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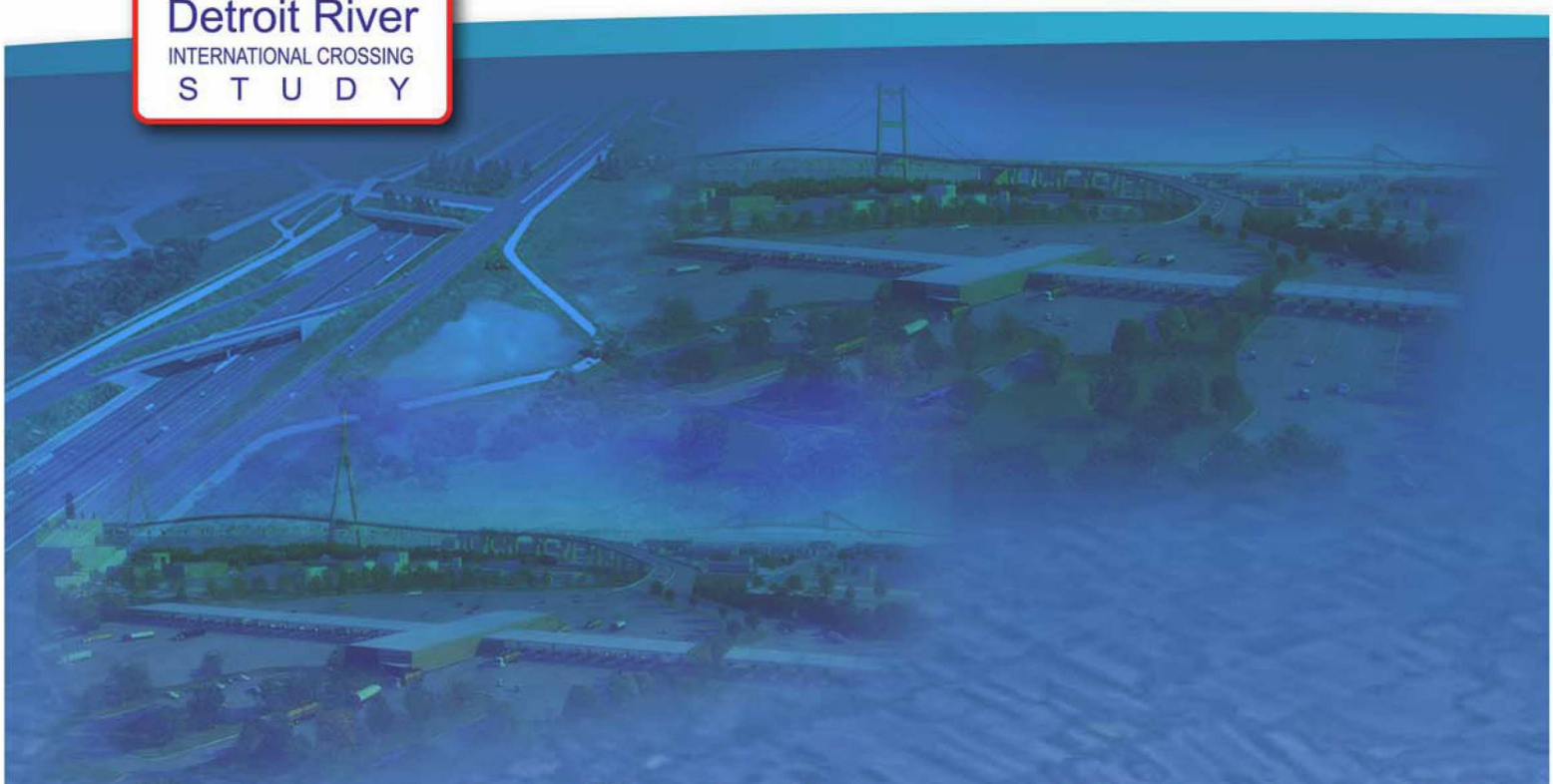
Canada-U.S.-Ontario-Michigan Border Transportation Partnership

Detroit River
INTERNATIONAL CROSSING
S T U D Y



Canadian Environmental Assessment Act Screening Report
CEAR No: 06-01-18170

Detroit River International Crossing Study
City of Windsor, County of Essex, Town of LaSalle, Town of Tecumseh

DRAFT July 2009

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1.0 Background

1.1 Introduction

The Detroit River International Crossing (DRIC) project is the result of a bi-national transportation study that has been undertaken by a partnership of government agencies, comprising the following provincial, state and national transportation authorities from both Canada and the United States:

- Transport Canada (TC);
- The Federal Highway Administration (FHWA), U.S. Department of Transportation;
- The Ontario Ministry of Transportation (MTO); and,
- The Michigan Department of Transportation (MDOT).

The objective of the Partnership is to provide for the safe, secure and efficient movement of people and goods between southwest Ontario and southeast Michigan, while minimizing environmental and community impacts.

The overall bi-national proposal represents an end-to-end border transportation system that connects the freeway systems in Canada and the United States with a new international border crossing that is served by border inspection facilities on both sides of the Detroit River. In Canada, the project is located in the City of Windsor and the Town of Lasalle and Town of Tecumseh, in the County of Essex in southwest Ontario. The United States portion of the project is located in the City of Detroit, in Wayne County, Michigan.

An integrated environmental assessment process for the DRIC project was developed to meet the requirements of the respective legislation of each jurisdiction, including the *Canadian Environmental Assessment Act* (CEAA), the *Ontario Environmental Assessment Act* (OEAA), and the *U.S. National Environmental Policy Act* (NEPA).

The purpose of this report is to document the Canadian federal environmental assessment decision for the Canadian portion of the DRIC project, as required under the CEAA. It is a summary document that is based on the extensive body of documentation generated throughout the OEAA process.

Once the necessary environmental and regulatory approvals have been secured, the Partnership intends to pursue a range of innovative project delivery mechanisms, which are expected to include a Public-Private Partnership (P3) model to design, build and operate the new bridge crossing and border inspection plaza, and potential alternative financing models to construct the access road and freeway interchanges.

The study has adopted a precautionary approach by considering, where applicable, worst-case scenarios in the environmental analysis. Recognizing the project is still in the early design phase, the study also includes commitments to future work to track key issues. Where appropriate, commitments for monitoring and follow-up will ultimately be incorporated into relevant contract documents.

1.2 DRIC Study Process

As DRIC is a bi-national study, the Canadian and U.S. study teams worked closely together to identify and evaluate a broad range of alternatives. Through this process, the Partnership identified the location for a new bridge crossing, and associated border inspection facilities and freeway connections in both countries.

Each jurisdiction has documented the results of the assessment process in accordance with their respective legislative requirements. For the purpose of this report, the word “Project” is used to describe the Canadian portion of the project. The complete results of the U.S. study are available at **http://www.partnershipborderstudy.com**.

In Canada, the Project was subject to the requirements of both the OEAA and CEAA. As such, the environmental assessment was coordinated according to the *Canada-Ontario Agreement on Environmental Assessment Cooperation* (the Agreement). The study process was led by MTO, and followed an individual EA process under the OEAA. Key components of this process included defining the need for the Project, the identification and analysis of alternatives, as well as opportunities for public consultation. TC participated throughout the study, and other federal

authorities were engaged early in the process to integrate the federal EA requirements under CEAA.

1.3 Ontario Environmental Assessment Act

The provincial environmental assessment (EA) was initiated in May 2004 with the submission of the Terms of Reference (TOR) to the provincial Ministry of the Environment (MOE). The TOR were approved in September 2004, and a consultant team was engaged to conduct the necessary studies. The provincial assessment formally began in February 2005. The following sections provide additional background on the implementation of the EA process, and the key steps in the overall DRIC study.

Purpose, Need and Planning Alternatives

The Partnership has been studying border crossing capacity in this region for several years. In 2001, the Partnership jointly commissioned a Planning/Need and Feasibility (P/NF) Study, which was completed in 2004. Among other things, the P/NF Study confirmed the long-term need for additional border crossing capacity in the Windsor-Detroit corridor.

The Windsor-Detroit border crossing represents an important trade corridor between Canada and the U.S. Based on 2006 border crossing statistics, approximately 28% of Canada-U.S. surface trade passes through Windsor-Detroit. Based on studies undertaken by the Partnership, travel demand forecasts of passenger car and commercial vehicle volumes at the Detroit River crossings suggest that additional border crossing capacity will be required to accommodate traffic growth. The studies concluded that, unless steps are taken to expand infrastructure capacity, mounting congestion and delay would have considerable economic impacts by 2035.

Drawing on the work of the PN/F study, a draft *Transportation Planning and Needs Report* was completed in November 2005. The report identified several transportation planning alternatives, including improvements to border processing, transportation demand management, and various modal shifts, among others. The report concluded that the only transportation planning alternative that can meet the identified needs is one that includes the provision of new and/or improved roads with a new or improved crossing. This alternative was identified as the most effective at addressing the transportation network requirements, border processing requirements, and provides the highest overall level of support to long-term planning objectives.

Given the strategic importance of Windsor-Detroit corridor, the Partnership initiated a formal environmental assessment process to develop a new or expanded border crossing in the Windsor-Detroit corridor, for the purpose of providing the necessary capacity to meet long-term travel demand.[1] The early steps in the provincial process included identifying the study area, and generating, assessing and evaluating alternatives to address the identified transportation needs. A summary of these steps is provided below.

Identification of the Study Area, and Evaluation of Alternatives

Building on the work completed in the P/NF study, the DRIC study team identified a preliminary analysis area (PAA) covering a broad area of the Windsor-Essex region of southwest Ontario, and undertook a series of field studies to document the existing environmental conditions in the study area. Two environmental overview reports were prepared to describe the existing environmental conditions in this area.[2]

In collaboration with the US study team; the DRIC study team identified a broad range of illustrative, or conceptual,

[1] Additional information on the purpose, need and alternatives to the project can be found in the PN/F study, and the August 2005 report, *Regional and National Economic Impact of Increasing Delay and Delay Related Costs at the Windsor Detroit Crossings*, and the *Transportation Planning and Needs Report,* November 2005.

[2] Environmental Overview Paper – Canadian Existing Conditions Volume 1 (Social, Economic, Archaeological, Cultural Heritage, Acoustics and Vibration, Air Quality, Waste and Waste Management and Technical Considerations), June 2005; and Environmental Overview Paper – Canadian Existing Conditions Volume 2 (Natural Sciences), June 2005.

alternatives within the PAA. These illustrative alternatives included 15 options for crossing the Detroit River, 13 border inspection plaza options, and a wide range of route alternatives for an access road connecting to Highway 401. The river crossing options, which ranged from Belle Isle in the north to Amherstburg in the south, connected to alternative plaza and highway interchange options in the United States.

Given the nature and extent of current land uses and development along the Detroit River in both Canada and the U.S., the study teams recognized that it is not possible to develop a new or expanded river crossing, plaza and freeway connection that entirely avoids environmental and community impacts. As such, a set of key evaluation factors was developed, and systematically applied to the illustrative alternatives, in both Canada and the U.S.

The seven factors were defined as: changes in air quality; protect community/neighbourhood characteristics, maintain consistency with existing and planned land use; protect cultural resources, protect the natural environment, improve regional mobility, and minimize cost. Using these factors, a reasoned argument method and arithmetic method were applied to evaluate each of the illustrative crossing, plaza and access road alternatives.

As a result of this evaluation, the Canadian and U.S. study teams identified an area of continued analysis (ACA), which was the area identified as having the best potential for developing practical crossing and plaza alternatives that would minimize environmental and community impacts, and that could be viable on both sides of the border. In Canada, the ACA was located in the industrial area of west Windsor, extending north generally from Broadway Boulevard to the vicinity of Brock Street. The Canadian study team also identified a preferred access road corridor to Highway 401, which largely follows the existing Huron Church Road corridor, from the end of the existing 401 towards EC Row expressway, where the road diverged to connect to the various plaza options. In addition, the study team prepared work plans to guide the analysis throughout the provincial EA process. The analysis and work plans were presented to the public and government review agencies in November 2005.

A more detailed review of environmental conditions in the ACA was undertaken, to assist in the development of the practical alternatives. Within the ACA, the Canadian and U.S. study teams were able to further refine the crossing and plaza alternatives, and developed a more refined set of practical alternatives. This included three Detroit River crossing options, and four Canadian plaza options. The river crossing options connected to a plaza envelope in the US (within which different plaza configurations were possible), and associated highway interchange options.

Practical alternatives for the Canadian access road were also developed, and included three different concepts: an at-grade roadway, a depressed/below-grade roadway, as well as a cut and cover tunnel option. For the at-grade and below-grade options, the study team considered two different configurations – one with local access roads located on one side of the highway, and another with directional access roads located on each side of the highway. The results of this work were presented to the public and government review agencies in March 2006.

The evaluation of the practical alternatives used the same evaluation criteria as for the illustrative alternatives, and provided an assessment of the impacts and benefits associated with each alternative.

Through the analysis of the practical alternatives, and in conjunction with ongoing consultation efforts, a new alternative was developed that combined beneficial features of the original alternatives. The new alternative identified the Parkway in August 2007 and included 7 kilometres of below grade freeway, an optimized service road system, and a green corridor with 10 tunnelled sections totalling 1.5 km in length, a grade separated recreational trail system, and extensive green areas.

Upon completion of the analysis and evaluation of the practical alternatives, the Partnership announced the results of the evaluation for the access road component in May 2008. Referred to as The Windsor-Essex Parkway, the Technically and Environmentally Preferred Alternative (TEPA) access road that consisted of the major components of the Parkway with some refinements made to reflect additional community consultation and analysis. These refinements included an additional tunnel in the Spring Garden area, more green space and a refined trail network. The components of the TEPA for the international bridge crossing (Crossing X-10B) and Canadian plaza (Plaza B1) were announced in June 2008.

The selection of the TEPA was made following a complete analysis and evaluation of practical alternatives for the crossing, plaza and access road. The TEPA for this study consists of The Windsor-Essex Parkway connecting to Plaza B1 together with Crossing X-10B. The components of the TEPA for the international bridge crossing (Crossing X-10B) and Canadian plaza (Plaza B1) were announced in June 2008.

Subsequent to the TEPA selection, several refinements were developed based on further technical analysis and stakeholder consultation, with the objectives of further enhancing the benefits or mitigating environmental effects. The combination of the TEPA and associated refinements along with the proposed mitigation measures are referred to collectively as the Recommended Plan.

The Recommended Plan has been developed to a concept design level to confirm feasibility of the proposed infrastructure and to identify the property requirements and the environmental impacts. This concept design is intended to provide a sufficient level of detail on which to base a decision regarding approval of the undertaking and to guide the development of more detailed designs during subsequent design phases of the study. The Recommended Plan is referred to as the Project for the purposes of the this Screening Report

Summary of Environmental Considerations in the Evaluation of Alternatives

The process of identifying and evaluating alternatives began with the identification of a long list of illustrative alternatives in a broad study area. Through a thorough and systematic process, the number of alternatives was reduced and the level of analysis became more detailed. Additional technical studies were undertaken at each stage of the process to supplement the preliminary baseline work.

The DRIC EA Report was completed in December 2008 and submitted to the Ontario Ministry of the Environment (MOE) for review and approval. Information about the existing environmental conditions, as well as the impacts and benefits of the Project, are found in the series of technical reports that support the OEAA submission.

This body of technical documents, which are all available on the Partnership web site (**http://www.partnershipborderstudy.com**), provides the foundation for federal decision-making under CEAA. This body of documentation has been supplemented by additional work that has been undertaken since the submission of the DRIC EA Report. This includes: MTO's response to comments on the DRIC EA Report and supporting technical documentation, the MOE review of the DRIC EA report, supplementary fisheries documentation and conceptual compensation plans as well as the Cumulative Effects Assessment Report.

2.0 Federal Environmental Assessment Process

2.1 Coordination with the OEAA

As a member of the Border Transportation Partnership and co-proponent of the Project, TC participated throughout the provincial study process. Opportunities to involve other federal departments and agencies were identified in the TOR, and implemented early in the study process.

A Canadian Agencies Advisory Group (CANAAG) was established at the outset of the study, to provide a forum for provincial and federal government agencies to stay up-to-date on the process, and to hear each other's interests and concerns. The formal process under CEAA was initiated early in the process, in order to maximize opportunities for coordination.

The federal and provincial EA processes were coordinated pursuant to the *Canada-Ontario Agreement on Environmental Assessment Cooperation* (the Agreement). Subsequently, the Federal Review Team (FRT) was able to participate in the development of factor specific technical studies that support both the provincial DRIC EA Report and this Screening Report. As part of the coordinated federal-provincial process, a Joint Assessment Committee (JAC) was established as a forum to share information on the decision-making process. Additional information about coordination with the provincial process can be found in Chapter 2 of the DRIC EA Report.

2.2 Application of the Canadian Environmental Assessment Act

As noted above, the federal environmental assessment was initiated early in the process, to maximize opportunities for coordination. On August 24, 2005, a Project Description was circulated to federal authorities in accordance with the CEAA *Federal Coordination Regulations*. The Project Description provided background information on the Project, as well as general information on its proposed location.

The Project Description included preliminary information on components/structures (e.g., roadways, ramps, bridges, rail crossings etc.), facility characteristics (e.g. number of lanes, right-of-way requirements, etc.), project activities, resource/material requirements and waste disposal. Based on the Project Description and additional information submitted to date, a number of federal departments and agencies determined their role pursuant to the CEAA with respect to the Project.

Responsible Authorities / Prescribed Authority

Transport Canada (TC)

TC has determined that it is a responsible authority (RA) for the Project because it is a co-proponent of the Canadian portion of the Project, and therefore, an EA is required pursuant to paragraph 5(1)(a) of CEAA. TC is also proposing to provide financial assistance to the Project and therefore is an RA pursuant to paragraph 5(1)(b) of CEAA. In addition, the Project will require an approval under paragraph 5(1)(a) of the *Navigable Waters Protection Act* for the bridge span, and therefore, TC is also an RA pursuant to paragraph 5(1)(d) of CEAA.

Fisheries and Oceans Canada (DFO)

The Project will require an authorization from DFO under subsection 35(2) of the *Fisheries Act*, for channel realignments and/or enclosures, watercourse crossings and other associated channel works along the Windsor-Essex Parkway component of the Project. Additional authorizations may be required if construction of the bridge requires any temporary shoreline work in the Detroit River. DFO is an RA pursuant to paragraph 5(1)(d) of CEAA.

Windsor Port Authority (WPA)

Pursuant to section 9 and paragraph 5(1)(c) of CEAA, the WPA is a prescribed authority (PA) under the *Canada Port Authority Regulations*, in relation to federal water lots that will be crossed by the new Detroit River bridge.

TC, DFO and the WPA have coordinated their activities throughout the EA process to ensure the conduct of a single federal EA process.

Expert Federal Authorities

A number of federal authorities contributed to the conduct of the assessment, including: Environment Canada, Health Canada, Foreign Affairs and International Trade Canada, and the Canada Border Services Agency. These departments and agencies are considered expert Federal Authorities (FAs) and provided expertise to the RAs/PA. Since the Project underwent a multi-jurisdictional assessment, the Canadian Environmental Assessment Agency served as the Federal Environmental Assessment Coordinator (FEAC) for the assessment. Together, the RAs, PA, expert FAs, and FEAC comprise the federal review team (FRT).

2.3 Screening Level of Assessment Required under CEAA

The Project is not described in the Comprehensive Study List Regulations of CEAA; therefore, section 18(1) of CEAA requires the RAs/PA to ensure that a screening level assessment of the Project is carried out before taking any action that would allow the Project to proceed, in whole or in part.

A Notice of Commencement was posted on the web site for the Canadian Environmental Assessment Registry

(CEAR). To help guide the process, Federal Environmental Assessment Guidelines and a Federal Public Participation Plan were developed and circulated for public review in 2006. The guidelines were last updated in February 2009, and are available on the CEAR site.

This Screening Report has been prepared to provide a federal environmental assessment summary document for the conclusions drawn from the environmental effects analysis, including potential adverse environmental effects, the significance of these effects, and mitigation measures that are necessary to prevent or minimize any potentially significant adverse effects. It also summarizes results from public consultation that have been used in support of the CEAA screening. As the provincial EA documentation generally provides the EA body of documentation for this assessment, this report refers to the relevant provincial EA documents for supporting information and details throughout.

3.0 Scope of Project

3.1 Scope of the Project under CEAA

CEAA requires that an RA/PA determine the scope of the Project for the purpose of the assessment. The scope of the Project, as identified by each RA/PA in accordance with section 15 of CEAA, is described below.

Scope of Project for Transport Canada and the Windsor Port Authority

The scope of the Project for TC and the WPA includes the construction, operation, modification and any decommissioning work in relation to the Project, including the Windsor-Essex Parkway between Highway 401 and the proposed Border Services Plaza, the proposed Border Services Plaza and the Canadian portion of a new six-lane international bridge crossing over the Detroit River. This includes activities associated with the construction and operation of various project components, which are further detailed in Table 3.1.

Scope of Project Fisheries and Oceans Canada

The scope of the Project for DFO includes the components of the Project, or activities required for the Project, that have the potential to result in the harmful alteration, disruption or destruction of fish habitat associated with potential realignment/ enclosure of watercourses, watercourse crossings, temporary shoreline works in the Detroit River and any ancillary works and/or activities that are required solely for the purpose of undertaking the components of the Project that require authorization under section 35(2) of the *Fisheries Act*.

Additional information on the project components and their associated activities is provided in the sections that follow.

3.2 Project Description

The Canadian portion of the DRIC Project includes three major components (**Exhibit 3.1** below):

The Windsor-Essex Parkway

The Windsor-Essex Parkway consists generally of a 10 kilometre, six-lane urban freeway connecting the existing Highway 401 to the new Border Services Plaza, a four-lane service road connecting existing Highway 3 to existing Huron Church Road, and a multi-use recreational trail network.

The Windsor-Essex Parkway includes paved shoulder and a paved median, with a concrete median barrier. All six through lanes on the freeway will be 3.75 metres wide, and shoulders will be 3.0 metres wide and fully paved (median and outside). The proposed service road, which is generally adjacent to the Windsor-Essex Parkway, typically consists of four lanes that are each 3.75 wide with paved outside shoulders that are 2.5 metres wide, with a 1 metre wide flush median. Substantial portions of the Windsor-Essex Parkway are below grade and require either vegetated side slopes or constructed retaining walls.

From west to east, the Windsor-Essex Parkway corridor generally follows the existing E.C. Row Expressway from Ojibway Parkway to Huron Church Road, along Huron Church Road from E.C. Row south to Highway 3, along Highway 3 to the existing Highway 401, and along Highway 401 to North Talbot Road.

Numerous local, connector and arterial crossing roads intersect with the Windsor-Essex Parkway corridor. Some crossing roads will include interchanges; some will be connected with the proposed service road network, some will be grade separated from the corridor; and some current road crossings will be closed.

There will be 11 tunnels ranging in length from 120 metres to 240 metres. These tunnel structures are located along

the length of the corridor to provide enhanced linkages for roads, trails and wildlife.

A multi-use trail network will provide a continuous path between the existing trail at the Malden Road/E.C. Row Expressway underpass and the Howard Avenue diversion. Grade separated trail crossings will allow cyclists and pedestrians to travel the length of the corridor. The network includes numerous alternate paths and connections with locations outside the corridor. The multi-use trail network will provide recreational opportunities and enhance linkages for local residents.

Ancillary works associated with the Windsor-Essex Parkway include stormwater management, illumination, and an advanced traffic management system (ATMS).

During operations of the Windsor-Essex Parkway, vehicular traffic and maintenance vehicles are expected to use the freeway and associated infrastructure.

Border Services Plaza

The plaza will be situated within the Brighton Beach Industrial Park adjacent to the Detroit River on approximately 55 Hectares. The plaza will provide border processing facilities to meet future travel demand and security requirements at the border crossing. The initial construction of the plaza will be such that future expansion will be possible by way of constructing additional inspection booths or tolls.

Major facilities within the plaza include outbound tollbooths, an outbound inspection area; and primary and secondary inspection areas for inbound commercial and passenger vehicles. Onsite buildings will include a duty-free shop, a maintenance building, and a main office-type building.

Ancillary works include local service road access, stormwater management, security measures and illumination.

International Bridge Crossing

A six-lane international bridge crossing of the Detroit River will provide three Canada-bound lanes and three US-bound lanes. The capacity of the new crossing will accommodate future travel demand, by meeting capacity and providing flexibility to stream traffic on the crossing to improve border processing (e.g. designated NEXUS/FAST lane).

The crossing will consist of a main span approximately 840 to 855 m in length across the width of the Detroit River attached to onshore piers, with short access roads/ramps that will connect to plazas in both Canada and the US.

Two bridge types are being considered for the crossing: a cable-stayed bridge and a suspension bridge. Selection of the bridge type will be determined during future design stages of this Project. Neither bridge type requires piers to be placed in the Detroit River.

The design concept for the suspension bridge alternative consists of an 855 m main span across the Detroit River with unsuspended backstay spans of approximately 250 m at each end. The main span would be supported at either end by a reinforced concrete tower extending approximately 140 m above footings. The bridge deck would be a steel orthotropic girder structure approximately 35 m wide. Between the two main towers, the deck would be supported by wire rope suspenders connected to main cables, which would be attached to anchorages at each end of the bridge. The anchorage on the Windsor side of the bridge would be constructed on land owned by Ontario Power Generation.

The design concept for the cable-stayed alternative consists of an 840 m main span and symmetric 320 m side spans. The main span would be supported at either end by reinforced concrete pylons extending approximately 250 m above footings. Between the two pylons, stayed cables would support the bridge deck at 15 m intervals. The main span deck would be approximately 35 m wide and could accommodate both steel and concrete construction.

Additional information and a detailed description of the Project and its components can be found in Chapter 9 and in Appendix A - Recommended Plan Concept Design Plates of the DRIC EA Report.

Exhibit 3.1 – The Project

3.3 Project Component Identification

The following Table 3.1 outlines the core project components and activities for both the construction and operations/maintenance phases of the Project. Additional information on the core project components / activities can be found in the Draft Practical Alternatives Evaluation - Constructability Report for Plaza & Crossing Alternatives (December 2008) and Draft Practical Alternatives Evaluation – Constructability Report for Access Road Alternatives (May 2008).

Table 3.1 – Project Component Identification[3]

TABLE 3.1: PROJECT COMPONENTS AND ACTIVITIES			
Project Phase	**Components**	**Activities**	**Boundaries**
Windsor-Essex Parkway			
Construction	Site preparation	• Movement of equipment and workers to and throughout the site • Material importation, storage and stockpiling • Installation of administration and support facilities, such as work trailers, equipment maintenance and storage areas and associated utilities • Surface and underground utility relocation • Demolition of structures and substructures along the alignment • Creation of suitable terrestrial habitat for relocation of plant species at risk impacted by clearing • Clearing and grubbing • Top soil removal, stockpiling and disposal (including re-use, where possible) • Excavation; clean up of contaminated sites, where required • Temporary dewatering at watercourse crossings • Grading, placement of fill	Site specific, and localized activities and routes
	Road closures; realignment of local roads and construction of temporary staging roads	• Traffic management; utility relocation, installation of drainage, placement of fill, paving, illumination	Local
	Construction of retaining walls	• Pile driving, directional boring, placement of tie-backs, installation of pre-formed panels • Pouring concrete	Site specific
	Construction of freeway, service roads lanes and multi-use trail network; access and egress ramps (9 northbound-westbound and 11 southbound-eastbound); intersections	• Excavation, stockpiling; • Placement of fill and granular materials for embankments and road base • Grading; paving (including the use of temporary asphalt plants) • Line painting	Site specific

[3] Although specific details may be refined as part of the detailed design stage, the nature and magnitude of the various project components is considered appropriate for the purpose of impact assessment.

TABLE 3.1: PROJECT COMPONENTS AND ACTIVITIES

Project Phase	Components	Activities	Boundaries
	Construction of full and partial interchanges, intersections, grade separated crossings, and a roundabout at the Parkway / Highway 3 / Howard Avenue diversion	• Excavation, stockpiling • Placement of fill and granular materials for embankments; • Construction of temporary platforms and workspaces; • Construction of support structures, such as abutments, retaining walls, piers; • Pile driving, pouring concrete, paving; (including use of temporary asphalt plants)	Site specific
	Construction of access and egress ramps, including nine northbound / westbound and 11 southbound / eastbound ramps;	• Construction of temporary platforms and workspaces; • Construction of support structures, such as abutments, retaining walls, piers; • Pile driving; pouring concrete and paving	Site specific
	Construction of 11 tunnels, 14 overpass and underpass structures and 8 pedestrian overpasses	• Excavation, stockpiling, pile driving; • Placement of fill and granular materials for embankments; • Temporary dewatering of watercourses; • Construction of temporary platforms and workspaces; • Installation of bridge abutments, wing wall and deck forming systems; pouring concrete; installation of guard rails	Site specific
	Construction of multi-use trail system	• Grading, paving, re-vegetation	Site specific
	Construction of drainage components (i.e., sewers, catch basins and stormwater management facilities); including nine proposed stormwater management wet ponds	• Excavation and grading, temporary diversions; concrete placement, construction of pumping stations and instrumentation; • Installation of sewers, ditches and swales to convey runoff to stormwater management ponds	Site specific and localized downstream and upstream areas
	Realignment and/or closure of municipal agricultural drains; installation of culverts and structures	• Excavation; • Horizontal and vertical realignment; placing of fill; installation of pipes, culverts, backfill; erosion and sedimentation control	Site specific and localized downstream and upstream areas
	Installation of illumination along the freeway, service roads and trail system	• Excavation; • Installation of fixtures; • Drilling, pouring concrete.	Site specific
	Installation of Advanced Traffic Management System	• Excavation; • Installation of poles with concrete footings; • Installation of ducts and cabling to support variable message signs, closed circuit television; • Vehicle detection and queue-end warning systems, and communications systems	Site specific
	Management of construction waste	• Transfer of waste, including excess earth/soil and contaminated materials, to approved disposal or recycling sites	Site specific and local

TABLE 3.1: PROJECT COMPONENTS AND ACTIVITIES			
Project Phase	**Components**	**Activities**	**Boundaries**
	Site clean-up and landscaping	• Final grading of surfaces; landscaping.	Site specific
Operation / Maintenance	Operation of freeway, access roads and multi-use trail network	• Mixed vehicular traffic; recreational and pedestrian traffic; illumination	Sites specific local and regional
	Winter de-icing / snow removal	• Application of sand and/or salt; snow removal	Site specific
	General maintenance activities	• Roadway and structure maintenance and rehabilitation (line painting, re-surfacing, graffiti removal); landscaping; culvert maintenance; drainage improvements	Site specific
Border Inspection Plaza			
Construction	Site Preparation	• Movement of equipment and workers throughout, to and from the site; • Realignment of local roads • Development of construction staging areas; • Material importation, storage and stockpiling; • Clearing and grubbing; • Surface and underground utility relocation • Demolition of structures and substructures on the site • Installation of administration and support facilities, such as administration facilities, equipment maintenance and storage areas, utilities; • Top soil removal, stockpiling and disposal (including re-use, where possible) • Excavation; clean up of contaminated sites, where required • Salvage and relocation of plant species at risk prior to clearing and grubbing • Rock excavation; boring, drilling • Placement of fill; grading	Site specific and local

TABLE 3.1: PROJECT COMPONENTS AND ACTIVITIES

Project Phase	Components	Activities	Boundaries
	Construction of plaza road network and parking, including: 29 inbound inspection lanes, (including dedicated FAST and NEXUS lanes), primary and secondary inspection areas for inbound passenger and commercial vehicles; nine outbound toll lanes, an outbound inspection area; employee parking areas, service road within the plaza, and local road access from Sandwich Street	• Excavation and stockpiling; • Placement of fill and granular materials to provide the base for the plaza footprint; Grading; paving (including the use of temporary asphalt plants)	Site specific
	Construction of inspection and toll booths, VACIS inspection facilities; plaza buildings, including a main administration building; inspection building for the Canada Food Inspection Agency, duty free shop, maintenance facilities and salt storage building	• Construction of building foundations and substructures; erection of buildings using standard construction techniques; • Pile driving • Connection to municipal and utility services	Site specific
	Construction of stormwater management facilities	• Excavation and grading; installation of culverts, sewers, ditches and swales to convey runoff to stormwater management pond	Site specific and localized downstream areas
	Installation of illumination and security fencing	• Excavation; drilling; installation of fixtures; pouring concrete footings for poles	Site specific
	Management of construction waste	• Transfer of waste, including contaminated materials, to approved disposal or recycling sites	Site specific
Operation	Operation of plaza	• Mixed vehicular traffic • Movement of equipment workers throughout the site; • Management of waste	Site specific, local, and regional
	Winter de-icing / snow removal	• Application of sand and/or salt; snow removal	Site specific
	Management of waste	• Transfer waste, including contaminated materials, to approved disposal or recycling sites	
	General maintenance activities	• Roadway and structure maintenance and rehabilitation (line painting, re-surfacing); landscaping; culvert maintenance; drainage improvements, maintenance of storm water management facilities	Site specific
International Bridge Crossing (suspension bridge OR cable stayed)			

TABLE 3.1: PROJECT COMPONENTS AND ACTIVITIES

Project Phase	Components	Activities	Boundaries
Construction	Site preparation	• Movement of equipment and workers throughout, to and from the site; • Development of construction staging areas; • Material importation, storage and stockpiling; • Clearing and grubbing; • Surface and underground utility relocation • Installation of administration and support facilities, such as administration facilities, equipment maintenance and storage areas, utilities; • Top soil removal, stockpiling and disposal (including re-use, where possible) • Excavation; clean up of contaminated sites, where required • Rock excavation; boring, drilling • Placement of fill; grading • Construction or use of docking facilities on the Detroit River for off-loading oversize and over-weight components	Site specific and local
	Construction of towers and anchorage or pylon and anchor pier (140m or 250m tower height, depending on the selected bridge design)	• Installation of temporary work platforms and supports, such as steel piles; • Pile driving drilling; • Mass concrete pours; • Wall and slab construction; • Placement of pre-fabricated pieces by crane	Site specific and local
	Installation of main bridge deck (ranging from 855 metres to 840 metres in length) and cable system; minimum clearance of 46 metres across shipping channel	• Installation of temporary work platforms; • Delivery of bridge superstructure segments by barge; assembly of bridge deck segments; • Hoisting and placement of bridge deck segments by heavy-lift fixed and mobile cranes (e.g. lifting gantries from the suspension cables, or cantilevered from towers using cranes); • Paving and waterproofing bridge deck	Site specific and local
	Construction of approach roadway, consisting of back and/or spans (including construction of support piers at 45-80 m intervals, for a distance of 250 to 320 metres, depending on the selected bridge design	• Construction of temporary platforms and workspaces; • Construction of support structures such as piers, abutments and retaining walls; • Pile driving; and paving and/or concrete pouring, • Line painting	Sites specific and local
	Management of construction waste	• Transfer of waste, including soils and contaminated materials, to disposal or recycling sites	Site specific

TABLE 3.1: PROJECT COMPONENTS AND ACTIVITIES

Project Phase	Components	Activities	Boundaries
	Installation of electrical systems, and drainage and stormwater management systems; installation of roadway barriers and illumination	• Installation of ducts, cabling, poles, fixtures, railings and stormwater conveyance systems;	Site specific and localized downstream areas
Operation	Operation of bridge	• Mixed vehicular traffic Illumination	Site specific local and regional
	Winter de-icing / snow removal	• Application of sand and/or salt; snow removal	Site specific
	General maintenance activities	• Roadway and structure maintenance and rehabilitation (repair of deteriorating concrete, cables, expansion joints, bearings, pavement, etc.); drainage improvements, maintenance of storm water drainage system	Site specific and localized downstream areas

4.0 Scope of Factors

CEAA requires that a screening level assessment consider the following factors, in accordance section 16(1) of the Act. As such, this assessment will include the following factors:

- The environmental effects[4] 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;
- The significance of the effects referred to above;
- Comments from the public that are received in accordance with the CEAA and the regulations;
- Measures that are technically and economically feasible and that would mitigate any significant adverse environmental effects of the Project; and
- As part of the coordinated EA process, the RAs/PA used the discretion allowed for in paragraph 16(1)(e) of CEAA to include a consideration for the purpose of the Project, the need for the Project, and the benefits of the Project.

The scope of the factors considered in this report, in relation to the scopes of Project identified above, includes potential effects (including cumulative effects) on the following environmental components:

- Air quality and climate;
- Surface water and groundwater*;
- Water levels and flows in the Detroit River*;
- Surface and subsurface geology and soils;
- Vegetation, vegetation communities and wetlands;
- Fish and fish habitat*;
- Wildlife, wildlife habitat and migratory birds;
- Species at risk;
- Noise and vibration; and
- Contaminated sites and waste management.
- The effect of any change that the Project may cause in the environment on:
  - Human health and socio-economic factors;
  - Physical and cultural heritage;
  - Current use of lands and resources for traditional purposes by Aboriginal peoples; and,
  - Things of historical, archaeological, paleontological or architectural significance.

The environmental effects of the Project on navigation are taken into consideration as part of the EA only when the effects are indirect, that is, resulting from a change in the environment affecting navigation. For this EA only direct effects were identified; therefore, the effects of the Project on navigation are not addressed in the environmental assessment. Any measures necessary to mitigate direct effects will be included as conditions of the *Navigable Waters Protection Act* approvals[5]. Approvals from TC will be required prior to construction of the bridge crossing.

Spatial Boundaries for the Environmental Assessment

Spatial boundaries were defined for each environmental component by taking into account ecological, technical and

[4] As "environmental effects" is defined under the *Canadian Environmental Assessment Act.*
* Denotes environmental components considered by DFO in relation to the scope of the Project.

[5] The Detroit River is considered a navigable waterway under the *Navigable Waters Protection Act*.

social considerations and reflected the geographic range over which the Project's environmental effects may occur, even if these effects extend beyond the Project footprint. For each environmental component, an appropriate Area of Investigation (AOI) was identified.

Additional information regarding Spatial Boundaries for the Project can be found throughout Chapter 7 of the DRIC EA Report.

Temporal Boundaries for the Environmental Assessment

Temporal boundaries were defined for each scoped environmental component in relation to the construction, and operation/maintenance stages of the Project and are as follows:

- Construction will require approximately 4 years for completion;
- Although decommissioning is not anticipated for the Project, operations/maintenance was considered within the context of a planning horizon (the year 2035).

The following Table 4.1, which is based on the factors outlined in the Federal Environmental Assessment Guidelines, provides additional information on the scope of the factors to be considered. It describes the attributes of each factor being assessment and the corresponding spatial and temporal boundaries.

Table 4.1: Environmental Components and Attributes

Table 4.1: Environmental Components and Attributes			
Environmental Component	**Attribute**	**Assessment Boundaries**	
		Spatial	**Temporal**
Air Quality and Climate			
Air Quality	NOx	Local / Regional	Construction / Operation
	SOx		
	VOCs, PAH's		
	Particulates/ Dust		
Climate	CO_2	National	Operation
Surface and Subsurface Geology and Soils			
Soils	Existing Soils	Area of Continued Analysis	Construction
	Existing Contaminated Sites		
Geology	Surface Geology		
	Subsurface Geology		
Surface Water			
Local watercourses	Water Quality	Area of Continued Analysis	Construction / Operation
	Water Quantity		
Detroit River	Water Quality		
	Levels and flows	Local	Construction
Groundwater			
Groundwater	Quantity	Area of Continued Analysis	Construction / Operation
	Water Quality		
Vegetation, Vegetation Communities and Wetlands			

Table 4.1: Environmental Components and Attributes			
Environmental Component	**Attribute**	**Assessment Boundaries**	
		Spatial	**Temporal**
Vegetation	Vegetation Communities	Combined maximum footprint of the practical alternatives, plus adjacent lands located within 120 metres of the right-of-way	Construction / Operation
	Wetlands		
	Species at Risk		
Fish and Fish Habitat			
Fish	Resident fish species	Area of Continued Analysis	Construction / Operation
	Northern Pike		
	Aquatic Species at Risk (mussels)		
Fish Habitat	Resident Fish Species		
	Northern Pike		
	Aquatic Species at Risk (mussels)		
Wildlife, Wildlife Habitat and Migratory Birds			
Wildlife	Amphibians	Combined maximum footprint of the practical alternatives, plus adjacent lands located within 120 metres of the right-of-way	Construction / Operation
	Reptiles		
	Migratory Birds		
	Resident Birds		
	Mammals		
	Species at Risk		
Wildlife Habitat	Amphibians	Combined maximum footprint of the practical alternatives, plus adjacent lands located within 120 metres of the right-of-way	Construction / Operation
	Reptiles		
	Resident Birds		
	Migratory Birds		
	Mammals		
	Species at Risk		
Noise and Vibration			
Noise	Ambient noise levels	Area of Continued Analysis	Construction / Operation
Vibration	Ground borne vibration		
Indirect Effects			
Health and Socio-economic Considerations	In relation to direct environmental effects	Area of Continued Analysis	Construction / Operation
Built Heritage and Historical, Archeological, Paleontological or Architectural Resources	In relation to direct environmental effects	Area of Continued Analysis	Construction / Operation
Current Use of Lands and Resources for Traditional Purposes by Aboriginal Persons	In relation to direct environmental effects	Local	Construction / Operation

5.0 Description of Existing Environment

Much of the proposed alignment for The Windsor-Essex Parkway is within existing urban transportation corridors adjacent to residential and industrial areas. The proposed Border Services Plaza will be located adjacent to the Detroit River in the Brighton Beach industrial area in west Windsor, and the international bridge crossing will span the Detroit River.

A summary of natural heritage and urban features that are pertinent to the federal decision-making process under CEAA is provided below, with references to the relevant supporting technical documents. More detailed descriptions of the existing environment are provided in Chapter 4 and 7 of DRIC EA Report as well as environmental component specific supporting documentation.

5.1 Air Quality and Climate

Existing air quality in the study area is greatly influenced by local and long-range (cross border) contaminants generated in upwind urban and industrial areas. The predominant wind directions in Windsor are from the west to southwest, which brings atmospheric contaminants from the Midwest USA, the heavily industrialized areas of Detroit, nearby communities and beyond into the ACA. Existing ambient air quality conditions in the area are dominated by the substances that combine to produce smog or acid rain. This includes both NO_x and $PM_{2.5}$.

At the beginning of the study, historical air quality monitoring data from MOE and EC monitoring stations in close proximity to the study area were examined, covering the years 1999 to 2003. Data on the following pollutants were considered: Nitrogen oxides (NO_x), Nitrogen dioxide (NO_2), sulphur dioxide (SO_2); and particulate (PM_{10} and $PM_{2.5}$), Carbon monoxide (CO), Ozone (O_3), volatile organic compounds (VOCs), and Polycyclic Aromatic Hydrocarbons (PAHs). Based on the available data, it was noted that:

- NO_2 did not exceed the 1-hour and 24-hour maximum allowable concentrations.
- SO_2 concentrations did not exceed the annual mean and 1-hour and 24-hour allowable maxima.
- Interim criterion for continuous PM_{10} was exceeded greater than nine times for all three years.
- The proposed Canada-wide standard for $PM_{2.5}$ was exceeded at all four stations for all three years of available data.
- The 1-hour maximum concentrations for O_3 exceeded the AAQC for all three years.
- The 1-hour and 8-hour maximum concentrations for CO did not exceed the AAQC from 1999 to 2003.
- When compared against the AAQC values, the maximum 24-hour values for VOCs and PAHs were all below the associated criteria.

Within the ACA, this dataset was supplemented with updated MOE data for NO_2 and $PM_{2.5}$ for the period from 2001 to 2005. The DRIC study team further supplemented these data by establishing two temporary ambient air monitoring stations in the ACA, along the existing Huron Church Road/Talbot Road corridor. In general the additional monitoring data validated existing information on air quality in the study area.

Additional details on air quality and climate including monitoring results can be found in Chapter 7 of the DRIC EA Report; the Draft Practical Alternatives Evaluation Working Paper – Air Quality Impact Assessment, and the Environmental Overview Paper, Volume 1.

5.2 Noise and Vibration

Within the ACA, 33 residential and other sensitive receptors were identified to represent worst case locations for potential noise impacts. Noise modelling results indicate that existing background sound levels are generally high (>55 dBA) during both daytime and night time hours The daytime sound levels are predicted to range from a low of approximately 56 dBA to a high of approximately 79 dBA in the absence of project implementation. The night time

sound levels are predicted to range from a low of approximately 52 dBA to high of approximately 72 dBA, in the absence of project implementation. These sound levels predictions reflect the increasing traffic volume on the major roads within the study area, and the relatively high percentage of truck traffic on a number of these roads.

Existing ground vibration levels were measured at eight receptor locations, which were considered to be potentially vulnerable to ground-borne vibration.

More information on the noise and vibration assessment can be found in Chapter 7 and 10 of the DRIC EA Report, and the Draft Practical Alternatives Evaluation Working Paper – Noise and Vibration Assessment.

5.3 Vegetation, Vegetation Communities and Wetlands

Within the study area as defined in Table 4.1, there are a number of Areas of Natural and Scientific Interest (ANSIs), Environmentally Significant Areas (ESAs) and one Provincial Nature Reserve. The Ojibway Prairie is a 65-hectare Provincial Nature Reserve that is regulated under the *Provincial Parks Act* to protect one of the largest remnants of tallgrass prairie and oak savannah in Ontario. The dominant feature of this nature reserve is the tallgrass prairie plant community. The Ojibway Prairie Nature Reserve forms one component of the Ojibway Prairie Complex ANSI, which also includes five other areas identified as prairie remnants.

A total of 618 different vascular plants were recorded in the study area; 30 per cent of these recorded plants are considered introduced or non-native to Ontario; 63 species are considered extremely rare, very rare, or rare within the province, and 8 are regulated under the federal *Species at Risk Act* (SARA) and the *Ontario Endangered Species Act* (OESA).

Vegetation communities in the study area primarily consist of recently disturbed communities, including cultural woodlands, cultural meadows, cultural thickets, and cultural savannahs. In the past, these areas would have been dominated by a mixture of tallgrass prairie and natural savannah. As a result of anthropogenic influences, there has been a reduction in the frequency of fire, and an increase in agricultural activities and urban development. Woody species have increased due to the lack of fire, and now dominate in the form of cultural woodlands, cultural thickets and cultural savannah communities. Despite the influence that humans have had on the composition and structure of the vegetation communities in the study area, remnant patches of Tallgrass Prairie exist on the periphery of the Ojibway Prairie Complex. The wetlands in the study area include swamps, marshes and open aquatic communities.

Eight species listed as Special Concern, Threatened or Endangered by COSEWIC or COSSARO and regulated under SARA and the OESA were recorded during field investigations (colic root, willowleaf aster, Kentucky coffee tree, spiked blazing star, Shumard oak, prairie rose, Riddell's goldenrod and butternut).

Additional information on designated natural areas, vegetation, vegetation communities and species at risk is available in Chapter 4 and 7 of the DRIC EA Report, and in the Draft Practical Alternatives Evaluation Working Paper – Natural Heritage.

5.4 Wildlife, Wildlife Habitat and Migratory Birds

Following four continuous seasons of data collection and in-field wildlife investigations, 139 species (11 herpetofauna, 108 birds and 20 mammals) were identified as being present in the study area. Herpetofauna species included the eastern foxsnake and Butler's gartersnake, which are both protected under SARA and OESA. Butler's gartersnake was found in two separate locations on the south side of E.C. Row Expressway. The eastern Massassauga and the eastern hognosed snake, both listed on Schedule 1 of SARA and Schedule 4 of the OESA occur in the Ojibway Prairie complex, but none were observed during field investigations of the project area.

Of the 108 bird species in the study area, field survey data showed that 50 species were breeding birds, and most of the remaining 58 species were considered non-residents or migrants. Migrant populations were observed moving through the western two-thirds of the study area, using the Detroit River, Black Oak Woods, Ojibway Park, Ojibway Prairie Provincial Nature Reserve, Spring Garden Forest, the deciduous forests around Reddock Avenue and the St. Clair College Prairie ESA as migration corridors. Many of the forests, woodlots and cultural thickets north of these major natural heritage features and within the study area were being used as continuations of these major north-south migration corridors. Areas like the forests, woodlots and cultural thickets around Chappus Street, the woodlots around E.C. Row Expressway just north of Spring Garden Park and the woodlots and cultural thickets on the south side of Talbot Road opposite St. Clair College all contained hundreds of migrating birds during the spring and fall seasons, and contributed to the continuation of a series of bird migration corridors going through the study area. The only avian species regulated by SARA (Schedule 3) is the Red-headed woodpecker, found in the Black Oak Woods between Ojibway Parkway and Matchette Road.

The entire study area is located within two continental bird migration corridors associated with the Atlantic and Mississippi flyways. The large forest of the west side of Huron Church Road, just south of Turkey Creek (north and south of Reddock Avenue) was identified as a stop-over area for birds of prey on migration.

Based primarily on evidence from signs such as trail, track, scats, smells, sounds, etc. evidence for mammal activity was recorded in every habitat type. No mammal species found in the study area are regulated under SARA or the OESA.

Additional information on wildlife, wildlife habitat and migratory birds can be found in Chapter 4 and 7 of the DRIC EA Report and in the Draft Practical Alternatives Evaluation Working Paper – Natural Heritage.

5.5 Surface and Subsurface Geology and Soils

The subsurface conditions in the Windsor area are characterized by regionally extensive, flat-lying soil and bedrock strata, including:

- Surface layers of miscellaneous fill materials associated with industrial, urban and suburban development, typically ranging in thickness from 1 to 4 metres;
- Native deposits of sand and silt, at or near surface, in some areas;
- Beneath the sand, where present, thick deposits of silty clay that are relatively stiff near the surface and become gradually softer and weaker with increasing depth;
- Bedrock throughout, generally encountered at depths from 20 to 35 metres, with localized areas as shallow as 2 metres and as deep as 54 metres; and
- Salt formations within the bedrock stratigraphy at depths ranging from approximately 150 to 400 metres.

The bedrock geology consists of an evaporate-carbonate sequence of rock formations. The surface of the bedrock beneath the overlying sediments is relatively flat.

Subsurface conditions near the Detroit River have been influenced by historic salt mining activities in the region. A detailed geotechnical investigation was undertaken to confirm the integrity of the underlying bedrock in key locations associated with the bridge crossing.

Approximately 36 properties (primarily former and current commercial and light industrial) have been assessed to determine the potential for soils contamination. In addition, some of the existing structures in the project area may contain asbestos type materials, lead based paints, or polychlorinated biphenyls in electrical equipment. Although no contamination has been encountered to date, the potential does exist in the project area. Additional and more detailed surveys will undertaken during later design stages .

Additional information of surface, subsurface geology, soils, contaminated sites and waste management can be found in Chapter 4, 7, and 10 of the DRIC EA Report , the Draft Practical Alternatives Evaluation Working Paper – Waste and Waste Management, the Preliminary Foundation Investigation and Design Report – Bridge Approach Corridor and in the Preliminary Foundation Investigation and Design Report – Evaluation of Alternative Bridge Sites Vol. 1.

5.6 Groundwater

Within the overburden soil, groundwater levels were measured about 2 to 3 metres below the ground surface, with the level to the north and west between St. Clair College and Turkey Creek being lower than the level to the south and east. Measured groundwater levels within the bedrock were close to about Elevation 177.5 m, though there appears to be a trend of increasing levels from south and east to north and west.

The observation well data indicate that there may be a general trend along the potential project alignment of groundwater levels within the overburden soils decreasing from southeast to northwest while bedrock groundwater levels exhibit the opposite trend. It was considered that the trend of decreasing groundwater levels within the overburden is generally reflective of a weathering profile and inhibited infiltration of surface water through the low-permeability clayey silt and silty clay soils, combined with generally declining ground surface elevations from southeast to northwest along the ACA. The trend in groundwater elevation within the bedrock was also considered generally consistent with the groundwater flow patterns between Lake St. Clair, the Detroit River, and areas to the northwest flowing southeast towards the Lake Erie basin.

MOE records indicate that there may be a few drinking water wells within approximately 250 m of the project area, however these are in locations that are now serviced by municipal watermains.

Additional information on groundwater can be found in Chapter 10 of the DRIC EA Report and in the Preliminary Foundation Investigation and Design Report – Evaluation of Alternative Bridge Sites Vol. 1.

5.7 Surface Water

Within the ACA, there are nine recipient drainage systems: McKee Drain, Titcombe Drain, Basin Drain, Marentette Mangin Drain, Turkey Creek, Lennon Drain, Cahill Drain West Tributary, Cahill Drain and Wolfe Drain. All of the drainage systems are part of the Turkey Creek system, which ultimately outlets to the Detroit River. Heavy impacts associated with agricultural and urban development affect all of these watercourses. These impacts include both physical (e.g. channelization, piping, barriers); and chemical (e.g. metals, organic compounds, nutrients) effects. Surface water runoff from existing transportation infrastructure in the study area currently flows directly into receiving watercourses.

Additional information of surface water can be found in Chapter 10 of the DRIC EA Report and in the Draft Practical Alternatives Evaluation Assessment Report – Stormwater Management Plan.

5.8 Fish and Fish Habitat

Fish and Fish Habitat were surveyed at several stations located within the ACA and its vicinity. All waterbodies within the study area were investigated to determine the presence or absence of fish and fish habitat and the characteristics of the fish communities present. A total of 21 species of fish were found to inhabit streams located in the study area, excluding the Detroit River. The majority of local watercourses were dominated by warmwater sport and bait fish communities, although some coolwater species are also found. Northern pike were observed during spawning season within Titcombe Drain located in the Chappus Road area, throughout portions of Lennon, Cahill and Wolfe Drains upstream of Highway 3, and in McKee Creek in the vicinity of Sandwich Street.

The Detroit River supports a diverse resident and migratory fishery including 69 recorded species. Shoreline areas adjacent to the plaza and bridge landing provide habitat features that support fish through out their life cycle

The potential exists to encounter mussels, which is a SARA listed species, in some of the local watercourses in the study area. Reconnaissance level mussel surveys will be conducted prior to construction to confirm the presence/absence of mussels.

Additional information on fish and fish habitat can be found in Chapters 4 and 7 of the DRIC EA Report and in the Draft Practical Alternatives Evaluation Working Paper - Natural Heritage.

5.9 Built Heritage and Historical, Archaeological, Paleontological or Architectural Resources

Within the ACA there are twenty built heritage features and three cultural landscapes including:

- Eight pre-1900 features related to agricultural settlement.
- Eight early twentieth century residences of the same general building type representing the first suburban infill of rural agricultural lands.
- Cultural landscapes including an unconfirmed tunnel associated with the underground railway in Sandwich Towne and the abandoned Brighton Beach subdivision
- The historic Sandwich Towne area is located adjacent to the project area.

Additional information on physical and cultural heritage resources can be found in Chapter 7 of the DRIC EA Report and in the Draft Practical Alternatives Evaluation Working Paper Cultural Heritage.

Stage 1 and preliminary Stage 2 archaeological assessments were undertaken from 2006 to 2008. The area of investigation was located within the ACA, but was focused on the practical crossing, plaza and access road alternatives.

The Stage 1 assessment documented the archaeological and land use history of the area and its current geography and topography, in order to assess the potential for archaeological resources. The Stage 2 systematic field assessment investigated all areas with archaeological potential within the ACA, and for which permission to enter had been obtained.

There were 23 archaeological components located within the project area, including nine Euro-Canadian and 14 Aboriginal assemblages. Summary details on these sites are provided in Table 7.14 of the DRIC EA Report. The Stage 2 Archaeological Assessment of the Detroit River International Crossing Report contains a summary description of each site identified during the 2008 field seasons.

Additional information on archaeological resources can be found in Chapter 7 of the DRIC EA Report and in the Draft Practical Alternatives Evaluation Working Paper - Archaeology.

5.10 Current use of lands and Resources for Traditional Purposes by Aboriginal Persons

The potential current use of lands and resources for traditional purposes by aboriginal persons was considered during the EA, however none have been identified to date. First nations, including Walpole Island First Nation were consulted through out the EA process. Additional information about consultation with aboriginal groups can be found in section 8.1.

6.0 Project-Environment Interaction Matrix

Table 6.1– The Potential Project-Environment Interaction Matrix

	ENVIRONMENTAL COMPONENTS																	POTENTIAL INDIRECT ENVIRONMENTAL INTERACTIONS		
PROJECT COMPONENTS	Air Quality	Climate	Soils	Geology	Local Watercourses	Detroit River	Groundwater	Vegetation	Wetlands	Species at Risk	Fish	Fish Habitat	Wildlife	Wildlife Habitat	Migratory Birds	Noise	Vibration	Health and Socio-economic considerations	Built Heritage and Cultural Resources	Current use of land by Aboriginal Peoples for traditional purposes
Site preparation	X		X		X			X	X	X	X	X	X	X	X	X				
Road closures; realignments and temporary staging	X		X													X	X			
Retaining walls			X				X										X			
Freeway, ramps, service roads	X		X	X												X	X			
Interchanges, grade separations, and roundabout	X		X													X	X			
Structures including tunnels, over / under passes	X		X		X		X									X	X			
Multi-use trail system			X													X				
Sewers, catch basins and stormwater management facilities	X		X		X					X	X	X	X	X		X				
Watercourse/drain crossings, realignments, and closures	X		X		X		X			X	X	X	X	X		X				
Illumination																				
Advanced Traffic Management System																				
Construction waste	X		X																	
Watercourse/ drain crossings, realignments and closures	X		X		X		X			X	X	X	X	X						
Site clean-up and landscaping	X		X													X				
Operation of freeway, access roads and multi-use trail network	X	X											X	X		X	X			
Winter de-icing operations	X		X		X		X	X	X		X	X	X	X						
General maintenance activities					X			X	X		X	X								
Site Preparation	X		X		X			X		X	X	X	X	X	X	X				
road network and parking,	X		X													X				
Inspection facilities, buildings, toll booths and maintenance facilities	X		X										X	X		X	X			
stormwater management facilities	X		X		X						X	X								
Illumination and security fencing													X	X						
construction waste			X																	
Operation of plaza	X	X											X	X		X	X			
Winter de-icing operations	X		X		X		X	X			X	X	X	X						
General maintenance activities					X			X			X	X								
Site preparation	X		X			X		X			X	X	X	X		X	X			
Towers and anchorage or pylon and anchor pier	X			X		X					X	X	X	X	X	X	X			

PROJECT COMPONENTS	ENVIRONMENTAL COMPONENTS																	POTENTIAL INDIRECT ENVIRONMENTAL INTERACTIONS		
	Air Quality	Climate	Soils	Geology	Local Watercourses	Detroit River	Groundwater	Vegetation	Wetlands	Species at Risk	Fish	Fish Habitat	Wildlife	Wildlife Habitat	Migratory Birds	Noise	Vibration	Health and Socio-economic considerations	Built Heritage and Cultural Resources	Current use of land by Aboriginal Peoples for traditional purposes
Main bridge deck and cable system	X					X					X	X	X	X	X	X				
Approach roadway and back and/or spans	X														X	X				
Electrical, drainage, roadway barriers and illumination						X					X	X								
Operation of bridge	X	X				X					X	X	X	X	X	X	X			
Winter de-icing operations	X		X			X		X			X	X								
General maintenance activities						X					X	X								

7.0 Environmental Effects and Mitigation Measures

To a large degree, environmental effects were avoided or minimized to the extent possible in the development of the Project, as part of the identification and evaluation of alternatives and in the selection of the preferred alternative. In addition, many mitigation measures have been incorporated directly into the Project design. This section summarizes the potential adverse environmental effects of the Project and mitigation measures for effects that could not be fully avoided. Criteria for the characterization of residual effects are summarized in Table 7.1.

Mitigation measures for the predicted effects largely comprise standard best management practices, and will be based on relevant standards and specifications, industry standards and protocols. Additional project-specific measures have also been identified. Overall, with the implementation of theses best management practices and mitigation measures, some residual effects from the Project remain possible, however they are not expected to be significant. In some instances, elements of the project design will result in improvements to environmental quality relative to existing conditions.

MTO will be responsible for implementing the mitigation measures required in relation to the Windsor-Essex Parkway. TC will be responsible for implementing mitigation measures required in the relation to the border inspection plaza and the international bridge crossing. Commitments to implement mitigation will be incorporated into the funding contribution agreement between TC and MTO for the Windsor-Essex Parkway, and in regulatory authorizations and approvals that will be issued by federal and provincial agencies, which may also include a financial security component. Commitments will also be integrated into relevant contracting documents as part of any P3 (public-private partnership) arrangement for the plaza and bridge crossing, and any alternative financing arrangements for the access road. Contracts will include obligations related to the adherence to standards and protocols, as well as project-specific mitigation measures developed through EA and regulatory processes. Compliance monitoring programs and environmental management programs will be developed as the Project proceeds through subsequent design stages, in order to track and address key issues.

This summary report draws from the work undertaken for the OEAA process, including the provincial DRIC EA Report and the supporting technical documentation. For additional details, please reference to the detailed studies listed in Section 12.

Table 7.1 – Significance Criteria Definitions

CRITERION	LOW	MODERATE	HIGH
Magnitude	Effect is evident only at or nominally above baseline conditions	Effect exceeds baseline conditions however is less than regulatory criteria or published guideline values.	Effect exceeds regulatory criteria or published guideline values.
Geographic Extent	Effect is limited to the project site/footprint.	Effect extends into areas beyond the project site/footprint boundary.	Effect is trans-boundary in nature.
Duration	Effect is evident only during the construction phase of the project.	Effect is evident during construction and/or the operational phase of the project.	Effects will be evident beyond the operational life of the project.
Frequency	Condition causing the effect occurs infrequently (i.e. <once per year).	Condition causing the effect occurs at regular intervals although infrequent intervals (i.e. <once per month).	Condition causing the effect occurs at regular and frequent intervals (i.e. > once per month).
Permanence	Effect is readily reversible over a short period of time (i.e. one growing season).	Effect is not readily reversible during the life of the project.	Effect is permanent.
Ecological Context	Evidence of environmental effects by human activities. Effect results in minimal disruption of ecological functions and relationships in the impacted area.	Relatively pristine area. Effect results in some disruption of non-critical ecological functions and relationship in the impacted area.	Pristine area / not affected by human activity. Effect results in disruption of critical ecological functions and relationship in the impacted area.

7.1 Air Quality and Climate

Air Quality

Construction activities in relation to the Windsor-Essex Parkway, border inspection plaza and international bridge crossing have the potential to adversely affect air quality in the study area. The operation of heavy equipment during construction and associated with activities such as topsoil removal, excavation, grading and paving will generate dust and exhaust emissions. Effects will generally be limited to the project site, and will be mitigated through the use of standard dust suppression techniques (favouring water-based approaches) and proper site management (minimizing vehicle traffic on exposed soils, limiting vehicle speeds to minimize dust generation; avoiding dust generating activities during periods of dry weather; covering exposed stockpiles; proper equipment maintenance).

During the operation phase, vehicular traffic on the Windsor-Essex Parkway, plaza and bridge has the potential to adversely affect air quality in the study area, by increasing the pollutant load associated with vehicle emissions and road dust suspension. Air dispersion modelling predicted higher concentrations of particulate matter adjacent to the Windsor-Essex Parkway and bridge crossing, and within approximately 250m of the plaza, with the highest impacts occurring within 50-100m. Air quality in relation to other gaseous pollutants may improve, because of improvements to traffic flow within the corridor particularly when compared to predicted increases that would be expected to accrue in the absence of the project due to traffic flow, congestion and increases in the number of vehicles. Modelling results for the crossing indicate that the maximum concentrations of $PM_{2.5}$ and NO_x are expected to be similar to those of the Windsor-Essex Parkway. Exceedances of PM_{10} criteria within 100m of the Windsor-Essex Parkway are possible, however, effects beyond 250m are expected to be negligible. Effects will be minimized by following best management practices for road maintenance, such as road sweeping. An advanced Traffic Management System (ATMS)

will also be implemented to monitor traffic flow and provide information to travellers, allowing informed decisions to avoid traffic congestion and resulting in reduced vehicular emissions.

Additional information on air quality impacts can be found in the Air Quality Assessment – Technically and Environmentally Preferred Alternative, and in section 10.1 of the DRIC EA Report. Based on the analysis, some residual effects on air quality may still occur even with the implementation of mitigation measures, however they are not likely to be significant.

Climate

Operation of the Windsor-Essex Parkway, plaza and bridge crossing has the potential to increase the output of CO_2, as a result of traffic growth in the corridor. According to the Emission Database for Global Atmospheric Research 584, 578 kT CO_2 equivalent were released in Canada in the year 2000, of which 121,411 kT CO_2 equivalent were from road transportation. The Project is expected to add approximately 200 kT CO_2 equivalent to Canada's emissions (assuming 2000 levels remain constant until 2035), or 0.04% of the total emissions. The Project is not expected to have a substantial contribution to global warming potential from CO_2 emissions. Calculation details are provided in Appendix E of the Air Quality Impact Assessment - Technically and Environmentally Preferred Alternative. Based on the analysis, residual effects on climate are likely to be negligible and are not considered significant.

7.2 Noise and Vibration

Noise

Construction activities in relation to the Windsor-Essex Parkway, plaza and bridge have the potential to increase ambient noise levels throughout the construction phase. The operation of heavy equipment associated with activities such as topsoil removal, drilling, excavation, grading and paving will generate noise. Activities such as rock excavation and pile driving are particularly likely to result in perceptibly increased noise levels in the vicinity of these activities. A number of these activities will take place in the industrial area of west Windsor, away from residential receptors. However, pile driving will likely be required for the construction of bridges, tunnels, and retaining walls closer to residential areas. The duration of these effects will be limited to the period of time when construction is occurring at a given location.

Specific details on construction equipment quantities, work schedules and duration will only become available during subsequent design stages; as such, it was concluded that a detailed analysis of predicted worst case 1-hour sound levels would not generate meaningful predictions at this stage. However, a variety of standard mitigation measures and best management practices are available to reduce noise levels in the vicinity of residential and other sensitive receptors. These include: maintaining equipment, preventing pot holes and ruts on construction haul roads, and compliance with MOE noise emission standards; and will be developed further in the detailed design stage. Where the sequencing of construction permits, noise barriers and/or berms will be built in early phases of construction to reduce noise levels at sensitive receptors. In addition, a complaints protocol will be developed and communicated to local residents prior to the start of construction. Residual effects will be temporary.

The operation of the Windsor-Essex Parkway, plaza and bridge has the potential to increase ambient noise levels, as a result of vehicular traffic in the corridor, particularly in locations where the alignment of the Windsor-Essex Parkway has shifted traffic closer to residential communities. Given the distance of the plaza and bridge from sensitive receptors, increased noise levels from the operation of the plaza and bridge are not expected to cause significant adverse effects.

A series of noise receptors were identified along the Windsor-Essex Parkway route and all the way to the plaza. Noise modelling was conducted to predict the increase in ambient noise levels attributable to the

Project for the years 2012, 2025, and 2035. Without mitigation, noise exceedances of >5 dBA were observed in the modelling outputs at many receptors; in some instances, increases of >10 dBA were predicted along the Windsor-Essex Parkway. To mitigate these effects, noise barriers will be installed at key locations along the Windsor-Essex Parkway and near the plaza in the vicinity of Ojibway Parkway and Malden Road; to ensure that noise level increases will be eliminated or reduced to an increase of less than 5 dBA.

Additional information on the assessment of noise effects can be found in the Noise and Vibration Impact Assessment – Technically and Environmentally Preferred Alternative (December 2008), and in Section 10.2.1 of the DRIC EA Report. Based on the analysis, with the implementation of mitigation, some residual effects may still occur, however they are not likely to be significant.

Vibration

Construction of the Windsor-Essex Parkway and bridge has the potential to generate ground-borne vibration effects. In particular, the construction of land-based bridge piers, tunnels and overhead structures could generate vibration effects from activities such as pile driving, and boring. Given the distance of the bridge from sensitive receptors, adverse effects from vibration are not expected to occur. Plaza construction activities are not expected to cause vibration effects. Construction activities along the Windsor-Essex Parkway may generate intermittent and short-term effects; however, these are expected to be very limited.

The contractor will be required to undertake a pre-construction assessment with regard to foundations and sensitive equipment that could potentially be affected by vibration, once additional details regarding construction staging are available. In addition, a process will be developed for receiving, investigating, and addressing public complaints related to vibration.

Operation of the Windsor-Essex Parkway has the potential to generate ground-borne vibration effects on receptors located in close proximity to the alignment, as a result of vehicular traffic. Modelling results showed that road operations have the potential to generate between 0.05mm/sec and 0.1mm per second in areas adjacent to the Windsor-Essex Parkway; however, vibration levels at the measured receptors were generally below the perceptible level of 0.14mm/sec, and in all cases, were well below the 50mm/sec limit for structural damage. As such, mitigation is not considered necessary.

Additional information on the assessment of vibration effects can be found in the Noise and Vibration Impact Assessment – Technically and Environmentally Preferred Alternative, Noise and Vibration Impact Assessment – Recommended Plan and in Section 10.2.1 of the DRIC EA Report. Based on the analysis, it is concluded that significant adverse effects resulting from ground-borne vibration are not likely to occur.

7.3 Groundwater

Construction of the Windsor-Essex Parkway, plaza and bridge has the potential to interact and affect groundwater levels, flux and quality. During construction of the foundations for structures west of Malden Road, artesian conditions could be encountered, resulting in the release of groundwater to the surface. In addition, excavation and dewatering associated with the construction of permanent, open and below grade roadways within the native clays using slopes or retaining walls may result in a permanent lowering of the groundwater pressures within the clay soils surrounding the permanent cuts. In turn, this could induce settlement within the silty clay subsoils within this zone. This effect is localized to the project footprint and no additional effects on vegetation, water quality, flow, groundwater table, seepage/upwelling zones and recharge areas are anticipated. Dewatering activities during the course of deep excavations could potentially result in the inadvertent release of naturally occurring hydrogen sulphide, which could have adverse effects on aquatic life. Hardening of surfaces could impact surface water infiltration and groundwater recharge.

Construction activities may result in the potential for drainage of perched water within areas of surficial sand. The effect will be limited to within the Project footprint and will fully mitigated where necessary through the use of low permeability barriers (i.e. clay).

The potential for accidental contaminant spills during both construction and operations phases of the Project to effect groundwater is limited by a naturally occurring 20 m layer of impermeable clay between the surface water and deeper groundwater.

The need for dewatering will be minimized to the extent practical by limiting the depths of temporary and permanent excavations. Measures to minimize or avoid the need for dewatering include the use of controlled density drilling fluids for the installation of deep foundations. Where dewatering is necessary, if hydrogen sulphide or any other contaminants are encountered, an *Ontario Water Resources Act* approved treatment system may be required. In addition, the handling, use and disposal of any controlled density drilling fluids will be conducted in accordance with regulatory requirements.

Additional information on potential effects on groundwater can be found in section 10.4.8 of the DRIC EA Report. Based on the analysis, and taking into consideration the implementation of mitigation measures, some residual adverse effects are possible, however they are not likely to be significant.

7.4 Surface, Subsurface Geology and Soils

As noted above, lowering of the groundwater pressures in clay soils could induce settlement within silty clay subsoils during the construction phase of the Project. Mitigation measures to prevent effects on groundwater are expected to effectively avoid or reduce these potential effects on silty clay subsoils. It is predicted that residual effects on subsurface geology associated with groundwater are not likely to occur.

Construction activities in relation to the Windsor-Essex Parkway, plaza and bridge have the potential to result in adverse effects on soils. Topsoil removal and excavation associated with the construction of each project component is expected to require the removal of 3.5 million m^3 of soils throughout the study area. Exposure and erosion of soils including contaminated soils could cause adverse effects on surface water quality and fish habitat, by increasing the level of total suspended solids and potentially introducing deleterious and toxic substances into receiving watercourses. The potential to encounter contaminated soils has been identified.

Given the large volumes of fill required for the construction of the Windsor-Essex Parkway and plaza, usable excavated soils will be stockpiled and re-used within the project area to the fullest extent possible. Construction will be staged to minimize the areas of exposed soils at any given time. Excess and unsuitable (contaminated) soil material will be disposed of and managed in accordance with provincial regulations at approved disposal sites. With the implementation of mitigation, it is concluded that significant adverse effects on surface, subsurface geology and soils are not likely to occur.

7.5 Surface Water

Local Watercourses

Construction activities in relation to the Windsor-Essex Parkway, border inspection plaza and international bridge crossing have the potential to adversely affect water quality in the study area. Activities such as topsoil removal and stockpiling, excavation, the placement of fill and granular materials, grading and paving have the potential to result in erosion and sediment runoff in association with precipitation events. In-water works associated with the realignment of municipal agricultural drains and the installation of culverts and related structures have the potential to adversely affect water quality by increasing the level of total

suspended solids. There is a potential for contaminant spills (i.e. fuels, hydraulic oils and lubricants) from the use and refuelling of heavy equipment during construction.

Effects will be avoided or minimized through the implementation of standard construction best management practices for erosion and sediment control and the stabilization of exposed soils. Contractors will be required to have an appropriate spill response plan to prevent and manage spills (including restrictions to ensure no refuelling within 30m of watercourses). A monitoring program will be developed in cooperation with relevant regulatory agencies as required, which will identify site-specific protocols for inspections and sampling, to ensure that any effects are identified in a timely manner and addressed. If required, a Permit to Take Water will be secured from MOE, and related mitigation measures will minimize effects on stream flow.

Operation of the Windsor-Essex Parkway, plaza and bridge has the potential to result in adverse effects on local watercourses, due to an increase in the overall area of impervious surfaces. Runoff over impervious surfaces, particularly during hot days, has the potential to result in increased temperatures that could alter the thermal regime of the receiving watercourses. Runoff could also increase peak flows and associated pollutant loadings (e.g. hydrocarbons, salt and sand from winter de-icing activities), causing a degradation of water quality and increased erosion downstream.

Within the existing corridor, all pollutant loadings are currently discharged directly to receiving watercourses without any quality or quantity treatment. To address the issue, and to mitigate any additional effects associated with an increase in the overall impervious area as a result of the Project, a stormwater management system will be implemented in accordance with the applicable MOE design standards to provide quality treatment quantity control and erosion management. Nine stormwater management wet ponds are proposed, which will provide removal of 80% of the total suspended solids, as well as providing erosion attenuation of the 25mm storm for 24 hours. In addition, the stormwater management ponds will provide quantity storage to control peak flows in receiving watercourses during rainfall events up to and including the 100-year storm. Oil/grit separators are included in the design at various locations along the service road. Best salt managements practices will be implemented to minimize salt usage. Similar measures will be implemented at the plaza and crossing.

Additional information on potential effects on surface water and the stormwater management plan are found in section 9.3.7 of the DRIC EA report, Draft Practical Alternatives Evaluation Assessment Report – Stormwater Management Plan and the Draft Stormwater Management Report. Based on the analysis, with the implementation of mitigation measures, it is concluded that significant adverse residual effects are not likely to occur.

Detroit River

Construction of the bridge crossing has the potential to result in adverse effects water quality on the Detroit River. Effects and mitigation measures related to erosion and sedimentation are consistent with those applied to local watercourses. Potential adverse effects on water quality could also result from the construction and operation of temporary docking facilities to support the delivery and placement of materials and structures; including the use of barges and cranes to deliver and place segments of the bridge structure. Potential adverse effects include the inadvertent release of pollutants, debris or sediment into the river, and the temporary loss of natural shoreline through stabilization or reinforcement that may be necessary to support near-shore construction activities. Levels and flows could be adversely affected from the use of barges or floating docks to hoist bridge segments into place from the river.

Potential effects associated with these activities will be mitigated through the application of standard best management practices. These measures will be outlined in an Environmental Management Plan that will be developed once additional details are available on the bridge type, and the specific construction methods.

Given the localized and temporary nature of these works, and the plans for the restoration of construction related effects to baseline or improved conditions, post-construction adverse effects are not anticipated.

Operation of the new bridge crossing has the potential to result in adverse effects on water quality in the Detroit River, from the release of stormwater runoff containing hydrocarbons, grit and salt generated from vehicular traffic and maintenance activities, and accidental spills. To avoid these impacts, no deck drains discharging into the Detroit River will be installed on the bridge. A stormwater management system will be designed and installed to collect and convey runoff from the bridge and convey the water to a land-based stormwater management pond, where it will be treated prior to release into the Detroit River. Specific options for stormwater treatment and spills containment will be developed in accordance with the applicable MOE design standards and current practices, and will be further developed once a bridge design has been selected. It is concluded that, with the implementation of mitigation measures, significant adverse residual effects on water quality in the Detroit River are not likely to occur.

7.6 Fish, Fish Habitat and Aquatic Species at Risk

Construction of the Windsor-Essex Parkway, plaza and bridge has the potential to adversely affect fish, fish habitat and aquatic species at risk. The construction of the Windsor-Essex Parkway and plaza will require the realignment or enclosure of portions of several municipal agricultural drains, and the installation of culverts and water conveyance structures. A total of 10,225 m^2 of fish habitat is likely to be affected. Permanent loss or impacts to fish habitat will require a *Fisheries Act* Authorization from DFO . Specific effects include: the realignment, enclosure or physical harm to watercourses in the study area, and the creation of barriers to fish passage, including the construction of submerged culverts at Cahill and Lennon drains (which will eliminate access to spawning areas for Northern Pike). Direct fish mortality could result from dewatering activities (including alterations to base flow), or from the release of sediment or deleterious substances from spills. Potential effects on water quality and quantify, as described in the surface water section, may also affect fish and fish habitat. In-water works could also potentially affect freshwater mussel species protected under the *Species at Risk Act*.

In addition to the mitigation measures identified for the protection of surface water, effects on fish and fish habitat will be reduced to the extent possible, as the Project proceeds to the detailed design stage. Construction activities will be subject to appropriate timing restrictions. Culvert lengths and extensions will be minimized, and new structures will be constructed using fish-friendly designs that include appropriate horizontal and vertical clearances, open bottoms, countersinking culverts, incorporation of low flow channels in culverts. Pump intakes will be fitted with screens to prevent fish entrainment, in accordance with the requirements of DFO. Realigned channels will be designed using natural channel design principles to enhance habitat over pre-project conditions. During de-watering activities, isolated fish will be captured and relocated by qualified personnel. A detailed fish habitat compensation plan is being developed with DFO. Fish habitat compensation measures will include the creation of new spawning habitat for Northern Pike in Cahill and Lennon Drains or in adjacent areas and will be approved by DFO before any *Fisheries Act* Authorizations are issued.

Site-specific mitigation measures will be further developed during the regulatory process under the *Fisheries Act*. Additional studies to support the development of appropriate site-specific measures, including a mussel survey, will be undertaken.

Operation of the Windsor-Essex Parkway, bridge and plaza has the potential to result in adverse effects on fish and fish habitat, through the potential degradation of water quality. Potential effects and mitigation for surface water and fish habitat are identified above.

Additional information on potential effects to fish, fish habitat and aquatic species at risk can be found in the Natural Heritage Impact Assessment – Recommended Plan, section 10.4.4 of the DRIC EA report, and the Conceptual Fisheries Compensation Plan. Based on the analysis, and including the incorporation of conceptual fish habitat compensation plans, it is concluded that significant adverse effects from the Project are not likely to occur.

7.7 Vegetation, Vegetation Communities, Wetlands and Species at Risk

Construction of the Windsor-Essex Parkway, plaza and bridge will result in the removal, loss or disturbance of vegetation, vegetation communities and wetlands in the study area. Site preparation activities for construction of the Windsor-Essex Parkway, such as clearing, grubbing, topsoil removal and excavation, will result in the full or partial removal of vegetation. Disturbance effects such as increased wind throw, and drainage modifications have the potential to result in plant community desiccation or changes in plant community structure, composition and function, and the introduction of exotic or invasive species.

Site preparation activities will result in the full or partial removal of 134 vegetation communities, including eight high quality (3.62 ha), 45 moderate quality (40.72 ha) and 81 low quality (87.37 ha) communities. Within these vegetation communities, up to 648 vascular plants could be displaced. Effects include the permanent loss of pockets of globally ranked, very rare vegetation communities (G2), including remnant fresh, moist, tallgrass prairie and pin oak mineral deciduous swamp; the permanent loss of several pockets of the Ojibway Prairie Wetland Complex totalling 8.78 hectares, and the removal of 5.47 ha of designated natural areas.

A total of 137 vegetation communities (88.61 ha) located on adjacent lands within 120m of the footprint of the Project may be disturbed, including 15 high quality communities (15.89 ha), 57 moderate quality communities (36.78 ha) and 65 low quality communities (35.94 ha). Within these vegetation communities, up to 648 known vascular plant species could be disturbed. Effects include the disturbance of 27.06 ha of land adjacent to designated natural areas.

With respect to wetlands, there will the permanent loss of some pockets totalling approximately 9 ha of the 150 ha Ojibway Prairie Wetland Complex (PSW).

Operation of the Windsor-Essex Parkway and plaza will require winter maintenance activities, such as salting, which could adversely affect salt-intolerant plants. Sanding activities could also result in the introduction of exotic or invasive species present in the sand. Effects will be mitigated appropriate planting strategies in adjacent restoration areas, and through the implementation of a Salt Management Plan, and in accordance with Environment Canada's Code of Practice for the Environmental Management of Road Salts (2004).

Site preparation activities for the construction of the Windsor-Essex Parkway and plaza will result in the removal of species at risk habitat that supports a total of eight vegetation species that are designated as Threatened or Special Concern under the *Species at Risk Act* and the Ontario *Endangered Species Act*. This total includes 418 prairie climbing rose, 929 colicroot, two planted common hoptree, one planted dwarf hackberry, 951 dense blazing start, 20 Kentucky coffee-trees, 1,285 Riddell's goldenrod and 11,676 willowleaf aster.

The area of vegetation removal has been minimized to the extent possible through alternative analysis and selection process as well as the project design. Areas that can be protected from disturbance during construction will be delineated prior to the start of construction, and no activities will be permitted in these

areas. Erosion and sedimentation control measures will be used on the Project site to prevent the migration of sediment or storm water from the Project work area.

Rare, threatened and endangered vegetation species located within the footprint of the Windsor-Essex Parkway and the plaza will be transplanted prior to construction activities. For the larger species that are easily identifiable all specimens will be transplanted. For smaller species, a representative majority will be transplanted. For larger mature specimens (i.e. large Kentucky coffee trees) transplanting is not considered feasible. Specimens will be grown from seeds/seedlings of the existing trees and planted in suitable habitat, with an offset ratio and the intent of achieving a higher number of specimens post-project implementation. Vegetation removal will be offset using enhancement, restoration and creation measures, which will be incorporated into landscape management plans. MTO has identified 120 ha of land in the vicinity of the Project that will be available for protection, restoration and enhancement.

Edge management measures will be employed to reduce effects from wind throw, increased light and wind penetration, drainage modifications, and introduction of invasive or exotic species. An environmental monitor will conduct site inspections during construction to ensure that mitigation measures are effective.

A compensation plan for the Ojibway Prairie Wetland Complex will be developed in accordance with the Federal Policy on Wetland Conservation (1991) and corresponding Ontario Provincial Policy Statement. Additional mitigation measures will be incorporated into the permit requirements under the federal *Species at Risk Act* and the Ontario *Endangered Species Act*.

Additional information on the effects on vegetation is provided in the Natural Heritage Report – Recommended Plan and in Section 10.4.2 of the DRIC EA report. Based on the analysis, with the implementation of mitigation, it is concluded that significant adverse residual effects on vegetation, vegetation communities, wetlands and vegetation species at risk are not likely to occur.

7.8 Wildlife, Wildlife Habitat and Migratory Birds

Construction of the Windsor-Essex Parkway, plaza and bridge has the potential to result in adverse effects on wildlife (including migratory birds), wildlife habitat and species at risk. Site preparation activities, including the removal of vegetation, will result in the loss or disturbance of approximately 130 ha of habitat for mammals, herpetofauna and avian species. Vegetation removal could disturb nesting migratory birds,

Habitat for the Monarch butterfly, which is a protected species under the *Species at Risk Act*, will be affected by site preparation activities. Vegetation removal will also result in the loss of 2.1 ha of Butler's gartersnake habitat, and 52 ha of Eastern foxsnake habitat. This, in turn, could result in the loss of hibernacula and associated adult snake mortalities.

Mitigation will include measures identified above to protect vegetation from disturbance during construction. Wildlife rescue will be performed on-site prior to vegetation removal.

Snakes will be captured and relocated prior to construction to prevent mortality. A snake barrier will be installed alongside portions of the construction area, to prevent snakes from entering the work zone, and to redirect snake movements to safer areas.

Species-specific mitigation and compensation plans will be developed, to meet the requirements of the federal *Species at Risk Act* and the *Ontario Endangered Species Act*. These will include habitat enhancement, restoration and creation of new and suitable habitat areas.

Additional mitigation for effects to wildlife and wildlife habitat will include construction timing restrictions to avoid the active breeding period of migratory birds, and the use of exclusion techniques to prevent establishment or re-establishment of nests in habitat that may be attractive to birds in the construction area.

Noise and light, as well as visual and physical intrusions from the presence and operation of the Windsor-Essex Parkway, plaza and bridge may alter wildlife activities and patterns by creating a barrier to wildlife movement, or through wildlife-vehicle collisions. In addition, the presence of a new bridge structure across the Detroit River has the potential to result in the disruption or mortality of migratory and resident birds, by creating an obstruction on existing bird migration pathways.

Enhancement and restoration of habitat along the Windsor-Essex Parkway will offset habitat loss and will establish connections between designated natural areas. Tunnels in selected areas, including the Oakwood Tunnel, will reduce existing barriers for wildlife and enhance wildlife movements. Permanent fencing and noise barriers will be installed to prevent many wildlife species from entering the Project area. Permanent snake barriers will also be installed to prevent snake mortality during the operation phase. The implementation of the landscaping plan is expected minimize effects from the Windsor-Essex Parkway and plaza by restoring and creating new functional habitat areas.

Potential collision effects on migratory birds from the presence of the bridge will be mitigated through the use of appropriate bridge lighting, such as the use of low-intensity, lower-wavelength blue, turquoise or green lights, and the avoidance of red and yellow lights to the extent possible. Given that the potential for effects on migratory birds would be linked to the design and height of the bridge, and that the bridge design has not yet been selected, specific mitigation measures will be incorporated during the final bridge design process. Additional studies will be undertaken in consultation with appropriate regulatory agencies.

Additional information on the effects on wildlife and migratory birds is provided in the Natural Heritage Report – Recommended Plan and in section 10.4.5 of the DRIC EA report. It is concluded that, with the implementation of mitigation, significant adverse residual effects are not likely to occur. A follow-up program will also be developed to ensure that the effects are as predicted and that the mitigation is effective.

7.9 Indirect Effects

Following the assessment of the potential environmental effects of the Project, indirect effects were identified including any change in the environment that may have an effect on:

- Health and socio-economic conditions
- Built Heritage
- Current use of lands and resources for traditional purposes by aboriginal persons,
- Historical, archaeological, paleontological or architectural resources.

Health and Socio-economic Considerations

Operations of the Windsor-Essex Parkway was identified as having potential adverse effects on air quality early in the study process. Throughout the course of the study, members of the public raised concerns about potential human health effects associated with air emissions from vehicular traffic, particularly in relation to diesel emissions from heavy trucks.

Although the air quality impact assessment concluded that the Windsor-Essex Parkway will have limited air quality effects, a human health risk assessment was undertaken to help interpret the potential for adverse effects to people in the immediate area surrounding the proposed roadway. The risk assessment included analysis of exposure through inhalation and ingestion of chemicals associated with vehicle emissions, as well as deposition to soils and uptake by vegetation. The assessment concluded that the Project would not

result in an increased health risk to people living along the roadway or to people using the greenscapes on tunnel crossings. As such, significant adverse residual effects are not likely to occur.

Construction of the plaza was identified as having the potential to result in adverse effects on air quality. Although these construction related effects are expected to be short-term and localized, local property owners have raised concerns that a temporary increase in the generation of fine particulate matter and gaseous emissions during the construction phase could affect the operation of sensitive equipment at businesses adjacent to and in the vicinity of the plaza footprint.

As described in the air quality section, construction-related effects on air quality will be minimized through the use of standard dust suppression techniques (favouring water-based approaches) and proper site management (i.e. minimizing vehicle traffic on exposed soils, limiting vehicle speeds to minimize dust generation, avoiding dust generating activities during periods of dry weather covering exposed stockpiles, and proper equipment maintenance).

TC is actively working with the affected property owners to ensure that these measures will be sufficient to avoid causing off-site operational impacts, and to determine whether additional measures might be necessary. Additional measures could include enhanced on-site management of air emissions during construction, ongoing monitoring of air quality during the construction phase, or enhanced filtration at affected properties. TC is committed to working with the affected stakeholders to minimize adverse effects to the extent possible. It is concluded that, with the implementation of mitigation, significant adverse residual air quality effects on local stakeholders are not likely to occur.

Current Use of Lands and Resources for Traditional Purposes by Aboriginal Persons

No indirect effects have been identified to date for the current use of lands and resources for traditional purposes by aboriginal groups throughout the Project area.

Built Heritage and Historical, Archaeological, Paleontological or Architectural Resources.

No indirect effects on physical and cultural heritage, or items of historical, archaeological, paleontological or architectural significance were identified. Direct effects on physical and cultural heritage were assessed as part of the provincial process, but are outside the scope of this document. Additional information is available in the DRIC EA Report.

7.10 Accidents and Malfunctions

The potential exists for adverse effects to occur as a result of accidents and malfunctions that occur during the construction and operation of the Windsor-Essex Parkway, plaza and bridge. The primary risk of environmental effects is related to potential spills that could occur during the operation and refuelling of heavy equipment during construction phase, particularly when activities are taking place in or near watercourses. Potential spills during operations could occur as a result of vehicle collisions, or the operation of maintenance vehicles. The release of deleterious substances into receiving watercourses following a spill could degrade water quality and fish habitat, and could result in direct mortality of fish. Mitigation measures to avoid or minimize effects from spills are addressed in the surface water and fish habitat sections. It is concluded that, with the implementation of mitigation, significant adverse residual effects from accidents and malfunctions are not likely to occur.

7.11 Effects of the Environment on the Project

The definition of “environmental effect” under CEAA includes “any change to the Project that could be caused by the environment”. In considering the effects of the environment on the Project, specific

consideration was given to the potential effects associated with sub-surface geology in the vicinity of the bridge crossing.

The bridge crossing is located adjacent to an area with a history of historic solution mining of salt deposits, which have altered the sub-surface conditions. Solution mining of salt has created brine wells and associated caverns deep below the surface, which could adversely affect the ability of the bedrock to support the bridge. If the bridge was built in area of unstable bedrock, the bridge piers could shift to an unacceptable extent and compromise the integrity of the structure.

Extensive foundations investigations were undertaken at the practical alternative stage to confirm the stability of the bedrock in the vicinity of the crossing, and to ensure that the bedrock is capable of supporting the bridge piers. This work was guided by a Geotechnical Advisory Group, which comprised external geotechnical experts from Canada and the United States. Geotechnical findings conclude that the bridge crossing is located outside the limits of solution mining influence. Detailed bridge design will take into consideration the existing subsurface conditions. As such, the subsurface conditions are not likely to have an adverse effect on the Project.

Additional information on the foundations investigations can be found in the Preliminary Foundation Investigation and Design Report.

Consideration was also given to the potential effects of extreme weather and climate conditions on the project components. Events such as ice and snowstorms, tornados, flooding, and seismic events could all interfere with project-related construction activities. These events could also restrict usability and safety during the operation phase, and could result in direct damage to the project components. By adherence to all relevant design standards, the design of the project components will take these events into account. It is therefore concluded that, significant adverse residual effects of the environment on the Project are not likely to occur.

7.12 Transboundary Effects

CEAA requires consideration of any change that the Project may cause in the environment, 'whether any such change occurs within or outside Canada'. Given that this Project is international in nature, technical studies were coordinated with parallel efforts in the United States to arrive at an end-to-end transportation solution. The results of the U.S. studies are documented in the U.S. *Final Environmental Impact Statement (FEIS)* and available at www.partnershipborderstudy.com.

Following a review of the residual effects, it was determined that the potential existed for transboundary effects in relation to air quality, water quality and aboriginal land-use. No potential transboundary effects were subsequently identified. However, TC and the Ministry of Transportation have consulted and continue to consult with Walpole Island First Nations (WIFN) regarding matters of concern including the potential for transboundary effects to traditional lands.

Additional information about air quality (Chapter 10.1), water quality (Chapter 10.4.9) and Aboriginal Consultation (Chapter 3.6) can be found in the DRIC EA Report.

7.13 Cumulative Effects

A cumulative effects assessment was undertaken to determine whether the residual adverse environmental effects from this Project could combine with residual adverse environmental effects arising from other projects and activities to produce cumulative effects. The cumulative effects assessment was undertaken based on the presence of an existing environmental condition baseline that is reflective of extensive

anthropogenic activity over an extended period of time, that includes heavy industry, marine transportation, and extensive vehicle movements and emissions associated with and local and trans-boundary transportation of people and goods. The results of this assessment are summarized below. Further information is available in the DRIC Cumulative Effects Assessment Report.

Potential residual effects from this project include, in particular:

- Air Quality and climate
- Noise and vibration
- Groundwater
- Species at risk
- Vegetation, vegetation communities and wetlands
- Wildlife, wildlife habitat and migratory birds
- Fish and fish habitat
- Surface water

In addition to the existing environmental condition baseline that is reflective of extensive anthropogenic activity over an extended period of time, a total of 21 past, present and reasonably foreseeable future projects and activities were identified for consideration in the assessment of cumulative effects assessment. Using the information available, an assessment was undertaken to determine whether the effects from those projects and activities could combine in time and space with the effects of the DRIC Project to produce significant cumulative effects.

The assessment concluded that effects from the Project would overlap with the existing environmental condition baseline that is reflective of extensive anthropogenic activity over an extended period of time and could potentially act cumulatively with the following 12 projects:

- Sandwich Neighbourhood Waterfront Special Policy Area
- Old Sandwich Town Community Plan
- Huron Church Road Corridor Special Policy Area
- Spring Garden Planning Area (ESA)
- Talbot Planning District – Town of Lasalle
- Truck Ferry Road Infrastructure Signing Improvements
- Highway 401 Widening East of Highway 3 to West of Manning Road
- U.S. portion of the DRIC Project
- Ambassador Bridge Enhancement Project
- Ambassador Bridge Enhancement Project and the Existing Ambassador Bridge
- Existing Ambassador Bridge
- Existing Brighton Beach Power Plant

Given the nature of these projects and activities, the assessment identified potential cumulative effects in

relation to species at risk (in the Spring Garden area) and migratory birds (in the vicinity of the Detroit River).

Given the limited extent of the residual effects of the DRIC Project in comparison to the existing environmental condition baseline that is reflective of extensive anthropogenic activity over an extended period of time and in consideration of the scale of the other 12 projects, as well as the extent of the mitigation measures proposed for this Project, it was concluded that the resulting cumulative effects do not warrant any additional mitigation measures, and that significant cumulative effects are not likely to occur.

8.0 Agency and Public Consultation

Since the beginning of the study in 2005, consultation has been an integral component of the Project. Municipalities, agencies, businesses, communities, the public at large, and First Nations have been involved in the over 300 meetings and events to date. The consultation has helped shape every phase of the study leading up to the recommended alternative and development of mitigating measures.

Additional details about Agency and public consultation including process, a list of meetings and outcomes can be found in Chapter 3 of the DRIC EA Report.

8.1 Consultation with Aboriginal Peoples

The responsible authorities identified the potential to acquire aboriginal traditional knowledge that could contribute to the assessment of potential adverse environmental effects in the screening. MTO, TC, WPA and DFO have consulted with the First Nations since the study commencement in January 2005. First Nations groups initially consulted included the following:

- Walpole Island First Nations;
- Oneida Nation of the Thames;
- Caldwell First Nation;
- Munsee Delaware Nation;
- Aamjiwnaang;
- Chippewas of Kettle and Stony Point;
- Moravian of the Thames; and
- Chippewas of the Thames.

Early in the study, Walpole Island First Nation indicated a desire to actively participate in the study, and the study team has continued to consult directly with Walpole Island First Nation. In addition however, each First Nation group identified in the list above has been invited to comment on study materials at each key milestone of the study. More then 12 meetings have been held with the Walpole Island First Nations. A summary of each meeting can be found in Chapter 3 of the DRIC EA Report. Matters of interest to Walpole Island First Nations identified at the meetings included:

- Possession of artefacts found;
- Piers in the river/disturbance of river bottom;
- Air and water quality;
- Fish and fish habitat;
- Species at Risk including stewardship opportunities;
- Introduction of Foreign Species;
- Detroit River land claim;
- Legal duty to consult;
- Sharing of information with other First Nations;
- Funding for meaningful participation;

- Economic opportunities; and,
- Reflect historical presence in the naming of the bridge.

In response to the Walpole Island First Nation's expressed interest and ability to provide traditional knowledge and information relative to the study area, the provincial and federal governments have provided funding for it to retain a consultant to review and provide input to the study materials and findings. Input received from the Walpole Island First Nation included suggestions regarding environmental mitigation, archaeological preservation and opportunities for meaningful employment. The following is a summary of commitments to Walpole Island First Nations:

- Discussions and consultation with Walpole Island and other First Nations will occur during future design stages.
- MTO will discuss the dedication of protected, enhanced or restored lands located within the right-of-way for The Windsor-Essex Parkway to First Nations to ensure permanent protection, conservation and research.
- Effective techniques for mitigating impacts for individual species at risk and significant plant communities will be further investigated in discussion with First Nations.
- Partnerships will be developed with First Nations to provide for the curation of public art associated with potential gateway features.
- Results of Stage 2 archaeological investigations will be presented at regular update meetings. Walpole Island First Nation will be afforded every opportunity to review and comment on this work and to provide advice and comments on subsequent Stage 3 assessment work and any associated reporting. It is also understood that Walpole Island First Nation may wish to have monitors present during future Stage 3 or 4 fieldwork.

Additional information about Aboriginal Consultation can be found in Chapter 3 of the DRIC EA Report.

8.2 Consultation with Government Departments and Agencies

Canadian Agency Advisory Group (CANAAG)

The CANAAG was formed at the study outset to ensure that review and approval agencies would be brought into the process early and at timely study milestones. The reader is referred to Chapter 3 of the DRIC EA Report for a list of CANAAG members, as well as a list of meetings that have been held throughout the duration of the Project.

Municipal Advisory Group (MAG)

The MAG, convened at the study outset, has included senior staff officials from the municipalities and county as well as school board representatives. The reader is referred to Chapter 3 of the DRIC EA Report for a list of MAG members, as well as a list of meetings that have been held throughout the duration of the Project.

8.3 Consultation with the Public

Public consultation on the Project began in January 2005 when a MTO Notice of Study Commencement published in local newspapers. The main forum for public consultation has been the seven MTO Public Information Open Houses (PIOH), follow-up workshops, bus and boat tours, several context sensitive solutions workshops and an initial public outreach meeting. Each meeting was extensively advertised and well attended, in some cases by over 1,000 citizens. At each public event, comments were solicited and responded to. Throughout the course of the study, the team has also met with various community groups, as appropriate, in order to further understand and respond to specific issues and concerns.

For more information on the IPO, PIOH, and workshop sessions, the reader is referred to Chapter 3 of the DRIC EA Report.

Community Consultation Group (CCG)

The Community Consultation Group (CCG) was formed at the commencement of this study in the spring of 2005. The MTO in coordination with TC invited interested individuals from the City of Windsor, Town of LaSalle, and Essex County to participate in the study as part of the Community Consultation Group. Members of the public with a variety of backgrounds and interests joined the CCG and volunteered their time to meet and share ideas and concerns. In total 73 citizens have enrolled as CCG members.

In total, 18 CCG meetings have been held at key milestones of the study. Meetings have been well attended with an average attendance of 29 people. While some members have come and gone, a core group of approximately 20 has remained engaged over the life of the study. The majority of the meetings held with the CCG were presentation-style meetings and question and answer sessions. The presentations consisted of the study team presenting new data and information to the CCG, and then seeking input and feedback from the CCG members regarding the materials presented. At each CCG meeting, members of the public were invited to attend as observers only.

Private Sector Advisory Group (PSAG)

The combined Canadian and US study teams formulated a bi-national Private Sector Advisory Group and invited owners from many businesses (both in Canada and the U.S.) to participate. This has served as a useful method to provide timely information to a large number of businesses, and has resulted in further contact with several individual businesses, as documented below. These meetings have given the team a better understanding of the economic importance of an efficient border crossing system.

Crossing Owners, Operators and Proponent Group (COOP)

At the outset of the Project, there were several private interests with specific proposals for new border crossings. The study team consulted with each of these groups individually and collectively to ensure that their proposals were understood and that they understood the Partnership's objectives and EA study. The reader is referred to Chapter 3 of the DRIC EA Report for a list of COOP members, as well as a list of meetings that have been held throughout the duration of the study.

8.4 Public Participation Under CEAA Subsection 18(3)

A Public Participation Plan was developed for the Project. The purpose of this document was to outline a plan for providing members of the public with an opportunity to participate in reviewing the Draft CEAA Screening Report. The federal Public Participation Plan is available electronically from the study website (**http://www.partnershipborderstudy.com**).

The Canadian Environmental Assessment Registry (CEAR) Internet Site (#06-01-18170) was established in early 2006, when the Responsible Authorities posted a notice of project commencement, and has been updated periodically to reflect additional details and project information. The Internet site will remain active until the completion of all follow up programs.

To ensure an opportunity for public input into the federal EA process, the Draft EA Guidelines (November 2006) were made available for public review on November 22, 2006. The public comment period ended on December 22, 2006. TC staff reviewed and considered all comments received. The Final EA Guidelines were released on February 12, 2009.

TC will provide an opportunity for the public to examine and comment on the Draft CEAA Screening Report. The Draft CEAA Screening Report will be made available to the public for a period of not less than 30 days.

9.0 Monitoring and Follow-Up Program

As Responsible Authorities / Prescribed Authority, TC, DFO [6], and the WPA have an overall responsibility to ensure that the mitigation measures taken into account in the determination of the significance of effects are implemented for the Project and are effective.

As co-proponents for the Canadian portion of the Project, TC and MTO are responsible for the implementation of mitigation measures and the conduct of any required monitoring and follow-up for the Project. In this regard, TC is responsible for implementing mitigation measures and ensuring the conduct of any required monitoring and follow-up for the plaza and the Canadian portion of the international crossing. In addition, MTO is responsible for implementing mitigation measures, monitoring, and follow-up for the Windsor-Essex Parkway.

Where federal regulatory processes exist for a specific environmental component, the mitigation measures and monitoring requirements will be specified in the terms and conditions of the federal regulatory instruments (i.e. *Fisheries Act* Authorizations).

The federal funding contribution agreement between TC and MTO will complement the federal regulatory instruments to ensure the implementation of mitigation measures and monitoring, as well as the conduct of the follow-up program and any necessary adaptive management measures identified during follow-up activities.

The PA, WPA will ensure the implementation of mitigation, monitoring and follow-up via their standard lease agreements which contain the following provisions:

- Tenant must comply with all laws, orders and regulations, both Provincial and Federal;
- WPA has the right to enter the site at any time to ensure that mitigation is being implemented.

TC, with appropriate support from the other RAs/PA will be responsible for the CEAA follow-up program and for arranging for the review of the results submitted on the CEAA follow-up program. As reports are submitted, TC will determine if:

- The follow-up program as implemented is meeting the stated objectives;
- The effects are occurring as predicted in the CEAA Screening Report;
- The follow-up program requires amendment to adapt to changes in the Project or differences in the observed environmental effects; and,
- The proponent is required to implement additional adaptive management measures to ensure that environmental effects are limited to acceptable levels.

In conducting this review, TC may request expertise from expert federal authorities. Environment Canada (EC) has agreed to participate in the review of detailed work plans for monitoring and follow-up activities as well as any subsequent results.

[6] As effects, mitigation and monitoring activities pertain to the RAs' interests related to the scope of the project.

9.1 Monitoring

Monitoring programs to ensure the effectiveness of mitigation measures identified for the Project include the following:

- Compliance Monitoring Programs (CMPs) to ensure to ensure effective implementation of typical project related mitigation and best management practices. (CMPs for The Windsor-Essex Parkway will be carried out by MTO; TC will carry out CMPs for the plaza and the Canadian portion of the crossing).
- Factor Specific Environmental Management Plans (EMPs will be developed for the Plaza and Crossing.
- MTO is committed to ensure that an Environmental Management System (EMS) is in place to guide the operation and maintenance of The Windsor-Essex Parkway.

Specific details of the monitoring programs will be prepared and defined by TC during the pre-construction period of project design. TC will consult with agencies and stakeholders, where appropriate, in the preparation of the monitoring programs. RAs/PA will review and approve the details of the monitoring programs prior to construction.

Monitoring programs to be managed by the province, as noted above will be submitted to TC once approved by the appropriate provincial jurisdictions. The MTO will also be required to submit a report recording the status of the implementation of the mitigation measures through CMPs and EMPs.

9.2 Follow-up

The CEAA defines follow-up as, "a program for verifying the accuracy of the EA of a project, and determining the effectiveness of any measures taken to mitigate the adverse environmental effects of the Project."

In addition to the monitoring programs identified during the coordinated EA process, TC will develop and implement follow-up measures focused on the aspects of the Project, specifically:

- Migratory birds associated with the Canadian portion of the international crossing; and,
- Vegetation Species at Risk associated with the plaza.

TC will establish the follow-up program for the aspects noted above:

- Verify the prediction of environmental effects that have been identified;
- Determine the effectiveness of mitigation measures in order to modify or implement new measures where required;
- Support the implementation of adaptive management measures to address previously unanticipated adverse environmental effects; and,
- Provide information on environmental effects and mitigation that can be used to improve and/or support future EAs, including cumulative effects assessments.

In addition, DFO will require TC and MTO to implement monitoring and follow-up measures, specifically:

- Environmental monitoring during construction activities to ensure that mitigation measures to protect fish and fish habitat are properly incorporated into project construction activities; and,
- Monitoring of fish habitat compensation areas to ensure that these areas are functioning as intended. If these compensation areas of fish habitat are found to not be functioning as intended, further measures will be implemented to ensure no net loss of fish habitat is achieved.

9.3 Follow-up Program for Migratory Birds

During the coordinated environmental assessment process, concerns were raised regarding the potential effects on migratory birds associated with the bridge design, location and illumination. Further work will be undertaken during future design stages to confirm and mitigate the potential for effects of the new bridge on migratory birds. Radar studies, acoustic studies and point count surveys will be coordinated by TC in consultation with EC to provide input to bridge design. Analysis of the radar survey data will be undertaken to determine whether there would be a high potential for migratory bird collisions with the bridge superstructure.

Based on the results of the migratory birds survey a follow-up program may be developed by TC, in consultation with EC, with the following objectives:

- Monitor the accuracy of predicted effects on migratory birds.
- Monitor the effectiveness of the proposed mitigation in minimizing the effects to migratory birds.
- Obtain data that can be used, if required, to support the design of adaptive management measures to address any unanticipated effects on migratory birds.

Specific details related to monitoring and follow-up activities including the duration of the activities will be documented in a follow-up plan for migratory birds. This document will be finalized by TC, following review by appropriate agencies, prior to construction activities associated with the international crossing.

9.4 Follow-up Program for Species at Risk

MTO has submitted an application for a permit under the Ontario *Endangered Species Act* for the Windsor-Essex Parkway to demonstrate that it will not jeopardize the survival or recovery of species at risk in Ontario. TC will also secure a permit under SARA for the plaza. As part of the SARA Permit approval process, TC will develop follow-up programs for Species at Risk, in consultation with EC with the following objectives:

- Monitor the accuracy of predicted effects to vegetative Species at Risk associated with the plaza.
- Monitor the effectiveness of the proposed mitigation in minimizing the effects to vegetative Species at Risk associated with the plaza.
- Obtain data that can be used, if required, to support the design of adaptive management measures to address any unanticipated effects to vegetative Species at Risk associated with the plaza.

Based on the commitments to further develop follow-up programs, and taking into consideration mitigation measures and, the federal RAs/PA are satisfied that the monitoring and follow-up programs developed will be sufficient to verify the EA predictions, determine the effectiveness of mitigation measures, support the implementation of adaptive management measures, and provide information on environmental effects and mitigation that can be used to improve and support future EA processes.

9.5 Commitments for Future Work

MTO and TC are committed to maintaining consultation efforts to keep interested parties informed of activities, future design stages and project implementation. Additionally, MTO and TC are committed to ensure that compliance monitoring of commitments made during the EA and subsequent phases, including necessary permits and approvals, are adhered to.

As per the *Migratory Birds Convention Act*, specific details related to monitoring and follow-up activities will be documented in a follow-up plan for migratory birds. The document will be finalized by TC, following review by appropriate agencies, before the commencement of construction activities associated with the

international crossing.

As part of the *SARA* permit approval process, TC will develop a follow-up program for species at risk associated with the plaza. The RAs/PA will continue to engage EC in the development of a monitoring and follow-up program for terrestrial species at risk.

As per the *Navigable Waters Protection Act (NWPA)*, approvals will be obtained prior to construction for the Canadian portion of the international crossing.

As per the Federal *Fisheries Act,* MTO and TC will obtain any required authorizations under subsection 35(2) of the *Fisheries Act* for any unavoidable harmful alteration, disruption of destruction of fish habitat prior to relevant construction works or activities.

10.0 CEAA Conclusions and Decisions

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Screening Report prepared by:

_____ Date: _____

Title: **Holly Wright**
Environmental Planner, URS Canada

_____ Date: _____

Title: **Tyler Drygas**
Senior Environmental Planner, URS Canada

_____ Date: _____

Title: **Murray Thompson**
Vice President, URS Canada

The above have prepared and reviewed this environmental Screening Report to the best of their ability and knowledge.

The scope of the Project as identified by TC and the WPA includes the construction, operation / maintenance, and decommissioning (where applicable) of the following project components: A six-lane international bridge crossing of the Detroit River; a Border Services Plaza; and, a controlled access highway connection approximately 10 kilometres long located between the Border Service Plaza and the provincial highway network.

Department of DFO Canada's interests are in relation to: potential effects on fish and fish habitat associated with watercourse crossings, potential realignment and/or enclosure of watercourses along with any associated works, accesses and other undertakings directly associated with the channel works; potential infilling in the Detroit River associated with shoreline work; and any fish habitat compensation required to offset habitat loss.

In accordance with subsection 20(1) of *CEAA* and subsection 15(1) of the *Canada Port Authority Environmental Assessment Regulations*, TC, DFO Canada and the WPA have determined that as a result of implementing the Project and with the application of the specified mitigation measures as well as all relevant construction specifications and Best Management Practices, significant adverse environmental effects are not likely to occur.

Mitigation Measures Accepted by: _____ Date: _____

Title: **Dave Wake** Manager, Ministry of Transportation, Planning Office Windsor BIIG

The proponent has read and understood this environmental Screening Report and accepts responsibility for the implementation of the mitigation measures and related monitoring and follow-up programs (if identified above) for The Windsor-Essex Parkway.

Mitigation Measures Accepted by: _____ Date: _____

Title: **Sean O'Dell**, Executive Director, Windsor Gateway Project, Transport Canada

The proponent has read and understood this environmental Screening Report and accepts responsibility for the implementation of the mitigation measures and related monitoring and follow-up programs (if identified above) for the Plaza and Bridge Crossing.

Envrionmental Screening Approved by: _____ Date: _____

Title: **Jim Lothrop** A/ Director General – Surface Infrastructure Programs, Transport Canada

The above has reviewed the environmental Screening Report and approves the CEAA Decision. In addition, the above accepts responsibility for the implementation of the mitigation measures and related monitoring and follow-up programs, as identified above, for the Windsor-Essex Parkway.

Envrionmental Screening Approved by: _____ Date: _____

Title: **David Cree** President, Windsor Port Authority

The above has reviewed the environmental Screening Report and approves the CEAA Decision. In addition, the above Federal Department/Agency provides Transport Canada with assurance that mitigation measures and follow-up programs, as identified above, related to the interests identified in **the Scope of Project** will be implemented.

Envrionmental Screening Approved by: _____ Date: _____

Title: **Lisa Fowler**
Regional Environmental Assessment Analyst, Fisheries and Oceans Canada

The above has reviewed the environmental Screening Report and approves the CEAA Decision. In addition, the above Federal Department/Agency provides Transport Canada with assurance that mitigation measures and follow-up programs, as identified above, related to the interests identified in **the Scope of Project** will be implemented.

11.0 Contacts

PARTIES INVOLVED	CONTACT	TELEPHONE
Federal EA Coordinator (FEAC)	Mohammad Murtaza Canadian Environmental Assessment Agency Ontario Regional Office	416-952-1585
Responsible Authority (RA)	Sarah O'Keefe A/ Environmental Assessment Project Manager, Highways and Borders Transport Canada	613-990-5473
Responsible Authority (RA)	Lisa Fowler Regional Environmental Assessment Analyst Fisheries and Oceans Canada	905-639-4022
Prescribed Authority (PA)	David Cree President & CEO Windsor Port Authority	519-258-5741
Proponents	David Wake Manager, Planning Office, Windsor BIIG Ontario Ministry of Transportation	519-873-4559
	Sean O'Dell Executive Director, Windsor Gateway Project Transport Canada	613-991-4702
	Mohammed Alghurabi Senior Project Manager Michigan Department of Transportation	517-373-7674
	James Steele Administrator, Michigan Division Federal Highway Administration	517-702-1845

12.0 Key References

Canadian Environmental Assessment Act. 1992.
http://laws.justice.gc.ca/en/showdoc/cs/C-15.2///en?page=1

Species At Risk Act. 2002.
http://laws.justice.gc.ca/en/s-15.3/text.html

Ontario *Endangered Species Act*. 2007.
http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_07e06_e.htmcological

Ministry of Transportation. Environmental Standards and Practice Documents
http://www.mto.gov.on.ca/english/engineering/envirostandards/

Transport Canada.. Final EA Guidelines under the Canadian Environmental Assessment Act for the Detroit River International Crossing Project. April 2009.
http://www.ceaa.gc.ca/050/document-eng.cfm?DocumentID=33407

Canadian Reports Available Electronically at http://www.partnershipborderstudy.com

URS Canada Inc. (DRIC EA Report) Final Environmental Assessment Report – Environmental Assessment W.O. 04-33-002: Detroit River International Crossing Study, City of Windsor, County of Essex, Town of LaSalle, Town of Tecumseh. December 2008. Prepared for the Canada-United States-Ontario-Michigan Border Partnership.

URS Canada Inc. Technically and Environmentally Preferred Alternative Reports. December 2008. Prepared for the Canada-United States-Ontario-Michigan Border Partnership.

URS Canada Inc. Draft Practical Alternative Evaluation Working Papers, Reports & Memos. March, April, May and December 2008. Prepared for the Canada-United States-Ontario-Michigan Border Partnership.

Detroit River International Crossing Final Air Quality Monitoring Report. March 2008. Prepared for the Canada-United States-Ontario-Michigan Border Partnership.

Transport Canada. Detroit River International Crossing Project Federal Public Participation Plan. November 2006.

URS Canada Inc. Draft Transportation Planning and Needs Study Report. November 2005. Prepared for the Canada-United States-Ontario-Michigan Border Partnership.

URS Canada Inc. Detroit River International Crossing Study Environmental Assessment Terms of Reference. May 2004. Prepared for the Canada-United States-Ontario-Michigan Border Partnership.

Additional Supporting Documentation

URS Canada Inc. Detroit River International Crossing Cumulative Effects Assessment Report. July 2009. Prepared for the Canada-United States-Ontario-Michigan Border Partnership.

URS Canada Inc. Disposition Tables of Responses to Comments Received from Federal Reviewers on Preliminary

Draft CEAA Screening Reports. July 2009. Prepared for the Canada-United States-Ontario-Michigan Border Partnership.

URS Canada Inc. Disposition Tables of Responses to Comments Received from Federal Reviewers on Provincial Technical Reports. July 2009. Prepared for the Canada-United States-Ontario-Michigan Border Partnership.

URS Canada Inc. Draft Compensation Strategy for Fish Habitat Alternations. June 2009. Prepared for the Canada-United States-Ontario-Michigan Border Partnership.

Morrison Hershfield Ltd. Fisheries and Aquatic Environment Secondary Source Summary, Detroit International Crossing and Gateway Plaza. June 2009. Prepared for Transport Canada.

URS Canada Inc. Draft Feasibility Assessment Fish Lifts Lennon and Cahill Drains. April 2009. Prepared for the Canada-United States-Ontario-Michigan Border Partnership.