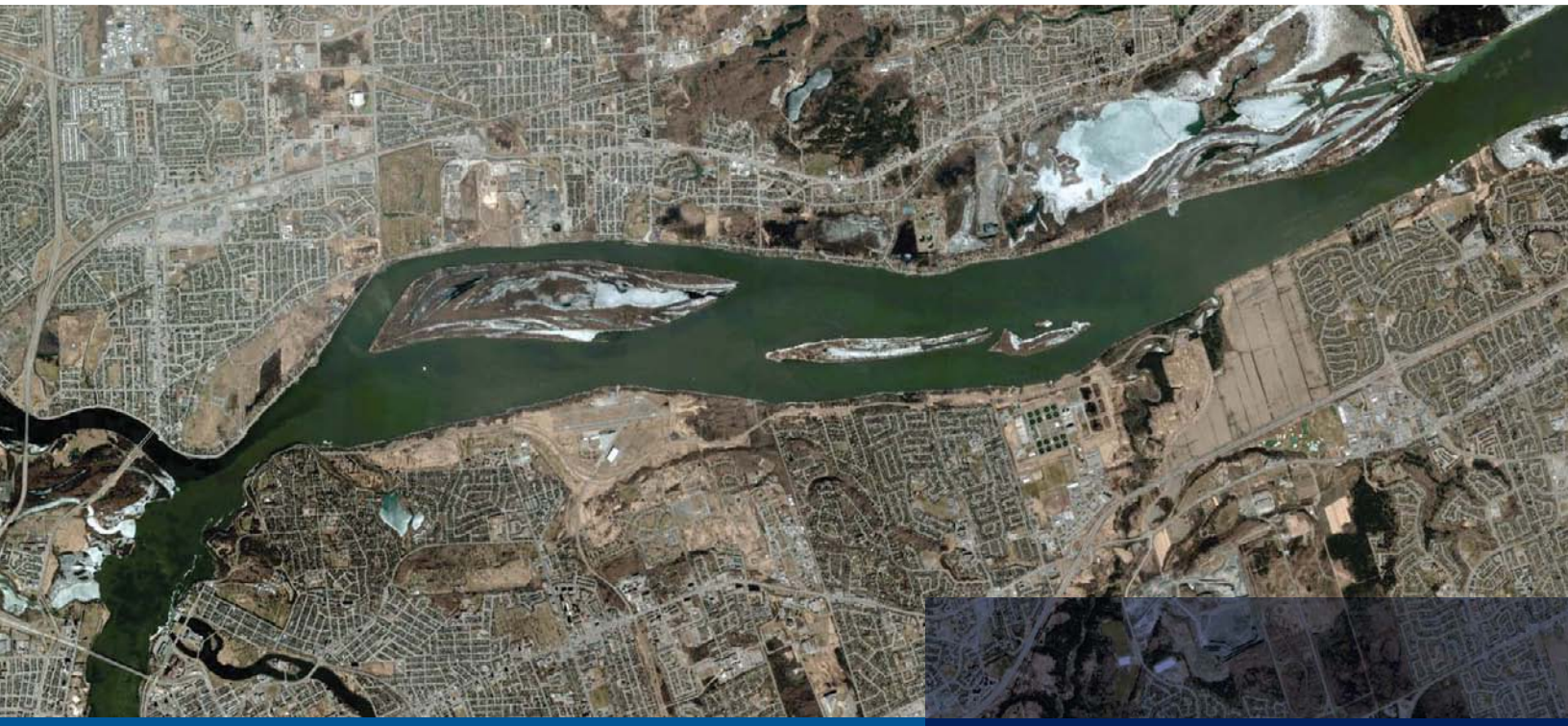
INTERPROVINCIAL CROSSINGS ENVIRONMENTAL ASSESSMENT

ÉVALUATION ENVIRONNEMENTALE DES LIAISONS INTERPROVINCIALES

coentreprise AECOM Delcan

Future Interprovincial Crossings in the National Capital Region Environmental Assessment Study



Scoping Document

April 2010

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1 Purpose

The purpose of the undertaking is to improve interprovincial transportation capacity across the Ottawa River to address long term needs. The traffic network changes from the new crossing will result in more effective and efficient movement of people and goods.

The purpose of this document is to provide direction with respect to the scope of the federal environmental assessment (EA) being conducted for the proposed Future Interprovincial Crossing spanning the Ottawa River from Ottawa, Ontario to Gatineau, Quebec. As such, the document describes the factors proposed to be considered and the proposed scope of study for those factors. The document also serves to describe the federal EA process and the proposed scope of project for the purposes of the environmental assessment.

This EA is being undertaken by the proponent, the National Capital Commission (NCC), in partnership with the Ministry of Transportation in Ontario (MTO) and the ministère des Transports du Québec (MTQ). This Scoping Document has been prepared by the Co-Enterprise AECOM-Delcan on behalf of the EA proponent.

2 Background

The NCC is the proponent of the environmental assessment for a proposed crossing of the Ottawa River between Ottawa and Gatineau. A Phase 1 Study was completed which examined 10 corridor crossings. The recommendation of the Phase 1 study was to construct a crossing at Corridor 5, Kettle Island within the next 20 years. The work would include:

- Modifications to the Aviation Parkway / Highway 417 / Ottawa Road (OR) 174 (split) interchange;
- Widening the Aviation Parkway, where necessary, to a 4-lane divided cross section;
- Constructing a new intersection with the Rockcliffe Parkway;
- A new interprovincial bridge with long spans (approximately 200 m) over the navigational channel;
- A new roadway link northerly from the bridge to Maloney Boulevard; and
- Widening Montée Paiement over Autoroute 50 to a 4-lane structure.

Following Phase 1 it was decided that the three highest ranked corridors would be carried forward to Phase 2 including Corridor 5 Kettle Island (described above), Corridor 6 Lower Duck Island and Corridor 7 Gatineau Airport/McLaurin Bay.

For Corridor 6, Lower Duck Island, the work would include:

- Widening OR 174 to 6 lanes, from new interchange at bridge approach to Highway 417
- A new interchange at OR 174
- A new roadway link from OR 174 to bridge
- Relocating Rockcliffe Parkway
- A new interprovincial bridge spanning the Ottawa River, McLaurin Bay and wetlands
- A new roadway link northerly from the bridge to Maloney Boulevard
- Widening Lorrain Boulevard from Maloney Boulevard to Autoroute 50, including a new railway structure

For Corridor 7, Gatineau Airport/McLaurin Bay, the work would include:

- Widening OR 174 to 6 lanes, from new interchange at bridge approach to Highway 417
- A new interchange at OR 174
- A new roadway link from OR 174 to bridge
- A new interprovincial bridge spanning the Ottawa River, Murphy and McLaurin Bays and wetlands and the Blanche River
- A new roadway link northerly from the bridge to Autoroute 50, including new railway structure
- A new interchange at Autoroute 50

The scope of work for Phase 2 of the EA involves environmental analysis of the three corridors, comparative analysis and evaluation, selection of the recommended corridor including proposed mitigation measures to reduce any negative environmental effects, and seeking of appropriate environmental approvals.

The Ottawa River is a navigable waterway and the work described will require approval.

Timing and contracting for the construction of the project will be determined at a later date by the Study Partners.

3 Application of the Canadian Environmental Assessment Act

In January 2010, the proponent placed the document entitled “Future Interprovincial Crossings in the National Capital Region Environmental Assessment Study – Project Description” on the Canadian Environmental Assessment Registry (see Appendix A). The same document was circulated to federal authorities that exercise a regulatory responsibility or that may have expert information or advice respecting the project. The document provided background information on the project, and an overview of the development proposal.

The *Canadian Environmental Assessment Act* (CEAA) applies to federal authorities when they contemplate certain action or decisions in relation to a project that would enable it to proceed in whole or in part. A federal environmental assessment may be required when a federal authority:

a) is the proponent of the project
b) provides financial assistance to the proponent
c) sells, leases or otherwise disposes of federal lands or
d) issues a permit, licence or any other approval as prescribed in the Law List Regulations

These function as triggers in the *Canadian Environmental Assessment Act*.

This EA study is receiving federal financial support through the NCC, which is a federal Crown Corporation responsible for ownership, planning and management of property, as well as regulating development on federal lands within the National Capital Region (NCR). The provinces of Québec and Ontario are also providing equal financial support to the study.

In addition, this project will potentially require lands in the City of Ottawa owned by the Federal Government, potentially including the vicinity of the Rockcliffe and Aviation Parkways (Corridor 5) and the Greenbelt (Corridors 6 and 7).

The following Responsible Authorities (RAs) have been identified and are required to ensure that an EA of the proposed project is carried out in accordance with CEAA:

- PWGSC, Environmental Assessment & Sustainable Project Delivery for the Ottawa River Act
- Transport Canada, Marine Safety for Navigable Waters Protection Act authorization
- Department of Fisheries and Oceans for Fisheries Act authorization
- Department of National Defence for property disposal if required

The following Federal Authorities (FAs) have been identified and will provide expert advice during the EA:

- Health Canada, Healthy Environments and Consumer Safety
- Environment Canada (Ontario and Quebec), Environmental Assessment Section
- Transport Canada, Surface Programs, Environmental Assessment of Highway Projects

Additional RAs and/or FAs may be identified during the federal coordination process.

4 Preparation of Environmental Assessment Documentation

The NCC, based on the authority provided in subsection 17(1) of CEAA, will delegate the preparation of the EA Study to a consultant in Phase 2B. The Scoping Document preparation, Phase 2A, has been delegated to AECOM Delcan. In assessing the project, Federal departments will use the EA Study, together with any technical studies that are prepared to support the EA Study, and will ensure the preparation of a Screening Report as part of their Decision respecting the significance of potential environmental effects stemming from the proposed project.

The NCC will distribute the EA Study and Screening Report and all supporting technical studies to the federal review team for review and comment. Based on comments received, the federal review team may request revisions. The draft EA Study Report will be made available for public review and comment consistent with Study Design developed in Phase 2A. The federal review team will provide comments to the NCC, and may request that additional revisions be made to the documents. More than one iteration may be required before the documents are considered complete. Once the EA Study is complete, the RAs will use this information to make a determination on the significance of the environmental effects and will document the determination in the Screening Report. The NCC will ensure that the public who participated in the EA Study will have an opportunity to examine and comment on the Screening Report.

5 Public Registry

The CEA Agency has established a national public registry, the Canadian Environmental Assessment Registry (CEAR) on which the NCC, as the Federal Coordinator, has posted a copy of Notice of Commencement and the more extensive Project Description for the assessment, as required by section 55 of CEAA. The more extensive Project Description can be accessed through the Internet Web site of the Canadian Environmental Assessment Agency (www.ceaa.gc.ca). The CEAR number for this project is 10-01-52629.

The Notice of Commencement was posted on the registry on January 19, 2010 and the availability of the Project Description (English and French) was posted on the registry on February 16, 2010.

As the assessment proceeds, the CEAR may include the following documentation:

- Scope of the factors to be considered
- Notices requesting public input
- EA decisions
- Follow-up information (if required)

Interested parties, including members of the public, will be able to obtain copies of documents related to the federal EA process by request.

6 Scope of the Project

In accordance with section 15(3) of CEAA, the scope of the project must include "in relation to a physical work, any construction, operation, modification, decommissioning, abandonment or other undertaking in relation to the physical work that is proposed by the proponent, or that is likely to be carried out in relation to that physical work".

For the Interprovincial Crossing EA Study, the scope of the project to be assessed will include, but is not limited to:

- site preparation activities including site access and staging modifications to existing infrastructure
- construction of any temporary structures, including roads and in-water structures
- construction of the bridge including new piers, abutments and approaches
- construction of roadworks including new and widened roads and related infrastructure connecting the new bridge to the provincial controlled access highway system in Ontario and Quebec (interchanges, new or modified) and intersections with municipal roadways (new or modified)
- operation of any temporary structures and roads
- operation of the bridge and ancillary facilities
- maintenance of the proposed project components (e.g. summer and winter maintenance, periodic rehabilitation and modifications)
- decommissioning and abandonment of individual project components such as temporary structures

Decommissioning and abandonment of the bridge itself and connecting roadways are not anticipated in the foreseeable future. The scope of assessment will not include this aspect.

As more detailed information becomes available about the project, the scope of project may change.

The federal EA Study will provide a complete description of all proposed primary and ancillary project components, structures and activities with an approximate schedule. These descriptions will be supported by appropriate plans, maps, and photos. The EA Study may, at its completion (but subject to future federal and provincial agreements), identify which jurisdiction(s) will be responsible for the ownership, construction and operation of each work or activity as well as the implementation of the proposed mitigation and follow-up activities.

7 Scope of Assessment

7.1 Factors to be Considered

Section 16(1) of the CEAA identifies the factors that need to be considered in an EA at the screening level:

16(1) Every screening…shall include a consideration of the following factors:

- *a) The environmental effects of the project, including the environmental effects of malfunctions or accidents that may occur in connection with the project and any cumulative environmental effects that are likely to result from the project in combination with other projects or activities that have been or will be carried out;*
- *b) The significance of the effects referred to in paragraph (a);*
- *c) Comments from the public that are received in accordance with this Act and the regulations;*
- *d) Measures that are technically and economically feasible and that would mitigate any significant adverse environmental effects of the project; and*
- *e) Any other matter relevant to the screening… that the responsible authority… may require to be considered.*

It should also be noted that that the definitions of *environment* and *environmental effect* under the CEAA are as follows:

"Environment" means the components of the Earth, and includes:

- *a) Land, water and air, including all layers of the atmosphere;*
- *b) All organic and inorganic matter and living organisms; and*
- *c) The interacting natural systems that include components referred to in paragraphs (a) and (b).*

"*Environmental effect*" means, with respect to a project:

- *a) Any change that the project may cause in the environment, including any change it may cause to a listed wildlife species, its critical habitat or the residences of individuals of that species, as those terms are defined in subsection 2(1) of the Species at Risk Act,*
- *b) Any effect of any such change referred to in paragraph (a) on*
  - *i. Health and socio-economic conditions,*
  - *ii. Physical and cultural heritage,*
  - *iii. The current use of lands and resources for traditional purposes by aboriginal persons, or*
  - *iv. Any structure, site or thing that is of historical, archaeological, paleontological or architectural significance, or*
- *c) Any change to the project that may be caused by the environment,*

Whether any such change or effect occurs within or outside Canada.

When these terms are used in this document their meaning is as defined above. For this project, factors to be assessed in relation to the components of the project have been developed in consultation with agencies, the public and other stakeholders. The eight factor areas are natural, cultural, water use and resources, social, land use and property, economic, traffic and transportation and costs. These factor areas and the sub-factors identified within each will be used to determine the environmental effects of the project and project alternatives. Sub-factors are noted below in section 8.1.

The scope of the assessment for the Interprovincial Crossings will include environmental effects of the project, including the environmental effects of malfunctions or accidents that may occur in connection with the project, the effects of the environment on the project and any cumulative environmental effects that are likely to result from the project in combination with other projects or activities that have been or will be carried out. Additional guidance on the cumulative effects assessment is provided in section 8.5 of this document.

Additional or more specific factors or issues to be addressed in the EA may be identified following consultation with expert federal authorities, other stakeholders and the public throughout the EA process.

Evaluation of environmental effects will be undertaken for the three corridors described in this Scoping document until such time as one or more corridors is eliminated from further consideration, based on the results of technical and environmental work and the comparative analysis. The reasons behind the decision to carry forward the preferred corridor will be documented along with its environmental effects as described in this section.

8 Content of the Environmental Assessment Study

8.1 Scope of the Factors to be Considered

The scope of factors to be considered in the assessment will include, but may not necessarily be limited to, potential effects (including cumulative effects) on the following environmental components:

Natural Environment
- Species at Risk, flora and fauna, habitat
- Air Quality/Greenhouse gases
- Fisheries and Aquatic Habitat
- Hydrotechnical (hydraulics, hydrology, , water quality)
- Terrestrial (wildlife, birds, vegetation, wetlands, habitats)
- Environmentally Significant Areas
- Environmentally Sensitive Areas

Cultural Environment
- Heritage and Archaeological
- Aboriginal Interests

Water Use and Resources
- Water treatment facilities
- Wastewater treatment facilities

Social Environment
- Community
- Visual Aesthetics and Views
- Human Health
  - Air Quality
  - Noise
  - Vibration
- Recreation
  - Boating activities
  - Scenic parkways
  - Recreational facilities
  - Float planes

Land Use and Property
- Conformity with Official Plans (cities and NCC)
- Federal Master plans and Special Purpose or Protected areas (e.g. Greenbelt)
- Future development
- Property Requirements, full and partial (residential, business, institutional, industrial, agricultural)
- Museum, Airport runways
- Property impacts
- Contamination (soil/sediment)

Economic Environment
- Economic Development

Traffic and Transportation
- Trucking
- Traffic operations
- Transit operations
- Traffic Safety
- Connectivity to non-motorized infrastructure

Costs
- Lifecycle costs

Appendix B contains a description of the scope of generic factors to be considered.

The factors required by section 16(1) and 16(2) of the CEAA are to be considered systematically in the EA Study. Specifically, the EA Study will describe:

- Application of CEAA
- Project description (i.e. description of: construction, operation and maintenance phases; project location; and project schedule)
- Scope of the project
- Scope of the assessment
- Spatial and temporal boundaries of the assessment
- Existing environmental conditions
- Likely environmental effects, including mitigation
- Likely cumulative environmental effects, including mitigation
- Likely residual environmental effects
- Significance of environmental effects
- Public consultation activities, including issues identified and their resolution
- Aboriginal consultation activities, including interests and issues identified and their accommodation
- Follow-up program, if required
- Conclusions and recommendations for decision

Details on specific information to be addressed in the EA Study are provided in the following sections.

8.2 Project Description

The EA Study will include a comprehensive description of the project commensurate with the level of design undertaken for the project at the time of the environmental assessment. The project description will include a description of the construction, and operation activities that are being proposed. The description of the project will refer to, and elaborate on, the items identified in the project scope, supported with appropriate maps and diagrams.

8.3 Spatial and Temporal Boundaries of the Environmental Assessment

The consideration of the environmental effects in the EA Study Report needs to be conceptually bounded in both time and space. This is more commonly known as defining the *study areas* and *time frames*, or spatial and temporal boundaries.

Study areas will be defined taking into account ecological, technical and social considerations and professional judgement regarding the likely geographic extent of likely environmental effects. The "study area" for the Interprovincial Crossing Study will therefore vary, depending on the component of the environment being examined. For example:

- For noise modelling, the study area includes major roads within 600 m of the road being studied
- For traffic operations, the study area is regional, using the overall travel demand forecasting model for the National Capital Region
- For wetlands, the study area is the overall wetland system potentially impacted

The following geographic study area definitions are suggested as a reference point. As noted above, it is expected that the spatial boundaries will vary for each environmental component, depending on the nature of the predicted effects. The specific spatial boundaries will be defined in the EA Study.

Site Study Area	The Site Study Area is the project footprint, namely, the area where new construction of physical works takes place, as well as areas or structures that are being modified, decommissioned or abandoned. The Site Study Area may not include all of the area required for mitigation measures.
Local Study Area	The Local Study Area is defined as that area existing outside the Site Study Area boundary, where there is a reasonable potential for the occurrence of environmental effects from the project. The boundaries may change, as appropriate, following a preliminary assessment of the spatial extent of potential environmental effects.
Regional Study Area	The Regional Study Area is defined as the area within which there is the potential for cumulative effects.

The temporal boundaries for the assessment will establish over what period of time the project-specific and cumulative effects will be considered, and will address at a minimum the planning horizon of the project.

Within the potential boundaries of physical infrastructure (i.e. the Site Study Area), alternatives such as various horizontal alignments, vertical profiles and cross-sections will be considered. The corridors to be considered during Phase 2B are illustrated on Figures 1, 2 and 3 and described as follows:

- **Corridor 5:** from Autoroute 50 to Maloney Boulevard, construction is expected to be contained within the boundaries of the existing Montée Paiement right-of-way (current four-lane divided arterial). From Maloney Boulevard to the north river shore, construction will require acquisition of new right-of-way. The horizontal alignment is expected to be an extension of Montée Paiement southerly with potential to swing easterly into a portion of the existing golf course. At the north shore the study area expands to the west to consider area required for the

potential relocation of the Rue Jacques Cartier intersection with Rue Saint Louis. Across the river, the road alignment will need to follow appropriate geometric design standards for the speed of traffic, considering the location of the road on the north and south shores. The width of the study area across the river may be several hundred meters as illustrated, though obviously both ends will be controlled by the corridor on land. From the south shore to Highway 417, construction will be generally within the NCC-owned corridor. A portion of the federal lands between the Aviation Museum and the Montfort Hospital on the east side of the Aviation Parkway will be included in the Site Study Area. No changes to the Aviation Parkway alignments are proposed between Montreal Road and Ogilvie Road where the Aviation Parkway is currently a 4 lane divided roadway. At the Highway 417 interchange, the Site Study Area will extend along Highway 417 and OR 174 for a distance of about 1 km to include the area potentially required for the construction of suitable ramp connections.

- **Corridor 6:** from Autoroute 50 to Maloney Boulevard, the Site Study Area will include Lorrain Boulevard and adjacent properties. From Maloney Boulevard to the north river shore the Site Study Area includes lands between the water treatment plant and McLaurin Bay. The width of the study area across the river is several hundred meters as illustrated. The ends will be controlled by the location of the corridor on land. From the south shore to Ottawa Road 174, the corridor extends from the westerly boundary of the Greenbelt (including the Montreal Road interchange and the east edge of the Canotek development) to the easterly side of the Phase 1 alignment of Corridor 6. The Site Study Area also includes land south of OR 174 as needed to construct an interchange and potential connections to St. Joseph Boulevard. The corridor also includes the OR 174 right-of-way (widening proposed) from this new interchange to Highway 417 interchange where ramp improvements will be considered.
- **Corridor 7:** The Site Study Area north of Autoroute 50 will be in the open space between the highway and the airport, sufficient to develop a new interchange and service roads to connect to the existing road network. From Autoroute 50 to Maloney Boulevard, the study area will include open area that follows the Phase 1 Corridor 7 alignment between Rue de Granby and Montée Chaudet. The need to connect with the Site Study Area on the south shore of the Ottawa River (within the Greenbelt), requires that Corridor 7 swing upstream and cross the McLaurin-Murphy Bay wetlands at an angle. The Site Study Area has been shown reasonably wide to allow for development of alternatives within these natural areas. From the south shore to OR 174, the Site Study Area will be from the easterly boundary of the Greenbelt to the westerly side of the Corridor 7 as developed during Phase 1. The corridor also includes the OR 174 right-of-way (widening proposed) from this new interchange to Highway 417 interchange where ramp improvements will be considered.

No geometric design work has been done during Phase 2A to confirm the feasibility of the potential alignments within the Site Study Areas. As a result, the feasibility of any new alignments proposed after Phase 1 must be examined in Phase 2B.

In Phase 1, a number of criteria were established to guide the identification of suitable corridors. The important criteria for Phase 2 are summarized as follows:

- The corridor must satisfy interprovincial transportation demand and be available for truck traffic
- The corridor must connect the provincial highway system, specifically the controlled access highways (Highway 417 in Ontario and Autoroute 50 in Quebec)

- The corridor must involve arterial roads and highways where it follows existing infrastructure
- The corridor must have a geometric design that corresponds to a suitable design speed for this roadway
- The corridor must consider potential impacts to the environment as defined by the factor areas

These criteria need to be considered for any new alignments within the identified Site Study Areas.

Figure 1 Corridor 5 Site Study Area

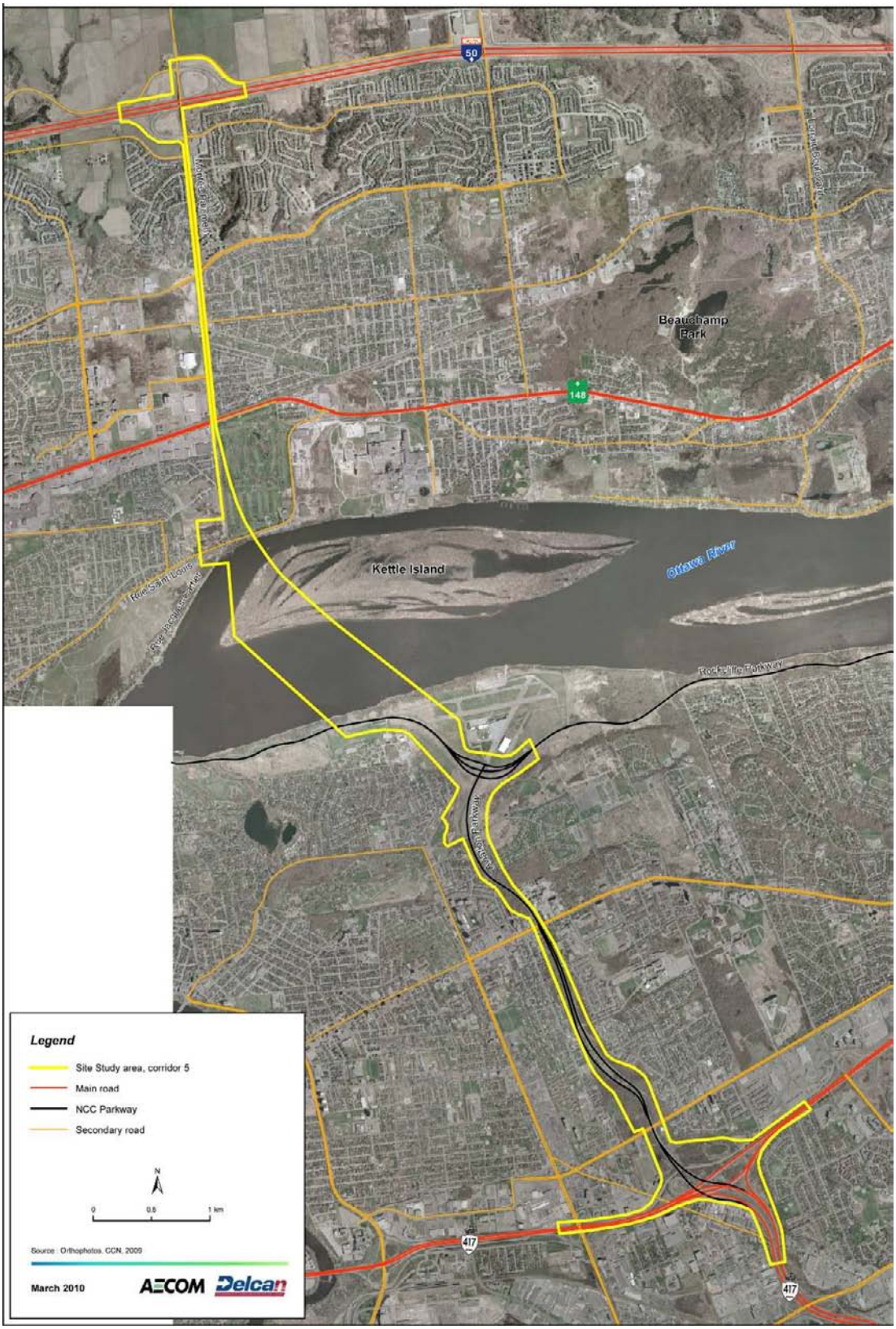


Figure 2 Corridor 6 Site Study Area

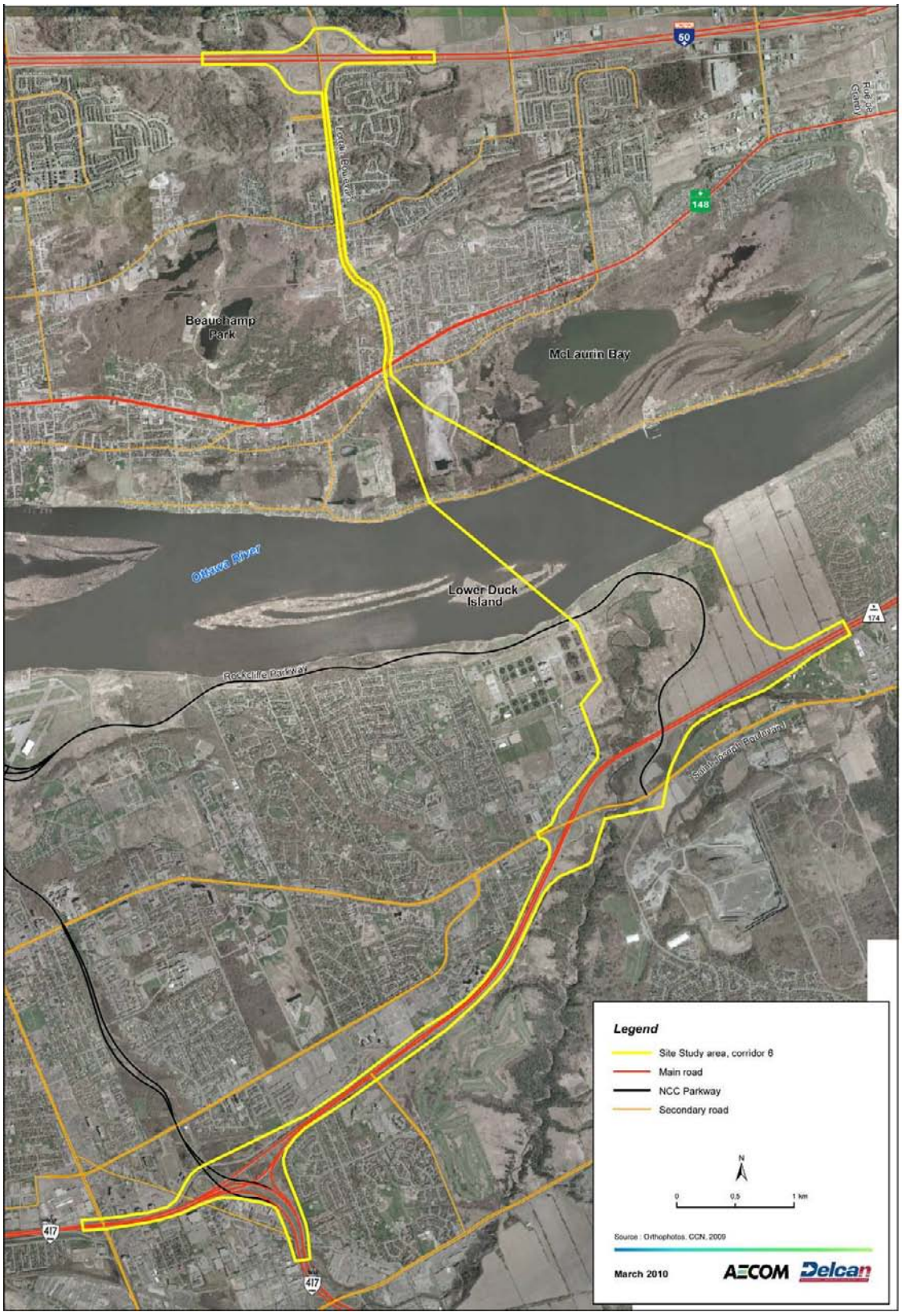
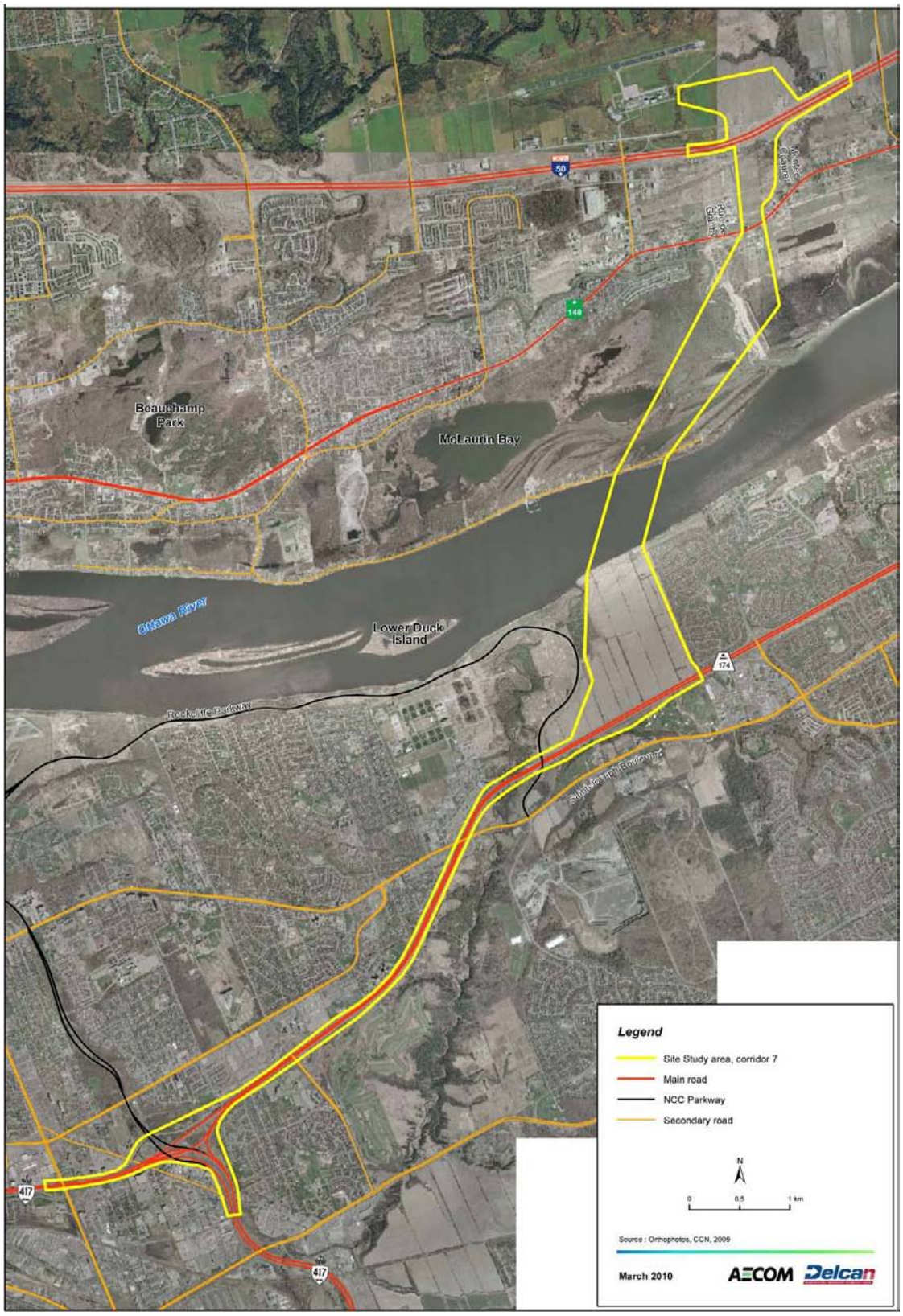


Figure 3 Corridor 7 Site Study Area



8.4 Description of the Existing Environment

A description of the existing environment is required to determine the likely interactions between the project and the surrounding environment and, conversely, between the environment and the project. The components that are typically described include, but are not necessarily limited to the factors described in section 8.1 above.

The required level of detail in the description of the existing environment will be less where the potential interactions between the project and various components of the environment are limited, or remote in time and/or space.

8.5 Assessment and Mitigation of Environmental Effects

The consideration of potential environmental effects in the EA Study will be done in a systematic and traceable manner. The assessment methodology will be summarized. The results of the assessment process will be clearly documented using summary matrices and tabular summaries where appropriate.

The following provides further details on the methods that will be followed to assess the effects that may be caused by the project, and the assessment of effects of the environment on the project.

8.5.1 Assessment of Environmental Effects

The assessment will be conducted in a manner consistent with the following general method:

1. ***Identify the potential interactions between the project activities and the existing environment during construction and normal operations, and with respect to relevant malfunctions and accidents.***

Specific attention will be given to interactions between the project and the environment. The analysis will distinguish between construction effects and operational effects, and the text will clearly identify which project activities could affect which components of the environment.

In this step, standard design and operational measures that would prevent or reduce the likelihood of interactions occurring with the environment will be reviewed. Opportunities for additional impact mitigation measures are addressed in step 3 below.

2. ***Describe the resulting changes that likely would occur to the components of the environment as a result of the identified interactions with the project.***

Each environmental change will be described in terms of whether it is direct or indirect, and positive or adverse.

Identified changes in natural, social, and transportation conditions will focus on those that are likely to result from the predicted changes that the project is likely to cause to the environment. However, a general description of other natural, social, and transportation effects will also be provided.

Quantitative as well as qualitative methods will be used to identify and describe the likely adverse environmental effects. Quantitative analysis will be used where feasible, for example for environmental components, such as air quality, noise and vibration. Professional expertise and judgment will be used in interpreting the results of the analyses. The basis of predictions (including data and modeling limitations/assumptions and inaccuracies) and interpretation of results, as well as the importance of remaining uncertainties, will be clearly documented in the EA Study.

3. Identify and describe technically and economically feasible mitigation measures that may be applied to each likely adverse environmental effect.

Mitigation strategies will reflect avoidance, precautionary and preventive principles. That is, emphasis will be placed on avoiding or preventing the cause or source of an effect before addressing how to reverse or reduce an effect once it occurs.

The EA Study will identify measures that are technically and economically feasible and that will mitigate any significant adverse environmental effects of the project, including cumulative effects. Proposed mitigation measures will conform to pertinent federal and provincial regulations, guidelines, standards, best practices and/or codes of practice, and the EA Study will indicate how this will be achieved. The EA Study will clearly indicate when mitigation will be implemented (as opposed to providing suggestions as to what could or might be done) and will identify who will be responsible for implementing the measures and how their effectiveness will be ensured.

Where the prevention of effects cannot be assured, further mitigation measures in the form of contingency responses, will be described. Where relevant, commitments to further develop site-specific environmental management plans will be identified.

4. Provide an opinion on the significance of the environmental effects that likely will occur as a result of the project, having taken into account the implementation of the proposed mitigation measures.

The criteria for judging and describing the significance of the residual (post-mitigation) effects will include: magnitude; duration and frequency; ecological context; geographic extent; and permanence / degree of reversibility.

The analysis will be documented in a manner that readily enables conclusions on the significance of the environmental effects to be drawn. The responsible authorities will make the final decision on the significance of the environmental effects.

8.5.2 Assessment of Effects of the Environment on the Project

The assessment will take into account how the environment could adversely affect the project, for example, from seismic events or severe weather, including occurrences of extreme flood flows, ice jams, and high water level events. The assessment will also take into account any potential effects of climate and climate change on the project, including an assessment of whether the project might be sensitive to changes in climate conditions during its life span.

This part of the assessment will be conducted in a step-wise fashion, similar to that described for the assessment of the project effects. The possible interactions between potential natural hazards and the project will be first identified, followed by an assessment of the effects of those interactions, mitigation measures, if required, and the significance of any remaining likely adverse environmental effects.

The emphasis in this section will be on environmental conditions that are reasonably plausible, but not limited to events that occur on a regular basis.

8.5.3 Assessment of Accidents and Malfunctions

The EA Study will identify the potential for environmental effects resulting from accidents and malfunctions during any phase of the project and will evaluate the likelihood and circumstances under which these events could occur. The implementation of any mitigation measures, contingency plans and response mechanisms will be detailed in this section.

8.6 Assessment of Likely Cumulative Effects

Cumulative effects are residual effects on the environment (i.e. that occur after mitigation measures have been put in place) combined with the environmental effects of past, present and future projects or activities. Cumulative effects can also result from the combination of different individual environmental effects of the project acting on the same environmental component. As such, the effects of this project will be considered together with those of other projects and activities that have been, or will be carried out, and for which the effects are expected to *overlap* with those of the project (i.e., overlap in same geographic area and time).

In order to consider the potential cumulative environmental effects of the project, the EA will identify other past, present or reasonably foreseeable future projects carried out in the study area. The emphasis in this section will be on “reasonably foreseeable” projects (e.g., projects that have been approved or that are currently advancing through the regulatory approvals process). Ongoing discussion with federal authorities will be undertaken during the preparation of a list of other projects and activities that will be addressed. Other projects planned by local and regional governments, as well as provincial and federal agencies will be identified in consultation with the agencies responsible. This must include other federally funded transportation projects in the region.

The projects will not be limited to other public transit/transportation infrastructure projects. All reasonably foreseeable projects will be considered, especially those that may add cumulative effects to water quality, vegetation, wildlife habitat, air quality, and noise as these environmental factors often experience the most impact from multiple projects / cumulative effects.

The information available to assess the environmental effects from other projects may be less detailed as those effects may be more remote in distance and time to the project. Detailed information about another project or activity may not be available. The consideration of cumulative environmental effects may, therefore, be at a more general level of detail than that considered in the assessment of the direct project-environment interactions.

The likely cumulative effects will be assessed for significance in a similar fashion to other environmental effects.

Guidance on how to consider cumulative environmental effects in an EA will be obtained from the reference guide *Cumulative Effects Assessment Practitioners Guide*, Canadian Environmental Assessment Agency, February 1999, available at http://www.ceaa.gc.ca/.

8.7 Assessment of the Significance of the Environmental Effects

The criteria for evaluating and describing the significance of the residual effects (including cumulative effects) will include: magnitude; duration and frequency; ecological context; geographic extent; and permanence / degree of reversibility. Existing federal and provincial regulatory and industry standards and guidelines will be used as points of reference for evaluating significance. Professional expertise and judgement will also be applied in evaluating the significance of an environmental effect. All applicable federal and provincial laws will be respected.

The analysis will be documented in a manner that readily enables conclusions on the significance of the environmental effects to be drawn. The RAs will make the final decision on the significance of the environmental effects.

8.8 Public Consultation

The EA Study will include a description of public consultation activities, including a list of key stakeholders, meetings and/or other events, as well as a summary of issues identified and the steps that are being taken to address them. The results of public consultation undertaken for this project to date has been documented and placed on the study web site. Future consultation activities are also described on the web site (www.ncrcrossings.ca).

Comments received by the proponent that relate to the EA Study will be clearly identified and tabulated along with a description of how those comments were addressed and incorporated into the EA Study Report, how they may have affected the Project or assessment and/or the reasons for not incorporating some comments. RAs will consider comments received throughout the EA process when making their determination under the Act.

Pursuant to section 55 of the Act, a Canadian Environmental Assessment Registry (CEAR) was established to provide notice of the federal EA, and to facilitate public access to records relating to the EA. As noted earlier, the link to the registry for this project is: http://www.ceaa.gc.ca/050/details-eng.cfm?evaluation=52629

8.9 Aboriginal Consultation

The Algonquins of Ontario (AOO) have an outstanding land claim that encompasses the city of Ottawa and most of Eastern Ontario. As such, they have been, and will continue to be, involved in the study. The Kitigan Zibi Anishinabeg (KZA) First Nation also has interests in the study area and is involved in the study.

The NCC is actively working with the AOO and KZA to formalize their involvement for Phase 2 of the study. One meeting was held (November 2009) during the initial work on Phase 2A, and two additional consultation meetings were held in March-April 2010. The purpose of the initial meeting was to discuss the best approach for working together on this Study. The purpose of the second meeting in March was to review progress and discuss draft Memoranda of Understanding (MOU) being developed to provide a framework for AOO and KZA involvement. Later in March 2010, the First Nations groups were informed that the NCC was unable to commit at this time to funding proposals but remained committed to meaningful consultation. The purpose of the third meeting, in

April, was to discuss the draft CEAA Scoping document and Study Design as well as the MOU process.

The AOO and KZA have indicated that they want to be involved in a substantive way and that funding is needed. Their interest is about the territory and how it will be used. If concerns arise that rights might be infringed, then proper accommodation will need to be discussed.

8.10 Follow-Up Program

The need for a follow-up program will be considered in the EA Study. The purpose of a follow-up program is to assist in determining if the environmental effects, including cumulative effects, of the project are as predicted in the EA Study. It is also to confirm whether the impact mitigation measures are effective, and to determine if any new mitigation strategies may be required. An opinion will be provided in the EA Study Report on whether a formal follow-up program is required. Should a need for a follow-up program be identified, the EA Study Report will provide a description of proposed environmental and compliance monitoring activities to be undertaken. The design of the program will be appropriate to the scale of the project and the issues addressed in the EA Study.

The RAs will make the final determination on whether a formal follow-up program is required, and what measures will be taken to ensure the implementation of mitigation measures.

8.11 Conclusions and Recommendations for Decision

The Screening Report will present a preliminary recommendation by the NCC as to whether the project is likely to cause significant adverse environmental effects, taking into account the appropriate mitigation measures. However, each of the RAs will make its own conclusions on the EA, consistent with the *Canadian Environmental Assessment Act.*

9 Contacts for the Environmental Assessment

Contact information for the Federal Environmental Assessment Coordinator (FEAC):

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Senior Environmental Officer
National Capital Commission
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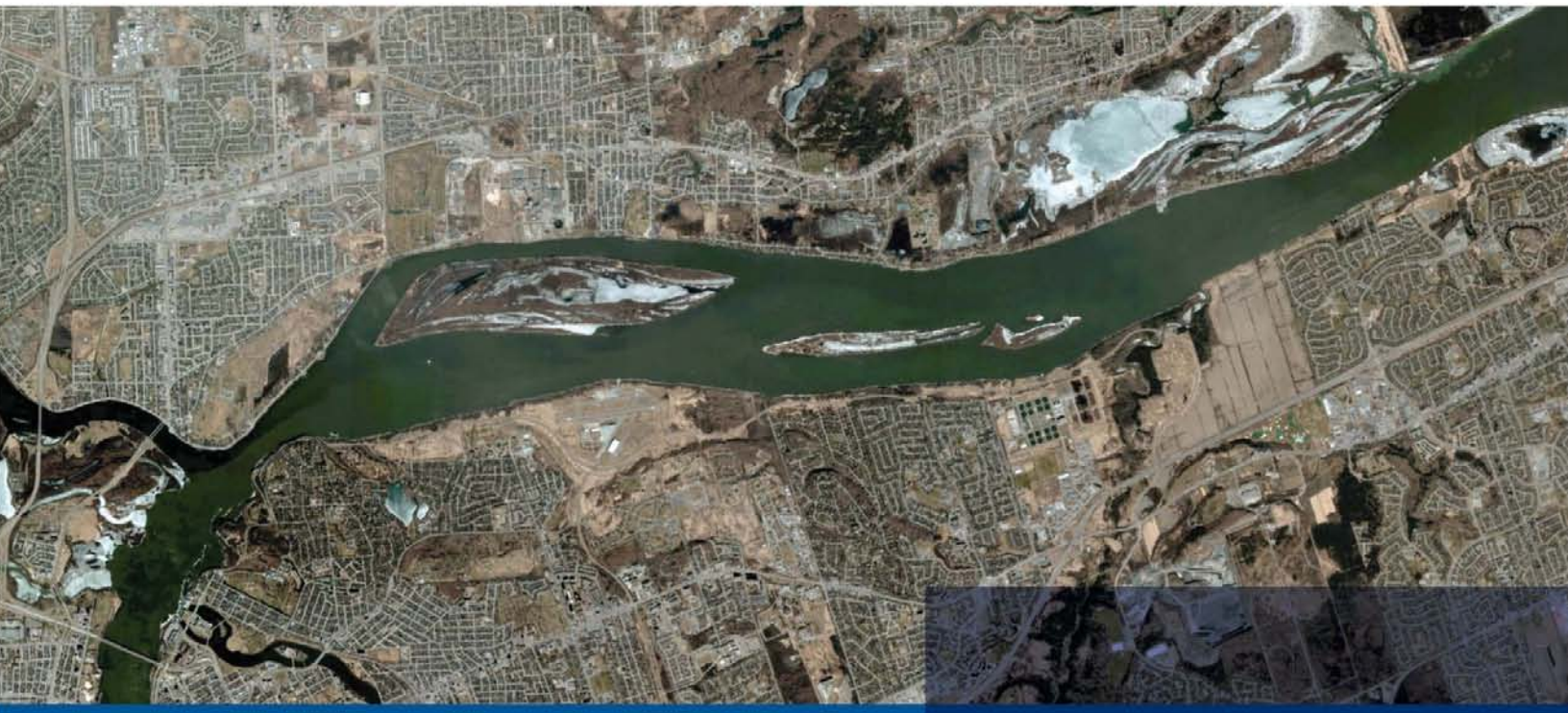
Appendix A

Project Description

coentreprise

AECOM Delcan

Future Interprovincial Crossings in the National Capital Region Environmental Assessment Study, Phase 2A



Project Description

for the Canadian Environmental Assessment Registry

NCC CCN

NCC File No: SC2050

December 2009

Future Interprovincial Crossings in the National Capital Region Environmental Assessment Study

Project Description for the Canadian Environmental Assessment Registry

NCC File No : SC2050

AECOM Delcan

Ref : 05-19680

January 2010

This report has been prepared by the following personnel of AECOM Delcan:

14 January 2010

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Valerie McGirr, P. Eng.

14 January 2010

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Distribution

NCC/CCN PDF copy

Project folder

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1 Introduction

The National Capital Commission (NCC), in cooperation with the Ministry of Transportation in Ontario (MTO) and the Ministère des Transports du Québec (MTQ), initiated the Future Interprovincial Crossings Environmental Assessment (EA) Study in 2006. Deficiencies in the current transportation system have resulted in increased auto emissions, traffic delays and heavy truck traffic in the urban core of the City of Ottawa as the National Capital Region (NCR) continues to grow.

The Interprovincial Crossings EA study is being undertaken in two phases. Phase 1 of the study was initiated in 2006, and was completed in January 2009 by Roche-NCE. The objectives of Phase 1 were to confirm the need for additional interprovincial crossing locations, to propose and evaluate alternative solutions and to prioritize the solutions. During this Phase, it was demonstrated that there is a need for a new interprovincial crossing. Ten potential corridor locations were proposed, evaluated, and ranked based on several evaluation criteria. A preferred corridor location (the Kettle Island Crossing) was determined as a result of the Phase 1 study. Following Phase 1, a decision was made to carry forward the three highest ranked corridors identified in the Phase 1 Study for further examination, including Kettle Island, Lower Duck Island and Gatineau Airport/McLaurin Bay.

Phase 2 was initiated in October 2009 and is being undertaken in two stages. Phase 2A is being undertaken by AECOM-Delcan Co-Enterprise and includes the preparation of a Study Design including a Public Engagement Plan and a Scoping document. During Phase 2B, the EA will be completed, leading to a recommended project corridor out of the three under consideration. As part of this phase, measures to minimize or eliminate adverse environmental effects will be recommended.

A map of the National Capital Region is shown in Figure 1. Locations of the three highest ranked corridors within the NCR are shown in Figure 2. More specific locations of the corridors, shown in Figures 3, 4 and 5 are described as follows.

Corridor 5 – Kettle Island

The north end of the corridor is located at the interchange of Highway 50 and Montée Paiment in Gatineau at approximately latitude 45°30’ north and 75°40’ west. The south end of this corridor is located at the Highway 417/174 interchange in Ottawa, at approximately latitude 45°25’20” north and 75°37’20” west.

Corridor 6 – Lower Duck Island

The north end of the corridor is located at interchange of Highway 50 and Lorrain Boulevard in Gatineau at approximately latitude 45°30’ north and 75°36’ west. The south end of the new corridor is located on Ottawa Road (OR) 174 in Ottawa, at approximately latitude 45°27’40” north and 75°34’ west. Widening of OR174 westerly to Highway 417 is also included in this project.

Corridor 7 – Gatineau Airport – Baie McLaurin

The north end of the corridor is located at a new interchange with Highway 50 in Gatineau, in the vicinity of the Gatineau Airport, at approximately latitude 45°30’ north and 75°32’ west. The south end of the new corridor is on OR174 in Ottawa at approximately latitude 45°27’40” north and 75°34’ west. Widening of OR174 westerly to Highway 417 is also included in this project.

Figure 1 Map of the National Capital Region and Study Limits

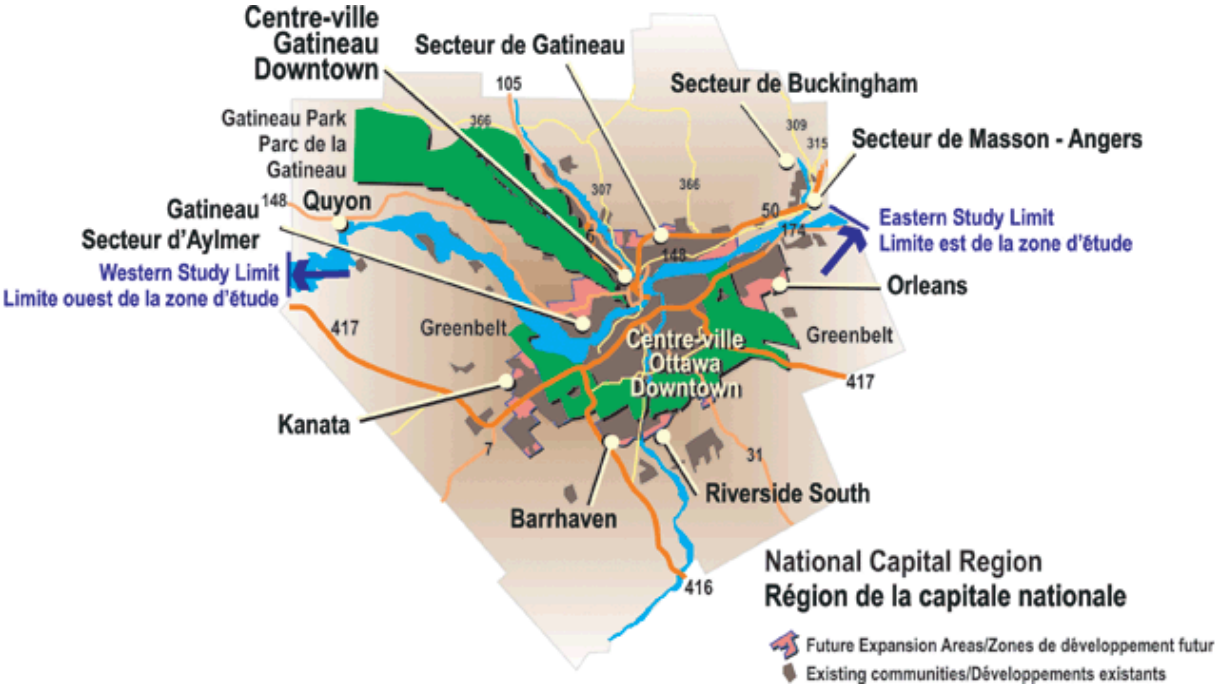


Figure 2 Map of Three Highest Ranked Corridors within the Context of the NCR

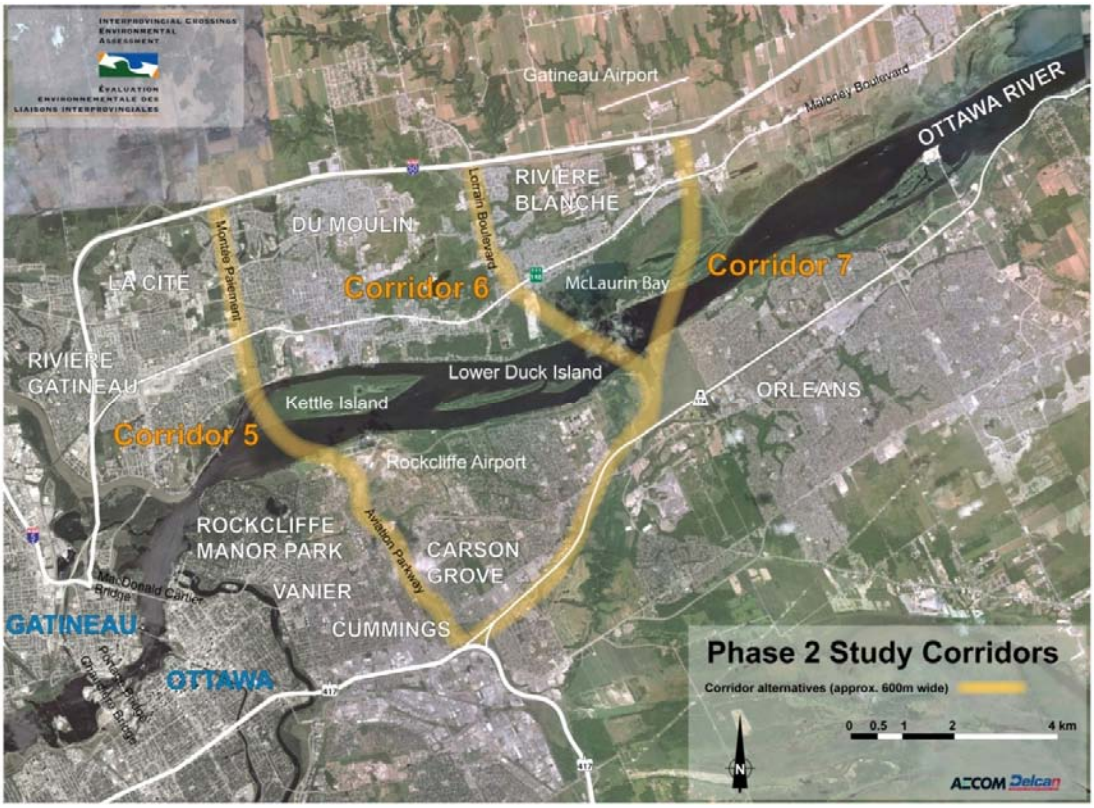


Figure 3 Corridor 5 - Kettle Island Corridor (from Phase 1 Final Report)

(Note: portion of corridor north to Autoroute 50 and south to Highway 417 not illustrated)

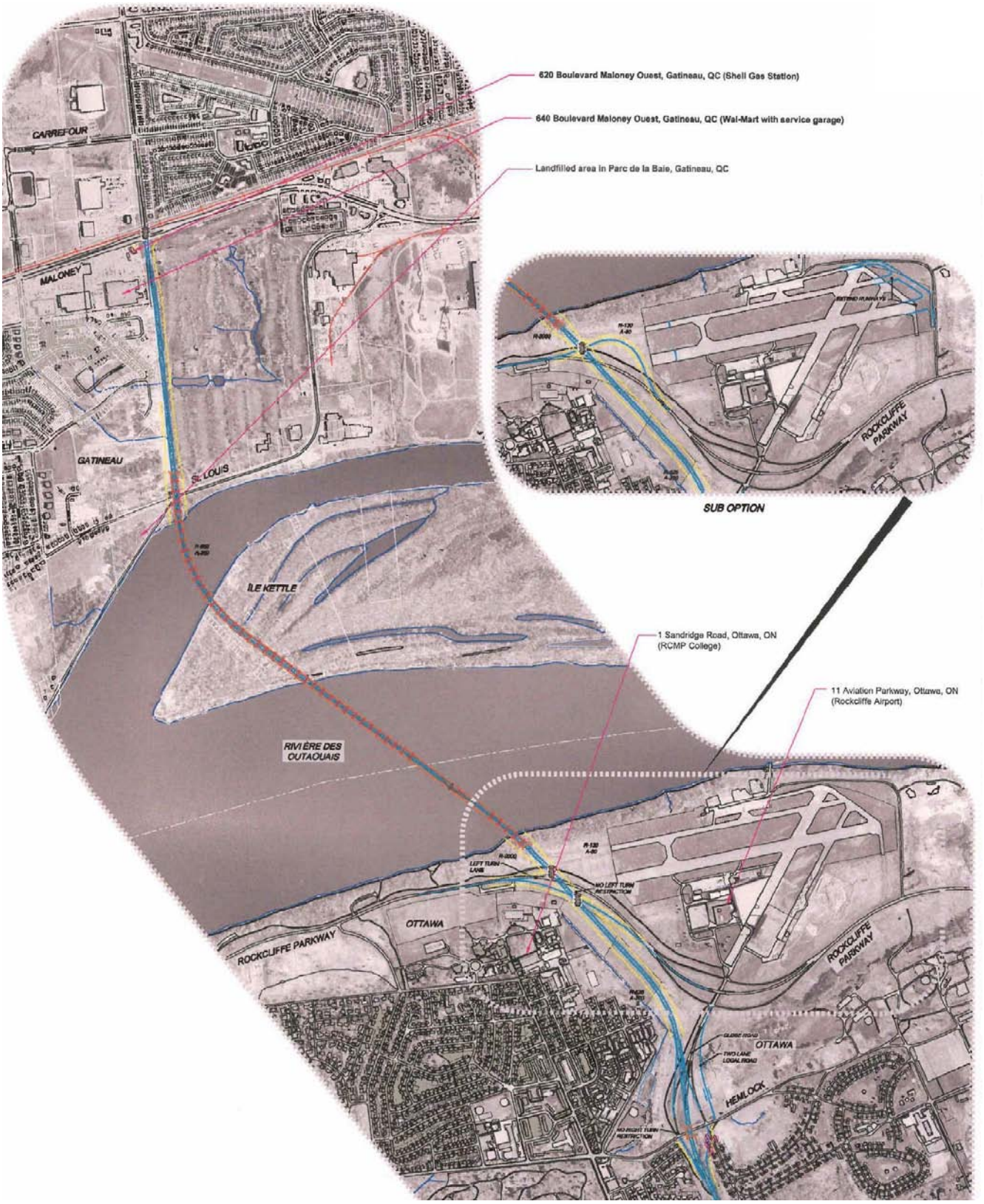


Figure 4 Corridor 6 - Lower Duck Island Corridor

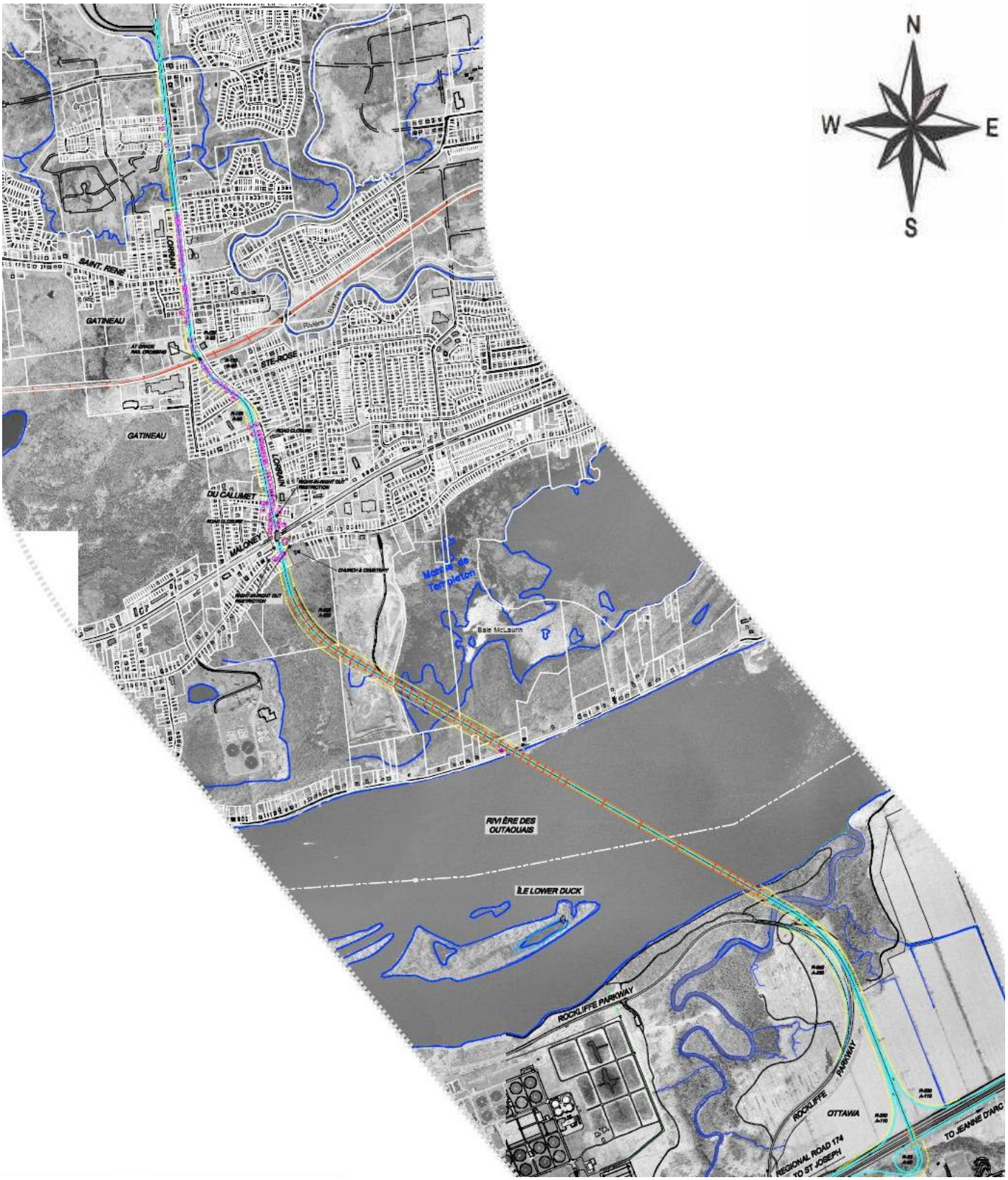
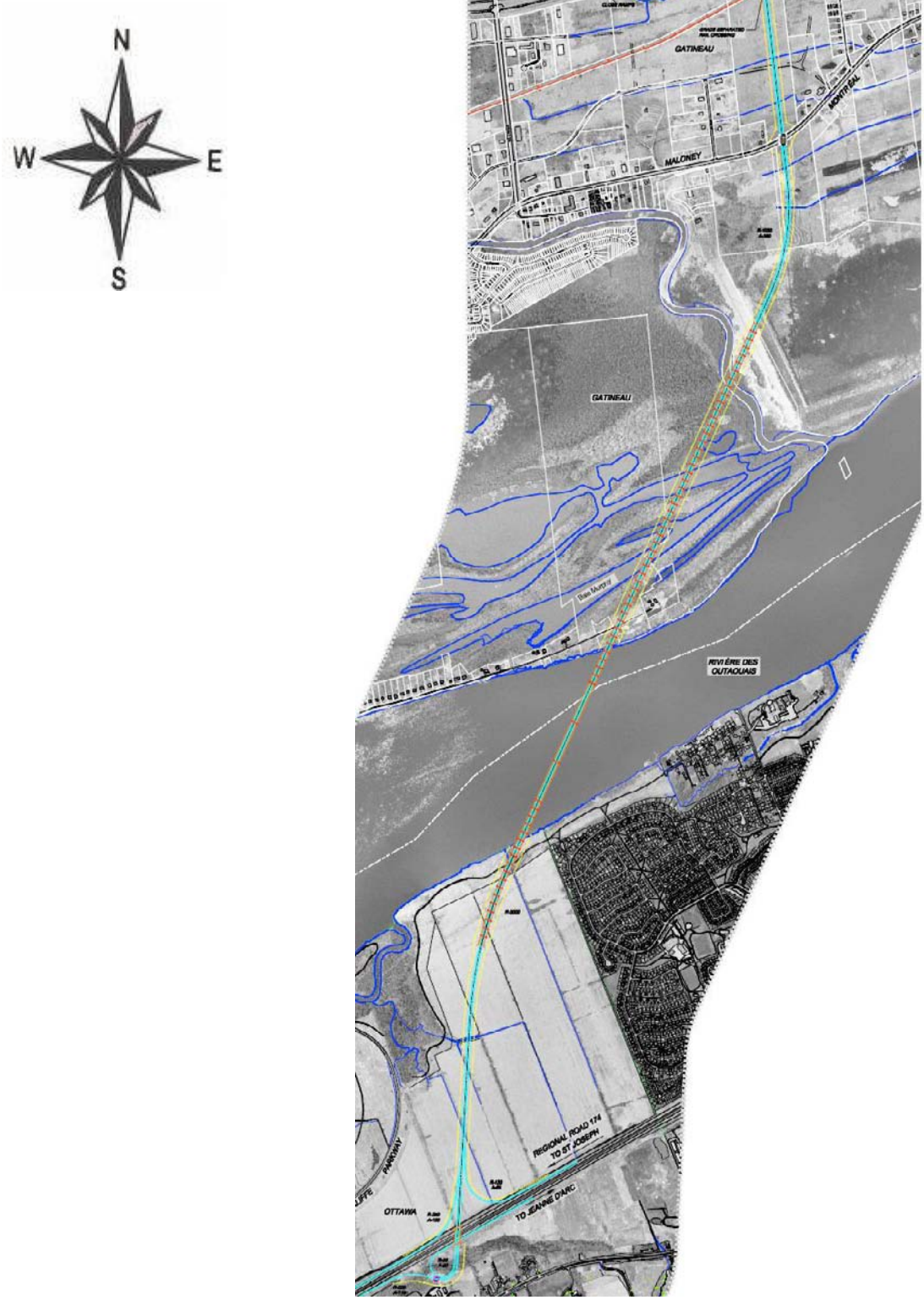


Figure 5 Corridor 7 - Gatineau Airport / Baie McLaurin Corridor



1.1 Purpose of This Document

This document, entitled "Future Interprovincial Crossings in the National Capital Region Environmental Assessment Study - Project Description" is based on content provided in the Phase 1 study (Roche-NCE, 2009). This Project Description has been prepared to formally initiate the federal EA process by providing information on the proposed undertaking to assist federal authorities in determining their respective involvement with the federal environmental assessment and to allow for posting of the project description of the Canadian Environmental Assessment Registry as initial public notification of the initiation of the environmental assessment of the project, all in accordance with the Canadian Environmental Assessment Act (CEAA).

In accordance with the Canadian Environmental Assessment's Agency's Operational Policy Statement on Preparing Project Descriptions under the *Canadian Environmental Assessment Act ("the Act"),* this project description includes the following information:

- Overview/General Information on the Project
- Name and Contact Information for the Proponent;
- Federal Involvement
- Description of Project Components
- Description of Physical Works and Activities (including Waste Disposal);
- Description of the Study Area and Existing Environment, including information on Fish and Fish Habitat
- Public/Agency Consultation to date

1.2 Proponents

The National Capital Commission is the proponent of this study; its study partners are the Ministère des Transports du Québec (MTQ) and the Ministry of Transportation of Ontario (MTO). This study also is being prepared in collaboration with the City of Ottawa and the City of Gatineau. All five of these agencies will participate in the Study Team Steering Committee and the Technical Advisory Committee.

1.2.1 Contact Information

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2 Environmental Assessment and Approvals

This study is being undertaken as a federal EA. As a result of the interprovincial nature of the proposed project, the environmental requirements of Canada, Québec and Ontario will be applied, insofar as possible. Where two or more processes may indicate different levels of requirements, in order to achieve the same goal, the more stringent and rigorous requirements shall be applied. It is recognized that definitions, measurement methods, levels of detail and consultation requirements for the different processes may vary, and that the EA Study shall satisfy the guidelines and operational statements established by the CEA Agency, MOE, and MDDEP, insofar as possible.

2.1 Provincial and Municipal Permits

A complete list of anticipated provincial and municipal permits that may be required will be developed during Phase 2B of the EA Study. These may include, but are not limited to permits and authorizations under the following statutes:

- Ontario Water Resources Act
- Québec Loi sur la qualité de l'environnement
- Ontario Water Resources Act
- Ontario Heritage Act
- Québec Loi sur les biens culturels
- Conservation Authorities Act

2.2 Federal Permits and Authorizations

The federal permits and authorizations required will be determined in Phase 2B of the EA Study. These will include but are not limited to:

- Fisheries Act, Department of Fisheries and Oceans – Fish Habitat Authorization(s)
- Navigable Waters Protection Act, Transport Canada – Navigability Permit(s)

2.3 Federal-Provincial Financial Support to the EA study

This EA study is receiving federal financial support through the National Capital Commission, which is a federal Crown Corporation responsible for ownership, planning and management of property, as well as regulating development on federal lands within the NCR. The provinces of Québec and Ontario are also providing equal financial support to the study.

2.4 Federal Land to be Used or Required by the Project

This project will potentially require lands in the City of Ottawa owned by the Federal Government, potentially including the vicinity of the Rockcliffe and Aviation Parkways (Corridor 5) and the Greenbelt (Corridors 6 and 7).

2.5 Other EA Regimes to Which the EA Study has been or could be Subjected

This study is a federal EA study, and is subject to the Canadian Environmental Assessment Act (CEAA).

Ontario EA Requirements

Since the Project has been identified as a federal undertaking and the *NCC* has been identified as the Proponent for the purposes of the Phase 2 EA Study, the MOE have determined that their legislation does not specifically apply. The EA Study process will, therefore, incorporate the information requirements of the provincial process where those are more rigorous than the Federal requirements.

Québec EA Requirements

Application of the Québec environmental assessment process is under discussion. Should the Project be considered as a federal Project by the Province and that the provincial process does not apply, then this EA Study process will incorporate the information requirements of the Québec process where those are more rigorous than the federal requirements.

3 Project Information

The following sections provide relevant material on the project summarized from Phase 1, Interprovincial Crossings Environmental Assessment Study Feasibility, Needs Assessment and Justification Report.

3.1 Schedule

The completed EA Study is expected to be finished in late 2012, with all endorsements and approvals for the environmental assessment expected to be received by December 2013.

3.2 New Interprovincial Crossing Alternatives

Based on the results of the "Alternatives to the Undertaking" evaluation, the Phase 1 process included the generation, refinement and evaluation of a number of corridor locations for the new interprovincial transportation infrastructure. The ten corridor locations that were considered included:

1. Chemin Pink–Riddell Drive;
2. Boulevard des Allumettières to Riddell Drive
3. Deschênes to Moodie Drive;
4. Deschênes to Highway 416;
5. Kettle Island;
6. Lower Duck Island;
7. East of Lower Duck Island – Boulevard de l'Aéroport;
8. Tenth Line – Montée Mineault;
9. Petrie Island; and
10. Masson – Cumberland.

Bridge alternatives were considered for all corridors. Tunnel alternatives were considered for Corridors 2 and 7. Following a more detailed screening and evaluation process, the preferred "Alternative to the Undertaking" was identified as: Corridor 5 – Kettle Island. However, based on comments received during the Phase 1 consultation sessions, the decision was made by the proponent and its provincial partners, MTO and MTQ, to carry forward the three highest ranked alternatives for detailed evaluation during Phase 2. In each case, the alternatives include a crossing of the Ottawa River. In-water work is planned with each alternative. The number and arrangement of bridge spans will be assessed during the alternative design phase. The bridge is expected to include a long clear span of approximately 200 m regardless of which alternative is chosen. The three alternatives that are being studied during Phase 2 are:

Corridor 5 – Kettle Island

This corridor runs from Highway 417 to Autoroute 50 via the Aviation Parkway in Ottawa, and includes a new bridge traversing the Ottawa River at Kettle Island and Montée Paiement Boulevard in Gatineau. This alternative includes:

- Modifications to the Aviation Parkway / Highway 417 / Ottawa Road (OR) 174 interchange;

- Widening the Aviation Parkway, where necessary, to a 4-lane divided cross-section;
- Constructing a new intersection with the Rockcliffe Parkway;
- A new interprovincial bridge spanning the Ottawa River;
- A new roadway link northerly from the bridge to Maloney Boulevard; and
- Widening Montée Paiement over Autoroute 50 to a 4-lane structure.

Corridor 6 – Lower Duck Island

This corridor runs from Ottawa Road 174 / Highway 417 to Autoroute 50 via a new roadway connection through the Greenbelt in Ottawa, and includes a new bridge structure traversing the Ottawa River at Lower Duck Island and Lorrain Boulevard in Gatineau. This alternative includes:

- Widening OR 174 to 6 lanes, from new interchange at bridge approach to Highway 417;
- A new interchange at OR 174;
- A new roadway link from OR 174 to bridge;
- Relocating Rockcliffe Parkway;
- A new interprovincial bridge spanning the Ottawa River, McLaurin Bay and wetlands
- A new roadway link northerly from the bridge to Maloney Boulevard; and
- Widening Lorrain Boulevard from Maloney Boulevard to Autoroute 50, including a new railway structure.

Corridor 7 – Gatineau Airport / McLaurin Bay

This corridor runs from Ottawa Road 174 / Highway 417 to Autoroute 50 via a new roadway connection through the Greenbelt in Ottawa, and includes a new bridge structure traversing the Ottawa River at McLaurin Bay and a new roadway connection to Autoroute 50 adjacent to the Gatineau Airport. This alternative includes:

- Widening OR 174 to 6 lanes, from new interchange at bridge approach to Highway 417;
- A new interchange at OR 174;
- A new roadway link from OR 174 to bridge;
- A new interprovincial bridge spanning the Ottawa River, Murphy and McLaurin Bays and wetlands and the Blanche River;
- A new roadway link northerly from the bridge to Autoroute 50, including new railway structure; and

- A new interchange at Autoroute 50.

3.3 Project Activities

The project involves the construction and operation of a road network connecting Highway 417 in Ottawa Ontario and Autoroute 50 in Gatineau, Quebec. For Corridor 5, Kettle Island, the project activities include:

- Five new ramps at the interchange of Highway 417 and OR174 with new structures (ranging from about 50 to 500 m in overall length) and grading (earth embankments). Construction is expected to be within existing road right-of-way.

- Upgrading of the Aviation Parkway from East Transitway to Montreal Road, a distance of about 2.3 km

- A four lane divided road from Montreal Road to the proposed bridge, a distance of about 2.4 km including new structure and new ramps at Hemlock (4 times 300 m) and a new local road (about 500 m). Construction will require acquisition of about 5 residential properties on Via Venus just south of Hemlock Road.

- Realignment of 1 km of the Rockcliffe Parkway and new signals at the intersection of the Rockcliffe Parkway and the new road to the bridge. Right-of-way will be within federal lands.

- A four-lane interprovincial bridge (including structure over Kettle Island) a distance of about 2.3 km. Property will be required for the right-of-way across Kettle Island (500m by 60 m) and from the Ottawa River north shore to the north end of the bridge (350m by 60 m). The south abutment will be on federal lands.

- A four lane divided road from the bridge to Maloney Boulevard. Additional property will be required for the right-of-way along the extension of Montée Paiement, a distance of about 800m.

- Widening of Montée Paiement across Autoroute 50, a distance of about 700 m. Construction is expected to be within existing road right-of-way.

Other work items will include drainage culverts, noise walls, retaining walls, closure of existing portions of road and intersection modifications. Construction access, materials storage and staging areas for the contractors will be required. Locations will be developed in consultation with the relevant road authorities during preliminary and detailed design. Given the complexity of the new ramps and structures at Highway 417, staging areas will likely be required for each structure. For the interprovincial bridge, in-water work will be required. The lengths and number of spans will be determined in detail design to suit environmental and engineering conditions. Temporary access will be required from provincial, municipal and federal roadways. Temporary roadworks will be required to detour traffic and maintain operation of existing roads during construction.

For Corridor 6, Lower Duck Island, the project activities include:

- Widening Ottawa Road 174 by one lane in each direction for a distance of about 6.3 km. Construction is expected to be within the existing road right-of-way.

- A new interchange at Ottawa Road 174 including ramps to and from east and west. Property will be required within the Greenbelt to accommodate the ramps and structure.

- A new 4 lane divided roadway from Ottawa Road 174 to the new interprovincial bridge, a distance of about 800 m. Right-of-way will be required through the Greenbelt.

- Relocating the Rockcliffe Parkway east of Green's Creek for a distance of about 700m. Right-of-way will be required through the Greenbelt.

- A four-lane interprovincial bridge, about 2.3 km long.

- A new 4-lane divided road from the bridge to Maloney Boulevard, a distance of about 350 m.

- Signalization and improvements at the intersection of Maloney and Lorrain Boulevards.

- Widening of Lorrain Boulevard from Maloney Boulevard to Autoroute 50 to create a divided four-lane cross-section a distance of 2.3 km. Road widening will require additional right-of-way from the residential and other properties that line this road. Acquisition of numerous properties is anticipated.

- A new railway structure on Lorrain Boulevard. Grade separation of the rail crossing will require acquisition of several properties on either side.

As with Corridor 5, other work items will be required as part of this project. Construction access, materials storage and staging areas for the contractors will be required. Locations will be developed in consultation with the relevant road authorities during preliminary and detailed design. Staging areas will likely be required along OR 174, at the new interchange and for each component of the Project. For the interprovincial bridge, in-water work will be required. The lengths and number of spans will be determined in detail design to suit environmental and engineering conditions. Temporary access will be required from provincial, municipal and federal roadways. Temporary roadworks will be required to detour traffic and maintain operation of existing roads during construction, in particular the major widening of Lorrain Boulevard.

For Corridor 7, Gatineau Airport/McLaurin Bay, the project activities include:

- Widening Ottawa Road 174 by one lane in each direction for a distance of about 6.3 km. Construction is expected to be within the existing road right-of-way.

- A new interchange at Ottawa Road 174 including ramps to and from east and west. Property will be required within the Greenbelt to accommodate the ramps and structure.

- A new 4 lane divided roadway from Ottawa Road 174 to the new interprovincial bridge, a distance of about 1000 m. Right-of-way will be required through the Greenbelt.

- A new interprovincial bridge spanning the Ottawa River, Murphy and McLaurin Bays and wetlands and the Blanche River, a distance of about 3.2 km. New right-of-way will be required.

- A new roadway link from the bridge abutment to Maloney Boulevard, a distance of about 900 m. New right-of-way will be required

- New signals and intersection at Maloney Boulevard with right-of-way.

- A new road from Maloney Boulevard to Autoroute 50, a distance of about 800 m. New right-of-way will be required.

- A new structure carrying the road over the railway just south of Autoroute 50. Additional right-of-way to accommodate embankments may be required, depending on the design proposed.

- A new interchange at Autoroute 50 with relocation of about 1 km of service road near the airport.

As with Corridor 5, other work items will be required as part of this project including major and minor culverts and retaining walls. Construction access, materials storage and staging areas for the contractors will be required. Locations will be developed in consultation with the relevant road authorities during preliminary and detailed design. Staging areas will be required along OR 174, at the new interchanges on OR 174 and Autoroute 50 and for each other component of the Project. For the interprovincial bridge, in-water work will be required. The lengths and number of spans will be determined in detail design to suit environmental and engineering conditions. Temporary access will be required from provincial, municipal and federal roadways. Temporary roadworks will be required to detour traffic and maintain operation of existing roads during construction.

3.4 Resource/Material Requirement

The resources and material requirements will be identified later in the EA Study and subsequent design. Quantities will be calculated in increasing detail as the accuracy of input data improves. The lengths of roadway and structures provided in Section 3.3, Project Activities, provides an indication of the substantial amount of materials required for a project of this magnitude.

The National Capital Region has significant resources in granular materials, concrete and asphalt that could be used in the construction of roads and structures. Given the size and number of structures involved, this project will likely attract the interest of major global contractors.

4 Existing Environmental Conditions

4.1 Natural Environment

4.1.1 Aquatic Environment

4.1.1.1 The Ottawa River

The study area spans the Ottawa River from the Ontario side in the south, in the City of Ottawa, to the Québec side in the north in the City of Gatineau. The Ottawa River is 1271 km in length and runs from Lake Capimitchigama in central Québec and then west to Lake Temiskaming, where it begins to define the border between the Province of Ontario and the Province of Québec. The river runs south from Lake Temiskaming and ends at the Lake of Two Mountains (Lac des Deux-Montagnes) and the St. Lawrence River in Montreal (Wikipedia, 2009).

All three corridors cross the Ottawa River at various locations, which are described in the sections below. Other watercourses specific to each corridor are also described below.

4.1.1.2 Hydrology and Surface Water Quality

Preliminary Hydrological studies were undertaken on all potential corridors as part of the Phase 1 study. The information below is taken from the Feasibility, Needs Assessment and Justification Report (Roche-NCE, 2009), which summarized the results of the Hydrological study, as well as information gathered as part of the preliminary Aquatic investigations. The complete preliminary Hydrotechnical and Fisheries and Aquatic Habitat Reports can be found on the internet at www.ncrcrossings.ca.

Corridor 5 – Kettle Island

This section of river is relatively shallow with the deepest areas in the order of 10 m ± and a shallow shoal on the south shore of Kettle Island. The width of the flow channel is 200 m for the area north of Kettle Island and 800 m for the area south of Kettle Island. Flows transition from the north side of the river, off Kettle Island, towards the south bank near the Aviation Museum, and therefore, would be expected to approach the crossing at a small to moderate angle. (Roche-NCE, 2009)

The riverbed substrate mainly consists of silt, with a small proportion of sand and traces of organic materials [north of Kettle Island only]. Water transparency is high and the maximum water depth measured as part of the September 2007 field reconnaissance was 9.4 metres. For the last 40 years, water level fluctuations in this part of the Ottawa River have been controlled by the Carillon Dam. There is a shallow water zone (less than 1.8 m in depth) just off the south shore of Kettle Island with the main flow channel being just north of Rockcliffe Parkway. The 100 year flow is 9840 m^3/s with a velocity of about 1.0 m/s (Roche-NCE, 2009).

Kettle Island is characterized by calm, shallow waters. (Roche-NCE, 2009).

Corridor 6 – Lower Duck Island

In this corridor, the river's flow channel is approximately 1 km wide, with no islands. The closest island (Lower Duck) is located 200 m upstream. The average water depth is 4.2 m. Both shorelines and the southwest corner of the corridor are characterized by areas of shallow water.

The section of river at Corridor 6 is similar to Corridor 5 in that the deepest areas are in the order of 10 m ±, with the majority of the flow area concentrated in the southern half of the channel. The 100 year flow is 9840 m^3/s with a velocity of about 0.9 m/s

As in Corridor 5, the crossing alignment appears to be at a moderate angle to the flow. (Roche-NCE, 2009)

Corridor 7 – Gatineau Airport / Baie McLaurin

The main channel of the Ottawa River is approximately 700 m wide (excluding the floodplain), making it one of the narrowest sections that was being considered for a potential crossing site during Phase 1. Like Corridor 6, this corridor includes no islands. The 100 year flow is 9840 m^3/s with a velocity of about 1.1 m/s

Bathymetric charts for this area show narrow bands of shallow waters (less than 1.8 m) along the Québec and Ontario shorelines. Water transparency levels and current velocity are low.

Baie McLaurin is a 42 ha marshland, which is bordered to the south by the McLaurin Lake outflow channel (Lalancette, 1990). According to the 2007 field observations, the channel reaches a maximum depth of 0.9 m, with an estimated average depth of 0.6 m. It is characterized by turbid waters and limited water discharge. The riverbed substrate is composed of fine-grained silt and organic matter. The shoreline surface deposits consists of silt, clay, sand and organic matter. The shoreline slopes are gentle to moderate, and show no evidence of erosion. (Roche-NCE, 2009)

4.1.1.3 *Fisheries and Aquatic Habitat*

The Ottawa River is the main aquatic feature within the study limits; however, there are numerous tributaries that flow into the Ottawa River in the study area for all corridors. The following information is taken from the Fisheries and Aquatic Habitat Report (Roche-NCE, 2008).

Corridor 5 – Kettle Island

Aquatic and emergent vegetation is found on both the Québec shoreline and northern shoreline of Kettle Island. The Québec shore is characterized by a narrow band of swamp forest extending right up to Jacques-Cartier Street. An unnamed stream draining part of a local golf course (east) and a residential subdivision (west) flows across the corridor and into the Ottawa River.

Shallow water areas are found on both the Ontario shoreline and the southern shoreline of Kettle Island. On the Ontario shoreline, the substrate consists of sand, silt and organic matter whereas on the left bank (Kettle Island), it consists of boulders, pebbles, cobbles and gravel. The river bed substrate consists of sand and silt. The Ontario shore features a strip of deciduous forest extending up to the Rockcliffe Parkway. The shoreline in this area has been heavily modified and consists of rip rap with a large storm sewer discharging urban runoffs.

Kettle Island includes several areas of open water colonized by emergent and floating aquatic vegetation. A survey of aquatic vegetation included sedges, narrowleaf bur-reed, water-lily, water-shield, pondweed, wild celery, water milfoil, *polygonum sp.*, Canada water-weed, pickerelweed, broad-leaved cattail, *juncus sp.* and hornwort.

The presence of lentic, shallow waters combined with aquatic vegetation suggests that the Kettle Island swamplands hold strong spawning site potential for phytophil and

phytolithophil species. The south shore of Kettle Island provides a good yellow perch spawning environment as the aquatic vegetation provides the ideal support for the eggs and protection for the juveniles. In addition, the area has an abundant source of prey for this species. This area also provides favourable spawning conditions for northern pike and brown bullhead.

The sandy beaches south of Kettle Island also provide potential spawning sites for the black crappie. This species would probably use this area during the first three years of its life, as it provides an abundant source of invertebrates required in the early life stages as well as the piscivorous prey species it feeds upon later in life.

Finally, the south shore of Kettle Island provides suitable spawning sites for pumpkinseed and rock bass. This area includes a wide variety of substrates, including mud, sand and rock, as well as abundant aquatic vegetation, providing excellent feeding and shelter opportunities. However, the channel located between Kettle Island and the Québec shore would appear more suitable to the rock bass, given the river substrate composition in this area and because this species prefers deeper waters in summertime.

According to MRNF and OMNR data, the bays around Kettle Island include confirmed spawning sites for the following species: brown bullhead, northern pike, largemouth bass, rock bass, common carp, smelt, eastern silvery minnow, emerald shiner, bluegill (rare), black crappie, pumpkinseed and shiner. The presence of largemouth bass, brown bullhead, eastern silvery minnow, emerald shiner and shiners in the area of Upper Duck Island, located approximately 3 km downstream of this corridor has also been confirmed.

The southernmost end of the Ontario side of the study area includes two separate tributaries of Green's Creek. Both channels have already been impacted by the development of Highway 417 and the Aviation Parkway.

Corridor 6 – Lower Duck Island

The Québec shoreline floodplain is adjacent to the lake of McLaurin Bay and intersects with the Templeton Marsh. This area is a mosaic of wetlands, including marshes, swamps and open water areas with aquatic vegetation. The black crappie is known to spawn in the Templeton Marsh, therefore most likely in this corridor. A confirmed northern pike (phytophil species) spawning site is located slightly further downstream, in McLaurin Bay.

Both the Québec and Ontario shorelines are heavily modified. A band of submerged and emergent aquatic vegetation was observed on the Ontario shoreline. A 15 m wide band of aquatic vegetation is located along the Québec shoreline.

The Ottawa River channel in this area does not include any confirmed spawning sites. However, spawning sites have been documented in the vicinity of Lower Duck Island, located upstream of the corridor. Species known to spawn in this area include the walleye, black crappie, mooneye, emerald shiner, smallmouth bass and pumpkinseed. A 1990 fish survey conducted in the Duck Islands sector yielded the following species: bluegill, bluntnose minnow, brown bullhead, white sucker, Johnny darter, largemouth bass, logperch, muskellunge, rock bass, rosyface shiner, smallmouth bass, spotfin shiner, spottail shiner and yellow perch.

The Green's Creek tributary intersects with the corridor in two locations, approximately 200 m and 1 km south of the Ottawa River. Green's Creek includes few areas of aquatic vegetation, with coverage averaging less than 25%. The corridor includes two fish nursery areas; the first is located in the southwest quadrant, south of highway 174, while the second is located approximately 300 m upstream of the mouth of Green's Creek.

A fish survey conducted on June 25, 2005 close to the mouth of Green's Creek yielded 22 juvenile bass (including 16 largemouth bass and 2 cyprinids). A 2004 survey conducted in the upper reaches of this watercourse (1 km south of the Ottawa River, close to highway 174) yielded the following species: Johnny darter (number of specimens: 91), longnose dace (75), black crappie (32), creek chub (19), central mudminnow (8), pearl dace (7), white sucker (4), pumpkinseed (4), golden shiner (3), common shiner (2), spottail shiner (1), brook stickleback (1), logperch (1), trout-perch (n.d.) and rock bass (n.d.). All of these species are also found in the Ottawa River. According to OMNR staff, Green's Creek is a known spawning site for the common shiner and the white sucker. Experimental fishing conducted approximately 3.5 km upstream of the corridor in 1996 yielded nine brassy minnows, a species with special status (at risk of designation as threatened or vulnerable in Québec). All other species captured were considered common.

Saugers were captured in Green's Creek (at the intersection with St-Joseph Boulevard) as part of an electrofishing campaign conducted during the spawning season in habitats generally described by the literature as preferential spawning habitat. However, because no eggs or spawning behaviour were recorded as part of this survey, the site has been identified as a potential spawning site instead of a confirmed spawning site. This potential spawning site is located outside the corridor under study (approximately 400 m upstream).

The Green's Creek watercourse contains but a few areas of aquatic vegetation concentrated along the shoreline. The shore includes areas of rock, clay, organic soils and trees. Closer to highway 174, the shore composition includes areas of gravel and sand. Slopes are gentle, and show few signs of erosion. Water depth varies from 0.3 m to 3 m.

In addition to the Ottawa River and Green's Creek, this study area includes tributaries of the Dalton-Bergeron Stream, the Blanche River and other unnamed watercourses on the Québec side.

Corridor 7 – Gatineau Airport / Baie McLaurin

The Blanche River, a meandering watercourse with a fine-grained substrate (silt) and organic matter runs through this corridor. Aquatic vegetation covers about 20% of the riverbed. In addition, submerged and emergent aquatic vegetation varying from a few metres to ten metres wide were observed in lentic areas. The shoreline consists of silt, with sand and organic matter. This section of the river represents a potential spawning site for lentic fish species. Indeed, the mouth of the river is used as a spawning site by the common carp (psammophil species) and yellow perch (phytolithophil species).

This corridor also contains the 42 ha McLaurin Bay marshes; the south boundary of the marsh is delineated by the McLaurin Lake outflow channel. The area is a mosaic of wetlands, including marshes, swamps and open water areas with aquatic vegetation.

Experimental fishing conducted in the marsh in 1990 yielded 11 fish species, out of 154 captures. The most abundant were pumpkinseed (32% of captures), followed by northern pike (17%), brown bullhead (14%), yellow perch (10%), central mudminnow (9%), largemouth bass (9%), common carp (3%), bluegill (3%), black crappie (<1%), banded killfish (<1%) and one unidentified species (<1%). This study area includes a northern pike spawning site, located only a few metres west of the Blanche River. Another northern pike spawning site is located approximately 500 m upstream of the corridor.

The existence of these spawning sites indicates that this study area holds strong habitat potential for phytophil species. In addition, given the biophysical conditions observed, this river segment provides good spawning conditions and potential for phytolithophil fish species.

This section of the Ottawa River contains no confirmed spawning sites.

The corridor also includes a number of smaller watercourses located in the northern portion of the study area. Flowing eastward and draining the surrounding farmlands, these watercourses ultimately flow into Charbonneau Creek, further downstream. For the most part, these secondary watercourses have been altered (transformed into linear ditches). Although of limited ecological value, they nevertheless provide potential fish habitats.

4.1.1.4 *Species at Risk*

Corridor 5 – Kettle Island

Based on existing studies, no confirmed species-at-risk (SAR) fish species have been recorded within the corridor; however, four SAR fish species are potentially present in the corridor based on fish preferences:

- Channel Darter (SARA – Threatened, Ontario – Threatened, Québec - Vulnerable)
- Lake Sturgeon (SARA – Awaiting Public Consultation for Addition to Schedule 1, Ontario – Endangered, Québec – At Risk of Designation as Threatened or Vulnerable)
- Brassy Minnow (Québec – At Risk of Designation as Threatened or Vulnerable)
- Longear Sunfish (Québec – At Risk of Designation as Threatened or Vulnerable)
- American Eel (SARA – Awaiting Public Consultation for Addition to Schedule 1, Ontario – Endangered, Québec – At Risk of Designation as Threatened or Vulnerable)
- River Redhorse (SARA – Special Concern, Ontario – Special Concern, Québec – At Risk of Designation as Threatened or Vulnerable)

Corridor 6 – Lower Duck Island

Based on existing studies, no confirmed species-at-risk (SAR) fish species have been recorded within the corridor; however, there are five SAR species that are potentially present in the corridor based on fish preferences:

- Channel Darter (SARA – Threatened, Ontario – Threatened, Québec - Vulnerable)
- Lake Sturgeon (SARA – Awaiting Public Consultation for Addition to Schedule 1, Ontario – Endangered, Québec – At Risk of Designation as Threatened or Vulnerable)
- Brassy Minnow (Québec – At Risk of Designation as Threatened or Vulnerable)
- Longear Sunfish (Québec – At Risk of Designation as Threatened or Vulnerable)
- American Eel (SARA – Awaiting Public Consultation for Addition to Schedule 1, Ontario – Endangered, Québec – At Risk of Designation as Threatened or Vulnerable)

- River Redhorse (SARA – Special Concern, Ontario – Special Concern, Québec – At Risk of Designation as Threatened or Vulnerable)

Corridor 7 – Gatineau Airport / Baie McLaurin

Based on existing studies, no confirmed species-at-risk (SAR) fish species have been recorded within the corridor; however, four SAR fish species are potentially present in the corridor based on habitat preferences:

- Channel Darter (SARA – Threatened, Ontario – Threatened, Québec - Vulnerable)
- Lake Sturgeon SARA – Awaiting Public Consultation for Addition to Schedule 1, Ontario – Endangered, Québec – At Risk of Designation as Threatened or Vulnerable)
- Brassy Minnow (Québec – At Risk of Designation as Threatened or Vulnerable)
- Longear Sunfish (Québec – At Risk of Designation as Threatened or Vulnerable)
- American Eel (SARA – Awaiting Public Consultation for Addition to Schedule 1, Ontario – Endangered, Québec – At Risk of Designation as Threatened or Vulnerable)
- River Redhorse (SARA – Special Concern, Ontario – Special Concern, Québec – At Risk of Designation as Threatened or Vulnerable)

4.1.2 Physical and Terrestrial Environment

4.1.2.1 *Geology and Soils*

The following information is taken from Planning, Feasibility, Needs Assessment and Justification Report, and has been summarized from the Natural Environment Report, both of which can be found in Appendix A.

Corridor 5 – Kettle Island

The corridor (including north and south approaches, shores, and Kettle Island itself) is characterized by about 30 m of overburden over bedrock. The south approach and south shore are underlain by sands over silty clay. Kettle Island is underlain by alluvium over sands over clay. The north approach is underlain by shore area alluvium over silty clay.

Corridor 6 – Lower Duck Island

This crossing is characterized by about 30 m of overburden at the south shore, decreasing to about 15 m at the north shore. The overburden consists of silly clay at the south approach and south shore; at the north shore the overburden consists of alluvium over sands over silty clay.

Corridor 7 – Gatineau Airport / Baie McLaurin

This crossing is characterized by about 45 m of overburden at the south approach and south shore, decreasing to about 25 to 30 m at the north approach and north shore. At the south approach/shore the overburden consists of silty clay; at the north approach/shore the overburden consists of alluvium and discontinuous deposits of peat/muck over silty clay.

4.1.2.2 *Vegetation*

The following information is taken from the Natural Environment Report contained within the Phase 1 study documentation.

Corridor 5 – Kettle Island

The most natural area of largely intact habitat on the Ontario shore is situated in and around the Montfort Woods. It is surrounded on lower ground by severely disturbed, younger woodlands. Another wooded area to the south by Ogilvie Road in the Carson Grove area also maintains a small stand of mature sugar maple forest habitat. The majority of the Carson Grove site is largely composed of young, disturbed upland and swamp forest, which supports limited ecological significance.

The area of Kettle Island within the corridor is dominated by natural riparian woodland in sand substrate with no bedrock outcropping. Although past shoreline disturbance and an artificially high water level have degraded the shore area in the past, the overall island retains a high degree of ecological integrity.

The higher sand-based areas of the island landscape within the corridor are dominated by a young to submature deciduous forest. Mature deciduous swamp forest colonizes the seasonally or semi-permanently flooded former river channels. A very narrow band of emergent marsh vegetation lines either shore. The vestige of similar deciduous swamp vegetation remains along the Québec shore by Rue Jacques Cartier. It constitutes a relatively natural habitat of mature green ash on the western boundary of the corridor. Similar swamp forest habitat along the river shore at the unnamed and partially channelized creek draining into the Ottawa River swamp (from the golf course immediately east of Montée Paiment) has been severely disturbed.

Corridor 6 – Lower Duck Island

Open cropland with no natural environment value covers the level clay-based landscape east of Green's Creek, with the exception of a small upland forest area north of the Rockcliffe Parkway that protects the creek valley. A similar area of young mixed forest occupies the regenerating upland west of the creek between the Rockcliffe Parkway and the river shore. Woodland habitats within the Green's Creek ravine are composed of swamp forest with a low diversity of almost exclusively native flora. Well-drained creek slopes are occupied by submature deciduous forest.

No extensive natural habitat remains along the Ottawa River shoreline, and the same can be said for the north shore in Gatineau where frontage along Boulevard Hurtubise has been extensively transformed into a rigid, stabilized river-bank. An extensive marsh and thicket swamp complex occupies the western end of Baie McLaurin immediately north of Boulevard Hurtubise. It grades into open cat-tail marsh in the main body of Baie McLaurin east of the corridor and into silver maple dominated deciduous swamp forest southward toward Boulevard Hurtubise. Submature to mature silver maple, hybrid maple, and red maple deciduous swamp forest occupies similarly low areas west of the large limestone quarry south of Rue Notre-Dame. A complex upland woodland west of the quarry is situated on a thinly-buried limestone bedrock ridge.

Corridor 7 – Gatineau Airport / Baie McLaurin

Open cropland with no natural environmental values covers the level clay-based landscape in the Ontario section of the corridor. The steeply sloping shore and open river course also mean that no areas of shallow water aquatic habitat have developed between this area and the Ottawa River. The Baie McLaurin wetland area is one of the largest

wetland complexes in Gatineau, with marsh and thicket swamp extending across the corridor section immediately north of Boulevard Hurtubise. This habitat also occurs along the eastern edge of the corridor where the Marais des Laiches wetland ends. Silver maple dominated deciduous swamp covers alluvial islands and the remaining low natural areas of the peninsula upon which the residences along Boulevard Hurtubise are built. Isolated deciduous upland forest of early succession species such as trembling aspen, green ash and white elm and heavily infested with glossy buckthorn shrubbery woodlots characterize edges of the disturbed earthfill along the natural gas pipeline corridor running north-south, east of the Blanche River.

4.1.2.3 *Environmentally Significant Areas*

The following information is taken from the Natural Environment Report (Brunton, 2008), which can be accessed on the project website.

Corridor 5 – Kettle Island

Kettle Island contains one of the largest example of mature deciduous swamp forest habitat in the National Capital Region and the largest example of an alluvial island in the Ottawa River system. That is an exceptional opportunity for sustaining representation of the native biodiversity of this restricted habitat as well as for maintaining populations of SAR . It has long been recognized as an exceptional natural landscape. The island was recently (2007) acquired by the Nature Conservancy of Canada as an ecological reserve to provide permanent protective management for the natural environment values of the site.

As with the river section of other Corridors, the open water areas here provide significant non-fisheries values as a provincially significant wildlife corridor and through their contribution of major hydrological resources.

Much of the remnant woodland on the Ontario shore is contained within the Moderate-rated UNA 171 at the Montfort Woods. This woodlot is isolated, however, with limited opportunity for ecological connectivity with similar habitats elsewhere. The Aviation Parkway Woods (UNA 67) to the south of the Corridor in the Carson Grove area also achieves a Moderate rating but marginally so, its rating almost entirely due to size criteria rather than intrinsic ecological values.

Corridor 6 – Lower Duck Island

Seasonal wildlife concentration in the wetlands of Baie-McLaurin have been documented for over a century, with spring and (especially) fall waterfowl staging being particularly notable. The shrubbier west end of the Baie McLaurin marsh/ swamp thicket habitat may be less significant for this purpose, however, than the pure marsh habitat to the east. Nonetheless, this wetland represents an important component of the series of such Outaouais sites along the Ottawa River that host substantial breeding and migratory waterfowl populations. This portion of wetland has been a designated provincial wildlife reserve since 1996.

The upland woodland and the shrub thickets on west of the quarry in Gatineau represents an area of exceptional native biodiversity. It supports a variety of uncommon or rare southern plant species such Moonseed (*Menispermum canadense*), Hackberry (*Celtis occidentalis*) and American Plum (*Prunus americanus*) that suggest the possibility of a relict hypsithermal (warm period) flora dating to the period when shorelines of post-glacial proto- Ottawa River may have existed here thousands of years ago.

The width of the open Ottawa River is approximately 1.7 km within this Corridor. As with the other alternatives, significant non-fisheries values of the open river in this Corridor include its value as a provincially significant wildlife corridor and its contribution of major hydrological resources.

The lower portion of the narrow Greens Creek valley is contained within an approved Provincially Significant ANSI and is also classified as an area of ecological interest and a Greenbelt buffer zone in the NCC publication "The NCC's Valued Natural Ecosystems and Habitats" by Del Degan, Massé, 2007. The ecological condition of the 438 hectare Green's Creek area was assessed as very high, while its level of integrity was assessed as threatened. Main stress factors were noted as infrastructure, human use and urban spread. Regionally significant mature flood plain Silver Maple forest and an array of Regionally and Provincially Significant ecological values are found in the Corridor 6 portion of this ANSI. The adjacent regenerating pastureland west of the Rockcliffe Parkway assumes ecological value as well by providing seasonal habitat for a variety of raptors, occasionally including numbers of the Provincially Significant Great Gray Owl.

Corridor 7 – Gatineau Airport / Baie McLaurin

The open Ottawa River is approximately 1.0 km wide within this Corridor, although that over-water figure increases substantially to approximately 2.8 km if the shoreline wetlands are included. As with other alternatives, significant non-fisheries values of the open river course here include its value as a provincially significant wildlife corridor and its contribution of major hydrological resources.

Baie McLaurin and Marais des Laiches to the east are within the chain of wetlands extending eastward from the Outaouais that have long been recognized to provide significant wildlife habitat. Important seasonal staging capacity is provided as well as waterfowl breeding habitat. The site is also a major component of one of the most important public wetland interpretation initiatives in the Ottawa Valley.

The deciduous swamp habitats of the alluvial islands and low sites along the peninsula in the southern section of Baie McLaurin are very similar to those exceptional swamp habitats in Kettle Island and Petrie Island-Baie Carpentier.

4.1.2.4 *Wildlife*

The following information is taken from the Natural Environment Report, which can be accessed on the project website.

Corridor 5 – Kettle Island

The potential for the occurrence of significant fauna within the Ontario portion of the corridor is very limited, represented mostly by animals in transit to more suitable habitat areas.

Peregrine Falcons are known to pass along the river through this Corridor but do not regularly utilize wetland or upland habitat here. Similarly, non-breeding Bald Eagles transit this and other sections of the river but are not known to habitually utilize natural habitat here. A similar passage pattern is known for the Common Nighthawk and Chimney Swift, both of which regularly pass over Ontario and Québec portions of the Corridor but are not known to have nested within it (even in artificial situations) in recent years.

One 'fly-by' sighting of Black Tern was noted along the island shore over the Ottawa River during the summer field inventory but no evidence (or habitat) for nesting of this species was observed.

Two Provincially Significant reptile species are identified as have a high potential of occurring within or adjacent to particularly appropriate wetland habitat on or adjacent to Kettle Island. Firm records of occurrence here, however, are presently unknown.

The Western Chorus Frog was reported from several sites west of the Montée Paiement just beyond the Corridor boundary but suitable habitat in these sites has been destroyed by recent urban development. No animals were noted during prime season investigations in 2007.

Kettle Island also has the dubious distinction of being the last recorded site for observations of the now-extinct passenger Pigeon (*Ectopises migratorius*), one being seen by pioneering Ottawa Valley field ornithologists George and Ted White on 3 September 1887.

Corridor 6 – Lower Duck Island

Peregrine Falcons are known to pass along the river through this Corridor but do not regularly utilize wetland or upland habitat here. Similarly, non-breeding Bald Eagles transit this and other sections of the river but are not known to habitually utilize natural habitat here. A similar passage pattern is known for the Common Nighthawk and Chimney Swift, both of which regularly pass over Ontario and Québec portions of the Corridor but are not known to have nested within it (even in artificial situations) in recent years.

Provincially Rare Great Gray Owls utilize the regenerating Cultural Meadow habitat east of Greens Creek on those infrequent occasions when the species winters in the lower Ottawa Valley in large numbers. A major cluster of owls (4 to 6 birds) last occupied this site during the winter of 2004-2005. The potential use of suitable off-shore river habitat by Northern Map Turtles (known from similar habitat immediately east of the Corridor) is also evident, although no records are known.

The Provincially Significant Least Bittern is known to maintain a small breeding population in Baie McLaurin, although it is not clear if they frequently utilize or nest in the shrubbier areas of marsh habitat found within the Corridor. Similarly, a small population of Regionally Rare Black Terns have traditionally utilized Baie McLaurin marsh habitat.

The Western Chorus Frog was reported from a site immediately west of the Corridor boundary in an area of rapid urban expansion near Auto-route. No animals were noted during prime season investigations in 2007. Similarly, a report of Milk Snake from the vicinity of Riviere Blanche east of the Corridor boundary is also in provincial files. It is not clear if suitable habitat for this species would exist in this urbanized section of the Corridor.

Corridor 7 – Gatineau Airport / Baie McLaurin

The potential for the occurrence of significant fauna within the Ontario portion of the Corridor is very limited, represented mostly by animals in transit to more suitable habitat areas. Peregrine Falcons are known to pass along the river through this Corridor but do not regularly utilize wetland or upland habitat here. A similar passage pattern is known for the Common Nighthawk and Chimney Swift, both of which regularly pass over Ontario and Québec portions of the Corridor but are not known to have nested within it (even in artificial situations) in recent years.

Non-breeding Bald Eagles transit this and other sections of the river but are not known to habitually utilize natural habitat in the Ontario portion of the Corridor. One (or two?) adults were noted during the present study utilizing the wetland habitat in Gatineau between

Marais des Laiches and Baie Carpentier (to the east) over at least a week long period in late summer. This may indicate early stages of potential nesting or seasonal habitat site selection.

The Provincially Significant Musk Turtle is known from several Ottawa River wetlands in western Québec and eastern Ontario, including Baie McLaurin. Northern Water Snake is listed because of the high potential for its occurrence in particularly appropriate wetland habitat at Baie McLaurin, although firm records of occurrence are unknown at present.

Regionally Significant Black Terns were observed in Baie-McLaurin region during the present study. This areas continues to support a small summering population and breeding is suspected.

4.1.2.5 *Species at Risk*

4.1.2.5.1 Flora

Significant species of Flora specific to each corridor are listed below in Table 1:

4.1.2.5.2 Fauna

Significant species of Fauna specific to each corridor are listed below in Table 2:

Table 1 Significant Species of Flora

Ranking	Species at Risk		
	Corridor 5	**Corridor 6**	**Corridor 7**
SAR/Provincially Significant Flora (Ontario)	NA	1. Cat-tail Sedge (Provincially Rare)	NA
SAR/Provincially Significant Flora (Québec)	1. Butternut (SARA – Endangered; no provincial status) 2. Ostrich Fern (Vulnerable) 3. Bladdernut (Susceptible) 4. Hackberry (Vulnerable)	1. Butternut (SARA – Endangered; no provincial status) 2. Rock Elm (Susceptible) 3. Water-meal (Susceptible) 4. Hackberry (Susceptible)	1. Ostrich Fern (Vulnerable) 2. Torrey's Bulrush (Susceptible) 3. Water-meal (Susceptible) 4. Southern Wild Rice (Susceptible) 5. Hackberry (Susceptible)
Regionally Significant Flora (Ottawa)	1. Cut-leaved Toothwort 2. Golden Corydalis	1. Witch-hazel 2. Climbing Poison-ivy 3. Grove Sandwort	NA
Regionally Significant Flora (Québec)	1. Ground-nut 2. Meadow Horsetail 3. Virginia Stickseed 4. Climbing Poison-ivy	1. Moonseed 2. American Plum 3. Virginia Stickseed 4. Climbing Poison-ivy	1. River Bulrush 2. Cat-tail Sedge

Table 2 Significant Species of Fauna

Ranking	Species at Risk		
	Corridor 5	**Corridor 6**	**Corridor 7**
SAR/ Provincially Significant Fauna (Ontario)	1. Peregrine Falcon (SARA-Special Concern; SARO – Endangered) 2. Common Nighthawk (SARA - Threatened; no provincial status) 3. Chimney Swift (SARA - Threatened; no provincial status) 4. Bald Eagle (Endangered) 5. Black Tern (Special Concern)	1. Peregrine Falcon (SARA-Special Concern; SARO – Endangered) 2. Common Nighthawk (SARA - Threatened; no provincial status) 3. Chimney Swift (SARA - Threatened; no provincial status) 4. Bald Eagle (Endangered) 5. Northern Map Turtle (SARA - Special Concern; SARO - Special Concern)	1. Peregrine Falcon (SARA-Special Concern; SARO – Endangered) 2. Common Nighthawk (SARA - Threatened; no provincial status) 3. Chimney Swift (SARA - Threatened; no provincial status) 4. Bald Eagle (Endangered)
SAR/Provincially Significant Fauna (Québec)	1. Peregrine Falcon (SARA-Special Concern; Québec - vulnerable) 2. Common Nighthawk (SARA - Threatened; no provincial status) 3. Chimney Swift (SARA - Threatened; no provincial status) 4. Bald Eagle (Vulnerable) 5. Northern Map Turtle ** (SARA - Special Concern; Québec - Vulnerable) 6. Western Chorus Frog (Vulnerable) 7. Northern Water Snake ** (Susceptible)	1. Peregrine Falcon (SARA-Special Concern; Québec - vulnerable) 2. Common Nighthawk (SARA - Threatened; no provincial status) 3. Chimney Swift (SARA - Threatened; no provincial status) 4. Bald Eagle (Vulnerable) 5. Least Bittern (Susceptible) 6. Western Chorus Frog (Vulnerable) 7. Milk Snake (SARA – Special Concern, Québec - Susceptible)	1. Peregrine Falcon (SARA-Special Concern; Québec - Vulnerable) 2. Common Nighthawk (SARA - Threatened; no provincial status) 3. Chimney Swift (SARA - Threatened; no provincial status) 4. Bald Eagle (Vulnerable) 5. Musk Turtle (SARA – Special Concern, Québec - Susceptible) 6. Northern Water Snake ** (Susceptible) 7. Least Bittern (Susceptible)
Regionally Significant Fauna (Ottawa)	NA	1. Great Grey Owl	NA
Regionally Significant Fauna (Québec)	1. Black Tern	1. Black Tern	1. Black Tern

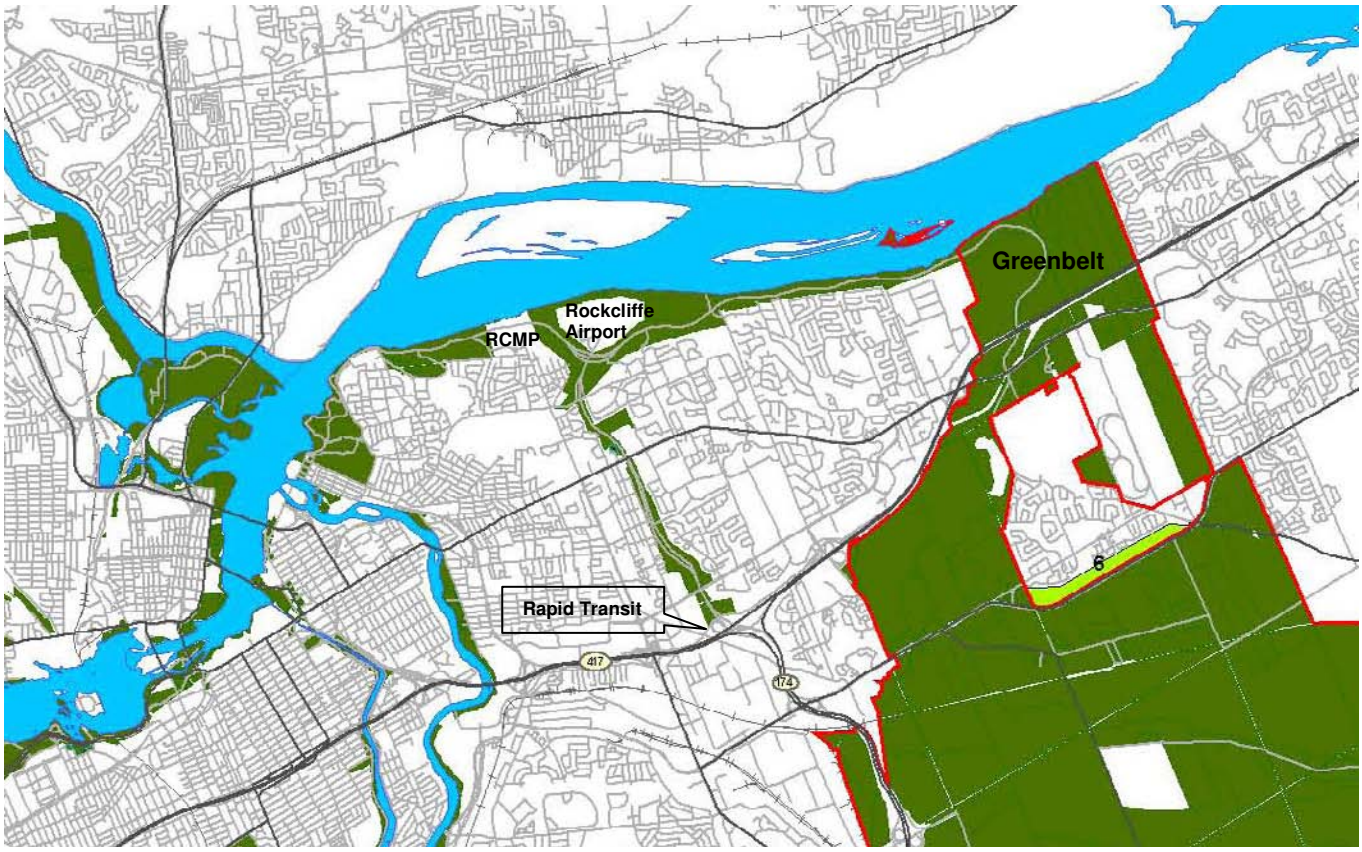
** - Potentially present

4.2 Social Environment

4.2.1 Land Use.

In this section, federal lands are first defined, followed by a description of land use. The three corridors under consideration involve lands owned and managed by the NCC on the City of Ottawa side as illustrated in Figure 6.

Figure 6 NCC Owned and Managed Lands in the Study Area (Green)



For Corridor 5, the NCC owns the land in the vicinity of the Aviation Parkway from the north boundary of the Rapid Transit corridor to the Ottawa River. Other federal lands in the vicinity of Corridor 5 include the Rockcliffe Airport and the RCMP lands at the north end of St. Laurent Boulevard.

For Corridors 6 and 7, the NCC owns the Greenbelt, north and south of Ottawa Road 174 and northerly to the Ottawa River. The red line shows the boundary of the Greenbelt.

Existing neighbourhoods potentially affected by the new corridor include:

- Rockcliffe Park, Vanier, Manor Park, former Rockcliffe Base and Carson Grove
- Village Tecumseh, La Cite, Du Moulin
- Convent Glen, Hiawatha Park, Beacon Heights

- Riviere Blanche, Sainte Rose

Rural residences are also impacted by the corridors, especially on the Quebec side.

The following information for the land use in the vicinity of each corridor is taken from the Planning, Feasibility, Needs Assessment and Justification Report (Roche-NCE, 2009).

Corridor 5 – Kettle Island

On the Ontario side, this corridor is bounded primarily by residential land uses including single and attached dwellings both east and west of the Aviation Parkway. Many of the areas are older, established neighbourhoods. Schools, parks and some smaller stores are also present in the residential neighbourhoods. Along arterial roads in the area, such as Montreal Road and Ogilvie Road, land use is commercial. The federal lands along the Parkway provide green space. The Rockcliffe Airport and Aviation museum occupy the area north of the Rockcliffe Parkway and the Aviation Parkway. The RCMP facility is located on the south side of the Rockcliffe Parkway at the north end of St. Laurent Boulevard. The Montfort Hospital is located north and east of the Aviation Parkway and Montreal Road. On the west of the corridor (north of Hemlock Road) is the Manor Park residential neighbourhood.

On the Québec side of the corridor, there is a newer residential neighbourhood along the west side of the corridor. The west side of the intersection at Montée Paiement and Boulevard Maloney includes higher density land uses (i.e. large surface retail) and most of the surrounding lands are built up residential and commercial areas. This corridor also crosses a golf course and the Kettle Island Conservation Area. There is a water treatment facility on Rue St. Louis and the Le Moulin industrial park is adjacent to the east side of the corridor.

The City of Gatineau Official Plan identifies a gateway to enhance, close to the Ottawa River, around the Montée Paiement. The planning of this gateway will have to be adequate in the perspective of a new bridge in this corridor. The City of Gatineau Official Plan includes a range of residential, mixed use, employment, parkland and conservation areas. The Highway 50 junction is designated as a development node.

Corridor 6 – Lower Duck Island

This corridor does not pass through any residential neighbourhoods on the Ontario side. On the Québec side, the corridor is bounded almost entirely by residential neighbourhoods (north of Rue Notre-Dame extending north to Highway 50).

In Ottawa, Corridor 6 crosses the Robert O. Pickard Environmental Centre, the Green's Creek ravines and agricultural areas within the Greenbelt. Other land uses in the study area include industrial, commercial and residential, with small areas of park land and institutional facilities.

Official Plan designations include Lower Duck Island as part of the urban lands within the City of Ottawa. At the Ottawa River this corridor is designated a natural environment area, which extends southward, including the Green's Creek ravine and adjacent undeveloped areas. The lands north of 174 and east of Green's Creek are designated agricultural resource areas. South of the 174 in the vicinity of the Rockcliffe Parkway and the Blair Road interchange, the land-use designation is general rural, which includes a variety of land uses such as farms, rural housing, wood lots and forests, small industries, golf courses, and small residential and commercial development. The Pineview Golf Course is located in the general rural designation on Blair Road.

The general urban area is located on the north side of 174 between Montreal Road and Blair Road and on the north and south sides of 174, east of the split. West of Blair Road is the mixed use designation which includes land uses with compact and mixed use development. The major open space designation on the north side of the split is the Aviation Parkway. This designation includes large parks and open space corridors along the Ottawa River, parkway corridors and corridors reserved for rapid transit and major roads. The land-use designation on the southwest side of the split is an employment area that allows commercial office and industry land uses.

Two trunk sewers cross the 174 corridor between Montreal Road and Blair Road to the R.O. Pickard Environmental Centre from Ottawa's south areas. A major hydro corridor follows the 174 right-of-way along the south side to west of 10th Line Road.

On the Québec side, Corridor 6 is located in the Gatineau sector of the City of Gatineau, a few kilometres from the municipal airport. The corridor extends southwards along Boulevard Lorrain, with residential dwellings along either side of the street, and with the usual accompanying commercial, parkland and institutional uses, including schools and churches. The area extending from Rue Notre-Dame to the Ottawa River includes residential subdivisions, parks, and conservation areas. This corridor also provides access to two City of Gatineau "Park-n-Ride" facilities.

In the Gatineau Official Plan, the land adjacent to the corridor is primarily designated for residential uses, with mixed uses on major arterials, including Boulevard St-René. Vacant lands south of Rue Notre-Dame are mainly designated for open space uses and include a major park, a riverfront park, a golf course, and a conservation area.

Corridor 7 – Gatineau Airport / Baie McLaurin

This corridor is mostly comprised of recreational pathways, agricultural lands, residential areas, and the Green's Creek ravine natural area.

On the Ontario side, this corridor passes the northwest corner of the Hiawatha Park residential neighbourhood (Convent Glen). Once on the Québec side, the corridor does not pass through any residential neighbourhoods.

According to the Ottawa Official Plan designations, Corridor 7 is a designated natural environment area at the Ottawa River, which extends southward, including the Green's Creek ravine and adjacent undeveloped areas. The lands east of Green's Creek are designated as an agricultural resource area.

South of the 174 along St. Joseph Boulevard, in the vicinity of the Rockcliffe Parkway and the Blair Road interchange, the land use designation is general rural.

The Gatineau Airport Corridor is located to the east of boulevard de l'Aéroport, in an area characterized by lower density uses. Most of the lands adjacent to Highway 50 are vacant. The area includes two industrial parks, including: the Aeroparc, located at the westernmost edge of the corridor, which houses the Gatineau Airport; and the parc de Salubrité, located in the heart of the corridor. Neither industrial park is built up to full capacity with several unoccupied lots. At its eastern end, near the Highway 50 connection, the corridor crosses an area designated as a development node in the municipal official plan. The land located along Boulevard Maloney features commercial uses and residential uses, along with areas of mixed use (commercial/residential). In addition, this corridor crosses through Baie McLaurin Park.

According to the Gatineau Official Plan, the lands adjacent Highway 50 are slated for development as part of a major employment node including heavy industrial and commercial uses. Boulevard Maloney will remain a major commercial thoroughfare including mixed use areas and a concentration of retail commercial uses. The vacant lands in the Baie McLaurin area are mainly designated for open space uses, and include a major park, a riverfront park, a golf course, and a conservation area.

A wide band of land located between Boulevard Maloney and the Ottawa River is classified as a designated (20- to 100-year) flood risk zone. No designated hazard lands were identified in the corridor.

4.2.2 Recreational Uses of the Ottawa River

The following information is taken from the Planning, Feasibility, Needs Assessment and Justification Report (Roche-NCE, 2009).

The Ottawa River is used extensively for many water-based recreational activities, including sailing, boating, sailboarding, kiteboarding, canoeing, and kayaking.

The Ottawa River includes two major and separate navigable areas delineated by hydrological features. The upriver area is located upstream of the Deschênes rapids, extending westward to the Chute des Chats (in the Pontiac Bay area, close to the town of Quyon). The second section is located downstream of Chaudière Falls; all three corridors lie within this second section. (The section of the Ottawa River between the Deschênes rapids and the Chaudière Falls is not considered a major navigable area.)

The lower Ottawa River allows boaters region-wide access to and from the connecting waterways and canals systems. For sailboats however, the disadvantage is that the river (particularly the navigable channel) is much narrower, the river current is correspondingly stronger, and there are few areas appropriate for sailing, especially in larger boats.

The Ottawa New Edinburgh Club and Rockcliffe Yacht Club are located within Corridor 5 and 6, and west of Corridor 7, along the Ottawa River. In addition, these clubs have sailing schools located in the immediate vicinity of this section of the river, which is extensively used for regattas and leisure sailing.

4.2.3 Contamination

A Screening Level Phase 1 Environmental Site Assessment was undertaken as part of Phase 1 of the Environmental Assessment process. The information below has been taken from the Phase 1 Environmental Site Assessment Report (Golder Associates Ltd., 2008), which can be accessed on the project website.

A low likelihood of contamination is associated with vacant, residential, agricultural, institutional, commercial and industrial properties. Other land uses represent a higher potential for subsurface contamination impacts on soil and/or groundwater. Once a recommended Corridor is selected, all identified properties will be subject to further investigation.

<u>Corridor 5 – Kettle Island</u>

Five properties were assessed along this corridor. Two of the properties were considered to have a low likelihood of contamination, and the other three were found to have a higher likelihood of contamination.

Name	Activity	Location	Potential Contaminants	Likelihood of Contam-ination	Rationale
Rockcliffe Airport	Flying Club	11 Aviation Parkway, Ottawa	Petroleum hydrocarbons, chlorinated solvents, de-icing products.	Low	Airport buildings at 200 to 250 m from site, no use of solvents or de-icing products next to the site.
RCMP Campus	Police headquarters	1 Sandridge Road, Ottawa	Various classes of chemicals, lead.	Low	At approximately 200 m from site.
Parc de la Baie	Former landfilled area	Parc de la Baie, Gatineau	Various waste types including construction debris, metals and polycyclic aromatic hydrocarbons.	High	Adjacent to site.
Wal Mart, Pneu Lubrification Express	Service garage	640 Boulevard Maloney Ouest, Gatineau	Petroleum hydrocarbons and chlorinated solvents.	High	Within 50 m from site.
Shell	Retail fuel outlet	620 Boulevard Maloney Ouest, Gatineau	Petroleum hydrocarbons.	High	Within 50 m from site.

Of the three corridors, this corridor has a medium level of potential contamination (based on the number of properties and their likelihood of impacts).

Corridor 6 – Lower Duck Island

Eleven properties were assessed along this corridor. Two of the properties were assessed as having a low likelihood of contamination and the other nine properties had a higher potential for contamination.

Name	Activity	Location	Potential Contaminants	Likelihood of Contam-ination	Rationale
Lafarge	Quarry	980 Rue Notre Dame, Gatineau	Petroleum hydrocarbons, metals.	High	Large operation, on site.
Unknown	Cemetery	942 Rue Notre- Dame, Gatineau	Formaldehyde, arsenic, pathogens.	Low	At approximately 100 m from site.
Ultramar	Retail fuel outlet	882 Boulevard Maloney Est, Gatineau	Petroleum hydrocarbons.	High	Adjacent to site.
Ultramar	Retail fuel outlet	877 Boulevard Maloney Est, Gatineau	Petroleum hydrocarbons.	High	Fairly large operation, within 100 m from site.

Name	Activity	Location	Potential Contaminants	Likelihood of Contam-ination	Rationale
Garage Guy Leblanc	Service Garage	867 Boulevard Maloney Est, Gatineau	Petroleum hydrocarbons and chlorinated solvents .	High	Adjacent to site.
De Luxe Nettoyeurs	Unknown, possibly dry cleaning	24 Boulevard Lorrain, Gatineau	Chlorinated solvents.	Low	Adjacent to site, but unknown activity, only found in 1968 street directory, no obvious IPECs* identified during site visit.
Duval Body Shop Gaetan	Car body shop	30 Boulevard Lorrain, Gatineau	Petroleum hydrocarbons, volatile organic compounds.	High	Adjacent to site.
Lalonde Jean	Service Garage	34 Boulevard Lorrain, Gatineau	Petroleum hydrocarbons and chlorinated solvents .	High	Adjacent to site.
Leon garage and Ouellette Robert mecan.	Service Garage	109 Boulevard Lorrain, Gatineau	Petroleum hydrocarbons and chlorinated solvents .	High	Within 50 m from site.
Carriere Emile	Retail fuel Outlet and service garage	139 Boulevard Lorrain, Gatineau	Petroleum hydrocarbons and chlorinated solvents .	High	Adjacent to site.
Ultramar	Retail fuel outlet	348 Rue Lorrain, Gatineau	Petroleum hydrocarbons.	High	Adjacent to site.

Of the three corridors, this corridor has the highest level of potential contamination (based on the number of properties and their likelihood of contamination).

Corridor 7 – Gatineau Airport / Baie McLaurin

Two properties were assessed along this corridor. Both properties were considered to have a low likelihood of contamination.

Name	Activity	Location	Potential Contaminants	Likelihood of Contam-ination	Rationale
Mourre Sablage Au Jet	Car Body Shop	20 Rue de Granby, Gatineau	Petroleum hydrocarbons, volatile organic compounds.	Low	Large operation, but at approximately 200 m from site.
Lafarge	Aggregate processing facility (cement, concrete, asphalt)	28 Rue de Granby, Gatineau	Petroleum hydrocarbons, polycyclic aromatic hydrocarbons.	Low	Large operation, but at approximately 200 m from site.

Of the three corridors, this corridor has the lowest level of potential contamination (based on the number of properties and their likelihood of contamination).

4.2.4 Archaeological / Built Heritage Features

The following information has been taken from the Planning, Feasibility, Needs Assessment and Justification Report (Roche-NCE, 2009), and has been summarized from the Archaeological and Heritage Reports, which can be found on the project website.

Corridor 5 – Kettle Island

This corridor is adjacent to three features of heritage interest, including one National Historic Site located at 280 Beechwood Avenue (the Beechwood Cemetery, it's administrative building and it's mausoleum). Rockcliffe Park and Village is also located within this corridor, and is designated as a Heritage Conservation District. In addition, the Ottawa New Edinburgh Club (located at 501 Rockcliffe Parkway) is designated under Part IV of the *Ontario Heritage Act*.

The City of Ottawa identifies 11 heritage parcels within this corridor. There are two medium potential archaeological zones on the Ontario side of the corridor. The Québec side of the corridor contains three areas of historic archaeological potential and three areas of prehistoric archaeological potential.

Corridor 6 – Lower Duck Island

Within this corridor, the City of Ottawa identified one heritage parcel. Two high potential archaeological areas are also located on the Ontario side – one at the east end of the Rockcliffe Parkway and the second east of Bearbrook Road and south of Highway 174. The Québec side of the corridor contains four areas of historic archaeological potential including Boulevard Lorrain, Boulevard Saint-Rene Est, Rue Notre-Dame, and Boulevard Hurtubise. In addition to these areas, four areas of prehistoric archaeological potential were identified, including Boulevard Lorrain, Boulevard Saint-Rene Est, an area south of Rue Notre-Dame, and Boulevard Hurtubise. No heritage features are located within this study corridor.

Corridor 7 – Gatineau Airport / Baie McLaurin

The City of Ottawa has identified one heritage parcel on the Ontario side. The Québec side of the corridor contains one area of prehistoric archaeological potential (Boulevard Maloney Est) and four areas of prehistoric archaeological potential including an area between Highway 50 and Boulevard Maloney, Parisien Street, south of the Blanche River, an area south of Boulevard Maloney and east of the Blanche River, and the western sector of the Blanche River, southeast of des Laiches Marsh. No features of heritage interest are located within this study corridor.

5 Consultation

The information found in the following sections was taken from the Planning, Feasibility, Needs Assessment and Justification Report (Roche-NCE, 2009) prepared as part of the Phase 1 study.

5.1 Consultations Held during Phase 1

A consultation program was undertaken during Phase 1 of the EAs and included: meetings with key stakeholders through a Technical Advisory Committee (TAC) and a Public Consultation Group (PCG); four Public Consultation Sessions (PCS) which included the general public; a project website; newspaper notices; and media briefings. Additional consultation will be held during the current Phase 2A and the future Phase 2B.

5.1.1 Technical Advisory Committee (TAC)

Members of the Technical Advisory Committee (TAC) are shown in the table below.

Table 3 Technical Advisory Committee (TAC) Members

Federal
National Capital Commission
Canadian Environmental Assessment Agency
Parks Canada
Department of Fisheries and Oceans
Public Works and Government Services Canada
Transport Canada
Environment Canada
Province of Ontario
Ministry of Transportation
Ministry of the Environment
Ministry of Culture
Ministry of Natural Resources
Rideau Valley Conservation Authority
Mississippi Valley Conservation Authority

Province of Québec
Ministères des Transports
Ministère du Développement durable, de l'Environnement et des Parcs
Ministère des Ressources naturelles et de la Faune
Hydro Québec
City of Ottawa
City of Ottawa including Transit Services (OC Transpo)
Ville de Gatineau
Ville de Gatineau
Société de transport de l'Outaouais (STO)
Other Members
Transportation Action Canada (formerly Transport 2000)
Conseil régional de l'environnement et du développement durable de l'Outaouais (CREDDO)

5.1.2 Public Consultation Group (PCG)

At the start of Phase 2A of the Future Interprovincial Crossings Study, all PCG members from Phase 1 were invited to continue their involvement in this study. New member organizations were also identified and invited. It is expected that the PCG membership will continue to evolve as the study progresses. Members of the Public Consultation Group are shown in the table below.

Table 4 Public Consultation Group (PCG) Members

Community Associations in Ontario	
Convent Glen Community Association	South March Community Association
Riverwalk Community Association	Environment for the Briarbrook/Morgan's Grant Community Association
Chatelaine Village Community Association	Action Sandy Hill
Queenswood Heights Community Association	City Centre Coalition

Ottawa-Carleton District School Board (OCDSB) Trustee	Dalhousie Community Association
Conseil des écoles catholiques de langue française du Centre-Est (CECLFCE) Trustee	Friends of Petrie Island and the Petrie Island Advisory Committee
Le Conseil des écoles publiques de l'Est de l'Ontario (CEPEO) Trustee	Cardinal Creek Community Association
President of Multicultural Association	Crystal Beach/Lakeview Community Association
Heart of Orleans BIA President	Crystal Beach/Lakeview Community Association, Transportation Committee
Fallingbrook Community Association	March Rural Community Association
Orleans Woods Community Association	King Edward Avenue Task Force
Manor Park Community Association	Lowertown Community Associations
Friends of the O-Train	Island Park Community Associations
Westboro Community Association	Kanata Lakes Community Associations
Woodpark Community Association	Pontiac Bridge Committee
Britannia Village Community Association	Rockcliffe Community Association
Community Associations in Québec	
Association des résidents de la Croisée	Association des résidents du District 15
Association des résidents de la Terrasse Lakeview	Comite de vie quartier Pointe-Gatineau
Association des résidents du quartier village Parc Lucerne	Association des citoyens du Manoir des Trembles
Association des résidents de l'Ile-de-Hull	Collectif Vigilance Petite-Nation
	Association des résidents du Parc Champlain et des environs
Business Groups	
Team Ottawa-Orleans/Equipe Ottawa – Orleans	Ottawa Chamber of Commerce
Chambre de commerce de Gatineau	Le Regroupement des gens d'affaires de la Capitale nationale

Environmental	
Ottawa Riverkeeper Inc.	Canadian Parks and Wilderness Society – Ottawa Chapter
Ottawa Field Naturalists	Greenspace Alliance
	Go for Green
Interest Groups	
Kriska Transportation/Ontario Trucking Association (OTA)	Lac Deschenes Sailing Club
Nepean Sailing Club	Marina de Hull
Federation of Citizens Association	Jp2g Consultants Inc.
Club Velo Plaisirs	Rockcliffe Yacht Club
Club de voile Grande rivière	Ottawa New Edinburgh Club
Britannia Yacht Club	Ontario Kiteboarding Association
Observers	
Councillor, Bay Ward	Ward 1 – Orleans
Queensway Terrance North Community Association	Ward 15 – Kitchissippi
Whitehaven Community Association	Ottawa Central Railway
Woodpark Community Association	North of Richmond Condo Group

5.1.3 Public Consultation Sessions (PCSs)

Prior to all four Public Consultation Sessions held during Phase 1, notices were placed in local newspapers, and notification letters were sent to agencies on the mailing list. Information about each of the four PCSs are outlined in the sections below.

The purpose of PCS 1 was to present the draft Terms of Reference (ToR), the study, the Alternative Planning Solutions, and the Crossing Alternatives to the public and to allow them to discuss the study with the project team. Some of the issues raised included the selection and weighting of criteria, concerns about input data, transportation models, and consultation process, suggestions to speed up the process, and suggestions for consideration of three additional crossings (Chemin Pink - Riddell Drive; Deschênes - Pinecrest Road, and East of Lower Duck – Boulevard de l'Aéroport) and one crossing that had been removed from the list of alternatives (Deschênes Rapids – Aylmer to Western Parkway).

As a result of the input from the public, two new crossings were added to the list of corridors: Chemin Pink - Riddell Drive and the Gatineau Airport crossing (East of Lower Duck – Boulevard de l'Aéroport).

PCS 2 was held to seek comments on the environmental inventories/surveys and constraints, the current traffic analyses, alternative solutions, preliminary alignments and preliminary evaluation criteria. Concerns brought forward at PCS 2 were regarding the selection and weighting of criteria, input data (accuracy/context), accuracy of traffic forecasts, public transit, the consultation process. Again, there were suggestions to speed up the process, as well as to account for previous study conclusions. Concerns were also raised regarding the significance of various existing land-use constraints (i.e., Rockcliffe Airport, Andrew Hayden Park, Connaught Rifle Range, Petrie Island, etc.).

An additional session was held as part of the PCS 2 process, based on these comments, to provide more detail on the development and consideration of the criteria. This session allowed the public more opportunity to comment, and eventually resulted in an additional series of PCSs held prior to the evaluation of the crossing locations.

PCS 3 was held to provide information and obtain input and comments on the analyses of projected traffic, truck origins and destinations, the short list of evaluation criteria, and the evaluation process and methodology.

The stakeholders indicated concerns regarding traffic, sailing, quality of life, property values, cost, natural environment, pollution, RCMP facilities and the Montfort Hospital, and transit.

As a consequence of this public input, utility functions and measurements were modified for sailing activities, impacts on water purification plants, and community cohesion. Stakeholders were also asked to rank the seven factor groups by importance to them (on comment sheets). The results indicated that the public found the natural environment to be the most important factor to them, and cost as the least important. Water use and resources, and cultural environment were ranked second and third. This feedback was provided to the Evaluation Committee prior to the evaluation session for their consideration.

The final round of consultation in Phase 1, PCS 4 was held to present the results of the detailed technical evaluation, the ranking of alternatives and the technically preferred alternative for a future crossing of the Ottawa River. Many concerns were raised at the session, with some of the key concerns being related to the lack of transparency/perception of bias, the need for independent review of the measured data, the impacts on communities, the weight given to quality-of-life factors, usually as compared to transportation or cost, the outcome of the evaluation, effects on local institutions (Montfort Hospital, RCMP, etc.), and the need to carry forward more than one corridor.

Phase 1 of the study recommended that Corridor 5 be carried forward to Phase 2 of the EA for more detailed study. Following the completion of Phase 1, it was decided by the NCC and its provincial partners, the MTO and MTQ, that the top three ranked corridors would be included in this detailed study (Crossing 6 and Crossing 7, in addition to Crossing 5).

5.1.4 Project Web Site

The Interprovincial Crossings website (www.ncrcrossings.ca) is updated periodically as required and advertises study events and gives stakeholders direct access to

documentation and information including Terms of Reference, Supporting Documentation Report, and the Existing Conditions Summary Report. A “contact us” section is provided allowing stakeholders to email comments and questions directly to the Project Team using a freeform email or using a standard WEB message form.

The website is updated at key milestones to provide the public with the most up-to-date information.

5.1.5 Media Briefings

Media briefings were provided to Members of Parliament and Members of the Provincial Parliaments, City Councillors, and the local press prior to each PCS. A complete package of the PCS information was distributed at the media briefings.

5.2 Contacts with Federal Departments to Date

The following federal departments were contacted during Phase 1:

- Fisheries and Oceans Canada;
- Transport Canada;
- Canadian Environmental Assessment Agency;
- Parks Canada;
- Public Works and Government Services Canada – Real Property Branch;
- Department of Indian and Northern Affairs;
- Health Canada;
- Royal Canadian Mounted Police; and
- Environment Canada.

5.3 First Nations and Aboriginal Interests

There are no First Nations reserves in the NCR, however the Algonquins of Ontario (ANO) have an outstanding land claim that encompasses the entire City of Ottawa and most of Eastern Ontario. As such, they have been kept informed of the study’s progress. In Ontario, information was provided to the Negotiating Representative of the ANO, and in Québec, the information was provided to the Kitigan Zibi Anishinabeg (KZA) Band Council. Offers were extended to both groups to meet to discuss the project and any potential Aboriginal interests. Three of these meetings were held during Phase 1 of the EA and meeting notes can be found in Appendix A, along with notes of a meeting held November 30, 2009 during the initial work on Phase 2A.

The Kitigan Zibi Anishinabeg First Nation identified a concern with rights and title to the islands in the Ottawa River. More specific consultation with First Nations will continue as the study progresses and throughout the refinement of the design.

6 References

Brunton Consulting Services, April 2008.

Natural Environment Assessment (Existing Conditions), Ottawa River Interprovincial Crossings.

Golder Associates Ltd., December 2008.

Screening Level Phase 1 Environmental Site Assessment, Ten Interprovincial Crossing Alternatives, Ottawa (ON) and Gatineau (QC)

Roche-NCE, January 2009.

Interprovincial Crossings Environmental Assessment Study Feasibility, Needs Assessment and Justification Report.

Roche-NCE, November 2008.

Aquatic Habitat and Fish Report Baseline Conditions.

Wikipedia, November 4, 2009.

Ottawa River. Web. <http://en.wikipedia.org/wiki/Ottawa_River>.

Appendix A

First Nations Meeting (November 2009)

INTERPROVINCIAL CROSSINGS ENVIRONMENTAL ASSESSMENT

ÉVALUATION ENVIRONNEMENTALE DES LIAISONS INTERPROVINCIALES

Notes of Meeting

AECOM Delcan

AECOM-Delcan Co-Enterprise

569 Saint-Joseph Boulevard, Suite 204
Gatineau, Québec, Canada J8Y 4A1
T 819 -777-1630

Subject:	Interprovincial Crossing Environmental Assessment (EA) Study
Date:	Nov. 30, 2009
Time:	10:00 am
Location:	NCC Boardroom 324
Purpose:	To share on the process and to discuss issues of mutual interest.
Meeting:	First Nations Meeting No. 3

Attendees

Name	Organization	Name	Organization
Gabrielle Simonyi (GS)	NCC/CCN	Jim Hunton	JP2G Consultants Inc.
Mike Moroz (MM)	NCC/CCN	Lynn Clouthier	Algonquins of Ontario (AOO)
Fred Gaspar	NCC/CCN		
Chief Kirby Whiteduck	Algonquins of Ontario (AOO)	Patrick G. Déoux (PD)	AECOM
Chief Gilbert Whiteduck	Kitigan Zibi Anishinabeg (KZ)	Greg Jodouin (GJ)	PACE
Cliff Meness	Algonquins of Ontario (AOO)		

Absentees

Name	Organization	Name	Organization

Item		Assigned
1.0	**INTRODUCTION**	
1.0 A	Introductions were made.	
1.0 B	No changes were suggested to the agenda.	
1.0 C	**Purpose of Meeting:** To discuss issues of mutual interest and share on the process of the Interprovincial Crossing Environmental Assessment (EA).	

Item		Assigned
2.0	**BACKGROUND** PD and GS provided a presentation (attached)	
3.0	**PHASE 2 PROGRAM AND SCHEDULE** • Overview of Phase 2A – No evaluation at this stage • Mandate of 2A is to develop a methodology and process to evaluate the three corridors and compare them. • GS will look into where "Kettle Island from 1800's" reference came from. Algonquins have interest in all the islands • Three (3) meetings are planned with the First Nations during Phase 2A, including this one. This initial meeting was to listen to the First Nations representatives and to discuss the best approach for working together on this project. The format and nature of the next meetings and consultations has not yet been determined.	
4.0	**ISSUES OF MUTUAL INTERESTS** Comments from participants included: • All the islands are very important, significant to the First Nations. Algonquin rights and interests were not given meaningful weight at Phase 1. They saw the weighting last time but still had questions, particularly around archaeology. G. Simonyi indicated archaeological issue would be dealt with at 2B. • They have raised many of the issues in letters and face-to-face meetings with senior management at NCC. They did not feel properly engaged in the past. They saw things in the media and felt they needed to react to them, rather than having been participants in the discussions. • The joint position of the Algonquins is that (financial) resources are required for them to be able to provide a well-founded position. They do not have the current capacity or resources to review large numbers of documents and to participate meaningfully. It costs them to attend, review and provide input. It's hard for them to keep up and participate. – They have developed work programs (with budgets) in the past with other departments. These are considered successful models for working together. – The Province of Ontario has engaged in successful consultation with the Algonquins of Ontario (AOO) when it engaged in a comprehensive work program such as MNR's Lightening the Ecological Footprint of Logging Operations in Algonquin Park and MNDMF's Aboriginal Consultation Protocol. These would provide a good format for consideration in the current NCC Interprovincial Bridge Crossing project. • It was felt that this is a bigger issue of the relationship with the NCC. However, it was agreed that a process could be developed for the purposes of this particular project. • They acknowledged that there is a need for First Nations groups to speak with one voice – the Algonquin voice. They will work towards this. • The separation of Quebec and Ontario is not recognized. These are all Algonquin lands.	

Item		Assigned
	Process for Consultation • They want to be involved from the get-go, and in a substantive way. • The word 'consultation' has not had a successful history with the AOO. They need to see a more comprehensive approach and not a 'consultation by checkmark'. • It's not only about consultation. The Supreme Court also references 'accommodation.' Accommodation needs to be recognized in the planning. That means that if they have concerns that rights might be infringed, then compensation needs to be discussed. • There was a reaction to the organizational chart. Are they equal or a priority stakeholder? The NCC recognized that they were an important and distinct participant in this project. – NCC is considering hiring a First Nations liaison office in the near future. – Organizational chart didn't mean to imply anything about prioritization of stakeholders. • First Nations are not to be considered a community group, and workshops would not be appropriate. They like the format of today's meeting as a means of consultation. • They appreciated that the NCC went to them at the outset of this project – they stated that the NCC had kept their word in this regard. It is the first time that they consult with First Nations at this stage of a project. • Subject to funding availability, they would also appreciate meetings on location rather than at the NCC.	
5.0	**QUESTIONS AND DISCUSSION** **Project Expectations:** • They want to be involved from the get-go, and involved in a substantive way. The interest is not only architectural. It's about the territory and how it will be used. • Representation must include KZ and AOO (they are trying to formalize their relationship). They need to speak with one voice – The Algonquin voice. – Algonquins of Ontario (AOO): 10 communities with 16 representatives. The much larger group wants to be involved. From Ottawa to Mattawa (8,000 to 10,000 Algonquins of Ontario registered electors). We may want to consider a presentation to this larger group. – There are approximately 8,000 Algonquins on the Quebec side of the river. The largest of reserve is KZ, with a population of 1,500. • They want involvement in the preliminary design. They expect that the preferred location and preliminary design will be based on archaeological studies (at least Stage 1 and 2), to determine if Stage 3 is required and to determine if mitigation is required before construction. • There are ways to celebrate Algonquin history and culture at the design phase. It's not just story boards. For example a park with a peace tree or some other natural symbol might be more meaningful than a monument; mitigation design issues such as protection of fish spawn, fish ladders, lighting on the bridge, etc. • They want input in the development of TORs, for assessment (perhaps sitting on committee or working team). They want to be seen as a member of the working group rather than as a stakeholder.	

Item		Assigned
	• They want to formalize their relationship with the NCC. They want to develop a work program to work on the issues they will identity as key concerns. This could be in the form of an MOU/Workplan/Roadmap (the concept of an MOU was brought up at an earlier meeting): – There is a need to get a roadmap down in writing. This 'MOU' can serve as a template for all projects with NCC and with other departments. – MOU can be negotiated rather quickly. From 1 to 6 months. – This 'MOU' should get done as a deliverable for Phase 2A, as it fits nicely into the mandate of Phase 2A. The MOU can serve as a roadmap for how to work together during 2B. It would also help secure the budget for Phase 2B. – KZ believes that the MOU notion is a good one but that it may be complicated to execute. There is a need for them to consult internally on this. **Next Steps:** • Letter from AOO (Jim) hopefully by Christmas. – AOO have a meeting on December 14 (negotiation team) – Will raise the MOU idea • Letter from KZ hopefully before Christmas • NCC will react once it receives the letters. – Will present a draft engagement program for how to work together and how to get comments and input.	
6.0	**OTHER BUSINESS** • The proper title is "Algonquins of Ontario", rather than "Algonquins of Ontario First Nation" as indicated in the presentation.	
7.0	**NEXT MEETING** • Meetings are the most appropriate form to discuss working together. They'll get back to us. They like the idea of going to the Algonquin communities.	

Recorded by: Greg Jodouin

cc. All attending

Appendix B

Generic List of Factors to be Considered

Generic List of Factors to be Considered

Generally, the scope of the factors to be considered in the assessment will include, but may not necessarily be limited to, potential effects (including cumulative effects) on the following environmental components.

Species at Risk (Species of Special Concern)

In conjunction with the section on vegetation, wildlife and migratory birds, the EA Study Report will indicate whether there are any known species of concern present in the study area, including those species listed under the federal *Species at Risk Act* (SARA) and corresponding legislation in Quebec and Ontario.

The SARA is intended to provide protection for individuals of wildlife species at risk listed under Schedule 1 of the Act, their residences (dwelling places, such as a den or nest or other similar area that is occupied or habitually occupied by one or more individual during part or all of its life cycle) and critical habitat (that part of areas used or formerly used by the species to carry out their life processes that is deemed essential for survival or recovery).

SARA requires that when a federal EA is carried out on a project that may affect a listed species or its critical habitat: adverse environmental effects must be identified, mitigation measures must be taken to avoid or lessen adverse effects, and environmental effects monitoring must be conducted. Furthermore, if any listed wildlife species, its critical habitat or the residences of individuals of that species may be adversely impacted by the project, the RAs for the CEAA assessment must notify the competent Minister responsible for the listed species. Environment Canada (EC) can provide assistance with this.

Existing background information will be collected to determine whether any species of conservation concern are known or expected to use the site or adjacent lands within the zone of influence of the project. The guidelines of the Environment Canada publication "Environmental Assessment Best Practice Guide for Wildlife at Risk in Canada" (February 2004) will be used. The methods to be used to conduct the biological inventory as well as any measures to protect and identify species at risk will be provided for review and further guidance. This information will also be outlined in the EA Study Report.

Air Quality

The EA Study Report will provide a description of air quality in the vicinity of the Project and will indicate the potential impact of the Project on air quality. If a quantitative air quality assessment has been undertaken the results will be summarized in the EA Study Report. If a quantitative study was not considered to be warranted a rationale will be provided, and a qualitative analysis must still be provided.

The discussion of potential effects will address the impacts associated with the construction phase, such as diesel emissions from the operation of heavy equipment, and the generation of dust during construction activities. It will also address potential local and regional impacts during operation, such as emissions associated with increased train traffic. The air quality assessment will consider the potential adverse impacts to sensitive receptors. For example, the analysis will indicate the location of the nearest residences, and whether they are likely to be effected by emissions. The EA Study Report will also address any potential human health effects associated with negative impacts on air quality caused by the Project.

When drawing conclusions about the significance of impacts, reference will be made to the appropriate guidelines, such as the National Ambient Air Quality Objectives, these can be accessed at the following link http://www.hc-sc.gc.ca/ewh-semt/pubs/air/naaqo-onqaa/index-eng.php. Where positive or neutral impacts are expected, the report will provide rationale to support the conclusions including quantitative data to the extent possible.

Guidance on the mitigation of air quality impacts during construction will be obtained from "Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities" (March 2005), Cheminfo Services.

Fisheries and Aquatic Habitat

In conjunction with the section on surface water, the EA Study Report will indicate the presence of fish and fish habitat in the study area. The EA Study Report will provide a list of fish known to frequent the study area and a description of their habitat.

The environmental effects analysis will identify any impacts the Project may have, including the impacts of watercourse crossing structures. Fisheries and Oceans Canada (DFO) will review all watercourse crossings for impacts to fish and fish habitat, in accordance with the Habitat Protection Provisions of the *Fisheries Act*.

All water crossing works will be designed in a way that avoids the Harmful Alteration, Disruption or Destruction (HADD) of fish habitat, using appropriate work methods and techniques. However, where impacts are anticipated to be unavoidable and an authorization for a HADD is deemed appropriate by DFO, mitigation measures (including compensation) must be incorporated into the Project consistent with the No Net Loss Principle outlined in DFO's Policy for the Management of Fish Habitat (1986). Additional guidance from DFO will be requested if a need for a HADD authorization is identified.

Hydrotechnical

The EA Study Report will identify the name, location and characteristics of any water bodies in the Project area and will identify potential impacts of the Project on surface water quality and quantity (the Ottawa River in particular). The analysis will include potential effects from storm water run-off and spills during the construction and operation phases. The EA Study Report will also describe the existing water quality to the extent possible and indicate whether the water bodies are a source of potable water.

The environmental effects analysis will identify the potential impact of the Project on the watercourses. In particular, the report will consider potential impacts on water quality resulting from the Project. Construction, operation or maintenance works over or near watercourses may impact water quality if there is the potential for the release of deleterious substances (including sediment) into receiving waters. Bridge and road runoff will be considered.

The report will also describe the site drainage, including storm water management and will include potential environmental and related human health effects on water quality and quantity of receiving water bodies from storm water run-off and spills, during both the construction and operation phases.

Specific emphasis will be placed on management measures in the event that contaminated soil or groundwater is encountered. When drawing conclusions about the significance of impacts, reference will be made to the appropriate guidelines, such as the Guidelines for Canadian Drinking Water Quality. These can be accessed at http://www.hc-sc.gc.ca/ewh-semt/water-eau/drink-potab/guide/index-eng.php.

Terrestrial – Vegetation and Wetlands

The EA Study Report will provide a description of vegetation and wetlands in the study area (within the zone of influence of the Project). The habitats within the zone of influence of the Project will be described and mapped in relation to the Project works and activities.

Noting the importance of the Ottawa River area, the environmental effects analysis will identify any impacts the Project may have, including the removal of vegetation (particularly in sensitive habitats), potential adverse effects on biodiversity (such as the potential for the establishment of exotic invasive plant species and possible effects on genetic and species diversity); disturbance effects (such as edge effects), and (where relevant) the potential effects of vegetation control, and other operational considerations. Any site/ecological restoration efforts will also be described.

The EA Study Report will describe and assess potential impacts on wetlands and their functions, taking into consideration the Federal Policy on Wetlands Conservation (http://www.ramsar.org/wurc/wurc_policy_canada.htm), which applies to the delivery of all federal programs, services and expenditures. Of relevance to this Project is the commitment under the Policy that all federal departments have made to the goal of 'no net loss' of wetland functions of all natural or created wetlands on federal lands and waters or in areas where wetland loss has reached critical levels. Wetland functions include hydrological, biogeochemical, habitat and ecological functions, as well as social/cultural/ commercial values, aesthetic/recreational values, and education and public awareness values. If there is potential for Project activities to encroach on or disturb wetland features, background information on these features will be provided as early as possible and further guidance will be obtained from the federal authorities on how to address wetland issues.

Adverse impacts on the wetland features and their functions will be assessed and a mitigation strategy will be developed based first on avoidance and then minimization and compensation, in that order. Any monitoring and maintenance requirements will be documented.

Terrestrial – Wildlife (including Migratory Birds)

The EA Study Report will provide a description of wildlife and migratory birds that are present in the study area (including species that may only use the study area on a seasonal basis) and will identify any impacts the Project may have on wildlife or avian communities or their habitat. In particular, the EA Study Report will note the impact on migratory birds during site restoration.

The proponent also notes that the "incidental take" of migratory birds and the disturbance, destruction or taking of the nest of a migratory bird are prohibited under section 6 of the *Migratory Bird Regulations*. "Incidental take" is the killing or harming of migratory birds due to actions such as economic development, which are not primarily focused on taking migratory birds. As no permit can be issued for the incidental take of migratory birds or their nests as a result of the proposed activities, the report will describe measures to avoid incidental take, which may include timing restrictions to avoid nesting birds during vegetation removal, site access, staging or stockpiling.

Wildlife corridors will be identified and assessed. Where existing corridors cross the proposed alignment, impacts will be documented and mitigation measures incorporated into the design.

Heritage and Archaeological

The EA Study Report will provide a description of all heritage and archaeological features that are present in the study area and will identify any impacts the Project may have on these resources. Work will be consistent with the requirements of the Ministry of Culture in Ontario and the ministère de la Culture, des Communications et de la Condition féminine du Québec.

Aboriginal Interests

The EA Study Report will describe any First Nations land uses and interests and will identify any indirect effects the project may cause on the current use of land for traditional purposes, or on First Nations cultural, archaeological or heritage resources. First Nations groups were involved in Phase 1 of the study, and have expressed interest in having greater participation in a number of facets of the project. The two groups, the Algonquins of Ontario (AOO) and the Kitigan Zibi Anishinabeg (KZA), expect to sign Memoranda of Understanding or Letters of Intent with the NCC regarding their participation through planning and design and construction. They will document their interests for the NCC to support the EA work.

Noise and Vibration

The EA Study Report will provide a description of noise in the vicinity of the Project and will indicate the potential impact of the Project in relation to noise. If a quantitative noise assessment has been undertaken the results will be summarized in the report. If a quantitative study was not considered to be warranted a rationale will be provided, and a qualitative analysis must still be provided.

The EA Study Report will provide a qualitative description of the neighbourhoods and land uses near the Project site, and will identify the location of and distance from residential communities and other sensitive receptors in the study area such as residences, hospitals, daycares and seniors' residences. Aerial photos or maps to support the text will be included. The report will describe the existing ambient conditions, using actual measurements where possible, together with a description of land uses and point sources that contribute to existing conditions.

The environmental effects analysis will indicate, using quantitative information to the extent possible, what additional contribution the Project may make during both the construction and operation phases (both daytime and nighttime scenarios). For the construction phase, the analysis will specifically describe what kinds of construction activities are likely to take place in the vicinity of the identified noise receptors. Particular attention will be paid to the potential effects on the identified noise sensitive uses in the study area.

Specifically, the analysis will include the following: a land-use map identifying sensitive sites (e.g. residences, schools, day-cares, hospitals and nursing homes); ambient noise levels; predicted noise levels during construction and operation; an indication of any changes in noise levels; comparison of predicted levels with relevant guidelines; and, noise abatement measures.

The EA Study Report will also address potential human health effects associated with negative impacts caused by the Project. When drawing conclusions about the significance of impacts, reference will be made to the relevant guidelines. Where positive or neutral impacts are expected, the report will provide rationale to support the conclusions, including quantitative data to the extent possible.

Contamination

The EA Study Report will describe surface geology and soils in the study area and any potential effects of the project, including the potential for adverse environmental effects resulting from contaminated sites and spills. Where the Project will involve the confinement, removal or remediation of contaminated soils or sediments, information on the containment, disposal or treatment method (including the potential environmental and any related human health effects associated with the method) will be provided. When drawing conclusions about the significance of impacts, reference will be made to the appropriate guidelines.

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