Appendix J:

Ministry of Transportation Environmental Assessment Report for the DRIC Study under the Ontario Environmental Assessment Act (December 2008)

Canada | U.S. Department of Transportation Federal Highway Administration | Ontario | MDOT Michigan Department of Transportation

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

Detroit River
INTERNATIONAL CROSSING
S T U D Y

Environmental Assessment Report
W.O. 04-33-002

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

URS

December 2008

ENVIRONMENTAL ASSESSMENT REPORT

W.O. 04-33-002

DETROIT RIVER INTERNATIONAL CROSSING
ENVIRONMENTAL ASSESSMENT STUDY

City of Windsor, County of Essex, Town of LaSalle, Town of Tecumseh

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December 2008

The Public Record

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EXECUTIVE SUMMARY

E.1 Overview and Background

The Detroit River International Crossing (DRIC) Study is a bi-national transportation improvement study that has been undertaken by the governments of Canada, United States, Ontario, and Michigan, who have formed the Canada-U.S.-Ontario-Michigan Border Transportation Partnership (the Partnership).

In 2001, the Partnership jointly commissioned a Planning/Need and Feasibility Study (P/NF) to identify a long-term strategy to address the safe and efficient movement of people and goods between Southwestern Ontario and Southeastern Michigan. The overall objectives of the Partnership in support of this strategy were the following:

- To improve the movement of people, goods and services in a safe and efficient manner across the Canadian / United States border at the Detroit and St. Clair Rivers to connect with existing national, provincial and regional transportation systems, such as I-75 and Highway 401;
- To enhance the regional economic vitality and Canadian/U.S. trade;
- To meet the long term needs of the U.S. and Canadian border inspection agencies;
- To expedite the planning and environmental study process to ensure that future travel demands in this region can be accommodated in a timely manner;
- To ensure that all modes of surface transportation including road, rail and marine will be considered;
- To use a single integrated planning and environmental study process, resulting in a single product, which will meet the requirements of all members of the Partnership;
- To ensure that any solutions which are developed as a result of the above integrated planning and environmental study process comply with all relevant and applicable federal, provincial, state and/or municipal laws, regulations, bylaws, ordinances or other binding enactments validly created by bodies with legislative or rule-making authority;
- To ensure that the process is conducted in a financially responsible and prudent manner; and
- To ensure that intelligent transportation systems/state-of-the-art facilities be provided to enhance border crossing efficiency.

After completion of the P/NF Study in 2004, the Partnership initiated a formal Environmental Assessment (EA) process for a new or expanded Detroit River International Crossing. As a first step in this process in Ontario, an EA Terms of Reference (EA TOR) was prepared. The *Detroit River International Crossing Study Environmental Assessment Terms of Reference (May 2004)* outlines the minimum considerations and study framework to be followed in completing this Environmental Assessment. The EA TOR was approved by the Ontario Minister of the Environment on September 17, 2004, and is available as a supporting document. A tabular summary of the commitments outlined in the EA TOR and how they have been addressed during the EA is provided in Section 1.5 of this EA Report.

While considering the objectives of the Partnership for the Detroit River International Crossing study, the study team generated and assessed illustrative crossing, plaza and access road alternatives within the Preliminary Analysis Area (PAA) generated at the outset of the study. Evaluation of these alternatives led to a refined Area of Continued Analysis (ACA). Within the ACA, six practical access road alternatives, four practical plaza alternatives, and three practical crossing alternatives were generated, assessed and evaluated.

After evaluating the practical alternatives for the access road, Canadian inspection plaza, and the international bridge crossing, the Technically and Environmentally Preferred Alternative (TEPA) was selected. The TEPA includes The Windsor-Essex Parkway, Plaza B1 and Crossing X-10B.

Subsequent to the selection of the TEPA, refinements were developed based on further technical analysis and stakeholder consultation, with the objectives of further enhancing the benefits or mitigating the effects of the TEPA. The combination of the TEPA and associated refinements along with the proposed mitigation measures are referred to collectively as the Recommended Plan, which is illustrated schematically in Exhibit E.1.

Key elements of the Recommended Plan are described in Section E.10, Section 1.8 and Chapter 9 of this EA Report. Anticipated environmental effects and proposed mitigation of the Recommended Plan are summarized in Chapter 10 of this EA Report.

Throughout the Detroit River International Crossing study extensive consultation efforts including seven Public Information Open Houses (PIOHs) were conducted to inform the public and obtain feedback about the technical analysis leading to the generation, assessment, and evaluation of the illustrative and practical alternatives, and ultimately, the TEPA and the Recommended Plan. Over 300 consultation sessions were held during the study with participation from thousands of Windsor-Essex County residents, community groups, experts, local elected officials, and other government agencies. Additional details of the consultation that has been completed as part of this study are included in Section E.3 and in Chapter 3.

The following sections provide a brief overview of the Detroit River International Crossing study that has led to the identification of the Recommended Plan. Additional details regarding the study are provided in subsequent chapters of this EA Report, and in supporting documentation that has been referenced throughout the report.

A complete list of the supporting documentation used as reference throughout this report is provided following the Executive Summary.

E.2 Study Purpose, Objectives and Scope

The Windsor-Detroit border crossing represents an important trade corridor between the United States and Canada. Based on 2006 border crossing statistics, approximately 28% of Canada-US surface trade passes through Windsor-Detroit.

The purpose of the undertaking is to provide for the safe, efficient and secure movement of people and goods across the Canadian-US border in the Detroit River area to support the economies of Ontario, Michigan, Canada and the US.

Given the importance of this trade corridor to the local, regional and national economies and the negative effects associated with poor traffic operations and congestion already occurring at existing crossings, it was recognized that the partnering governments must take responsible steps to reduce the likelihood of disruption to transportation service in this corridor.

In order to meet the purpose, this study has addressed the following regional transportation and mobility needs:

- Provide new border crossing capacity to meet increased long-term travel demand;
- Improve system connectivity to enhance the continuous flow of people and goods;
- Improve operations and processing capabilities at the border; and
- Provide reasonable and secure crossing options (i.e. network redundancy).

In addition, the study team has sought to recommend transportation solutions which minimize community and environmental impacts as much as reasonably possible. In particular, the study team has strived to address the local communities' goals to:

- Improve quality of life;
- Take trucks off local streets; and
- Improve traffic movement across the border.

The objectives of the study can generally be expressed in terms of the seven key evaluation factors that were developed in consultation with the public and were used to evaluate all of the alternatives developed during the study. These included:

Changes to Air Quality

- How will each alternative affect future levels of pollutants in the atmosphere in the next 10, 20, and 30 years?

Protection of Community and Neighbourhood Characteristics

- How will each alternative affect homes and businesses?
- How will each alternative affect future traffic conditions?
- How will each alternative affect future noise and vibration levels?

Consistency with Existing and Planned Land Use

- How does each alternative affect existing and future planned land use?

Protection of Cultural Resources

- How will each alternative affect historical, cultural and archaeological features in the area?

Protection of the Natural Environment

- How will each alternative affect ecosystems, species, water systems or other important natural resources?
- How will environmentally significant areas or species at risk be affected by each alternative?

Improvements to Regional Mobility

- What will be needed to improve traffic flows in this area?
- How will each alternative affect future traffic conditions?
- How can a new river crossing and plaza be efficiently managed?

Cost and Constructability

- What is the cost of each alternative?
- Is each alternative constructible?
- Will each alternative provide value for the tax dollar?

E.3 Study Process and Schedule Milestones

The study process followed the requirements of the *Ontario Environmental Assessment Act* (OEAA) and *Canadian Environmental Assessment Act* (CEAA), and was guided by the approved EA TOR. As detailed in subsequent sections of this report, each stage of the study included systematic and thorough analysis at an appropriate level of detail as well as consultation with the affected stakeholders and the public.

Specifically, the process involved outlining and confirming the purpose and need for the undertaking. Planning work undertaken in the previous P/NF Study (2001 – 2004) was reviewed and updated. That work confirmed the need for a new international crossing in the Windsor-Detroit area as part of a 30-year long-term border strategy. The results of the analysis and a long list of illustrative plaza, crossing and access road alternatives were presented to the public and other stakeholders for input and review.

In parallel with the above activities, the study team prepared Work Plans that would guide the analysis of alternatives throughout the Environmental Assessment. These were reviewed by the appropriate approval agencies, and were also made available to the public and stakeholders for comment. The Work Plans are available as supporting documents.

The Detroit River International Crossing study commenced in January 2005. During the spring of 2005, the study team updated traffic forecasts, confirmed the need for the project, and generated a long list of illustrative alternatives.

The first round of Public Information Open Houses (PIOHs), held in June 2005, focused on the purpose and need for the study, and presented the illustrative plaza, crossing and access road alternatives for public review and comment. Attendees were also asked to provide input on the development of the seven evaluation factors to be used throughout the remainder of the study to help determine the impacts associated with each alternative.

A thorough and systematic analysis and evaluation of this long list of illustrative alternatives was carried out during the fall and the results were shown to the public and key stakeholders for input and review late in 2005. The results of the evaluation identified an Area of Continued Analysis (ACA).

At the second round of PIOHs, held in November-December 2005, the study team presented alternatives to the undertaking, the evaluation of the illustrative alternatives, as well as the Area of Continued Analysis that had been identified on the basis of this evaluation.

Early in 2006, the study team developed practical crossing, plaza and access road alternatives within the ACA. At the third round of PIOHs, held in March 2006, the practical alternatives for the plaza, crossing and access road were presented. In addition, attendees were encouraged to provide feedback on the potential locations for interchanges, local access considerations (including service road options), and cross-sectional alternatives for at-grade, depressed and tunneled roadways.

The remainder of the 2006 calendar year focused on analysis of the practical alternatives. At the fourth round of PIOHs, held in December 2006, the study team presented the preliminary analysis of the practical alternatives for the plaza, crossing and access road. The public was advised on the status of the analysis work and conclusions to date. They were encouraged to comment on the analysis and work completed to date as well as the methods used to carry out the work conducted.

Informal consultations continued into the spring and summer of 2007 with growing interest around a concept which would be a combination of the tunneled and below-grade alternatives. At meetings with the City of Windsor, the vison of a more "green", parkway-like, alternative emerged. The concept, would include a green corridor with tunneled sections, a grade separated recreational trail system, and extensive urban design of the green areas.

The DRIC study team built upon this vision to develop a Parkway Alternative, which was released for public comment in August 2007. The alternative included 10 tunneled sections (total length 1.5km), a grade separated recreational trail network, and extensive areas of future parkland.

Information on the evaluation process to be undertaken in selecting a technically and environmentally preferred alternative for the crossing, plaza and access road was provided. As well, the public was invited to provide ideas and comments to help the study team evaluate all the alternatives and develop a single preferred alternative.

The Partnership announced The Windsor-Essex Parkway as the Technically and Environmentally Preferred Alternative for the access road portion of the project in May 2008, and the preferred location for the international bridge crossing and Canadian plaza in June 2008.

At the sixth round of PIOHs, held in June 2008, the study team presented a broad overview of the study, as well as the analysis and evaluation process leading to the selection of The Windsor-Essex Parkway, Plaza B1, and Crossing X-10B as the Technically and Environmentally Preferred Alternative (TEPA). In addition, the study team responded to the "GreenLink" concept that had been suggested by the City of Windsor in terms of its similarities and differences to the recommended "Parkway" alternative.

The remainder of 2008 focused on detailed analysis and identification of appropriate mitigation measures for the TEPA, as well as the finalization of the supporting documents and the documentation of the Ontario Environmental Assessment Report and the Canadian Environmental Assessment Screening Report. These measures were included in a draft version of this EA Report, which was made available to the public, agencies, municipalities, First Nations, and other interested parties for review in November 2008.

At the seventh and final round of PIOHs, held in late November 2008, the study team presented the Recommended Plan for the new border transportation system. This Recommended Plan consisted of refinements made to the TEPA since the sixth round of PIOHs and the proposed mitigation strategies developed by the study team. The feedback obtained at this PIOH was utilized to make refinements to the Recommended Plan for inclusion in this EA Report.

Following the final round of PIOHs, the study team focused on reviewing comments received at the PIOH and during the review of the draft version of the EA Report.

E.4 Environmental Assessment Process

The Detroit River International Crossing study has followed the requirements of the *Ontario Environmental Assessment Act (OEAA)* under the Environmental Assessment process, and the requirements of the Canadian Environmental Assessment Act under subsection 5(1)(a) of the Canadian Environmental Assessment Act. As such, both EA processes have been coordinated pursuant to the *Canada-Ontario Agreement on Environmental Assessment Cooperation* (the Agreement).

For projects subject to the OEA Act, an environmental assessment involves identifying and planning for environmental issues and effects prior to implementing a project. The process allows reasonable opportunities for public involvement in the decision-making process of the project. An EA document is prepared by the proponent of the project and is subject to review by the public and government agencies.

The purpose of the *OEAA* is to help protect and conserve Ontario's environment by ensuring that projects subject to the Act follow a planning process leading to environmentally sound decision-making. The *Detroit River International Crossing Study* has followed the requirements of the *OEAA* under the Environmental Assessment (EA) process *(Section 6.1 (2) of the OEAA)*. In general terms, an environmental assessment is a study which assesses the potential environmental effects and benefits of a project or undertaking on the environment. Key components of an EA include: consultation with members of the public, regulatory agencies, municipalities, and other stakeholders; First Nations engagement; the consideration of alternatives and their potential environmental effects; and the mitigation and management of environmental effects. The Detroit River International Crossing study has been undertaken consistent with the requirements identified in *Section 6.1 (2)* of the *OEAA*.

The *Canadian Environmental Assessment Act (CEAA)* is the legal basis for the federal environmental assessment process. The *Act* sets out the responsibilities and procedures for carrying out the environmental assessments of projects that involve federal government decision-making.

The federal environmental assessment process is applied whenever a federal authority has a specified decision-making responsibility in relation to a project, also known as a "trigger" for an environmental assessment. Specifically, the *Act* is "triggered" when a federal authority:

- Proposes a project;
- Provides financial assistance to a proponent to enable a project to be carried out;
- Sells, leases, or otherwise transfers control or administration of federal land to enable a project to be carried out; or
- Provides a licence, permit or an approval that is listed in the *Law List Regulations* that enables a project to be carried out.

As a co-proponent of the Canadian portion of the project, Transport Canada (TC) has determined that an EA is required pursuant to subsection 5(1)(a) of the *CEAA*. In addition, the project will require an approval under the *Navigable Waters Protection Act*, which is administered by TC, and is identified in the *Law List Regulations* under CEAA. As such, TC has identified itself as a Responsible Authority (RA) for the assessment. Fisheries and Oceans Canada (DFO) is also a Responsible Authority, in relation to *Fisheries Act* authorizations that will be required for certain water crossings along the access road. The Windsor Port Authority (WPA) is a Prescribed Authority under the *Canada Port Authority Environmental Assessment Regulations,* in relation to federal water lots that will be crossed by the new international bridge. TC, DFO and the WPA coordinated their activities, to ensure that a single environmental assessment is conducted.

As a bi-national study, the federal/provincial EA undertaken in Canada was also coordinated with studies in the United States, which were undertaken in order to gain approval through the *National Environmental Policy Act (NEPA)*. Although the documents and approval processes are different, the objectives and processes of *NEPA* are similar to that of *OEAA*. There is no *NEPA* document that is equivalent to the *OEA TOR*, however, the Purpose of the Undertaking discussion in an *OEA TOR* is comparable to the *Purpose and Need Statement* under *NEPA*.

In addition, throughout the study process, the Partnership coordinated meetings between Canadian and United States federal and state / provincial agencies of common interests so that, to the extent possible, a bi-national approach to identifying and addressing issues could be developed.

Additional information regarding the EA process followed as part of this study are included in Chapter 2 of this report.

E.5 Consultation

From the outset of the study, the study team realized that the Detroit River International Crossing project would benefit and have impacts on many stakeholders throughout the Windsor and Essex County area. Therefore, the team set out to develop a consultation framework that would include a wide variety of stakeholders and allow opportunities for meaningful two-way dialogue throughout the project. To this end, the study team established the following consultation groups early in 2005:

- Municipal Advisory Group (MAG): Consisting of area municipalities and the County of Essex. As the study progressed, school boards were also invited to join the MAG.
- Canadian Agency Advisory Group (CANAAG): Consisting of agencies involved in the review and approval of the provincial EA Report and the federal CEAA Screening Report.
- Private Sector Advisory Group (PSAG): A bi-national consultation group. There were invitations sent to several business owners and associations in Canada and the U.S.
- Crossing Owners/Operators/Proponents (COOP): Consisting of owners and operators of current border crossings, and private sector proponents of new or expanded crossings.
- Community Consultation Group (CCG): The study team solicited membership from the public, representing a wide variety of backgrounds and interests to join the CCG. Everyone who asked to be involved was included in the group. Participants volunteered their time to meet with the team on a regular basis, learn about the project, and share their ideas and interests.
- First Nations Consultation: Consultation with First Nations began in January 2005, where several First Nations groups were initially consulted.

The consultation groups were established early in 2005 and the team has met with each of them several times at key milestones as detailed in the following sections. As the study evolved, the team consulted with various other interests groups and stakeholders, including community groups, business owners and individual property owners. After the selection of the ACA, a School Advisory Group was formed to provide more direct consultation with local school councils. In addition to the above the team maintained extensive coordination and consultation with the U.S. study team and relevant stakeholders. DRIC study Working Group and Steering Committee meetings were held at regular intervals throughout the four-year period. Study team representatives reciprocated attendance at most public meetings held on the opposite side of the border.

The study team also consulted with the general public throughout the course of the study. The main forum for public consultation has been Public Information Open Houses (PIOHs) and follow up workshops, bus and boat tours, as well as several context sensitive solutions workshops and an initial public outreach meeting. Each meeting was extensively advertised and well attended, in some cases, by more than 1,000 citizens. The PIOHs provided attendees with the opportunity to review and discuss display boards and handout materials, as well as video animations of proposals and other relevant information. PIOHs and workshops were staffed by several technical representatives of the study team as appropriate. These included technical and environmental specialists (air, noise, natural heritage, etc.), the lead consultant, and MTO (project management, environmental, and property specialists). At each public event, comments were solicited for consideration and response. Throughout the study, the study team also met with various community groups, as appropriate, in order to further understand and respond to specific issues and concerns.

To further general public knowledge about the project, the study team established a project website, which has been maintained throughout the course of the study (www.partnershipborderstudy.com). This website has provided up-to-date information on the study progress as well as draft reports as they have become available. A second project website (www.weparkway.ca) was added in the spring of 2008 to highlight the Technically and Environmentally Preferred Alternative for the access road portion of the study. The public has been further informed about the study through the local media. Study progress has been widely covered by the local newspaper, radio stations, and television stations.

Municipalities, agencies, businesses, communities, the public at large, and First Nations have been involved in the more than 300 meetings and events which have occurred. The information received through these various consultation activities has been considered in the development, analysis and evaluation of alternatives. In some cases, the comments and/or desires of interested stakeholders were not supported by the study team's analysis and evaluation, in which case they are not reflected in the final outcomes. However, in many cases the comments reinforced the analysis/evaluation and/or caused the team to adjust its thinking regarding the balance of impacts and benefits of the undertaking. In this way, the consultation has influenced the outcome of the project in many significant ways, and has helped shape the study leading up to the recommended alternative and development of mitigating measures.

A detailed summary of the consultation that has occurred throughout the Detroit River International Crossing study is provided in Chapter 3 of this EA Report, including a listing of all consultation activities to date.

E.6 The Existing Environment

At the outset of the study, a Preliminary Analysis Area (PAA) was developed for the generation and assessment of illustrative alternatives. The PAA is illustrated by the highlighted area in Exhibit 1.1 of the EA Report, and represents a large portion of the Windsor-Essex region of Southwestern Ontario. More specifically, the PAA includes the City of Windsor and the Town of Amherstburg, Town of LaSalle and Town of Tecumseh within the County of Essex.

The Planning/Need and Feasibility Study (P/NF) completed in 2004 provided an inventory of the existing conditions in a Focused Analysis Area. As an initial step in the Detroit River International Crossing study and to build upon the work completed during the preparation of the Environmental Overview Report, further in-depth secondary source data collection was conducted within the PAA. A detailed review and inventory of existing conditions within the PAA was completed for the following areas: air quality; social impact assessment; economic assessment; land use; archaeological resources; cultural resources; natural heritage; acoustics and vibration; waste and waste management; and the existing transportation network. The key findings of this review based on each of these areas are documented in Chapter 4 of this EA Report. These findings were used to assist the study team in the generation, assessment and selection of both illustrative and practical alternatives.

In general, the study area on the Canadian side of the Detroit River has a combined population of over 300,000, including more rural parts of adjoining Essex County. It is characterized by both heavily urbanized and intensive agricultural land uses that are interspersed with a patchwork of remnant natural heritage features, including wetlands, prairies, and woodlots.

The primary land use in the City of Windsor is residential, with major employers clustered in manufacturing and commercial nodes across the city. Approximately 27 percent of employment in Windsor is related to automotive manufacturing and the machine, tool, die, and mold industry. Employment in manufacturing also dominates the different employment sectors in the area surrounding the City of Windsor. The presence of skilled labour in the Town of Tecumseh, the Town of LaSalle and the Town of Amherstburg keeps the area's industrial sector globally competitive, and supports a diverse employment base. In addition to these industrial pursuits, agriculture will remain one of the area's primary economic sectors.

Located within the City of Windsor and the Town of LaSalle is the Ojibway Prairie Provincial Prairie Reserve, which was regulated under the Provincial Parks Act in 1977 (OMNR 2002). Recently the Ojibway Prairie Park Management Plan was published, which sets out the park management directives for the next twenty years.

As outlined in the Official Plans for the City of Windsor and the Town of LaSalle, there are numerous parks and Open Space Features within the study area that provide recreational opportunities for the public. Municipal parks of note include the Ojibway Park and the Black Oak Heritage Park. These parks are associated with lands described as Environmentally Sensitive Areas (ESAs) or Areas of Natural or Scientific Interest (ANSIs).

The Detroit River has been designated a Canadian Heritage River. As such, the preservation and enhancement of its natural features, as well as its cultural and recreational values, is considered to be of both federal and provincial importance. The Detroit River is the first river to be designated a bi-national Heritage River. Canada and the U.S. have also initiated the establishment of the Detroit River International Wildlife Refuge. When fully established, the Refuge will include the marshes, coastal wetlands, islands, shoals, and riverfront lands from Mud Island on its north extent to the southern border of Sterling State Park in Monroe County, Michigan at its southern extent.

E.7 Transportation Needs Assessment

The Partnership jointly commissioned a *Planning/Need and Feasibility Study (P/NF)* in 2001, which identified a long-term strategy to promote the safe and efficient movement of people and goods between Southwest Ontario and Southeast Michigan. The transportation problems and opportunities identified during the P/NF Study provided the basis for the Partnership to initiate the environmental study processes for the development and assessment of transportation alternatives at the Detroit River international crossing.

In addition to the information presented in this section, Chapter 5 of the EA Report provides additional details regarding the transportation problems and opportunities of the study as well as "Alternatives to the Undertaking" that were considered.

TRANSPORTATION PROBLEMS AND NEEDS

The Ambassador Bridge and Detroit-Windsor Tunnel represent two of the busiest border crossings in North America. In 2006, they carried over 11 million passenger vehicles and over 3.7 million commercial vehicles annually and handled 28% of the total surface trade between Canada and the U.S. The delays and resultant queuing at these crossings will have several negative effects associated with poor transportation network operations should they not be addressed.

The current and future deficiencies in the roadway network serving the international border crossings at Windsor-Detroit that are anticipated within the 30-year timeframe are documented in the *Travel Demand Forecasts Working Paper*, which is available as a supporting document.

For this study, capacity was defined as the maximum vehicle service flow rate that can be sustained by a facility and represents a severe breakdown in traffic operations. This is a very undesirable condition with long queues and delays. Although traffic volumes up to the capacity can be accommodated, it was considered prudent to provide a level-of-service that is better than that provided when traffic volumes reach capacity. As such, capacity values within this study were defined as a range, with the upper limit corresponding to the maximum rate (as defined above) and the lower limit corresponding to the flow rate at which traffic operations start to become unstable due to the high number of vehicles using the facility.

The travel demand forecast reviewed existing and projected operations for all elements of the overall border crossing system, including the existing crossings, Canadian and U.S. border processing, and Canadian and U.S. access to the existing border processing facilities and crossings. The study identified future deficiencies for both the Ambassador Bridge and Detroit-Windsor Tunnel. The future capacity deficiencies for the various elements of the overall border crossing system are summarized in Table E.1.

TABLE E.1 – SUMMARY OF FUTURE DETROIT RIVER CROSSINGS CAPACITY DEFICIENCIES

Crossing	Time Capacity Reached				
	U.S. Road Access	U.S. Border Processing	Bridge/ Tunnel Roadbed	Canadian Border Processing	Canadian Road Access
Ambassador Bridge	Beyond 30 years	5 to 10 years	10 to 15 years	5 to 10 years	5 to 10 years
Detroit-Windsor Tunnel	0 to 5 years	5 to 10 years	30 years	5 to 10 years	5 to 10 years

Given the importance of the Detroit-Windsor trade corridor and the substantial number of people dependent upon safe, reliable access across the Detroit River on a daily basis, these capacity deficiencies are a serious problem that needs to be corrected. In order to relieve these problems and meet the purpose as defined in Section E.2, the Detroit River International Crossing study has strived to address the following regional transportation and mobility needs:

- Provide new border crossing capacity to meet increased long-term travel demand;
- Improve system connectivity to enhance the continuous flow of people and goods;
- Improve operations and processing capabilities at the border; and
- Provide reasonable and secure crossing options (i.e. network redundancy).

At the present time there is significant economic uncertainty. However, the travel demand forecasts that were completed were based on reasonable assumptions using the most current information available at the time, with extensive review and scrutiny by modeling experts from the Partnership agencies. This forecasting approach addressed future uncertainty through extensive sensitivity analyses, which capture a realistic range in the forecasts. The low growth scenario was intended to reflect much lower levels of demand which could be brought about by a variety of circumstances including low economic growth, currency exchange rates, the Western Hemisphere Travel Initiative, City of Windsor or provincial non-smoking initiatives, fuel prices and other such factors. Similarly, high growth scenarios were tested to determine the upside potential in cross-border demand based on more optimistic, yet reasonable growth assumptions.

Since the traffic forecasts were completed, there have been declines in cross border passenger car traffic. However, truck traffic remained fairly stable between 2001 and 2007 and in fact 2006 represented the peak in commercial vehicle traffic at the Ambassador Bridge. The most recent economic downturn will result in a truck volume decline in 2008. The recent declines in passenger car trips across the border coupled with the current economic downturn would indicate that the volumes are tending towards the lower range of the forecasts. It is prudent to assume that even considering some industry restructuring that Canadian / U.S. trade will ultimately recover and grow. Assuming only a very modest economic recovery over the long-term, the existing crossing facilities will reach their practical capacity within the planning horizon.

ALTERNATIVES TO THE UNDERTAKING

A number of planning alternatives (Alternatives to the Undertaking) were considered and assessed to address the identified transportation problems, as well as meeting the purpose of the undertaking. The alternatives that were considered included the following:

- Do Nothing;
- Improvements to border processing;
- Transportation demand management;
- Transportation systems management;
- New and/or improved rail alternatives including a new and/or expanded international rail crossing;
- New and/or improved transit services;
- New and/or improved marine services;
- New and/or improved road alternatives with a new or expanded international road crossing; and
- Combinations of the above.

The assessment of transportation planning alternatives provided an opportunity to examine fundamentally different ways of addressing transportation problems. In recognition of these fundamental differences among the planning alternatives, it was considered appropriate to assess the effectiveness of each type of alternative in addressing the problems and taking advantage of opportunities at a functional level.

The Alternatives to the Undertaking were assessed and evaluated using broad factors to determine which alternatives were practical and feasible from a transportation, environmental and border processing perspective. The evaluation factors were established to achieve the objectives of the study and were consistent with environmental approval processes in both Canada and the U.S. The factors developed for evaluating the transportation alternatives were as follows:

- Transportation Network Improvement;
- Transportation Opportunities;
- Governmental Land Use, Transportation Planning and Tourism Objectives;
- Border Processing;
- Environmental Feasibility; and,
- Technical Feasibility.

Based on the assessment and evaluation, the only transportation planning alternative that can meet the identified needs is one which 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 planning and tourism objectives. This alternative has a comparable degree of environmental and technical feasibility as the other alternatives on the basis that impacts could be avoided, reduced or mitigated to the extent possible as with other infrastructure improvement alternatives. It is also recognized that improved and expanded border processing capacity is an integral component of this solution.

In terms of addressing transportation network requirements for people and goods movement, a multi-modal approach provides choice for travelers and offers viable mechanisms to reduce auto use. Although alternatives for travel demand management, rail, transit, ferries, etc. cannot independently address the diverse user needs, sufficiently alleviate traffic congestion on the transportation network nor effectively provide reasonable options for maintaining the movement of people and goods in cases of disruptions at any of the existing border crossings, these alternatives should be included as part a multi-modal strategy for the medium and long-term needs of the transportation network in the area.

E.8 Illustrative Alternatives for Crossings, Plazas and Access Roads

Based on the selection of New and/or Improved Roads with a New or Improved Crossing as the recommended Alternative to the Undertaking, illustrative alternatives were developed within the Preliminary Analysis Area. A detailed summary of the approach used in the generation and evaluation is provided in Chapter 6. The term "illustrative" is used to describe the conceptual, "long list" alternatives determined within the PAA. In general, the alternatives to be considered for a new or expanded border crossing were categorized into the following components:

- A new or expanded crossing (tunnel or bridge);
- Plazas connected to the crossing (either directly or through a secure connection) for border agencies to inspect inbound and outbound drivers, passengers, vehicles and freight. These inspection plazas may also include other functions, such as toll collection and crossing maintenance facilities, and other border related services such as duty free shopping, brokerage offices, and other agency offices; and
- Controlled access roadways connecting the crossing plazas to the provincial or interstate freeway system.

The following guiding principles were developed to assist in the development of the illustrative crossing, inspection plaza and access road alternatives:

- Utilize existing infrastructure to the maximum extent - taking advantage of existing transportation and other linear corridors may improve usage of the transportation network and/or reduce impacts to other land uses;
- Seek areas or land uses that are compatible with transportation corridors and facilities, or areas in transition to compatible land uses - compatible areas are those that are considered to be less impacted by new crossing, inspection plaza and access road alignments than other land uses (e.g. industrial areas may be considered to be less impacted be a new inspection plaza than residential areas). Areas in transition allow the opportunity to incorporate new access road alignments in the area planning;
- Minimize impacts to significant natural features - such features are usually regionally unique, protected by legislation/designations and may preclude a transportation facility; and
- Minimize impacts to city centres - such areas generally provide a focus for cultural, social and economic activities.

The guiding principles reflect the objectives of the Partnership to address transportation needs, take advantage of transportation opportunities, and avoid generating unacceptable impacts to the extent possible.

PLAZA ALTERNATIVES

The identification of possible sites for inspection plazas was the initial step in the development of illustrative alternatives. This was due to the relatively large associated property requirement and specific siting requirements unique to their purpose. The crossing alternatives and road alternatives were developed subsequently, based on the alternative plaza locations.

On the basis of the guiding principles and the siting considerations identified by the study team, thirteen (13) potential plaza locations were identified on the Canadian side of the river. The identification of plaza locations on the Canadian side was coordinated with the identification of plaza locations on the US side. The plaza sites were divided into three geographical categories – east plaza sites, central plaza sites, and south plaza sites.

CROSSING ALTERNATIVES

Once the plaza locations were identified on the Canadian and US side of the Detroit River, the study team developed international crossing alternatives (bridge and tunnel options were considered) to connect the plaza sites. New crossing alternatives were developed based on providing six lanes over/under the Detroit River. A total of 15 potential crossing locations were identified. These alternatives were grouped into four geographical categories – area of Fighting Island, area of Zug Island, Area of Ambassador Bridge, and Area of Belle Isle.

ACCESS ROAD ALTERNATIVES

Illustrative access road alternatives were developed connecting Highway 401 in the Windsor-Essex County area to the alternative plaza locations. The development of access road alternatives considered significant features relating to the natural, social and cultural environment. Route optimization software (Quantm) was also used to aid in the generation of illustrative access road alternatives to verify the range of alternatives identified by the study team. These access road alternatives were divided into three geographic categories – southern alternatives, central alternatives, and eastern alternatives.

EVALUATION OF ILLUSTRATIVE ALTERNATIVES

The illustrative crossing, inspection plaza and access road alternatives were evaluated following a multi-stage process. Initially, the illustrative alternatives were assessed and evaluated separately on the Canadian and U.S. sides. The results of the U.S. and Canadian analyses were then compiled for an end-to-end assessment of illustrative crossing, plaza and access road alternatives for connecting Highway 401 in Ontario to the interstate freeway system in Michigan. The evaluation of illustrative alternatives was based on consideration of the seven key evaluation factors discussed in Section E.2. Although the same seven performance factors were used by both the Canadian and U.S. study teams, certain unique criteria and measures were employed by the U.S. study team that reflect the requirements and conditions on the U.S. side of the Detroit River.

The reasoned argument method was the primary evaluation method employed to select the recommended illustrative alternatives. This method highlights the differences in net impacts associated with the various alternatives. Based on these differences, the advantages and disadvantages of each alternative are identified. The relative importance of the impacts are examined to provide a clear rationale for the selection of a preferred alternative.

The arithmetic evaluation was the secondary method employed for this study. This method incorporates numeric values for both the level of importance of each environmental attribute (referred to as the weight) and the magnitude of the impact or benefit associated with an alternative (referred to as the score). The weight is multiplied by the score to obtain a total weighted score. The totals for each alternative are compared to determine the preferred alternative. The Arithmetic Method also allows for sensitivity testing as numerous weighting scenarios can be developed.

The evaluation of illustrative alternatives by the Canadian study team determined preferred alternatives for the southern, central and eastern access road alternatives. An evaluation of the preferred alternatives from each of the three geographic categories was then completed, based on consideration of the seven key evaluation factors.

The evaluation revealed that the southern alternatives generally have lower impacts to community features, which is a primary objective of this project, and have comparable costs and constructability risks to the other alternatives. However, the southern alternatives do not provide adequate benefits to existing crossings and key connecting roadways which operate over capacity during peak travel periods, and therefore do not provide an improvement to regional mobility in the long term.

Although the eastern access road alternatives were generally found to provide adequate improvements to regional mobility, they have higher community impacts than the central alternatives and were therefore not recommended for continued analysis.

The central access road alternatives represented a reasonable balance between benefits to regional mobility and community impacts, and were therefore recommended for continued analysis. These access road alternatives initially corresponded to four crossing and five plaza alternatives.

AREA OF CONTINUED ANALYSIS

Following further review and assessment of the illustrative plaza and crossing alternatives within the central access road corridor, including an end-to-end assessment of illustrative crossing, plaza and access road alternatives for connecting Highway 401 in Ontario to the interstate freeway system in Michigan, an Area of Continued Analysis (ACA) was identified for possible practical crossing, plaza and access road alternatives. These practical alternatives represented refinements of crossing alternatives X10 and X11, as well as possible alternatives connecting to the Ambassador Bridge Gateway and expanded plaza area on the U.S. side. The ACA area extended from Zug Island to the vicinity of the Ambassador Bridge on the U.S. side, and from Broadway Avenue to Brock Street in Sandwich Towne on the Canadian side.

On the Canadian side, the ACA encompassed illustrative plazas CC2, CC3 and CC7 and was defined to provide sufficient area to enable a range of access road alignments and crossing alignments to be developed for continued analysis. The area was also defined to accommodate refinement to the locations and alignments of crossing, plaza and access road alignments in the Ojibway Industrial Park area.

The residential community of Sandwich, Black Oak/Ojibway protected natural areas served to limit the extent of the Area of Continued Analysis on the Canadian side. The area also included the Huron Church/Talbot Road corridor and the Highway 401 corridor from Highway 3 to Dougall Parkway.

On the US side, the ACA encompassed the area of southwest Detroit between the I-75 corridor and the riverfront between Zug Island and the Ambassador Bridge.

Within the ACA, the study team generated, assessed and evaluated a number of practical crossing, plaza, and access road alternatives. A detailed description of the existing conditions of the ACA is included in Chapter 7, including a description and inventory of existing conditions for the following areas: air quality; social impact assessment; economic assessment; land use; archaeological resources; cultural resources; natural heritage; acoustics and vibration; waste and waste management; and the existing transportation network.

E.9 Practical Alternatives for Crossings, Plazas and Access Roads

The term "practical alternative" is used to describe the more refined alternatives that emerged from the assessment and evaluation of the broader level conceptual alternatives, i.e. the illustrative alternatives. This terminology was adopted on both sides of the border to promote the coordinated approach between the two EA processes. The practical alternatives that were generated and evaluated were located within the Area of Continued Analysis determined following the illustrative alternatives stage.

As outlined in Chapter 8 of this EA Report, the generation of practical plaza and crossing alternatives was based on a number of technical objectives derived from consultation with agencies, municipalities, specialists (including traffic, highway design, foundations and structural specialists), and the public. A total of three practical crossing alternatives and four practical plaza alternatives were developed on the basis of this generation criteria, as follows:

CROSSING ALTERNATIVES

- Practical Crossing Alternative A (Crossing 'A') is within the X-10 corridor. Due to the distance required to touch-down at-grade, the crossing connects only to Practical Plaza Alternative A (Plaza 'A') on the Canadian side of the river.
- Practical Crossing Alternative B ('Crossing B') is the other crossing within the X-10 corridor and connects to the south end of the plaza area on the U.S. side of the river. The crossing connects to Plaza A and Plaza B1 on the Canadian side of the river.
- Practical Crossing Alternative C ('Crossing C') is within the X-11 corridor. This alternative features four distinct crossing-plaza combinations, including two ways of connecting to Plaza A (via the Brighton Beach area or parallel to the Ojibway Parkway), a connection to Plaza B, and a connection to Plaza C.

PLAZA ALTERNATIVES

- Practical Plaza Alternative A is bounded by Ojibway Parkway, E.C. Row Expressway, Malden Road and Armanda Road/Broadway Avenue. Plaza A connects to all three crossing alternatives and is located approximately 2.0 km to 3.5 km from the Detroit River (corresponding to the approaches via Crossing A and Crossing C, respectively).

- Practical Plaza Alternative B connects to Crossing C and is located approximately 2.0 km from the Detroit River via the approach to Crossing C, within the Brighton Beach Industrial Area.
- Practical Plaza Alternative B1 is a variation of Plaza B and connects to Crossing B. This site is located approximately 1.0 km from the Detroit River via the approach to Crossing B. The plaza is also within the Brighton Beach Industrial Area, bounded by the Detroit River, Chappus Street, Ojibway Parkway and Broadway Street.
- Practical Plaza Alternative C connects to Crossing C and is located approximately 1.3 km from the Detroit River via the approach to Crossing C. The plaza is sited directly adjacent to the Detroit River shoreline and is bounded by Prospect Avenue, Sandwich Street and Chappus Street and the Brighton Beach industrial area to the south.

EVALUATION OF PRACTICAL CROSSING AND PLAZA ALTERNATIVES

As with the evaluation of illustrative alternatives and in accordance with the evaluation process developed for this study, the assessment and evaluation of these practical alternatives was undertaken following both a reasoned argument method, and an arithmetic method (weighted scoring). The reasoned argument method was the primary method, while the arithmetic method was the secondary method, which served as a basis of comparison for the evaluation findings.

For the purposes of the assessment, the practical plaza and crossing alternatives were organized by crossing corridor to determine the best plaza/crossing combination by corridor. The results of the evaluations identified that Crossing A-Plaza A (Crossing X-10A), Crossing B-Plaza B1 (Crossing X-10B) and Crossing C-Plaza B (Crossing X-11C) were the plaza-crossing alternatives that would be considered on the Canadian side.

Following the identification of the preferred plaza-crossing alternatives for each crossing corridor, the three alternatives were evaluated and assessed against one another based on the seven key evaluation factors. Overall, Crossing X-10B was identified as the preferred alternative in three of the six factor areas in which a preference could be expressed. Both the X-10A and X-11C alternatives were identified as least preferred in two factor areas. Crossing X-10B was not identified as the least preferred in any factor area.

As such, Crossing X-10B and Plaza B1 were selected as the Technically and Environmentally Preferred crossing and plaza.

ACCESS ROAD ALTERNATIVES

The generation of practical access road alternatives was based on the premise that it would extend from Highway 401 at North Talbot Road to the new plaza. Based on the mobility needs of the project, as well as community/municipal consultation, the following objectives guided the generation of practical alternatives in the Huron Church Road/Highway 3 corridor.

- Separate international and local traffic;
- Maintain the local and regional function of the Huron Church Road/Highway 3 corridor;
- Keep the existing traffic within the existing corridor during construction to minimize traffic infiltration onto other city streets; and
- Minimize the direct and indirect property impacts.

The study team considered four basic operational concepts:

- Integrated freeway with interchanges. Service roads provided, as needed, to maintain local access and circulation;
- Separate freeway paralleled by one-way service roads;
- Separate freeway paralleled by existing Huron Church Road/Highway 3;
- Tunnel below a rebuilt Huron Church Road/Highway 3 corridor.

The study team concluded that Concept 1 (an integrated freeway with local service roads only as required) would not adequately achieve the above-noted objectives. The remaining three concepts were then developed into five cross-section alternatives that better met the objectives. On this basis, the study team developed the following five initial access road alternatives between Highway 3 and the Malden Road area:

- Alternative 1A – At-grade six-lane freeway with parallel one-way service roads on either side of the freeway;
- Alternative 1B – Below-grade six-lane freeway with parallel one-way service roads on either side of the freeway;
- Alternative 2A – At-grade six-lane freeway with parallel service roads on one side of the freeway;
- Alternative 2B – Below-grade six-lane freeway with parallel service roads on one side of the freeway;
- Alternative 3 – Six lane freeway in a cut and cover tunnel with service roads on the surface.

As the findings of the technical work became clearer during the technical analysis of the five alternatives and in response to comments and feedback received through various consultation activities, the study team developed a modified access road alternative based on the below-grade and tunnel alternatives. This new alternative was identified as the Parkway and featured a below grade freeway with 10 tunnel sections ranging in length from 120 m to 240 m, strategically placed to maintain existing access across and along the corridor, as well to provide new connections for roads, trails and wildlife linkages. The Parkway alternative was initially presented for public review and comment at the fifth round of PIOHs in August 2007.

In response to the Parkway, the City of Windsor released an access road concept entitled GreenLinkWindsor. Like The Parkway, the GreenLinkWindsor concept proposed a below-grade freeway with tunnel sections, a separate service road for local traffic, a wider right-of-way with buffer areas between the corridor and adjacent residential areas, and a continuous recreational trail system along the corridor.

The study team carefully considered the GreenLinkWindsor concept, as well as the comments provided by other stakeholders, including other municipalities, government agencies and the public. The comments received were used to refine The Parkway. Based on this input, and on further deliberations by the study team, a number of refinements were made to The Parkway alternative in the period following the August 2007 PIOHs. These refinements were adopted to reduce the effects of The Parkway alternative and to improve the transportation benefits and community benefits to the extent practical. The refined Parkway alternative was subsequently re-named as The Windsor-Essex Parkway.

EVALUATION OF PRACTICAL ACCESS ROAD ALTERNATIVES

The five initial access road alternatives and The Windsor-Essex Parkway alternative were assessed and evaluated using the same approach undertaken for the evaluation of practical crossing and plaza alternatives, with a focus on the seven key evaluation factors. The Windsor-Essex Parkway was identified as preferred over the other access road alternatives in four of the seven key factor areas considered. In two of the seven factor areas, no clear preference was identified. In the area of Cost and Constructability, the at-grade Alternative 2A was identified as the preferred alternative. The Windsor-Essex Parkway alternative was the second-most expensive alternative and was identified as having greater cost and constructability risks than the other alternatives except for the tunnel alternative.

Overall, The Windsor-Essex Parkway was considered to provide the best balance of impacts and benefits. As such, The Windsor-Essex Parkway was selected as the Technically and Environmentally Preferred access road alternative.

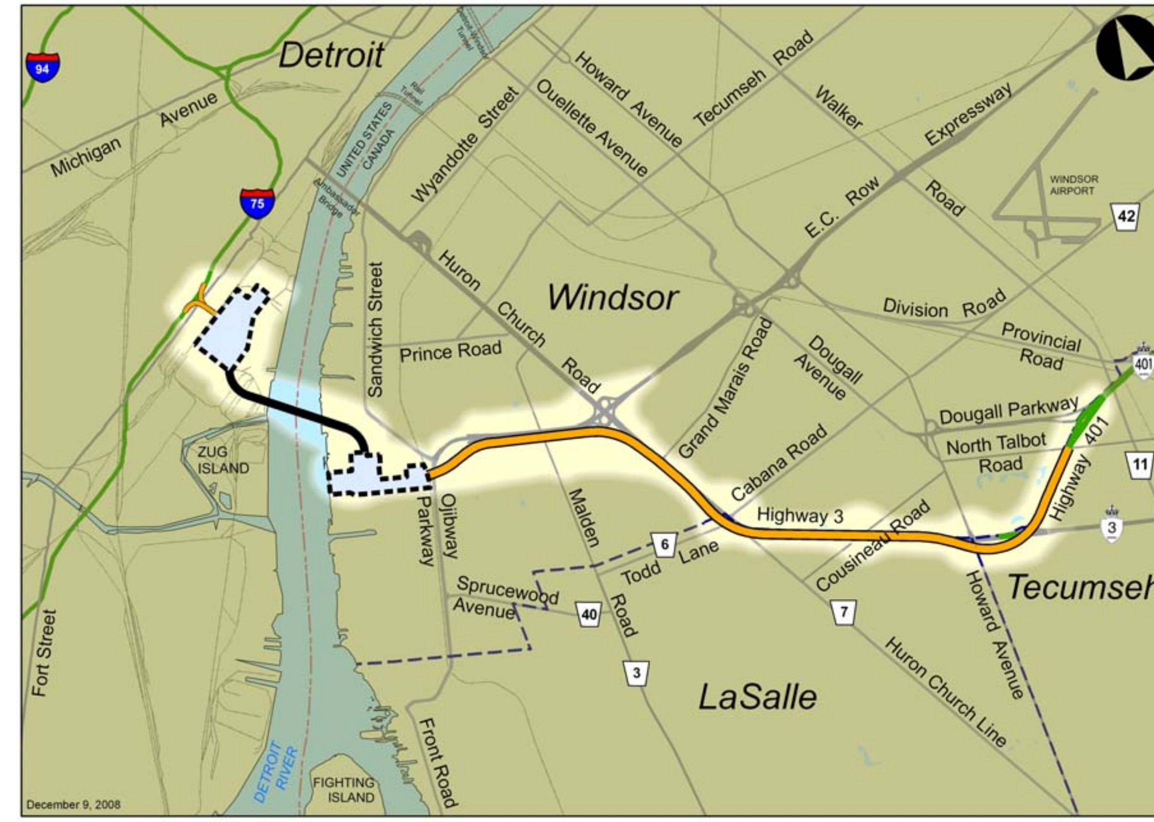
E.10 Description of the Recommended Plan

Subsequent to the selection and presentation of The Windsor-Essex Parkway, Plaza B1 and Crossing X-10B as the components of the TEPA, several refinements were developed based on further technical analysis and stakeholder consultation, with the objectives of further enhancing the benefits or mitigating the effects of the TEPA.

The combination of the TEPA and associated refinements along with the proposed mitigation measures are referred to collectively as the Recommended Plan.

The location of the Recommended Plan is illustrated schematically in Exhibit E.1. Key elements of the Recommended Plan are outlined below, with additional information provided in Chapter 9.

EXHIBIT E.1 – RECOMMENDED PLAN



THE WINDSOR-ESSEX PARKWAY

The Windsor-Essex Parkway is the recommended access road component of the new border transportation system that will provide a direct route connecting Highway 401 in Windsor, Ontario to Interstate 75 in Detroit, Michigan. The Windsor-Essex Parkway is planned as a six-lane urban freeway with 11 tunnels and service roads. It allows long-distance international traffic to travel unimpeded by traffic signals to a new inspection plaza and river crossing while improving community linkages and providing extensive new trails, green space and other recreational opportunities. The Windsor-Essex Parkway includes:

- Over 300 acres of parkland;
- 20 km of recreational trails;
- 11 tunnels covering approximately 1.8 km of freeway;
- New 4-lane service roads;
- Improvements to the movement of traffic to and from the border;
- Stormwater management ponds in selected locations;
- Noise mitigation measures;
- Full illumination along the freeway; and
- Conventional illumination along service roads, side roads, and sections of the trail system.

From the inspection plaza easterly approximately 1 km to where the freeway portion of The Windsor-Essex Parkway approaches E.C. Row Expressway approximately 0.3 km east of Matchette Road, the proposed freeway is grade separated over the Essex Terminal Railway, Ojibway Parkway and Matchette Road and is situated south of the existing E.C. Row Expressway corridor.

From approximately 0.3 km east of Matchette Road to approximately 0.4 km west of Huron Church Road, the freeway portion of The Windsor-Essex Parkway and E.C. Row Expressway are integrated into a core-collector system. In this section, the eastbound and westbound lanes of E.C. Row Expressway diverge and the freeway portion of The Windsor-Essex Parkway is aligned between them.

From north of Bethlehem Avenue/Labelle Street to approximately 1.0 km east of Howard Avenue, the proposed freeway is below-grade, predominantly in open-cut with grass side slopes. Retaining walls, either partial-height or full-height, are required in localized areas where necessary.

Within this section, the location of the service road relative to the freeway varies. From north of Bethlehem Avenue/Labelle Street to east of Huron Church Line the proposed service road is adjacent to the proposed freeway on the north side. From east of Huron Church Line to approximately 0.7 km west of Howard Avenue, the proposed service road is situated on the south side of the proposed freeway. From 0.7 km west of Howard Avenue to approximately 0.3 km east of Howard Avenue, the proposed service road is once again located adjacent to the proposed freeway on the north side. East of this location, no service road is proposed.

From approximately 1.0 km east of Howard Avenue to North Talbot Road, The Windsor-Essex Parkway is predominantly at existing grade. There is no service road proposed through this section.

Interchanges and access points between the proposed freeway, proposed service road and side roads are included in The Windsor-Essex Parkway design concept to facilitate mobility and local access in the corridor and provide the opportunity for border-bound motorists to choose a border crossing.

A modern roundabout is proposed for the intersection of realigned Highway 3, the proposed Howard Avenue diversion and the proposed freeway on and off-ramps east of Howard Avenue.

A potential carpool lot site has been identified on the east side of the Howard Avenue diversion, south of the proposed roundabout at realigned Highway 3. Further design stages of the project will include additional study as to the layout and feasibility of providing this carpool lot.

PLAZA B1

On the Canadian side, plaza alternatives were developed considering the need to provide improved border processing facilities to meet future travel demand and security requirements at the border crossing. All plaza alternatives considered were much larger than the current plazas at the Ambassador Bridge and the Detroit-Windsor Tunnel. The new plaza, Plaza B1 will be designed to serve the future (2035) travel demands at the border crossing. Initial construction of the plaza may not include the fully developed plaza, as the plaza may be developed in stages. The initial construction of the plaza will be such that future expansion will be possible by way of constructing additional inspection booths or tolls.

Plaza B1 was developed in consultation with Canada Border Services Agency and provides sufficient areas for primary inspection lane booths and on-site secondary inspection of people and goods. The plaza alternative also allows for dedicated NEXUS and FAST lanes and provides for a substantial improvement of border crossing processing capabilities.

Canada Border Services Agency has reviewed and tested functional layouts of the plaza alternatives to confirm the suitability under future traffic conditions. Plaza B1 includes:

- Total plaza area of 137 acres (55 hectares);
- Total of 29 inbound inspection lanes;
- Total of 103 secondary inspection parking spaces for commercial vehicles;
- Nine toll collection lanes; and
- Stormwater management features to control quality and quantity of runoff water.

The final design of the plaza will incorporate a local access road along the edge of the plaza that will provide continuity for traffic between Sandwich Street and Broadway Street as well as access for plaza employees. Local access will also be provided at the north end of the plaza from a realigned Sandwich Street to the Brighton Beach Power Station and Keith Transformer Station.

CROSSING X-10B

The new Detroit River crossing is being developed as a six-lane bridge providing three Canada-bound lanes and three US-bound lanes. The capacity of the new crossing, Crossing X-10B, will accommodate future travel demand, both in terms of meeting capacity and providing flexibility to stream traffic on the crossing to improve border process (e.g. designated NEXUS/FAST lane).

The new river crossing will be constructed to link inspection plazas on the Canadian and US sides of the Detroit River, and will be a key component of the new end-to-end transportation system that will link existing Highway 401 to the US Interstate system. The crossing will consist of both a main bridge that will span the width of the Detroit River, and approaches to the main bridge constructed on piers that will connect to plazas in both Canada and the US. The main bridge and approaches will be constructed on the Crossing X-10B alignment.

Two bridge types are being considered for the new crossing: a cable-stayed bridge and a suspension bridge. Selection of the bridge type will be made during subsequent design phases of this project.

E.11 Environmental Effects and Mitigation of the Recommended Plan

Impacts on environmental features resulting from the Technically and Environmentally Preferred Alternative (TEPA), along with proposed mitigation measures of the Recommended Plan, are described in Chapter 10 of this EA Report. Technical reports addressing the mitigation for the Recommended Plan have been prepared as part of this study to address the environmental and engineering factors considered as part of this study, and are available as supporting documents. The key factors that were considered included: Air Quality; Human Health Risk; Social Impact; Noise and Vibration; Natural Heritage; Cultural Heritage; Archaeological Assessment; Economic Impact; Waste and Waste Management; and Existing and Planned Land Use.

It should be noted that all of the environmental factors, with the exception of the Human Health Risk Assessment, have been used at every evaluative stage leading to the development of the TEPA. The Human Health Risk Assessment was conducted for the Recommended Plan. For each factor, including the Human Health Risk Assessment, the analysis of the environmental effects was made for both the future "No-Build" case and for the Recommended Plan. The methodologies for the various investigations are consistent with the work plans that were reviewed by appropriate agencies and interested stakeholders. This approach is also consistent with the approved *OEA Terms of Reference (TOR)*, May 2, 2004.

A brief summary of general environmental effects of the Recommended Plan and proposed mitigation measures for a number of the key disciplines is provided below. Additional details of these effects and mitigation measures are provided in **Table 10.5**, and in the various technical reports prepared for each discipline.

AIR QUALITY

- In general, potential impacts from The Windsor-Essex Parkway are small and limited to areas in close proximity to the road. The greatest benefit of The Windsor-Essex Parkway will be from the reduction in truck idling along the traffic corridor. Overall the implementation of The Windsor-Essex Parkway will mitigate future transportation related air quality impacts within the study area over the future "No-Build" alternative because it provides a wide right-of-way and improvements in traffic flow, by eliminating stop-and-go conditions caused by the traffic signals that exist in the Highway 3/ Huron Church Road corridor today.
- Air quality in the vicinity of the proposed plaza will be impacted relative to future "No-Build" within approximately 250 m from the Plaza property boundary by 2035. The highest impacts will likely occur within 50 to 100 m of the boundary. Given the location of the plaza in an industrial area, impacts to residential areas are minimized.
- Various mitigation measures will be employed during construction to minimize adverse air quality effects such as dust impacts through the use of proper controls.

HUMAN HEALTH RISK ASSESSMENT

- Predicted concentrations of gaseous air pollutants, fine particulate matter, and Volatile Organic Compounds for the future "No-Build" and the Recommended Plan scenarios are not much different from each other and background. Thus, the Recommended Plan does not result in an increased health risk over the future "No-Build" or background scenarios. This conclusion supports the findings of the Air Quality Impact Assessment.

NOISE AND VIBRATION

- Through the use of best practices, noise can be mitigated during the construction and operating phase.
- With a 5 m high barrier in place, the proposed project is predicted to result in no to a marginal noise impact for The Windsor-Essex Parkway It should also be noted that for many receptors, especially along the north side of the Windsor-Essex Parkway, a decrease in noise levels compared to future "No-Build" noise levels was predicted.
- For Plaza B1, a potential noise impact was identified for receptors in the Ojibway Parkway to Malden Road areas that are in the vicinity of the proposed approach roadway. However, the receptor sound levels can be reduced to within 5 dB above the future "No-Build" sound levels with a 5 m high acoustic barrier installed on the proposed approach roadway. Due to the relatively large distance between Crossing B and the closest receptors in Sandwich Towne, no noise mitigation measures are proposed for the Crossing.
- The Windsor-Essex Parkway is not expected to cause vibrations in the 50 mm/sec range; therefore, no structural damage is anticipated from vehicular traffic.

PROTECTION OF COMMUNITY AND NEIGHBOURHOOD CHARACTERISTICS

- It is recognized that the project will impact the adjacent neighbourhood communities to varying degrees. Through continued consultation with those impacted, residents can contribute to the management of the changes that affect them and their quality of life. Similarly, while the displacement of businesses along the Highway 3/Huron Church Road corridor that serve the local neighbourhoods will potentially cause a change in social patterns and community function, the displacement of businesses along the proposed access road will have limited overall economic impact. Despite the immediate loss of revenue and employment, the loss of businesses will be offset by gains in other businesses, or the displaced businesses will relocate to other areas.

ECONOMIC IMPACTS

- Although the Recommended Plan will displace a number of businesses, displaced businesses are offered fair market value for their businesses, which will provide them an opportunity to relocate if they so choose. For businesses that are not physically displaced but are otherwise affected, signage will be considered at certain intersections/interchanges, as policies permit, to make motorists aware of businesses/business clusters. Efforts will also be made during the construction phase to ensure access is maintained to operating businesses.

EXISTING AND PLANNED LAND USE

- The Windsor-Essex Parkway with its provision for buffer space adjacent to the corridor, and the opportunities for various recreational land uses such as trails and greenspace is consistent with local municipal planning policies. Potential impacts result from land use being changed from either residential, commercial, open space, industrial, or vacant to a transportation-related use.

ARCHAEOLOGICAL RESOURCES

- Archaeological resources have been identified within the Recommended Plan. The exact nature, extent and significance of these resources will not be known until the completion of the Stage 2 and 3 assessments within the Recommended Plan. Upon completion of Stage 2 & 3 assessment, determination of the extent of impacts to significant archaeological resources can be made. Where significant archaeological resources are encountered, mitigation will be required. This will entail either avoidance or mitigative excavation.
- Assessments have been completed on areas exhibiting the greatest archaeological potential, therefore further significant archaeological finds are not anticipated.

BUILT HERITAGE RESOURCES

- Without mitigation, there is a potential for the loss of six heritage features with cultural heritage value or interest within the Recommended Plan. A Built Heritage Resource Documentation Report will be required for all six Built Heritage Features. Where relocation is recommended, the City of Windsor Heritage Committee should be consulted.

NATURAL ENVIRONMENT

- The construction of the Recommended Plan will result in the displacement of wildlife and wildlife habitat and potential mortality to species at risk, and portions of provincially significant wildlife habitat may be lost. However, habitat restoration and enhancement will be implemented to create new and higher quality habitat. Areas of habitat to be retained will be clearly marked in the field and protected from construction activities. Wildlife salvage will be carried out prior to clearing/grubbing to reduce the risk of wildlife mortality. Restoration and enhancement of habitat located along The Windsor-Essex Parkway will be used at strategic locations to reconnect significant wildlife habitat located on both sides of The Windsor-Essex Parkway.
- A total of approximately 131.7 ha of vegetation communities will be removed to construct the Recommended Plan. At the same time, the design of The Windsor-Essex Parkway affords the opportunity to establish approximately 100 ha of green space using restoration and enhancement approaches. In addition, there are opportunities to partner in enhancements to other lands in public ownership adds another opportunity for overall benefits.
- The loss of fish habitat through enclosure or physical destruction will likely occur in 10 of the 15 watercourses/drains within the study area (excluding the Detroit River). However, culverts, designed using fish-friendly methods, and channels, designed using natural channel design principles, should not form barriers to fish passage during operations.
- Riparian vegetation should be maintained where possible. A fish habitat compensation plan will be prepared during later design stages to ensure no net loss of the productive capacity of fish habitat.

URBAN DESIGN AND LANDSCAPE PLAN

- The urban design and aesthetic plan will address the visual aspects of the form, finish and materials used in the landscape and open spaces as well as in proposed structures (e.g. bridges, abutments, retaining walls, noise attenuation and safety barriers).
- Mitigation measures to reduce or improve visual and landscape impacts will include the development of clear urban design and aesthetic guidelines to guide all aspects of future design; the use of landforming and vegetation strategies to improve views, aesthetics, ecological function and screening; and the inclusion of a multi-use trail system and pedestrian-accessible open space within the Recommended Plan. These mitigation measures will improve the visual character, aesthetic presence and landscape impact of the Recommended Plan. The result of the landscape and visual impact mitigation will be a landscape that is unified, green, connected, integrated, and functions as a culturally significant gateway.

E.12 Commitments to Consultation, Compliance Monitoring and Permits/Approvals

The Ministry of Transportation (MTO) is committed to maintaining consultation efforts to keep interested parties informed of activities, future design phases and project implementation. In addition, MTO is committed to ensuring that compliance monitoring is conducted of commitments made during the EA and subsequent phases, including necessary permits and approvals.

Consultation plans will generally involve an outline of committed communications with agencies, municipalities, the public, property owners, and other stakeholders as deemed necessary. Consultation plans will also involve an outline of committed communications with First Nations. These consultation plans will be made available for public input at the outset of the future design phase to ensure they outline appropriate commitments made during the EA including changes as described in the amending procedure (refer to Chapter A). Components that outline specific consultation requirements will be consistent with commitments made throughout the EA.

During future design phases, commitments made in the EA regarding design works and environmental analysis and impact assessment; development and incorporation of mitigation measures; obtaining of regulatory agency approvals and permits; and consultation with interested and potentially affected stakeholders will be monitored. The monitoring activities will be integrated with the design schedule for each segment to ensure timely verification that the commitments have been met by appropriate design solutions before construction activities commence.

Supporting Documents

The following is a list of supporting documentation that is referenced throughout this Environmental Assessment (EA) Report. These documents are available electronically from the study website as follows: (http://www.partnershipborderstudy.com). Hard copies of the report are available from URS Canada upon request.

1. Detroit River International Crossing Environmental Assessment Terms of Reference (May 2004)
2. Draft Acoustics and Vibration Work Plan (February 2006)
3. Draft Air Quality Work Plan (February 2006)
4. Draft Archaeology Work Plan (February 2006)
5. Draft Cultural Heritage Work Plan (February 2006)
6. Draft Economic Impact Work Plan (October 2006)
7. Draft Natural Heritage Work Plan (February 2006)
8. Draft Social Impact Assessment Work Plan (February 2006)
9. Draft Technical Considerations Work Plan (November 2005)
10. Draft Waste and Waste Management Work Plan (November 2005)
11. PIOH1 Summary Report (July 2005)
12. PIOH2 Summary Report (December 2005)
13. PIOH3 Summary Report (March 2006)
14. PIOH4 Summary Report (January 2007)
15. PIOH5 Summary Report (August 2007)
16. PIOH6 Summary Report (December 2008)
17. PIOH7 Summary Report (December 2008)
18. Transportation Planning and Need Study Report (November 2005)
19. Environmental Overview Paper – Canadian Existing Conditions Volume 1 (June 2005)
20. Environmental Overview Paper – Canadian Existing Conditions Volume 2 (June 2005)
21. Draft Feasible Transportation Alternatives (Alternatives to the Undertaking) Report (February 2006)
22. Travel Demand Forecasts Working Paper (September 2005)
23. Travel Demand Model Update Working Paper (September 2005)
24. Regional and National Economic Impact of Increasing Delay and Delay-Related Costs at the Windsor-Detroit Crossings (August 2005)
25. Generation and Assessment of Illustrative Alternatives Report (November 2005)
26. Generation and Assessment of Practical Alternatives and Selection of the Technically and Environmentally Preferred Alternative - Access Road (December 2008)
27. Generation and Assessment of Practical Alternatives and Selection of the Technically and Environmentally Preferred Alternative – Plaza and Crossing (December 2008)
28. Draft Level 2 Traffic Operations Analysis of Practical Alternatives (December 2008)
29. Draft Practical Alternatives Evaluation Working Paper – Air Quality Impact Assessment (May 2008)
30. Draft Practical Alternatives Evaluation Working Paper – Noise and Vibration Assessment (May 2008)
31. Draft Practical Alternatives Evaluation Working Paper – Social Impact Assessment (April 2008)
32. Assessment of Practical Access Road Alternatives Memorandum – Improve Regional Mobility (May 2008)
33. Draft Practical Alternatives Evaluation Working Paper – Economic Impact (May 2008)
34. Draft Practical Alternatives Evaluation Assessment Report – Existing and Planned Land Use (May 2008)
35. Draft Practical Alternatives Evaluation Working Paper – Archaeology (April 2008)
36. Draft Practical Alternatives Evaluation Working Paper – Cultural Heritage (April 2008)
37. Draft Practical Alternatives Evaluation Working Paper – Natural Heritage (April 2008)
38. Draft Practical Alternatives Evaluation Assessment Report – Stormwater Management Plan (March 2008)
39. Draft Practical Alternatives Evaluation Working Paper – Waste and Waste Management (May 2008)
40. Draft Pavement Engineering for Planning Report – Area of Continued Analysis (March 2008)
41. Draft Practical Alternatives Evaluation - Constructability Report for Plaza & Crossing Alternatives (December 2008)
42. Draft Practical Alternatives Evaluation – Constructability Report for Access Road Alternatives (May 2008)
43. Draft Preliminary Construction Cost Estimate Report for Practical Alternatives (Access Road and Inspection Plaza) (May 2008)
44. Bridge Conceptual Engineering Report (February 2008)
45. Draft Structural Planning Report for Practical Alternatives (May 2008)
46. Air Quality Impact Assessment - Technically and Environmentally Preferred Alternative (December 2008)
47. Air Quality Impact Assessment – The Recommended Plan Analysis – Technical Memorandum (December 2008)
48. Human Health Risk Assessment - Technically and Environmentally Preferred Alternative (December 2008)
49. Human Health Risk Assessment – The Recommended Plan Analysis – Technical Memorandum (December 2008)
50. Social Impact Assessment - Technically and Environmentally Preferred Alternative (December 2008)
51. Social Impact Assessment – The Recommended Plan Analysis – Technical Memorandum (December 2008)
52. Noise & Vibration Impact Assessment - Technically and Environmentally Preferred Alternative (December 2008)
53. Noise & Vibration Impact Assessment – The Recommended Plan Analysis – Technical Memorandum (December 2008)
54. Built Heritage Impact Assessment - Technically and Environmentally Preferred Alternative(December 2008)
55. Built Heritage Impact Assessment – The Recommended Plan Analysis – Technical Memorandum (December 2008)
56. Archaeological Assessment - Technically and Environmentally Preferred Alternative (December 2008)
57. Archaeological Assessment – The Recommended Plan Analysis – Technical Memorandum (December 2008)
58. Natural Heritage Assessment - The Recommended Plan (December 2008)
59. Urban Design and Landscape Planning Report – The Recommended Plan (December 2008)
60. Economic Impact – The Recommended Plan Analysis – Technical Memorandum (December 2008)
61. Existing and Planned Land Use – The Recommended Plan Analysis – Technical Memorandum (December 2008)
62. Waste and Waste Management – The Recommended Plan Analysis – Technical Memorandum (December 2008)
63. Level 3 Traffic Operations Analysis - Technically and Environmentally Preferred Alternative (December 2008)

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Glossary of Terms

20th Century Euro-Canadian – Generally understood to refer to the early 20th century European settlement period in Ontario.

95th percentile queue length – The traffic queue length that is expected to be exceeded only 5% of the time

Area of Continued Analysis (ACA) – Refers to the further defined study area that emerged from the Illustrative Crossing, Plaza, and Access Road Alternatives. The ACA formed the basis for the generation, assessment, and evaluation of the Practical Crossing, Plaza, and Access Road Alternatives.

Access Road – Refers to the proposed freeway facility connecting Highway 401 to the porposed customs plaza.

Agencies – Government bodies responsible for various approvals and/or permits required to undertake various aspects of the project such as property acquisition and construction

Area of Natural and Scientific Interest (ANSI) – Areas of land and water containing natural landscapes or features that have been identified as having life science or earth science values related to protection, scientific study or education.

ARCADY – A software package used for traffic analysis of roundabouts.

Archaic – In Ontario, this refers to the period between approximately 9,500 and 3000 years ago.

Arterial Roads – Roads that are intended to move large volumes of traffic at high speeds. The major distinction between this classification and the freeway classification is in the full control of access

AST – Above ground storage tank.

ATMS – Advanced Traffic Management Systems.

Average Annual Daily Traffic (AADT) – The average 24 hour, two-way traffic for the period January 1st to December 31st.

Back Slope – In a cross-section of the roadway, the back slope is the slope between the drainage channel (ditch) and the natural ground.

Built Heritage Features – Individual buildings or structures that may be associated with a variety of human activities, such as historical settlement and patterns of architectural development.

CANAAG – Canadian Agencies Advisory Group. A group composed of representatives from federal and provincial agencies with an interest in the project. Consists of agencies involved in the review and approval of the OEAA and CEAA Report.

Carolinian Canada - A non-profit coalition of more than 40 government and non-government conservation groups and any individuals who encourage the protection of remaining natural areas in the Carolinian region.

Community Consultation Group (CCG): The study team solicited membership from the public, representing a wide variety of backgrounds and interests to join the CCG. Everyone who asked to be involved was included in the group. Participants volunteered their time to meet with the team on a regular basis, learn about the project, and share their ideas and interests.

CEAA – *Canadian Environmental Assessment Act* or Canadian Environmental Assessment Agency.

Closed Circuit Television (CCTV) – A component of an ATMS system consisting of cameras positioned within a tunnel or along a roadway/freeway to monitor roadway operations.

Collector Roads – Roadways that collect traffic from local roads and feed it to arterial roads, or distribute it from arterial roads to local roads.

COOP Advisory Group – Crossing Owners, Operators and Proponents. An advisory group formed by the DRIC study team at the outset of the study.

Crossing - For the purposes of this study, the crossing refers to the proposed bridge over the Detroit River, and its approach structures.

Cross-section – The transverse profile of a road.

Crown – The highest break point of the surface of a roadway in cross-section.

CTC – Canadian Transit Company.

Cul-de-sac – A road open at one end only.

Cultural Heritage Resources – Describes both “cultural landscapes” and “built heritage features”.

Cultural Landscape – Collection of individual built heritage features and other related features that together form environmental features such as farm complexes, roadscapes and nucleated settlements.

Curb and Gutter – A curb has a vertical or a sloping face along the edge of a lane or shoulder that strengthens or protects the edge, or clearly defines the edge. A gutter is a paved shallow waterway provided for carrying surface drainage. Curbs and gutters together control and conduct stormwater and provide delineation for traffic.

Cut Section – A roadway located below natural ground elevation.

Demographic Trends – The characteristics and statistics of human populations.

Design Hour Volume (DHV) – The volume of traffic being designed for, usually the 30th highest hourly volume of the year, or the a.m. or p.m. peak hour volume.

Design Speed – A speed selected for the purposes of design.

DIBC – Detroit International Bridge Company

Drainage Channel (Ditch) – A drainage channel (or ditch) is placed adjacent to an outside lane or shoulder and is intended to control and conduct stormwater runoff. A shallow drainage channel is sometimes referred to as a swale.

DRIC – Detroit River International Crossing

Detroit River Tunnel Partnership (DRTP) – Partnership between two major private enterprises, Canadian Pacific Railway and Borealis Transportation Infrastructure Trust.

Environmental Assessment (EA) – An environmental assessment is a study that assesses the potential environmental effects and benefits of a project or undertaking on the environment.

Environmentally Sensitive Areas (ESA) – Those areas identified by any agency or level of government that contain natural features, perform ecological functions or have cultural, historical or visual amenities that are susceptible to disturbance by human activities and which warrant protection.

Evaluation Factors – Factors used to evaluate alternatives. The seven primary evaluation factors used for this study area were: changes to air quality; protection of neighbourhood and community features; consistency with existing and planned land use; protection of cultural resources; protection of natural environment; improvements to regional mobility; and cost and constructability.

Federal Environmental Assessment Coordinator (FEAC) – The Federal Environmental Assessment Coordinator (FEAC) must ensure that the screening of the project is carried out.

FHWA – United States Federal Highway Administration

Fill Section – A roadway located above the natural ground elevation.

Fore Slope/Side Slope – The slope between the roadway and drainage channel (ditch).

Freeway – A facility that accommodates the movement of large volumes of traffic at high speeds under free-flow conditions.

GDSOH – Geometric Design Standards for Ontario Highways.

Grade/Gradient – The rate of rise or fall of a roadway with respect to the horizontal distance, usually expressed as a percentage.

Guiderail – A longitudinal barrier which may be constructed of concrete, steel beam or of posts and rail.

Historical Settlements – Comprise two or more buildings, usually residences or former stores.

Horizontal Alignment – The configuration of a roadway as seen in plan, consisting of tangents, circular curves, and spirals or transition curves.

Environmental Assessment (EA) – An environmental assessment for an undertaking to which the *Ontario Environmental Assessment Act* applies, and which requires formal review and approval under the Act.

Illustrative Alternatives – The term “illustrative” is used to describe the conceptual or “long list” of alternatives.

Interchange – A grade-separated intersection with one or more turning roadways (ramps) for travel between the through roads.

Intersection (At-Grade) – The general area where two or more roads join or cross, within which are included the roadway and roadside facilities for traffic movements.

Lane/Traffic Lane – A part of the travelled way intended for the movement of a single line of vehicles.

Level of Service (LOS) – A measure of traffic operations at an intersection or along a freeway or local road. A LOS evaluation uses a six-letter grade scale (A to F) to rank the overall traffic handling ability of an intersection or a network based on delay per vehicle. LOS A indicates excellent traffic operations with minimal delays, while LOS F represents failing conditions with long delays. Levels of service E and F are generally considered undesirable.

Local Road – Local facilities that are normally short distance and emphasize the land access function.

Median – The area that laterally separates traffic lanes carrying traffic in opposite directions.

Median Barrier – A longitudinal barrier placed in the median to prevent a vehicle from crossing the median and encountering oncoming traffic or to protect a vehicle from a fixed object in the median.

Municipal Advisory Group (MAG) – An advisory group formed by the DRIC study team at the outset of the study.

MDOT – Michigan Department of Transportation

MES – Municipal Emergency Services

Mitigation – The elimination, reduction or control of the adverse environmental effects of the project.

MNR – Ontario Ministry of Natural Resources

MOE – Ontario Ministry of the Environment

MTO – Ontario Ministry of Transportation

Navigation Envelope – The vertical and horizontal clearance provided for marine traffic between a waterway and bridge or other structure.

NEPA – United States *National Environmental Policy Act*

OEAA – *Ontario Environmental Assessment Act*

OEPA – *Ontario Environmental Protection Act*

Official Plan (OP) – A municipal planning document that sets out general policies for current and future land use for the entire municipality.

Overpass – A grade separation in which the major road passes over an intersecting road or railway.

Preliminary Analysis Area (PAA) – Refers to the originally defined broad study area that formed the basis for the generation, assessment and evaluation of the illustrative crossing, plaza, and access road alternatives.

PIOH - Public Information Open House. Events where the project is presented in an open house, drop-in style format, with no formal presentation. Members of the public can meet one-on-one with the study team members.

Plaza - A customs plaza consisting of numerous lanes and kiosks through which all international traffic must pass. Can include inspections services and toll collection.

Practical Alternatives –The term "practical alternative" is used to describe the more refined alternatives that emerge from the assessment and evaluation of the broader level illustrative alternatives.

Private Sector Advisory Group (PSAG) – A bi-national consultation group formed by the DRIC study team at the outset of the study.

Prescribed Authority (PA) – The planning approval authority that the *Planning Act* assigns directly to a municipality, named in the regulation.

Proposed Freeway – The freeway portion of The Windsor-Essex Parkway

Proposed Service Road – The service road portion of The Windsor-Essex Parkway

Provincially Significant Wetland (PSW) – These are wetlands evaluated as provincially significant using the Ontario Wetlands Evaluation System (OWES).

Quaternary Period – Subdivision of geological time from the last two million years to the present. It can be divided into two epochs: the Pleistocene (two million years to ten thousand years ago) and the Holocene (ten thousand years ago to the present day).

Queue Warning System (QWS) – A component of an ATMS system used to detect vehicle delays and alert drivers of downstream congestion at overhead VMS signs.

Ramp – A turning roadway to permit the movement of traffic from one highway to another.

Responsible Authority (RA) – the federal authority that is required to ensure that an environmental assessment of a project is conducted as defined under the *Canadian Environmental Assessment Act*.

Right-of-Way – The area of land acquired for, or devoted to, the provision of a roadway.

SAG – School councils Advisory Group. A group formed by the DRIC study team at the outset of the study..

SARA – *Federal Species at Risk Act* (2002). The term species at risk refers to an extirpated, endangered or threatened species or a species of special concern.

Service Road – A road in the vicinity of a through road designed to intercept, collect and distribute traffic desiring to cross, enter or leave the through road and access adjacent properties.

Shoulder – Areas of pavement, gravel or hard surface, placed adjacent to through or auxiliary lanes. These areas are intended for emergency stopping and travel by emergency vehicles only. They also provide structural support for the pavement.

Sight Distance – The distance required for a driver to detect an information source or hazard which is difficult to perceive in a roadway environment that might be visually cluttered, recognize the hazard or its potential threat, select appropriate action, and compete the manoeuvre safely and efficiently.

Summer Average Daily Traffic (SADT) – The average 24-hour, two-way traffic from the period July 1 to August 31.

Superelevation – The gradient measured at right angles to the centre line across a roadway on a curve, from the inside to the outside edge.

TC – Transport Canada

TEPA – Technically and Environmentally Preferred Alternative for the Detroit River crossing, new customs plaza and access road linking these to the existing Highway 401. This consists of The Windsor-Essex Parkway, Plaza B1 and Crossing X10B.

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

Two-lane Road – A road that provides for one lane of through traffic in each direction.

Underpass – A grade separation (bridge) in which the major road passes under an intersecting road or railway.

Undetermined Pre-contact – An aboriginal site relating to the period prior to European contact for which the date and cultural affiliation have not been determined.

UST – Underground storage tank

Variable Message Sign (VMS) – An automated digital sign that informs motorists of potential diversion routes, slow traffic or incidents ahead, lane designations for customs, etc. A component of an ATMS system.

Vertical Alignment – The configuration of a roadway as seen in longitudinal section, consisting of tangents and parabolic curves.

VISSIM – A micro-simulation traffic analysis software package.

Warrant – A criterion that identifies the need for an addition to the highway such as traffic signals, traffic barriers, truck climbing lanes, passing lanes, left turn lanes, etc.

WIFN – Walpole Island First Nation

Windsor-Essex Parkway, The –The portion of the Recommended Plan that connects existing Highway 401 to the proposed new inspection plaza and international river crossing. The Windsor-Essex Parkway consists generally of a freeway portion connecting existing Highway 401 to the proposed plaza, a service road connecting existing Highway 3 to existing Huron Church Road, a multi-use trail network, buffer zones, tunnels, bridges, and all associated features such as lighting, ATMS, signs, etc.

Woodland Period – Referring to the period between roughly 3000 years ago and the beginnings of European contact. This refers to the period after ceramic vessels first. Distinguished from the Archaic by changes in stone tool styles and the introduction of ceramic vessel manufacture.

WPA – Windsor Port Authority (see also *Prescribed Authority*).

A APPROVALS BEING SOUGHT AND AMENDING PROCEDURE

A.1 Approvals Being Sought

The Detroit River International Crossing (DRIC) Environmental Assessment Report documents the coordinated Environmental Study undertaken by the Border Transportation Partnership, which includes the Ontario Ministry of Transportation, Transport Canada, the Michigan Department of Transportation (MDOT) and the U.S. Federal Highway Administration (FWHA). The study resulted from the *Planning/Need and Feasibility (P/NF) Study* completed in 2004, which identified the need to address the safe and efficient movement of people and goods in the long-term between Southwestern Ontario and Southeastern Michigan.

The Detroit River International Crossing study provided a consultation process that involved stakeholders, including external agencies, municipalities and the public at major milestones throughout the study. The study also incorporated additional workshops, presentations, and meetings with interested groups and individuals to identify and address concerns.

MTO, along with its partners in the Border Transportation Partnership, consulted and conducted an Environmental Assessment and identified a Recommended Plan for the Detroit River crossing, new customs plaza and access road linking these to the existing Highway 401. With this environmental assessment, MTO is seeking approval under the Ontario Environmental Assessment Act for the "Windsor-Essex Parkway",. The "Windsor-Essex Parkway" portion includes the proposed highway connection between Highway 401 and the proposed bridge between Windsor and Detroit, as well as any ancillary aspects of the Windsor-Essex Parkway, including features such as service roads, interchanges, and commuter parking lots.

That portion of the Recommended Plan which, for environmental assessment purposes, falls solely under federal authority, is therefore exclusively subject to the Canadian Environmental Assessment Act.

A CEAA Screening Report identifying project impacts and mitigation will be prepared, drawing from the technical work that has been carried out throughout the Detroit River International Crossing study. The final EA decisions by the federal and provincial governments will be based on the same technical information. It is anticipated that these final EA decisions will be made within a similar timeframe.

If this Environmental Assessment is approved, the Ministry of Transportation will then be in position to:

- Designate a highway right-of-way for the implementation of the recommended transportation improvement identified;
- Acquire property needed to build the facility and associated features, which may include but are not limited to: stormwater management facilities, temporary construction easements, mitigation and compensation measures, commuter parking lots, utility corridors, and service roads;
- Relocate affected utilities;
- Close, assume and designate roads as identified in Chapter 9;
- Make design and property refinements during future design phases;
- Construct the Recommended Plan; and
- Operate and maintain the completed Recommended Plan.

The approval being sought by this EA and commitments made in this EA will apply and be binding upon MTO, its agents, successors, transfers and/or assigns, and will be applicable to the design, construction, operation and maintenance of the The Windsor-Essex Parkway.

On the U.S. side, the U.S. portion of the crossing, the U.S. plaza and the U.S. interchange with I-75 is under the jurisdiction of the Michigan Department of Transportation (MDOT), and is the subject of a Final Environmental Impact Statement (FEIS). In December 2008, the Michigan Department of Transportation (MDOT) received Federal Highway Administration approval of the U.S. Final Environmental Impact Statement (FEIS).

In support of the approval being sought by this EA, this Detroit River International Crossing Study has followed the requirements of the *Ontario Environmental Assessment Act* (OEAA). This Environmental Assessment Report (EA Report) has been prepared for this project and provides information on the environmental effects and mitigation and the process that has been followed leading to the selection of the Recommended Plan, as well as the technical findings of the study.

In general, the EA Report includes the following information:

- Purpose of the undertaking and study history;
- Existing and future natural, socio-economic, cultural and engineering conditions in the study area;
- Description, analysis and evaluation of alternatives considered, including their associated potential impacts and evaluation of the alternatives;
- Description of the Recommended Plan and associated potential environmental effects and mitigation measures; and
- Commitments to future work and monitoring.

This EA Report is being made available to the public, other interested parties and external agencies for review. An Ontario Government Notice was placed in the local newspapers, mailed to more than 3,000 persons, agencies and other stakeholders on the study mailing list advising the submission of the Environmental Assessment to the Ontario Ministry of the Environment. This EA Report will be available for review commencing Friday, January 9, 2009 at the following locations:

Ontario Ministry of Transportation Windsor Border Initiatives Implementation Group 949 McDougall Avenue, Suite 200 Windsor, Ontario (519) 973-7367	Ontario Ministry of the Environment Windsor Area Office 4510 Rhodes Drive, Unit 620 Windsor, Ontario (519) 948-1464	Office of the Clerk City of Windsor 350 City Hall Square West Windsor, Ontario (519) 255-6211
Office of the Clerk Town of LaSalle 5950 Malden Road LaSalle, Ontario (519) 969-7770	Office of the Clerk Town of Tecumseh 917 Lesperance Rd Tecumseh, Ontario (519) 735-2184	Office of the Clerk County of Essex 360 Fairview Avenue West Essex, Ontario (519) 776-6441

Windsor Public Library Central Branch 850 Ouellette Avenue Windsor, Ontario (519) 255-6770	Windsor Public Library Sandwich Branch 3312 Sandwich Street Windsor, Ontario (519) 255-6770	Windsor Public Library Nikola Budimir Branch 1310 Grand Marais West Road Windsor, Ontario (519) 255-6770
LaSalle Public Library 5940 Malden Road LaSalle, Ontario (519) 969-8992	Tecumseh Public Library 13675 St. Gregory's Road Tecumseh, Ontario (519) 735-3760	URS Canada Inc. 75 Commerce Valley Drive E. Markham, Ontario (905) 882-4401

Ontario Ministry of the Environment Environmental Assessment & Approvals Branch 2 St. Clair Avenue West, Floor 12A Toronto, Ontario 1-800-461-6290	Ontario Ministry of the Environment West Region Office 733 Exeter Road London, Ontario 1-800-265-7672

Anyone wishing to provide comments on the environmental assessment must submit their comments in writing and/or by fax to the Ministry of the Environment by Friday February 27, 2009. All comments must be submitted to:

Catherine McLennon, Special Project Officer
Ministry of the Environment
EA Project Coordination Section
Environmental Assessment and Approvals Branch
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario, M4V 1L5
Tel: 416-314-7222/1-800-461-6290
Fax: 416-314-8452

A copy of all comments will be forwarded to the proponent for its consideration.

A.2 Amending Procedure

As noted in previous section, if this Environmental Assessment is approved by the Ontario Minister of the Environment, the approval will include the right to make refinements to the alignment and to the right-of-way for the Windsor-Essex Parkway during future design phases.

The Ministry of Transportation has developed the undertaking to a concept design level of detail for the purposes of this Environmental Assessment Report. The concept design level of detail does not provide the same level of detail as will be available during later stages of design. However, the concept design as contained in this Environmental Assessment does provide a sufficient level of detail to assess the environmental impacts of the Recommended Plan. The environmental impacts identified in the Environmental Assessment are therefore to be considered sufficiently reliable on which to base a decision regarding approval of the undertaking.

Some aspects of the undertaking are subject to change as design details are developed through future phases of the project. Changes may arise in terms of study area conditions, the development of new technology or mitigation methods, or the identification of previous unknown information or concerns. The Ministry of Transportation's assessment of the significance of the proposed change(s) will be reviewed and overseen by the Ministry of the Environment, and will generally be based on further technical assessment and consideration of applicable policy, and public and agency input, as appropriate.

An assessment as to the significance of a proposed change will be based on consideration of the following issues:

- Are there any significant environmental issues?
- Are there any significant property issues?
- Is there a need to provide public documentation of any issues that have been identified?

If the proposed change is not anticipated to be significant based on the above considerations, the change will be documented in a Design and Construction Report (DCR), which will be made available for public review.

If the proposed change is anticipated to be significant, the amending procedure described below will be invoked. The amending procedure will be consistent with Chapter 10 of *MTO's Class Environmental Assessment for Provincial Transportation Facilities (approved 1999 - amended 2000).* This chapter outlines the process for amending an approved Environmental Assessment per the Class process, and specifies the following:

- Affected parties will be consulted on the proposed changes, anticipated environmental effects, proposed mitigation and the need for a Transportation Environmental Study Report (TESR). The Class EA process and the principles for transportation engineering, environmental protection, consultation, documentation and bump-up, and environmental clearance will be followed. Depending on the complexity of the proposed change, and the number of stakeholders affected by the proposed change, a public information centre may be held.
- A Transportation Environmental Study Report (TESR) will be prepared to document the circumstances necessitating the change, outline the proposed change, and identify the anticipated environmental effects and proposed mitigation measures. The TESR will constitute an addendum to the original EA and will be made available for a 30-day public review period.
- A Notice of Bump-up opportunity will be issued at the time of TESR submission.
- Only the changes noted in the TESR will be eligible for bump-up. The concept of the undertaking, as outlined in the original EA may not be challenged. In the event that a bump-up is granted, the proponent has the option of withdrawing the TESR and implementing the project as documented in the original EA.

1 STUDY OVERVIEW

This chapter provides a study overview, including related projects within or near the Study Area as shown in Exhibit 1.1. The Detroit River International Crossing (DRIC) study was initiated as a bi-national transportation improvement study by the governments of Canada, United States, Ontario, and Michigan. After completion of the Planning/Need and Feasibility Study (P/NF) in 2004, the *Environmental Assessment Terms of Reference (EA TOR*) was approved by the Ontario Minister of the Environment on September 17, 2004 (refer to Appendix C). While considering the objectives of the Partnership for the Detroit River International Crossing study, the DRIC study team generated and assessed illustrative crossing, plaza and access road alternatives within the generated Preliminary Analysis Area (PAA). Evaluation of these alternatives led to to the identification of an Area of Continued Analysis (ACA). Within the ACA, six practical access road alternatives, four practical plaza alternatives, and three practical crossing alternatives were generated, assessed and evaluated.

Throughout the Detroit River International Crossing study extensive consultation including Public Information Open Houses (PIOHs) was conducted to obtain input and inform the public about the technical analysis leading to the generation, assessment, and evaluation of the illustrative and practical alternatives, and ultimately, the Technically and Environmentally Preferred Alternative (TEPA) and the Recommended Plan. More than 300 consultation sessions were held during the study with participation from thousands of Windsor-Essex County residents, community groups, subject matter experts, local elected officials, and other government agencies.

1.1 Study Background

The Detroit River International Crossing (DRIC) Study is a bi-national transportation improvement study that has been undertaken by the governments of Canada, United States, Ontario, and Michigan, who have formed the Canada-U.S.-Ontario-Michigan Border Transportation Partnership (the Partnership).

The Partnership includes the transportation authorities of two federal governments and two provincial/state governments. The Federal Highway Administration (FHWA) is an arm of the U.S. Department of Transportation and Transport Canada (TC) is the corresponding federal agency in Canada. The Ontario Ministry of Transportation (MTO) and the Michigan Department of Transportation (MDOT) are the provincial and state agencies that have roadway jurisdiction in Ontario and Michigan, respectively.

In 2001, the Partnership jointly commissioned a Planning/Need and Feasibility Study (P/NF) to identify a long-term strategy to address the safe and efficient movement of people and goods between Southwestern Ontario and Southeastern Michigan. The overall objectives of the Partnership in support of this strategy were the following:

- To improve the movement of people, goods and services in a safe and efficient manner across the Canadian-U.S. border at the Detroit and St. Clair Rivers to connect with existing national, provincial and regional transportation systems, such as I-75 and Highway 401;
- To enhance the regional economic vitality and Canadian-U.S. trade;
- To meet the long-term needs of the U.S. and Canadian border inspection agencies;
- To expedite the planning and environmental study process to ensure that future travel demands in this region can be accommodated in a timely manner;
- To ensure that all modes of surface transportation including road, rail and marine will be considered;
- To use a single integrated planning and environmental study process, resulting in a single product, which will meet the requirements of all members of the Partnership;
- To ensure that any solutions that are developed as a result of the above integrated planning and environmental study process comply with all relevant and applicable federal, provincial, state and/or municipal laws, regulations, bylaws, ordinances or other binding enactments validly created by bodies with legislative or rule-making authority;
- To ensure that the process is conducted in a financially responsible and prudent manner; and
- To ensure that intelligent transportation systems/state-of-the-art facilities be provided to enhance border crossing efficiency.

The P/NF Study, completed in January 2004, identified a strategy for improvements to meet the long-term (2030 and beyond) needs of the transportation network serving cross-border traffic in the area of Southwestern Ontario and Southeastern Michigan. Among other things, the strategy confirmed the need for a new or expanded crossing of the Detroit River with connections to the freeway systems in Ontario and Michigan.

As a result of this recommendation, the Partnership initiated a formal environmental assessment process for a new or expanded Detroit River International Crossing (refer to Chapter 2 for further details). As a first step in this process in Ontario, an EA Terms of Reference (EA TOR) was prepared. The *Detroit River International Crossing Study Environmental Assessment Terms of Reference (May 2004)* outline the minimum considerations and study framework to be followed in completing this Environmental Assessment. The EA TOR was approved by the Ontario Minister of the Environment on September 17, 2004. The EA TOR is available as a supporting document.

The project detailed in this EA Report is part of an overall international transportation improvement project that requires approvals from governments on both sides of the border. The Partnership's coordinated process facilitated the joint selection of a preferred river crossing location to meet the requirements of the *Ontario Environmental Assessment Act* (OEAA), the *Canadian Environmental Assessment Act* (CEAA), and the *United States National Environmental Policy Act* (NEPA) effectively and efficiently.

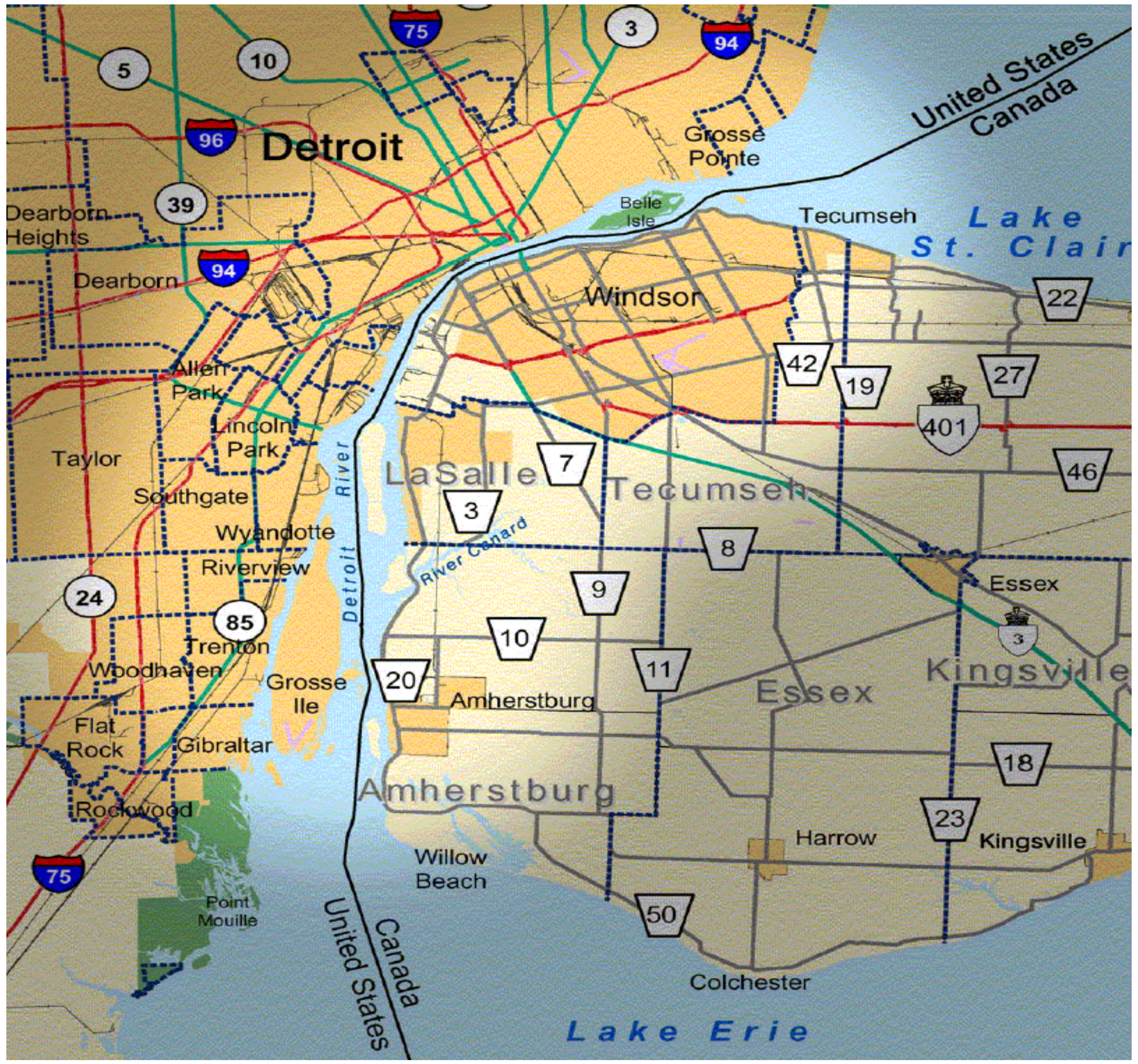
In a separate but parallel process, the Government of Canada, the Province of Ontario, the City of Windsor, and Essex County have continued to work together to reach agreement on additional initiatives to be pursued under the *Let's Get Windsor-Essex Moving* strategy. This initiative is aimed at relieving congestion and improving traffic flows to existing crossings in a manner that is consistent with the requirements of the Detroit River International Crossing study.

1.2 Study Location

The strategy identified during the P/NF Study formed the basis for the Detroit River International Crossing study and for the development of a study area in the Windsor-Essex region of Southwestern Ontario (refer to Exhibit 1.1).

The DRIC study focused on confirming the need, confirming the study area, and then generating, assessing, and evaluating alternatives to address the identified transportation needs. As the study progressed, the analysis area continued to focus on specific areas associated with illustrative and practical alternatives, and finally on the Technically and Environmentally Preferred Alternative (TEPA).

EXHIBIT 1.1 – STUDY AREA



1.3 Study Purpose, Objectives and Scope

The Windsor-Detroit border crossing represents an important trade corridor between the United States and Canada. Based on 2006 border crossing statistics, approximately 28 per cent of Canada-U.S. surface trade passes through Windsor-Detroit.

The purpose of the undertaking is to provide for the safe, efficient and secure movement of people and goods across the Canadian-U.S. border in the Detroit River area to support the economies of Ontario, Michigan, Canada and the U.S.

Given the importance of this trade corridor to the local, regional and national economies and the negative effects associated with poor traffic operations and congestion already occurring at existing crossings, it was recognized that the partnering governments must take responsible steps to reduce the likelihood of disruption to transportation service in this corridor.

In order to meet the purpose, this study has addressed the following regional transportation and mobility needs:

- Provide new border crossing capacity to meet increased long-term travel demand;
- Improve system connectivity to enhance the continuous flow of people and goods;
- Improve operations and processing capabilities at the border; and
- Provide reasonable and secure crossing options (i.e., network redundancy).

In addition, the study team has sought to recommend transportation solutions, that minimize community and environmental impacts as much as reasonably possible. In particular, the study team has strived to address the local communities' goals to:

- Improve quality of life;
- Take trucks off local streets; and
- Improve traffic movement across the border.

The objectives of the study can generally be expressed in terms of the seven key evaluation factors that were developed in consultation with the public and that were used to evaluate all of the alternatives developed during the study. These included:

Changes to Air Quality

- How will each alternative affect future levels of pollutants in the atmosphere in the next 10, 20 and 30 years?

Protection of Community and Neighbourhood Characteristics

- How will each alternative affect homes and businesses?
- How will each alternative affect future traffic conditions?
- How will each alternative affect future noise and vibration levels?

Consistency with Existing and Planned Land Use

- How does each alternative affect existing and future planned land use?

Protection of Cultural Resources

- How will each alternative affect historical, cultural and archaeological features in the area?

Protection of the Natural Environment

- How will each alternative affect ecosystems, species, water systems or other important natural resources?
- How will environmentally significant areas or species at risk be affected by each alternative?

Improvements to Regional Mobility

- What will be needed to improve traffic flows in this area?
- How will each alternative affect future traffic conditions?
- How can a new river crossing and plaza be efficiently managed?

Cost and Constructability

- What is the cost of each alternative?
- Is each alternative constructible?
- Will each alternative provide value for the tax dollar?

1.4 Key Components of the Detroit River International Crossing Study

A key component of the study involved preparing this Environmental Assessment Report (EA Report), which documents the environmental effects and the process that has been followed leading to the selection of the Technically and Environmentally Preferred Alternative (TEPA) and the Recommended Plan. To support the analysis and evaluation of alternatives, environmental and technical studies have been undertaken during the preparation of the EA Report, and results have been fully documented in supporting documents which are listed after the table of contents at the beginning of this report and available on the project website at www.partnershipborderstudy.com.

1.5 Overview of Study Process and Schedule Milestones

The study process followed the requirements of the OEAA and CEAA, and was guided by the approved EA TOR. Table 1.1, provides an overview of the commitments from the EA TOR, and describes how these commitments have been addressed, and where they are discussed in this EA Report.

As detailed in subsequent sections of this report, each stage of the study included systematic and thorough analysis at an appropriate level of detail as well as consultation with the affected stakeholders and the public. Overall project processes and schedule milestones are illustrated in Exhibit 1.2.

Specifically, the process involved outlining and confirming the purpose and need for the undertaking. Planning work undertaken in the previous P/NF Study (2001 – 2004) was reviewed and updated. That work confirmed the need for a new international crossing in the Windsor-Detroit area as part of a 30-year long-term border strategy. The results of the analysis and a long list of illustrative plaza, crossing and access road alternatives were presented to the public and other stakeholders for input and review.

In parallel with the above activities, the study team prepared Work Plans that would guide the analysis of alternatives throughout the Environmental Assessment. These were reviewed by the appropriate approval agencies, and were also made available to the public and key stakeholders for comment. The Work Plans are available as supporting documents.

As illustrated in Exhibit 1.2, the Detroit River International Crossing study commenced in January 2005. During the spring of 2005, the study team updated traffic forecasts, confirmed the need for the project, and generated a long list of illustrative alternatives.

The first round of Public Information Open Houses (PIOHs), held in June 2005, focused on the purpose and need for the study, and presented the illustrative plaza, crossing and access road alternatives for public review and comment. Attendees were also asked to provide input on the development of the seven evaluation factors to be used throughout the remainder of the study to help determine the impacts associated with each alternative.

A thorough and systematic analysis and evaluation of this long list of alternatives was carried out during the fall and the results were shown to the public and key stakeholders for input and review late in 2005. The results of the evaluation identified an Area of Continued Analysis (ACA).

At the second round of PIOHs, held in November-December 2005, the study team presented the evaluation of the illustrative alternatives, as well as the Area of Continued Analysis that had been identified on the basis of this evaluation.

Early in 2006, the study team developed practical crossing, plaza and access road alternatives within the ACA. At the third round of PIOHs, held in March 2006, the practical alternatives for the plaza, crossing and access road were presented. In addition, attendees were encouraged to provide feedback on the potential locations for interchanges, local access considerations (including service road options), and cross-sectional alternatives for at-grade, depressed and tunneled roadways.

The remainder of the 2006 calendar year focused on analysis of the practical alternatives. At the fourth round of PIOHs, held in December 2006, the study team presented the preliminary analysis of the practical alternatives for the plaza, crossing and access road. The public was advised on the status of the analysis work and conclusions to date. They were encouraged to comment on the analysis and work completed to date as well as the methods used to carry out the work conducted.

Informal consultations continued into the spring and summer of 2007 with growing interest around a concept which would be a combination of the tunneled and below-grade alternatives. At meetings with the City of Windsor, the vison of a more "green", parkway-like, alternative emerged. The concept, would include a green corridor with tunneled sections, a grade separated recreational trail system, and extensive urban design of the green areas.

The DRIC study team built upon this vision to develop a Parkway Alternative, which was released for public comment in August 2007. The alternative included 10 tunneled sections (total length 1.5km), a grade separated recreational trail network, and extensive areas of future parkland.

At the fifth round of PIOHs, held in August 2007, the study team presented this new below-grade alternative. Described as a green transportation corridor, the access road for international traffic would be below-grade with a number of tunnels. Information on the evaluation process to be undertaken in selecting a technically and environmentally preferred alternative for the crossing, plaza and access road was provided. As well, the public was invited to provide ideas and comments to help the study team evaluate all the alternatives and develop a single preferred alternative.

The Partnership announced The Windsor-Essex Parkway as the Technically and Environmentally Preferred Alternative for the access road portion of the project in May 2008, and the preferred location for the international bridge crossing and Canadian plaza in June 2008.

At the sixth round of PIOHs, held in June 2008, the study team presented a broad overview of the study, as well as the analysis and evaluation process leading to the selection of The Windsor-Essex Parkway, Plaza B1, and Crossing X-10B as the Technically and Environmentally Preferred Alternative (TEPA). In addition, the study team responded to the "GreenLinkWindsor" concept that had been suggested by the City of Windsor in terms of its similarities and differences to the preferred alternative, The Windsor-Essex Parkway.

Subsequent to the sixth round of PIOHs, the study team focused on further refining the TEPA based on additional technical analysis, stakeholder consultation, and development of appropriate mitigation measures. These measures were included in a draft version of this EA Report, which was made available to the public, agencies, municipalities, First Nations, and other interested parties for review in November 2008.

At the seventh and final round of PIOHs, held in late November 2008, the study team presented the Recommended Plan for the new border transportation system. This Recommended Plan consisted of refinements made to the TEPA since the sixth round of PIOHs and the proposed mitigation strategies developed by the study team. The feedback obtained at this PIOH was incorporated in the Recommended Plan for inclusion in this EA Report.

Following the final round of PIOHs, the study team focused on reviewing comments received at the PIOH and during the review of the draft version of the EA Report.

TABLE 1.1 – SUMMARY OF EA TOR COMMITMENTS

EA TOR Chapter/Section Reference	Heading	Commitment	EA Report Chapter/Section Reference	Discussion
1.1	Background	• The Partnership is committed to implementing effective consultation programs throughout the study process. • The Partnership will continue to liaise with local municipalities, other government agencies, and private sector proponents regarding ongoing improvements to the local transportation network for consideration in the generation and assessment of alternatives in the Detroit River International Crossing Project.	• Chapter 3	• Outlines the comprehensive, effective and traceable consultation program undertaken for this study.
1.2	Purpose of the OEAA Terms of Reference	• MTO, as a member of the Canada-U.S.-Ontario-Michigan Border Transportation Partnership, will consider enhancements to the process and work tasks, as required over the course of the OEA study, based on consultation input, changes to provincial/state/federal (both U.S. and Canada) policies and the availability of new environmental information. • MTO, as a member of the Canada-U.S.-Ontario-Michigan Border Transportation Partnership will undertake this OEA based on the legislative requirements, policies, procedures and protocols that are in place at the time the work is done.	• Chapters 1, 2, 3, 10	• Chapter 1 provides an overview of the study process undertaken. • Chapter 2 describes the coordinated study process which incorporates the requirements of OEAA, CEAA and NEPA. • As outlined in Chapter 3, the consultation program (which included over 300 meetings) has influenced the project outcomes in several ways, including the development of the Parkway alternative and subsequent refinements. • Further to this, additional PIOHs beyond those envisioned by the EA TOR were required for this study to facilitate the comprehensive, effective and traceable consultation program undertaken for this study. • As discussed in Chapter 10, the study process and work tasks specific to endangered species were modified to accommodate the requirements of the Ontario Endangered Species Act (2007). • Chapter 10 includes discussion under each environmental factor about the relevant legislative requirements, policies, procedures, and protocols and how they apply to this project.
1.3	Ontario, Canadian and U.S. Planning and Environmental Assessment Processes	• An objective of the Border Transportation Partnership is to develop the appropriate integrated environmental planning process that incorporates the requirements of OEAA, CEAA and the NEPA processes as well as any other applicable Ontario, Canadian and U.S. legislation. Other applicable government policies and agreements will be considered in the integrated study process.	• Chapter 2	• Chapter 2 describes the coordinated study process which incorporates the requirements of OEAA, CEAA and NEPA. • All applicable government policies and agreements have been addressed by the project.
1.3.4	Integrated Environmental Study Process	• Recognizing that this international transportation improvement project will require approvals from governments on both sides of the border, the Partnership is proposing to follow an integrated study process which meets the requirements of the respective environmental study legislation for Canada, U.S., Ontario and Michigan.	• Chapter 2	• Chapter 2 describes the coordinated study process which incorporates the requirements of OEAA, CEAA and NEPA.
2.2	Summary of Transportation Problems	• The transportation problems in the Detroit River area outlined in the EA TOR will be further defined during the OEA.	• Chapter 5	• Chapter 5 includes a discussion on Transportation Problems. This discussion is based on previous work undertaken in P/NF study, but incorporates updated findings from the Travel Demand Study undertaken as part of the EA. The Travel Demand Study reflects changes in traffic and network demands based on more recent issues which arose subsequent to the P/NF study. It considered a range of forecasts which take into account both high and low growth scenarios.

EA TOR Chapter/Section Reference	Heading	Commitment	EA Report Chapter/Section Reference	Discussion
2.3	Transportation Opportunities	• Consideration of transportation opportunities will not be restricted to roadway improvements. The assessment of travel demand identified a number of aspects of the transportation system that are currently operating well below capacity, and will likely continue to operate below capacity in the future under the current travel patterns. As part of the generation and assessment of transportation alternatives, the opportunity to divert excess demand to under-utilized crossings or modes will be considered.	• Chapter 5	• This chapter assesses a range of multi-modal transportation planning alternatives (Alternatives to the Undertaking) based on their ability to satisfy the study goals and objectives. It is noted that "In order to satisfy the study goals and objectives, it is apparent from the traffic analysis, that several of the transportation planning alternatives, implemented in concert will be required to address future transportation needs across the Detroit River." The following is also noted: "It is also clear that the only combination of alternatives that can practically accommodate a significant amount of increased demand for travel and effectively provide reasonable options for maintaining the movement of people and goods in cases of disruptions at any of the existing border crossings is one which includes the 'New and/or Improved Roads with a New or Improved Crossing' alternative. All other alternatives, even in combination, will not provide sufficient long-term border capacity to meet future needs."
3	Assessment and Evaluation	• The intent of the Partnership is to conduct one body of work pertaining to alternative generation, analysis and evaluation, and document the project findings in a format(s) suitable for circulation and review by the bi-national government agencies/ministries/departments and the general public.	• N/A	• The Partnership coordinated the analysis, schedule and products of the study to satisfy the requirements of both countries.
3.1	Process for Identifying and Assessing Transportation Planning Alternatives (Alternatives to the Undertaking)	• The Canada-U.S-Ontario-Michigan P/NF Study identified several transportation planning alternatives, which will be revisited in the EA under the integrated environmental study process. The alternatives to be considered in the OEA/EIS will include, but are not limited to: – Do nothing; – Improvements to border processing; – Transportation demand management; – New and/or improved rail alternatives with new and/or expanded international rail crossing; – New and/or improved transit services; – New and/or improved marine services; – New and/or improved road alternatives with new or expanded international road crossing; and – Combinations of the above. • During the Environmental Assessment, MTO will provide opportunity for interested parties, agencies, stakeholders, etc. to review and comment upon the range of planning alternatives to be considered. • Table 3.1 (of the EA TOR) identifies a listing of proposed factors and criteria to be considered for evaluating the practicality and feasibility of transportation alternatives. It should be noted that Table 3.1 represents the minimum considerations concerning	• Chapter 5	• All of the transportation planning alternatives documented in the EA TOR are discussed in Chapter 5 of the EA Report. • The development, assessment and evaluation of the transportation planning alternatives was presented to the public and stakeholders for comment during the second round of PIOH's (December 2005). • The factors identified in Table 3.1 of the EA TOR were used to evaluate the transportation planning alternatives. • The assessment and evaluation of the transportation planning alternatives was clearly and concisely conveyed to stakeholders, and was based on secondary source data as well as input obtained through consultation.

EA TOR Chapter/Section Reference	Heading	Commitment	EA Report Chapter/Section Reference	Discussion
		the identification and assessment of transportation planning alternatives. This listing is subject to refinement and modifications based on input received and study findings. • During the integrated environmental study process, MTO will provide the opportunity for interested parties, agencies, stakeholders, etc. to review and provide comments on the factors and criteria used to identify a preferred transportation planning alternative. Comments on the factors and criteria will be incorporated in the identification and assessment of planning alternatives, as appropriate. • The assessment of planning alternatives will consider work completed as part of the P/NF study, and will be based primarily on secondary source data and consultation. The basis for the assessment will include: – Government legislation, policies and guidelines; – Municipal policy (i.e. Official Plans); – Public, Agencies, Consultation Groups, and other stakeholder's issues and concerns; and – Project Team expertise. • The assessment will be documented clearly and concisely in a format that can be easily understood by all stakeholders. • The assessment of planning alternatives will identify the recommended planning alternative(s) to be carried forward for further consideration in the integrated environmental study process.		
3.2	Process for Generating a Study Area	• Follow proposed process outlined in EA TOR for generating a Study Area. • During the integrated environmental study process, MTO will provide opportunity for interested parties to review and comment on the study area limits.	• Chapter 1	• The Study Area was generated based on the transportation problems identified during the P/NF Study. • The Study Area was defined based on avoiding significant physical constraints that may preclude the development of feasible alternatives, to provide continuous corridors of sufficient area to generate a range of linear transportation facility alternatives, and to accommodate the generation of alternatives that could reasonably address the stated problems and take advantage of opportunities.
3.3	Process for the Generation and Evaluation of Alternatives (Alternative Methods)	• During the OEA, work plans will be developed to outline specific environmental inputs, investigations and methods of data collection and impact assessment at the respective study stages.	• N/A	• Work plans were developed for project disciplines which outlined specific environmental inputs, investigations and methods of data collection and impact assessment at the respective study stages. • The work plans were reviewed by applicable agencies and interested stakeholders. • The work plans are included as Supporting Documents.
3.3.1	Illustrative Alternatives (Alternative Methods)	• Follow four step process to identify Opportunity Corridors: – **Step 1**: Identify design requirements for linear transportation facility alternatives.	• Chapter 6	• Chapter 6 outlines the process followed in generating, assessing and evaluating the illustrative crossing, plaza and access road alternatives. • Constraints within the study area were identified and consulted on at the Initial

EA TOR Chapter/Section Reference	Heading	Commitment	EA Report Chapter/Section Reference	Discussion
		– **Step 2:** Establish constraint areas in the study area. – **Step 3:** Establish guiding principles for the development of opportunity corridors for illustrative alternatives. – **Step 4:** Assess the feasibility of the alternative opportunity corridors and identify preferred opportunity corridors for the generation of illustrative alternatives. • Consultation activities, including Public Information Open Houses, will provide an opportunity for interested parties to review and comment upon the assessment of opportunity corridors. • Illustrative alternatives will be developed based on technical and environmental objectives to avoid the most significant/sensitive environmental resource areas and study area features to the extent possible. • The objectives for generating alternatives will be to develop alternatives that are efficient/direct, meet objectives and design requirements of Partnership agencies, reflect the needs of border agencies, and minimize/avoid impacts to significant environmental and study area features to the extent possible. • Consider the environmental components outlined in Table 3.3 in generating illustrative alternatives. • The alternatives will be reviewed with agencies and the public through the consultation process and Public Information Open Houses. • The Partnership recognizes that the evaluation of alternatives for the Detroit River International Crossing Project may be complex due to the diverse nature of the project area and the inherent differences in cultures, values, objectives and priorities of the Canadian and American communities potentially impacted by the project. The evaluation will strive to incorporate the commonalities among the bi-national communities and objectively address their differences. • Consultation activities, such as Public Information Open Houses, will provide opportunity for interested parties to review and comment upon the evaluation of illustrative alternatives. • The assessment of impacts will include an examination of the significance of effects as required under CEAA. • The Partnership is proposing two complementary evaluation approaches to assist in the selection of a recommended alternative for the proposed Detroit River International Crossing. A Reasoned Argument (or Trade-off) method will be the primary tool used to identify a preferred alternative. An Arithmetic (weighting-scoring) method will be the secondary tool and will be used to verify the results of the trade-off method. • During the integrated environmental study, the decision making process will be clearly documented in support of a traceable process and to ensure it is		Public Outreach event in April 2005. • The generation of illustrative crossing, plaza and access road alternatives was presented at the first round of PIOHs in June 2005. The evaluation of the illustrative alternatives and identification of the ACA for generating practical alternatives was presented at the second round of PIOHs in November 2005. • The criteria provided in Table 3.3 of the EA TOR and the objectives embodied in the TOR were considered in generating the illustrative alternatives. • The generation, assessment and evaluation of the illustrative alternatives was undertaken in a coordinated fashion with the U.S. study team. A summary of the assessment of the illustrative alternatives on the U.S. side of the border, as well as the overall end-to-end evaluation is included in Chapter 6. • The illustrative alternatives were evaluated using a reasoned argument method as the primary evaluation tool, and an arithmetic method as the secondary evaluation tool. Both methods involved an assessment of significance of effects, and allowed public and stakeholders to provide their input on this issue through the use of multiple weighting scenarios (public, Community Consultation Group (CCG), study team). A questionnaire style rating tool was used to facilitate this process. • The evaluation of the illustrative alternatives was based on the criteria provided in Table 3.4 of the EA TOR. However, to enable the public to more easily provide input to the study teams in terms of rating the importance of the factors, the Canadian and U.S. study teams developed a revised evaluation table that simplified the number of factor areas to be considered from 18 to 7. The seven factors in the revised evaluation table are consistent with those in Table 3.4 of the EA TOR.

EA TOR Chapter/Section Reference	Heading	Commitment	EA Report Chapter/Section Reference	Discussion
		understandable to those who may be affected by the decisions. • One weighting scenario will be developed by the Partnership Project Team, other weighting scenarios will be developed by the general public. Additional weighting scenarios can be developed in consultation with regulatory agencies and municipalities. • The Partnership will consider all weighting scenarios in selecting a preferred alternative. • Questionnaires focused on establishing the relative weights that participants feel should be given to each environmental attribute will be distributed at the appropriate round of consultation activities. • The evaluation criteria listed in Table 3.4 of the EA TOR represent the minimum requirements in the process of evaluating alternatives and are subject to refinement and modification during the integrated environmental study process based on study findings, government policy and input received from the various stakeholder groups, including the public.		
3.3.2	Practical Alternatives	• The evaluation of illustrative alternatives will identify the practical alternative(s) to be carried forward for further consideration. • More detailed mapping of the practical alternatives will be prepared based on additional secondary sources data, field surveys and investigations and additional consultation. • The relative importance of the factors, as identified during the evaluation of illustrative alternatives, will be used in the evaluation of practical alternatives. • The third round of Public Information Open Houses (PIOH) will be arranged in conjunction with the U.S. Public Hearing to provide stakeholders a similar opportunity to comment on the analysis of practical alternatives. The consultation activities associated with the third round of PIOH will include meetings with Canadian ministries/agencies (both federal and provincial) to provide an opportunity to input to the generation and analysis of practical alternatives. • Upon completion of the third round of Public Information Open Houses the partnership will consider the comments received, refine the alternatives and analysis as required, and undertake the evaluation of the practical alternatives. • As with the illustrative alternatives, two evaluation methods will be used – Reasoned Argument and Arithmetic.	• Chapters 7, 8	• More detailed field investigations for the ACA were undertaken to support the analysis and evaluation of the practical crossing, plaza and access road alternatives. • The evaluation of the practical alternatives was undertaken consistent with the approach used to evaluate the illustrative alternatives. The same evaluation methods and evaluation criteria were used, and the three different weighting scenarios (public, CCG and study team) were applied. • The practical crossing, plaza and access road alternatives were presented to members of the public and external stakeholders at the third and fourth round of PIOHs in March 2006 and December 2006 respectively. These alternatives were also discussed at workshops held subsequent to those PIOHs, in April 2006 and January 2007 respectively. • The TOR proposed five rounds of PIOHs during the study. In total, the study team provided seven rounds of PIOHs. • The analysis of the five original access road alternatives, along with the corresponding plaza and crossing alternatives was presented at the fifth round of PIOHs in August 2007, six months in advance of the U.S. public hearing. Technical reports which provided the details of the analysis were made available on the study website during the summer and fall of 2007 to assist stakeholders in reviewing the analysis of the practical alternatives. • A Parkway alternative was developed, based on refinements to the below-grade and tunnel alternatives. The Parkway was presented at the fifth round of PIOHs in August 2007. The Parkway alternative was based on the notion of a more "green", context sensitive alternative, which emerged through consultation with the City of Windsor. Following the fifth round of PIOHs, the

EA TOR Chapter/Section Reference	Heading	Commitment	EA Report Chapter/Section Reference	Discussion
				Parkway alternative was refined. The study team considered stakeholder input in making these refinements. The refined Parkway alternative was renamed The Windsor-Essex Parkway, and was thoroughly analysed and evaluated along with the five original practical access road alternatives. The results of this evaluation were presented at the sixth round of PIOHs in June 2008. • The commitment in the EA TOR to present the analysis of the practical alternatives prior to selecting the TEPA was addressed through presentation of the preliminary analysis results at the December 2006 PIOH and the complete analysis of the five original practical alternatives at the fifth round of PIOHs in August 2007. Given that the Windsor–Essex Parkway alternative was a refinement of the original below-grade and tunnel alternatives, the analysis of the Windsor–Essex Parkway alternative was presented together with the evaluation of practical alternatives at the sixth round of PIOHs in June 2008. • Comments on the analysis of The Windsor-Essex Parkway were sought and were incorporated into the concept design of The Windsor-Essex Parkway, which was presented along with the associated mitigation, as the Recommended Plan at the seventh and final round of PIOHs in November 2008.
3.4.1	Development of the Concept Design	• The Concept Design plan will be undertaken to a level of engineering detail necessary to support: – The development of mitigation measures in consultation with the appropriate agencies; – A decision under CEAA by each Federal Regulatory Authority (RA) on whether adverse environmental effects (after mitigation) are significant or not; – OEA approval under OEAA; and – FHWA approval under NEPA. • In addition to the continuing public and private sector consultation, a fifth round of Public Information Open Houses will be held to seek stakeholder input to the concept Design alternatives. • Mitigating measures will be developed during the concept design phase and, upon selection of the preferred Concept Design, these measures will be incorporated to alleviate the anticipated environmental effects. • Concept Design plans will be prepared for the preferred concept alternative(s) at an appropriate level of detail. Typical elements of Concept Design can be viewed in supporting documentation.	• Chapters 9, 10, Appendix A	• The Concept Design of the Recommended Plan was developed to the level of engineering detail specified in the EA TOR. • The Concept Design of the Recommended Plan was presented to members of the public and external stakeholders at the seventh round of PIOHs in November 2008. It should be noted that additional PIOHs beyond the five that were envisioned in the EA TOR were required for this study to facilitate comprehensive, effective and traceable consultation program undertaken for this study. • As documented in Chapter 10, a comprehensive set of mitigating measures was developed for all environmental factors to alleviate the environmental effects, and in many cases to provide positive benefits to the community, including reduced noise impacts, vegetative buffers, a multi-use trail system, etc.
4	Monitoring Strategy	• During the integrated environmental study process, MTO will commit to developing a monitoring program for the implementation (construction) of the proposed design for the Detroit River International Crossing in cooperation with MDOT, FHWA and TC. The OEA Report will include a comprehensive list of all commitments made during	• Chapter 10, 11	• The EA Report commits to a monitoring plan to ensure that the implementation of the mitigating measures and key design features are consistent with the approvals of the EA and in accordance with the contract.

EA TOR Chapter/Section Reference	Heading	Commitment	EA Report Chapter/Section Reference	Discussion
		the study to guide future environmental work and consultation as well as effects and compliance monitoring.		• Monitoring will be carried out by Construction Administration staff, as well as through periodic site visits by environmental specialists. • Chapter 11 commits to the development of a Compliance Monitoring Plan to document, track and record compliance and monitoring efforts on a project. • Chapter 11 also commits to future consultation requirements during subsequent design stages.
5	Consultation for the Integrated Environmental Study Process	• Consultation activities undertaken during the study will focus on the following seven stages of the planning process: – Purpose and Need / Assessment of Planning Alternatives – Development of Illustrative Alternatives – Refinement and Evaluation of Illustrative Alternatives – Analysis of Practical Alternatives – Evaluation and Selection of a Preferred Practical Alternative – Concept Design and Mitigation of the Preferred Alternative – Environmental Assessment Documentation Submission	• Chapter 3	• Chapter 3 summarizes the seven rounds of PIOHs that were held at key study milestones, as well as the over 300 meetings held with external stakeholders in many different forums throughout the course of the project.
5.1	Public Consultation During the Integrated Environmental Study Process	• Within the integrated environmental study process, public consultation will involve reviewing, commenting and providing input to the technical and environmental work undertaken and to provide input to the public consultation process. • Implement the public consultation program consistent with the requirements of Sections 5.1.1 (Public Information Open Houses and Follow-up Activities), 5.1.2 (Public Notification) and 5.1.3 (Private Sector Advisory Group) of the EA TOR.	• Chapter 3	• Chapter 3 summarizes the public input obtained throughout the study, as well as the techniques employed to elicit this input.
5.2	Approach for Consulting External Agencies, Ministries and First Nations during the Integrated Environmental Study Process	• Implement the public consultation program consistent with the requirements of Sections 5.2.1 (Ministries/Departments/Agencies), 5.2.2 (Federal Agencies), 5.2.3 (Municipalities), 5.2.4 (Municipal Councils), and 5.2.5 (First Nations) of the EA TOR.	• Chapter 3	• Chapter 3 summarizes the input obtained from external agencies, ministries, First Nations, municipalities, etc., as well as the techniques employed to elicit this input.
5.3	Pre-Submission Review of the Environmental Assessment Report/Environmental Impact Statement	• The OEA/EIS Report will be available for a municipal/agency/public/First Nations review prior to finalizing for formal submission. • The final Municipal Advisory Group, Private Sector Advisory Group and Regulatory Agency Advisory Group meetings will be used to present an OEA/EIS Report for review prior to submission for formal review and approval.	• Chapter 3	• As discussed in Chapter 3, the draft EA Report was made available to public and external stakeholders during a Pre-Submission review from November 12, 2008 to December 12, 2008.
5.4	Submission of the EA/EIS/CEAA Screening Report	• Once finalized, the OEA Report will be submitted to MOE. The submission will be in accordance with Reg. 334, including: – The OEA Report will include an Executive Summary and a list of studies and reports done in connection with the undertaking or matters related to the	• Chapter A	• The submission of the final EA Report to the Minister of the Environment is described in Chapter A. All requirements outlined in the EA TOR have been adhered to. • A CEAA Screening Report will be submitted to Transport Canada for circulation

EA TOR Chapter/Section Reference	Heading	Commitment	EA Report Chapter/Section Reference	Discussion
		undertaking. – Unbound maps showing the location of the undertaking and the area affected by it will be included in the submission. • The OEA Report will document all pertinent aspects of the study concerning both sides of the border (i.e. existing conditions, consultation activities, environmental effects, mitigation and commitments). • This Terms of Reference (TOR) document and the Minister's "Notice of Approval" of the TOR will also be included in the appendices of the OEA Report. • As part of the MOE review process, the Report will be circulated to all pertinent government agencies for review, and will also be made available for public review. • Upon consideration of all comments received, the Minister will make a decision on the OEA. • Under CEAA, a Screening Report(s) is prepared and circulated to the Screening Committee (federal government review team). • The Screening Report(s) is then circulated to all pertinent federal regulatory authorities (RAs) for review. • The OEA Report will be appended to the Screening Report(s) as part of this circulation.		to all pertinent federal regulatory authorities (RAs) for review. The OEA Report will be appended to the Screening Report as part of this circulation.
6	Other Approvals Required	• Consultation with approval agencies will continue during the EA to coordinate timing of approvals, approval requirements and to ensure that approvals are ultimately obtainable.	• Chapter 11	• Chapter 11 provides a list of the approvals that will be required during the design phases of the EA. Consultation with approval agencies will continue during the EA to coordinate timing of approvals, approval requirements and to ensure that approvals are ultimately obtainable.

EXHIBIT 1.2 – OVERALL STUDY SCHEDULE

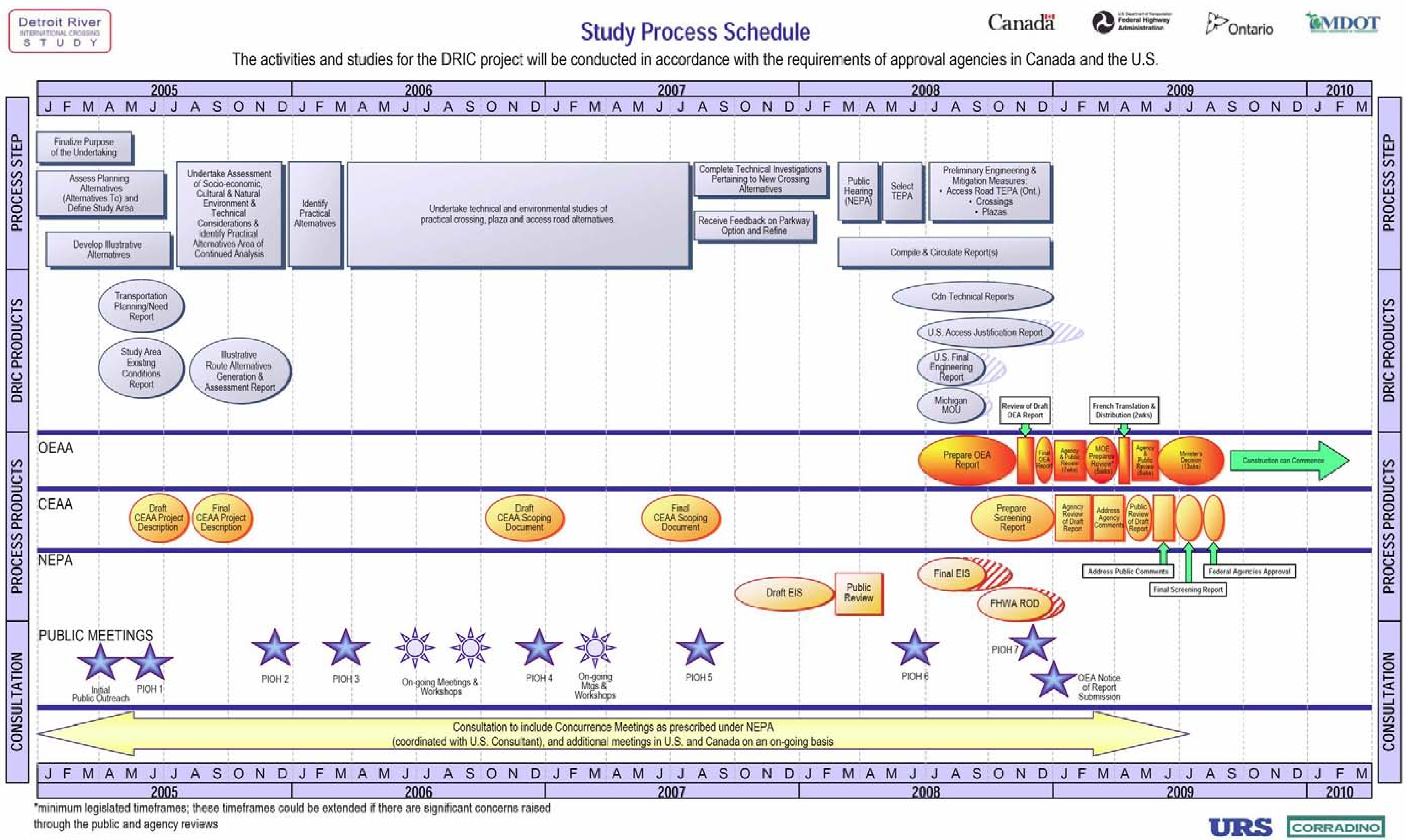
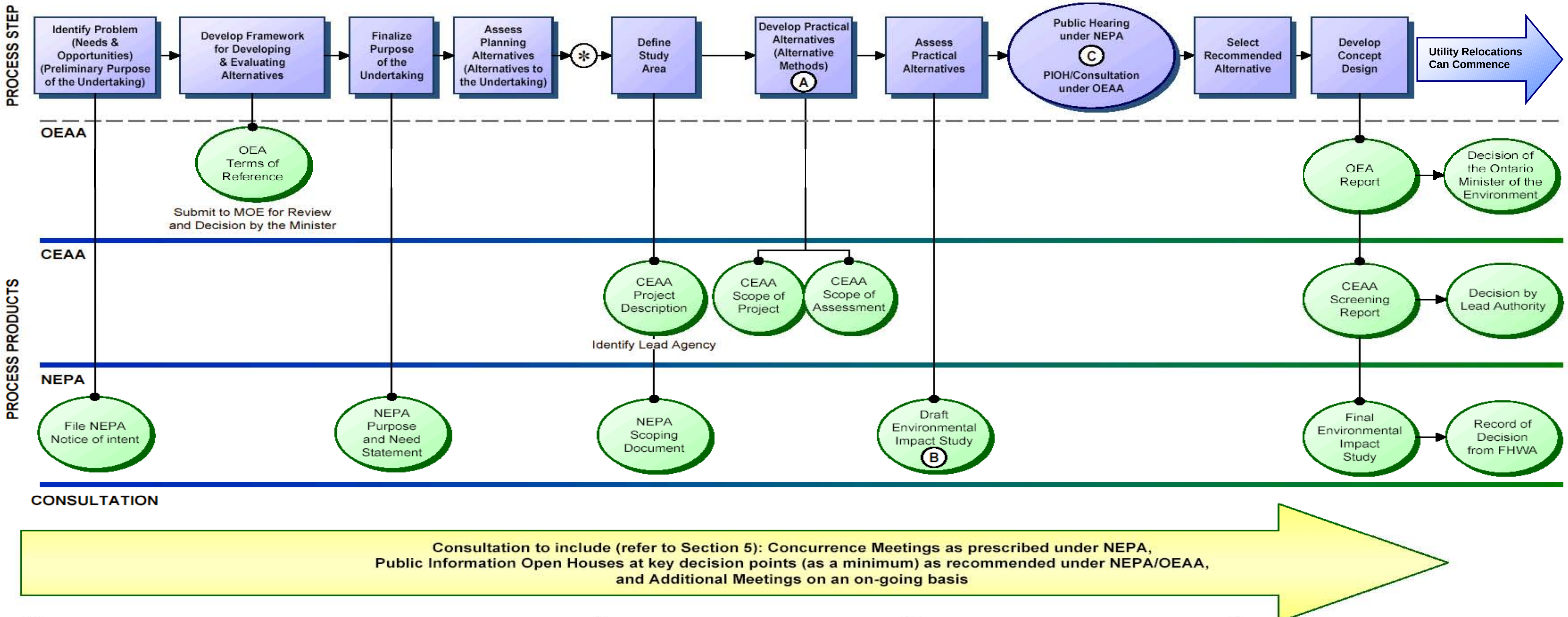


EXHIBIT 1.3 – COORDINATED NEPA/OEAA/CEAA PROCESS



* Following the assessment of planning alternatives, the process for identifying a recommended linear transportation facility, for which MTO would serve as the proponent, is illustrated. If the assessment of planning alternatives recommends other/additional alternatives, appropriate planning/implementation processes may be initiated by other proponents. MTO will meet with MOE at this point of the integrated environmental study process to obtain guidance/comment on future actions.

A In developing practical alternatives, the Project Team will first identify Illustrative Alternatives. The preferred Illustrative Alternatives will be carried forward as Practical Alternatives (See Section 3.3).

B Under NEPA, the Draft EIS is typically prepared and circulated prior to any selection of a recommended alternative.

C The Public Hearing following the circulation of the Draft EIS is mandatory under NEPA.

1.6 Study Process: A Coordinated Approach

An objective of the Border Transportation Partnership was to develop an appropriate coordinated environmental planning process that incorporated the requirements of the Ontario Environmental Assessment Act (OEAA), Canadian Environmental Assessment Act (CEAA) and the U.S. National Environmental Policy Act (NEPA) processes as well as any other applicable Ontario, Canadian and U.S. legislation.

Further to this, the Partnership's goal was to conduct essentially one body of work pertaining to alternative generation, analysis and evaluation, and to document the project findings in format(s) suitable for circulation and review by government agencies, ministries, and departments and the general public.

This work has been summarized in a series of documents. This OEA Report summarizes the work undertaken on the Canadian side of the Detroit River in accordance with the requirements of the OEAA.

In addition, a CEAA Screening Report is being prepared to meet the requirements of the CEAA process. Under CEAA, a Screening Report is prepared and circulated to the Screening Committee (federal government review team). The Screening Report is then circulated to all pertinent federal regulatory authorities (RAs) for review. The OEA Report will be appended to the Screening Report as part of this circulation. The RA responsible for the preparation of the respective Screening Report will determine if further agency or stakeholder review is required. The RAs will decide whether to exercise any power or perform any duty or function that would permit the project to proceed. As delegated by the RAs, Screening Reports may be carried out by the Partnership (or their consultants) with direction from the RAs in consultation with expert federal authorities (FAs).

In the U.S., the Final EIS (FEIS) was submitted to U.S. Federal Highway Administration (FHWA). FHWA will circulate the FEIS to government agencies and members of the public that have made substantive comments. Upon consideration of all comments received, FHWA will issue a Record of Decision. In December 2008, the Michigan Department of Transportation received Federal Highway Administration approval of the U.S. Final Environmental Impact Statement (FEIS).

A key principle of the process was that government ministries, departments, and agencies, as well as municipalities, non-government agencies, interest groups, community groups, First Nations and interested members of the public were provided with the opportunity to participate and offer input throughout the study. The Partnership proactively sought input from all stakeholders at key points in the decision-making process.

In addition, throughout the environmental study process, the Partnership coordinated meetings between Canadian and United States federal, state and provincial agencies with common or shared interests so that, as much as possible, a bi-national approach to identifying and addressing issues was developed.

Another key principle of the coordinated process was that, where two or more processes specified different requirements in conducting the study, the Partnership sought to incorporate the most rigorous requirement to the extent possible. However, there were certain requirements that were unique to a particular jurisdiction that needed to be directly incorporated into the corresponding study process. These issues were addressed as required by the Partnership during the coordinated study process. This coordinated process is schematically illustrated in Exhibit 1.3.

1.7 Relevant Projects / Initiatives

1.7.1 Canadian Projects / Initiatives

Prior to the Detroit River International Crossing study, the governments of Canada and Ontario announced a joint investment in Windsor-Essex for the *Let's Get Windsor-Essex Moving* strategy – a series of transportation infrastructure projects aimed at reducing congestion and improving efficiency in the local road network leading to the border crossings.

To date, more than $100 million has been invested in this strategy on several projects, including road-rail grade separations, road-widening projects, installation of intelligent transportation systems and improvements to the Detroit-Windsor Truck Ferry.

The Ontario Ministry of Transportation continues to improve Highway 3 in Essex County through a two-phase widening project from Leamington to Windsor. Phase 1 includes the widening of Highway 3 from two lanes to four from the west junction of Essex County Road 34 to Essex County Road 8 near Windsor. This project was completed in 2008. Phase 2 begins in 2009 and will widen Highway 3 from two lanes to five from Essex County Road 11 to the west junction of Essex County Road 34.

The Detroit International Bridge Company/Canadian Transit Company have proposed to build a second span adjacent to the existing Ambassador Bridge, referred to as the *Ambassador Bridge Enhancement Project*. The project includes a new suspension bridge similar in appearance to the Ambassador Bridge, located along the same corridor. A federal Environmental Assessment under the *Canadian Environmental Assessment Act* has been initiated for the proposed Ambassador Bridge Enhancement Project.

In addition, the Ambassador Bridge Company recently acquired land to expand its plaza operations and toll booth capacity in Windsor, Ontario. Construction has begun to expand the Ambassador Bridge plaza.

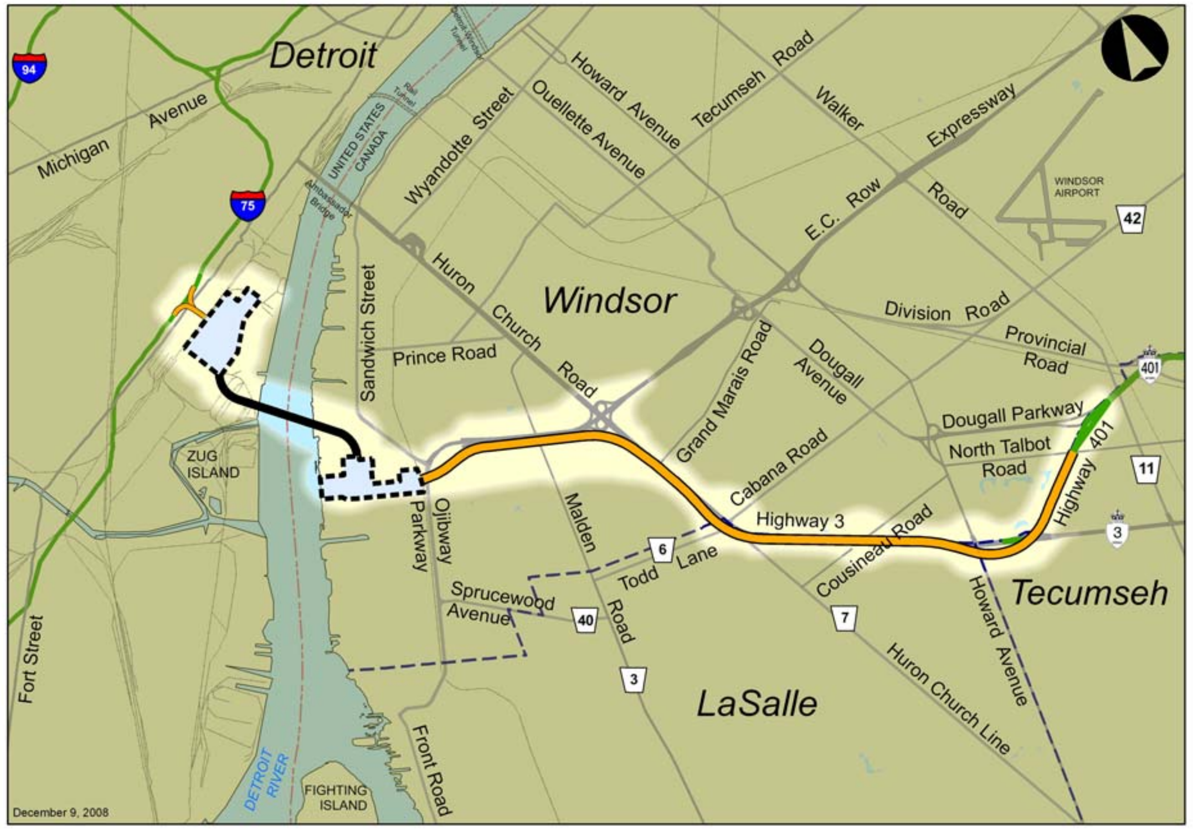
1.7.2 United States Projects / Initiatives

Construction is underway on the *Ambassador Gateway Project* in Detroit, Michigan. This project, which is being undertaken by the Michigan Department of Transportation (MDOT), is expected to be completed by December 2009. It will connect Detroit area freeways to the Ambassador Bridge and Detroit's Mexicantown neighbourhood. The project includes redesigning the Ambassador Bridge U.S. Plaza to improve safety and ease traffic flow.

1.8 Description of the Recommended Plan

After evaluating several illustrative and practical alternatives for the access road, Canadian inspection plaza, and the international bridge crossing within the study area, the study team selected the Technically and Environmentally Preferred Alternative (TEPA). The TEPA was refined based on additional technical analysis, stakeholder consultation, and development of appropriate mitigation measures. The combination of the TEPA and associated refinements along with the proposed mitigation measures are referred to collectively as the Recommended Plan. Key elements of the Recommended Plan are described in the following sections. (Refer to **Exhibit** 1.4 for an illustration of The Recommended Plan, which includes the Windsor-Essex Parkway, Plaza B1 and Crossing X-10B.)

EXHIBIT 1.4 –THE RECOMMENDED PLAN



1.8.1 The Windsor-Essex Parkway

The Windsor-Essex Parkway is a key component of a new border transportation system that will provide a direct route connecting Highway 401 in Windsor, Ontario to Interstate 75 in Detroit, Michigan.

The Windsor-Essex Parkway is planned as a six-lane urban freeway with 11 tunnels, and service roads. It allows long-distance international traffic to travel unimpeded by traffic signals to a new inspection plaza and river crossing while improving community linkages and providing extensive new trails, green space and other recreational opportunities. The Windsor-Essex Parkway includes:

- More than 120 ha (300 acres) of parkland;
- 20 km of recreational trails;
- 11 tunnels covering approximately 1.8 km of freeway;
- A new four-lane service road;
- Improvements to the movement of traffic to and from the border;
- Stormwater management ponds in selected locations;
- Noise mitigation measures;
- Full illumination along the freeway; and
- Conventional illumination along service roads, side roads and sections of the trail system.

From the inspection plaza easterly approximately 1 km to where the freeway portion of The Windsor-Essex Parkway approaches E.C. Row Expressway approximately 0.3 km east of Matchette Road, the proposed freeway is grade separated over the Essex Terminal Railway, Ojibway Parkway and Matchette Road and situated south of the existing E.C. Row Expressway corridor.

From approximately 0.3 km east of Matchette Road to approximately 0.4 km west of Huron Church Road, the freeway portion of The Windsor-Essex Parkway and E.C. Row Expressway are integrated into a core-collector system. In this section, the eastbound and westbound lanes of E.C. Row Expressway diverge and the freeway portion of The Windsor-Essex Parkway is aligned between them.

From north of Bethlehem Avenue/Labelle Street to approximately 1.0 km east of Howard Avenue, the proposed freeway is below-grade, predominantly in open-cut with grass side slopes. Retaining walls, either partial-height or full-height, are required in certain localized areas.

Within this section, the location of the service road relative to the freeway varies. From north of Bethlehem Avenue/Labelle Street to east of Huron Church Line the proposed service road is adjacent to the proposed freeway on the north side. From east of Huron Church Line to approximately 0.7 km west of Howard Avenue, the proposed service road is situated on the south side of the proposed freeway. From 0.7 km west of Howard Avenue to approximately 0.3 km east of Howard Avenue, the proposed service road is once again located adjacent to the proposed freeway on the north side. East of this location, no service road is proposed.

From approximately 1.0 km east of Howard Avenue to North Talbot Road, The Windsor-Essex Parkway is predominantly at existing grade. There is no service road proposed through this section.

1.8.2 Plaza B1

On the Canadian side, plaza alternatives were developed considering the need to provide improved border processing facilities to meet future travel demand and security requirements at the border crossing. All plaza alternatives considered were much larger than the current plazas at the Ambassador Bridge and the Detroit-Windsor Tunnel. The new plaza, Plaza B1 will be designed to serve the future (2035) travel demands at the border crossing. Initial construction of the plaza may not include the fully developed plaza, as the plaza may be constructed in stages. The initial construction of the plaza will be such that future expansion will be possible by way of constructing additional inspection booths or tolls.

Plaza B1 was developed in consultation with Canada Border Services Agency and provides sufficient area for primary inspection lane booths and on-site secondary inspection of people and goods. The plaza alternative also allows for dedicated NEXUS and FAST lanes and provides for a substantial improvement of border processing capabilities.

Canada Border Services Agency has reviewed and tested functional layouts of the plaza alternatives to confirm the suitability under future traffic conditions. Plaza B1 includes:

- Total plaza area of 55 ha (137 acres);
- Total of 29 inbound inspection lanes;
- Total of 103 secondary inspection parking spaces for commercial vehicles;
- Nine toll collection lanes; and
- Stormwater management features to control quality and quantity of runoff water.

The final design of the plaza will incorporate a local access road along the edge of the plaza that will provide continuity for traffic between Sandwich Street and Broadway Street as well as access for plaza employees. Local access will also be provided at the north end of the plaza from a realigned Sandwich Street to the Brighton Beach Power Station and Keith Transformer Station.

1.8.3 Crossing X-10B

The new Detroit River crossing is being developed as a six-lane bridge providing three Canada bound lanes and three U.S. bound lanes. The new crossing, Crossing X-10B will accommodate future travel demand, by both meeting capacity needs and providing flexibility to allow for the streaming of traffic to improve border processing (e.g., designated NEXUS/FAST lane).

The new river crossing will be constructed to link inspection plazas on the Canadian and U.S. sides of the Detroit River, and will be a key component of the new end-to-end transportation system that will link existing Highway 401 to the U.S. Interstate system. The crossing will consist of both a main bridge that will span the width of the Detroit River, and approaches to the main bridge constructed on piers that will connect to plazas in both Canada and the U.S. The main bridge and approaches will be constructed on the Crossing X-10B alignment.

Two bridge types are being considered for the new crossing: a cable-stayed bridge and a suspension bridge. Selection of the bridge type will be made during subsequent design phases of this project.

The reader is referred to Chapter 9 for further details of The Windsor-Essex Parkway, Plaza B1, and Crossing X-10B.

2 ENVIRONMENTAL ASSESSMENT PROCESS

This section provides an overview of the Environmental Assessment process that was carried out as part of the Detroit River International Crossing study. The study followed the requirements for an individual Environmental Assessment under the *Ontario Environmental Assessment Act* (OEAA), and the requirements of the *Canadian Environmental Assessment Act* (CEAA) under subsection 5(1)(a). As such, both EA processes have been coordinated pursuant to the *Canada-Ontario Agreement on Environmental Assessment Cooperation* (the Agreement).

As DRIC is a bi-national study, the EA processes undertaken in Canada included coordination of the Canadian study with the studies undertaken by the Michigan Department of Transportation (MDOT) and the Federal Highway Administration (FHWA). In the United States, the umbrella environmental law is the *National Environmental Policy Act* (NEPA). NEPA provides for a decision-making process that relies on interdisciplinary analysis, and consultation and commenting by the public, stakeholders, and regulatory agencies. In December 2008, the Michigan Department of Transportation (MDOT) received Federal Highway Administration approval of the U.S. Final Environmental Impact Statement (FEIS) for the crossing, the US plaza and the US interchange with I-75.

2.1 The Ontario Environmental Assessment Act

The purpose of the OEAA is to help protect and conserve Ontario's environment by ensuring that projects subject to the Act follow a planning process leading to environmentally sound decision-making.

For projects subject to the OEAA, an environmental assessment involves identifying and planning for environmental issues and effects prior to implementing a project. The process allows reasonable opportunities for public involvement in the decision-making process of the project. An EA document is prepared by the proponent of the project and is subject to review by the public and government agencies.

The Detroit River International Crossing study has followed the requirements for an individual Environmental Assessment (Section 6.1 (2) of the OEAA). In general terms, an environmental assessment is a study that assesses the potential environmental effects and benefits of a project or undertaking on the environment. Key components of an EA include: consultation with members of the public, regulatory agencies, municipalities, and other stakeholders; First Nations engagement; the consideration of alternatives and their potential environmental effects; and the mitigation and management of environmental effects.

The OEAA requires proponents to prepare a Terms of Reference (TOR) for the Environmental Assessment (EA). A TOR sets out a framework that guides the preparation of the EA. The approval of the Terms of Reference is the first statutory decision made by the Minister of the Environment in the EA planning and approval process.

The Detroit River International Crossing study Environmental Assessment Terms of Reference (May 2004) outlines the minimum considerations and study framework that were to be followed in completing this Environmental Assessment. This Terms of Reference document was approved by the Ontario Minister of the Environment on September 17, 2004.

The Detroit River International Crossing study has been undertaken consistent with the requirements identified in Section 6.1 (2) of the OEAA. The study has addressed the following components:

- A description of the purpose of the undertaking;
- A description and statement of the rationale for the proposed undertaking, alternatives to the undertaking, and alternative methods for carrying out the undertaking;
- A description of:
  - The environment that will be affected or that might reasonably be expected to be affected, directly or indirectly, by the undertaking, the alternatives to the undertaking, and the alternative methods of carrying out the undertaking;
  - The effects that will be caused or that might reasonably be expected to be caused to the environment, by the undertaking, the alternatives to the undertaking, and the alternative methods of carrying out the undertaking;
  - The actions necessary or that may reasonably be expected to be necessary to prevent, change, mitigate or remedy the effects upon or the effects that might reasonably be expected upon the environment, by the undertaking, the alternatives to the undertaking, and the alternative methods of carrying out the undertaking;
  - An evaluation of the advantages and disadvantages to the environment of the undertaking, the alternatives to the undertaking and the alternative methods of carrying out the undertaking; and,
  - A description of the consultation undertaken by the proponent and the results of the consultation.

Other aspects of the environmental assessment process applicable to this project are described in the *Ontario Environmental Assessment Act*, which can be accessed at: http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90e18_e.htm

2.2 The Canadian Environmental Assessment Act

The *Canadian Environmental Assessment Act* (CEAA) is the legal basis for the federal environmental assessment process. The Act sets out the responsibilities and procedures for carrying out the environmental assessments of projects that involve federal government decision-making.

The federal environmental assessment process is applied whenever a federal authority has a specified decision-making responsibility in relation to a project, also known as a "trigger" for an environmental assessment. Specifically, the Act is "triggered" when a federal authority:

- Proposes a project;
- Provides financial assistance to a proponent to enable a project to be carried out;
- Sells, leases, or otherwise transfers control or administration of federal land to enable a project to be carried out; or
- Provides a licence, permit or an approval that is listed in the *Law List Regulations* that enables a project to be carried out.

As a co-proponent of the Canadian portion of the project, Transport Canada (TC) has determined that an EA is required pursuant to subsection 5(1)(a) of the CEAA. In addition, the project will require an approval under the *Navigable Waters Protection Act*, which is administered by TC, and is identified in the *Law List Regulations* under CEAA. As such, TC has identified itself as a Responsible Authority (RA) for the assessment. Fisheries and Oceans Canada (DFO) is also a Responsible Authority, in relation to *Fisheries Act* authorizations that will be required for certain water crossings along the access road. The Windsor Port Authority (WPA) is a Prescribed Authority under the *Canada Port Authority Environmental Assessment Regulations,* in relation to federal water lots that will be crossed by the new international bridge. TC, DFO and the WPA coordinated their activities, to ensure that a single environmental assessment is conducted.

A number of federal authorities also identified themselves as having specialist or expert advice that may contribute to the conduct of the assessment, including: Environment Canada, Health Canada, Natural Resources Canada, Foreign Affairs Canada, the Canadian Transportation Agency and the Canada Border Services Agency. These authorities participated as expert federal authorities in the EA process. Since the assessment is multi-jurisdictional, the Canadian Environmental Assessment Agency (the Agency) served as the Federal Environmental Assessment Coordinator (FEAC). Together, these departments and agencies comprise the federal review team.

The project is not described on the *Comprehensive Study List Regulation* of the Act, and at this time, the Responsible Authorities and Prescribed Authority are not aware of any issues associated with this project that would warrant a need to have it referred to a mediator or a review panel pursuant to section 25 of the Act. As such, section 18(1) of the Act requires that a screening level assessment of the project be carried out.

A screening is a systematic approach to identifying and documenting the environmental effects of a proposed project and determining the need to eliminate or minimize (mitigate) the adverse effects, to modify the project plan, or to recommend further assessment through mediation or by a review panel.

As this project is also undergoing an EA under the *Ontario Environmental Assessment Act*, this EA processes will be coordinated pursuant to the *Canada-Ontario Agreement on Environmental Assessment Cooperation*. Within this coordinated EA process, a separate federal screening report, based on the assessment documented in this report, will be prepared to support federal decision-making.

2.3 Coordination of the Federal and Provincial Environmental Assessment Processes

As noted in Section 2.3, the federal and provincial EA processes were coordinated pursuant to the *Canada-Ontario Agreement on Environmental Assessment Cooperation* (the Agreement), which states that federal and provincial governments:

> "*will coordinate the environmental assessment processes whenever projects are subject to review by both jurisdictions … The agreement maintains the current level of environmental standards and the legislative and decision-making responsibilities of both governments. While projects requiring both provincial and federal environmental assessment approvals will still require separate approvals, decisions will be based on the same body of information and there will be an ability to make decisions concurrently*".

A Canadian Agencies Advisory Group (CANAAG) was established in 2005 to provide a forum for federal and provincial government agency representatives could receive regular project updates, and to exchange information on issues and concerns.

To further assist in coordination efforts, a Joint Assessment Committee (JAC) was established in early 2008, comprised of representatives of the Ontario Ministry of the Environment, MTO, the Agency, TC, DFO, and the WPA.

The goal of the coordinated process was to ensure that the study generated the type and quality of information required to satisfy both the *Canadian Environmental Assessment Act* and the *Ontario Environmental Assessment Act*; and provides findings on the environmental effects of the proposed project required for decision-making by the respective parties.

2.4 Coordination Between the Canada and United States DRIC Study Teams

The federal-provincial EA undertaken in Canada was also coordinated with studies in the United States, which were undertaken in order to gain approval under the *National Environmental Policy Act* (NEPA). Although the documents and approval processes are different, the objectives and processes of NEPA are similar to that of OEAA. There is no NEPA document that is equivalent to the EA TOR; however, the Purpose of the Undertaking discussion in an EA TOR is comparable to the Purpose and Need Statement under NEPA.

A draft Purpose and Need Statement was prepared in parallel with the preparation of the EA TOR. Consultation with relevant federal environmental and cooperating agencies on the draft Purpose and Need Statement took place during the preparation and review of the EA TOR. Upon approval of the EA TOR and the finalization of the Purpose and Need Statement, the Partnership coordinated efforts in conducting the Detroit River International Crossing study.

In addition, throughout the study process, the Partnership coordinated meetings between Canadian and United States federal, state and provincial agencies with common and shared interests so that, to the extent possible, a bi-national approach to identifying and addressing issues could be developed.

3 CONSULTATION

3.1 Consultation Overview

From the outset of the study, the study team realized that the Detroit River International Crossing project would benefit and have impacts on many stakeholders throughout the Windsor and Essex County area. Therefore, the team set out to develop a consultation framework that would include a wide variety of stakeholders and allow opportunities for meaningful two-way dialogue throughout the project. To this end, the study team established the following consultation groups early in 2005:

- Municipal Advisory Group (MAG): Consisting of area municipalities and the County of Essex. As the study progressed, school boards were also invited to join the MAG.
- Canadian Agency Advisory Group (CANAAG): Consisting of agencies involved in the review and approval of the provincial EA Report and the federal CEAA Screening Report.
- Private Sector Advisory Group (PSAG): A bi-national consultation group. There were invitations sent to several business owners and associations in Canada and the U.S.
- Crossing Owners/Operators/Proponents (COOP): Consisting of owners and operators of current border crossings, and private sector proponents of new or expanded crossings.
- Community Consultation Group (CCG): The study team solicited membership from the public, representing a wide variety of backgrounds and interests to join the CCG. Everyone who asked to be involved was included in the group. Participants volunteered their time to meet with the team on a regular basis, learn about the project, and share their ideas and interests.
- First Nations Consultation: Consultation with First Nations began in January 2005, where several First Nations groups were initially consulted.

The consultation groups were established early in 2005 and the team has met with each of them several times as detailed in the following sections. As the study evolved, the team consulted with various other interests groups and stakeholders, including community groups, business owners and individual property owners. After the selection of the ACA (see Chapter 6), a School Advisory Group was formed to provide more direct consultation with local school councils. In addition to the above the team maintained extensive coordination and consultation with the U.S. study team and relevant stakeholders. DRIC study Working Group and Steering Committee meetings were held at regular intervals throughout the four-year period. Study team representatives reciprocated attendance at most public meetings held on the opposite side of the border.

The study team also consulted with the general public throughout the course of the study. The main forum for public consultation has been Public Information Open Houses (PIOHs) and follow up workshops, bus and boat tours, as well as several context sensitive solutions workshops and an initial public outreach meeting. Each meeting was extensively advertised and well attended, in some cases, by more than 1,000 citizens. The PIOHs provided attendees with the opportunity to review and discuss display boards and handout materials, as well as video animations of proposals and other relevant information. PIOHs and workshops were staffed by several technical representatives of the study team as appropriate. These included technical and environmental specialists (air, noise, natural heritage, etc.), and the lead consultant, MTO (project management, environmental, and property specialists). At each public event, comments were solicited for consideration and response. Throughout the study, the study team also met with various community groups, as appropriate, in order to further understand and respond to specific issues and concerns.

To further general public knowledge about the project, the study team established a project website, which has been maintained throughout the course of the study (www.partnershipborderstudy.com). This website has provided up-to-date information on the study progress as well as draft reports as they have become available. A second project website (www.weparkway.ca) was added in the spring of 2008 to highlight the Technically and Environmentally Preferred Alternative for the access road portion of the study. The public has been further informed about the study through the local media. Study progress has been widely covered by the local newspaper, radio stations, and television stations.

As noted above, the Detroit River International Crossing study has included extensive consultation with a wide variety of stakeholders. These consultation activities are depicted graphically as Exhibit 3.1. Table 3.1 summarizes the consultation activities in chronological order. Table 3.2 provides a listing of the consultation activities sorted by stakeholder. These tables highlight the fact that more than 300 meetings have been held throughout the study. Consultation has occurred during every phase of the project with stakeholders, including:

- Municipalities
- Federal and Provincial Agencies
- Community Groups
- First Nations
- Business Owners
- Proponents of New River Crossing Initiatives
- The General Public
- Emergency Services
- Utility Companies

The consultation has been undertaken using many forums, including Public Information Open Houses (PIOHs), workshops, meetings and correspondence.

The information received through these consultation activities has been considered in the development, analysis and evaluation of alternatives. In some cases, the comments and/or desires of interested stakeholders were not supported by the study team's analysis and evaluation, in which case they are not reflected in the final outcomes. However, in many cases the comments reinforced the analysis/evaluation and/or caused the team to adjust its thinking regarding the balance of impacts and benefits of the undertaking. In this way, the consultation has influenced the outcome of the project in many significant ways. Several of these are summarized as follows:

- The Schwartz Report: Released by the City of Windsor in January 2005, this report outlined a vision for a new border crossing and plaza in the Brighton Beach area, and a controlled access facility connecting to Highway 401. The report discounted alternatives, such as use of E.C. Row Expressway, and the Detroit River Tunnel Partnership (DRTP) corridor through the central parts of

Windsor. The report considered access road alternatives primarily in the Highway 3/Huron Church Road corridor, the corridor which was ultimately selected by the DRIC study team as the preferred route for the access road.

- Rating Tool: Seven evaluation factors were developed in consultation with the public during the P/NF study and from the Initial Public Outreach (IPO) meeting. Public input relative to the weighting of the factors was obtained through a rating tool distributed at the first round of PIOHs in June 2005. Rating tools were also available through the local Project Office and on the project website. Interested members of the public were asked to provide the study team with their opinion as to how highly (on a scale of 0 to 100) the study team should consider each of the factors in deciding on what alternatives to carry forward for additional study. These responses enhanced the study team's appreciation of community concerns and values.
- Consultation with the Municipal Advisory Group: Among many useful contributions, the Municipal Advisory Group outlined a vision of the role and function of the future service road. This had considerable influence on the development of the alignments of the service road, as well as the ramp locations.

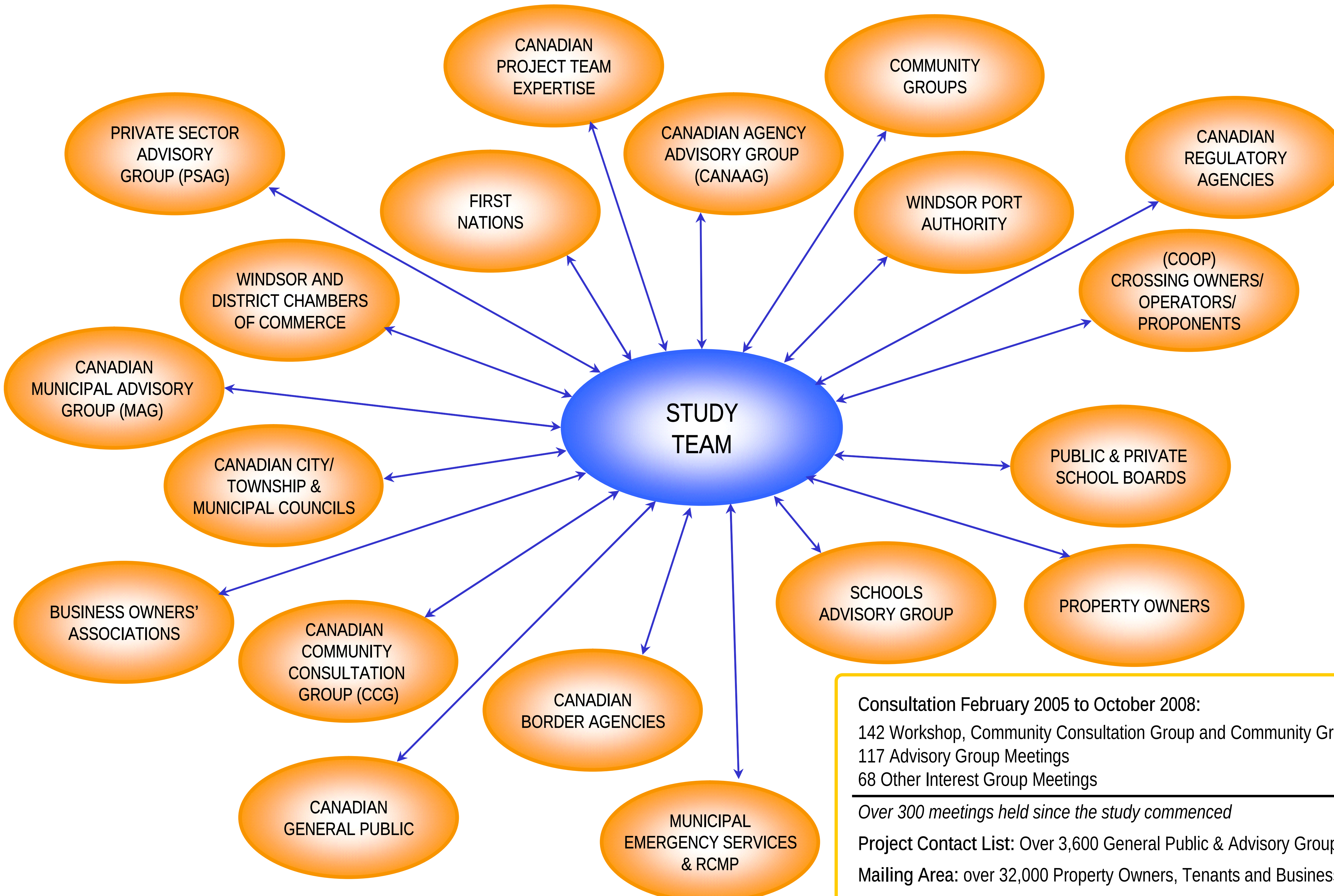
  The Municipal Advisory Group also outlined a vision for the Highway 3 interchange, which would help focus traffic away from the existing intersection of Howard Avenue and Highway 3 and more towards Highway 401, leading to and from the eastern parts of Windsor. These discussions had a direct bearing on the development of alternatives and the final selection of an interchange design in the Highway 3-Highway 401 area.

  The Municipal Advisory Group also requested that the study team consider the use of roundabouts at one or more strategic locations in the corridor. This led directly to consideration of roundabouts and selection of a roundabout at the Highway 3-Highway 401 interchange ramps.

  The Municipal Advisory Group also discussed the advisability of partial interchange ramps to and from Malden Road. These had been included as part of the original concepts, but were subsequently determined not necessary. This change facilitated moving the alignment of the access road closer to E.C. Row and ultimately integrating it into the E.C. Row corridor so as to minimize impacts to the natural area and nearby communities.
- Consultations with the City of Windsor, Municipal Advisory Group, Community Consultation Group, the public and many stakeholders within the community influenced the decision to set aside the at-grade alternatives and to further develop below-grade alternatives. These stakeholders also had a direct influence on the team's decision to develop a new alternative called The Parkway, a green transportation corridor which included a below-grade freeway, an end-to-end recreational trail system, and numerous tunnel sections.
- Context Sensitive Solutions (CSS) Workshops: To follow up on PIOHs, the team convened CSS workshops in 2006 and 2007. Study team members participating in the meeting included PMA Landscape Architects. The study team worked with citizens to identify themes for buffers and landscaping. There was strong community interest in naturalized areas and ecological restoration, which influenced the development of The Parkway alternative and mitigation treatments for the preferred alternative.
- Discussions with the Sandwich Towne Community: Several discussions took place with representatives of the Sandwich Towne community, highlighting the historical importance of Sandwich Towne. The historic nature and sensitivities of this community were considered throughout the analysis of alternatives for the plaza and bridge crossing. Ultimately, a location removed from the main part of Sandwich Towne was selected as the preferred alternative.
- Spring Garden Community Meetings: Meetings held with the Spring Garden community in 2008 indicated dissatisfaction with The Windsor-Essex Parkway alignment as it had been recommended in May 2008. This input prompted the team to develop a refined alignment, which integrates The Windsor-Essex Parkway into the E.C. Row Expressway corridor. This refinement has met with a level of acceptance by the community and the City of Windsor.
- Consultation with Oliver Estates Community: The August 2007 Parkway alternative originally envisioned a tunnel section at Howard Avenue. Subsequent discussion with the community indicated that the tunnel would have more benefit if was shifted farther west. As a direct result of this consultation, the tunnel design was revised at this particular location.
- Consultation with Residents in the areas of Kendleton Court, Sansotta Court, and other specific areas: These discussions have resulted in the team considering a wider buffer area and additional right-of-way.
- Consultation with Residents on Huron Church Line: Consultation with residents on Huron Church Line near the Highway 3 intersection has resulted in refinements to the alignment proposed for Huron Church Line and development of a short cul-de-sac to provide access to these residents.
- Consultation with Emergency Service Departments: Consultation with Windsor and LaSalle Fire Services has led directly to development of the interchange design at Todd Lane / Cabana Road West.

The following sections summarize key public and stakeholder consultations, which are illustrated in Exhibit 3.1.

EXHIBIT 3.1 – STUDY STAKEHOLDERS



Consultation February 2005 to October 2008:

142 Workshop, Community Consultation Group and Community Group Meetings
117 Advisory Group Meetings
68 Other Interest Group Meetings

Over 300 meetings held since the study commenced

Project Contact List: Over 3,600 General Public & Advisory Group Addresses

Mailing Area: over 32,000 Property Owners, Tenants and Businesses

Table 3.1 – Consultation Meetings By Date

#	Meeting	Date
1	Meeting with Town of LaSalle	22-Feb-05
2	Meeting with City of Windsor	24-Feb-05
3	Meeting with County of Essex	24-Feb-05
6	CBSA Meeting	17-Mar-05
7	Windsor City Council	21-Mar-05
8	LaSalle Town Council	22-Mar-05
9	PSAG Meeting	23-Mar-05
5	COOP Meetings (individual by organization)	22 & 23-Mar-05
10	MAG Meeting	29-Mar-05
11	CANAAG Meeting	31-Mar-05
12	CBSA Meeting	31-Mar-05
22	Initial Public Outreach Meeting	5 & 6-Apr-05
13	COOP Meetings (DRTP)	8-Apr-05
14	Binational Border Agencies Meeting	21-Apr-05
15	COOP Meetings (AMB)	28-Apr-05
16	First Nations (Oneida)	4-May-05
17	Community Consultation Group Meeting #1	11-May-05
19	U.S. Border Agencies Meeting	12-May-05
20	CBSA Meeting	18-May-05
21	MNR Meeting	18-May-05
22	WWCTWC	26-May-05
23	PSAG Meeting (CAPC)	2-Jun-05
24	Community Consultation Group Meeting #2	9-Jun-05
27	NBEST Meeting	14-Jun-05
28	Essex County Council	20-Jun-05
29	Windsor City Council	20-Jun-05
32	MAG Meeting	21-Jun-05
33	CANAAG Meeting	22-Jun-05
34	PSAG Meeting	23-Jun-05
35	First Nations (WIFN)	27-Jun-05
31	U.S. Public Meeting	27-Jun-05
36	COOP Meeting	28-Jun-05
30	Public Information Open House (PIOH) 1	21, 27 & 28-Jun-05
38	BASF Corporation Meeting	12-Jul-05
39	Community Consultation Group Meeting #3	13-Jul-05
40	MAG Meeting	14-Jul-05
41	PIOH 1 Workshop	14 & 20-Jul-05
42	MAG Meeting (Windsor Peer Review Team)	29-Jul-05
43	MAG Meeting (Tecumseh)	17-Aug-05
44	MAG Meeting (Windsor)	23-Aug-05
45	U.S. Scoping Meeting	31-Aug-05
46	Community Consultation Group Meeting #4 - Joint with LAC	28-Sep-05
47	CBSA Meeting	19-Oct-05
48	Community Consultation Group Meeting #5	25-Oct-05
49	U.S. LAC Meeting	26-Oct-05
50	PSAG Meeting (CAPC)	17-Nov-05
53	Essex County Council	28-Nov-05
54	Windsor City Council	28-Nov-05
55	U.S. LAC Meeting	28-Nov-05
57	MAG Meeting	29-Nov-05
58	Sandwich Development Task Force Meeting	30-Nov-05
59	CANAAG Meeting	1-Dec-05
56	Public Information Open House (PIOH) 2	29 & 30-Nov-05 and 01-Dec-05
60	Windsor Port Authority Meeting	2-Dec-05
61	COOP Meeting	6-Dec-05
62	PSAG Meeting	7-Dec-05
63	U.S. Public Meeting	8-Dec-05
64	Greater Essex County School Board Meeting	14-Dec-05
66	Essex Aggregates Meeting	15-Dec-05
67	Essex Terminal Railway Meeting	15-Dec-05
68	Lou Romano Water Reclamation Plant Meeting	15-Dec-05
69	Van De Hogen Meeting	15-Dec-05
70	Windsor Salt Meeting	15-Dec-05
65	Sandwich Community Heritage Group Meeting	15-Dec-05
71	Brighton Beach Power Meeting	16-Dec-05
72	Hydro One Meeting	16-Dec-05
73	U.S. Border Agencies Meeting	19-Dec-05
74	U.S. Workshop Meeting	21-Dec-05
75	U.S. Workshop Meeting	4-Jan-06
76	Sandwich Community Task Force Meeting	10-Jan-06
78	CBSA Meeting (+ tour)	11-Jan-06
77	Community Consultation Group Meeting #6	11-Jan-06
79	Huron Church Business Owners Meeting	12-Jan-06
80	Windsor Ward 1&2 Councillors' Meeting	18-Jan-06
81	U.S. Workshop Meeting	18-Jan-06
82	MAG Meeting	19-Jan-06
83	First Nations (WIFN)	20-Jan-06
84	PIOH2 Workshop (Plazas)	25-Jan-06
85	Windsor City Council Meeting	26-Jan-06
86	PIOH 2 Workshop (Routes)	26-Jan-06
87	Public Question & Answer Session	1-Feb-06
89	MAG Meeting	7-Feb-06
88	PIOH 2 Workshop (Routes Revised)	7-Feb-06
91	Municipal Emergency Services Meeting	8-Feb-06
90	Community Consultation Group Meeting #7	8-Feb-06
92	PIOH 2 Workshop (Plazas and Crossing)	9-Feb-06
93	Windsor & District Chamber of Commerce Meeting	15-Feb-06
94	Protect Windsor Meeting	15-Feb-06
95	Coco Corporation Meeting	16-Feb-06
96	Royal Canadian Legion Br. #594 Meeting	16-Feb-06
97	Public Meeting (Talbot Road/Huron Church)	21-Feb-06
98	First Nations (WIFN)	28-Feb-06
99	Port Authority & Sterling Fuels Meeting	1-Mar-06
100	Community Consultation Group Meeting #8 - Joint with LAC	22-Mar-06
102	CBSA Meeting	23-Mar-06
103	Briefing of Mayors & Warden	27-Mar-06
104	PSAG Meeting	28-Mar-06
107	CANAAG Meeting	29-Mar-06
106	MAG Meeting (Windsor Peer Review Team)	29-Mar-06
105	Public Information Open House (PIOH) 3	28 & 30-Mar-06
108	Presentation to WIFN Council	3-Apr-06
196	Presentation to Windsor Essex County Environmental Committee	3-Apr-06
109	Tour of Sandwich with Detroit City Council	5-Apr-06
110	PSAG Meeting	6-Apr-06
111	Oakwood Parent Council	10-Apr-06
112	MAG Meeting	11-Apr-06
113	PIOH 3 Workshop	11-Apr-06
114	RCMP/EMO/OPP/CBSA/Mun. Emergency Services Meeting	12-Apr-06
115	PIOH 3 Workshop	12-Apr-06
116	Talbot Road Residents	18-Apr-06
117	MAG Meeting	26-Apr-06
118	School Board Meeting	26-Apr-06
119	Community Consultation Group Meeting #9	27-Apr-06
121	Armanda Street Residents	10-May-06
120	MDOT Tour for JIBA	10-May-06
122	MAG Meeting	24-May-06
123	Windsor & District Chamber of Commerce Meeting	29-May-06
124	School Council Meeting	30-May-06
125	U.S. CSS Bus Tour	8-Jun-06
126	Sandwich Towne Community Task Force Tour of Delray	14-Jun-06
127	St. Clair College Meeting	21-Jun-06
128	Heritage Park Alliance Church Meeting	21-Jun-06
129	PIOH 3 Workshops	23-Jun-06
130	PIOH 3 Workshops	24-Jun-06
132	Community Consultation Group Meeting #10	26-Jun-06
131	Canadian CSS Bus Tour	26-Jun-06
139	Presentation to Windsor-Essex County District School Board of Trustees	8-Jul-06
133	Meeting with RCMP/NRCAN	10-Jul-06
134	Meeting with LaSalle Councillors (not formal council meeting)	11-Jul-06
135	Huron Church Business Owners Association Meeting	26-Jul-06
136	Meeting with City of Windsor Representatives	26-Jul-06
137	Meeting with Vidican Engineering	27-Jul-06
138	Meeting with Ministry of Tourism	3-Aug-06
140	Presentation to DaimlerChrysler	15-Aug-06
141	U.S. CSS Workshops	24-Aug-06
142	Drilling Information Session with STCTF	31-Aug-06
143	MAG Meeting	5-Sep-06
144	Community Consultation Group Meeting #11	6-Sep-06
146	Meeting with Valente Real Estate	7-Sep-06
147	Bi-National Coast Guard Meeting	13-Sep-06
148	Schools Advisory Group (SAG) Meeting	19-Sep-06
149	Canadian CSS Workshops	2 & 3-Oct-06
150	Social Impact Assessment Workshop	21-Oct-06
151	Community Consultation Group Meeting #12	26-Oct-06
152	CSS Workshop (Detroit)	3-Nov-06
153	CBSA Meeting	7-Nov-06
154	First Nations (WIFN)	9-Nov-06

#	MEETING	DATE
155	Presentation to Bellewood School	14-Nov-06
156	CSS Workshop (Windsor)	15-Nov-06
157	Presentation to Windsor Essex County Environmental Committee	23-Nov-06
158	MAG Meeting	29-Nov-06
159	Community Consultation Group Meeting #13 – Joint w/U.S. LAC	29-Nov-06
160	Meeting with Councillor Halberstadt	4-Dec-06
164	Schools Advisory Group (SAG) Meeting	5-Dec-06
161	Meeting with Dainty Foods	5-Dec-06
162	Meeting with Citizens Protecting Ojibway Wilderness	5-Dec-06
166	CANAAG Meeting	6-Dec-06
165	Mayor Briefing (PIOH 4)	6-Dec-06
167	Public Information Open House (PIOH) 4	06 & 07-Dec-06
168	PSAG Meeting	8-Dec-06
169	Meeting with City of Windsor Staff	13-Dec-06
170	Teleconference with Coast Guard	8-Jan-07
171	PIOH 4 Workshop	9-Jan-07
172	Windsor Port Authority Meeting	10-Jan-07
173	PIOH 4 Workshop	10-Jan-07
174	Meeting with Windsor Port Authority & Sterling Fuels	19-Jan-07
175	CBSA Meeting	23-Jan-07
176	Sandwich Towne Community Meeting	25-Jan-07
177	Social Impact Assessment Workshop	26-Jan-07
178	Social Impact Assessment Workshop	27-Jan-07
179	Meeting with Essex Region Conservation Authority	30-Jan-07
180	Meeting with Southwest Sales	30-Jan-07
181	Meeting with Royal Canadian Legion Br. 594	31-Jan-07
182	Meeting with LaSalle Utilities	31-Jan-07
183	Meeting with DFO	15-Feb-07
185	Community Consultation Group Meeting #14	21-Feb-07
184	Tour of ACA with Mike Weis, University of Windsor	21-Feb-07
186	First Nations (WIFN)	23-Feb-07
187	Municipal Emergency Services Meeting	27-Feb-07
188	Recreational Boaters Meeting	28-Feb-07
189	Schools Advisory Group (SAG) Meeting	1-Mar-07
190	Assumption Town Hall Meeting	3-Mar-07
191	Meeting with Ontario Ministry of the Environment (Noise)	6-Mar-07
192	Meeting with RCMP/NRCAN	9-Mar-07

#	MEETING	DATE
193	Meeting with Sterling Fuels	9-Mar-07
194	Heritage Park Alliance Church Meeting	16-Mar-07
195	Natural Science Agencies' Meeting	27-Mar-07
197	Meeting with Canadian Great Lakes Pilots Association	4-Apr-07
198	Presentation to U.S. Coast Guard Working Group	10-Apr-07
199	Meeting with Canadian Shipowners Association	10-May-07
200	PSAG Meeting (CAPC)	10-May-07
202	Meeting with Windsor Crossing Premium Outlets	15-May-07
201	Meeting with Town of LaSalle re: HPAC	15-May-07
203	Meeting with City of Windsor	18-May-07
204	Meeting with City of Windsor	24-May-07
205	Meeting with Windsor Crossing Premium Outlets	28-May-07
207	Presentation to Heritage Park Alliance Church	30-May-07
206	Meeting with Town of Tecumseh	30-May-07
208	Meeting with Town of LaSalle and County of Essex	31-May-07
209	Meeting with City of Windsor	4-Jun-07
210	Presentation to County of Essex Council	6-Jun-07
211	Meeting with City of Windsor	8-Jun-07
213	Detroit River Canadian Cleanup	26-Jun-07
214	Elected Officials Briefing	14-Aug-07
215	Media Briefing	14-Aug-07
217	PSAG Meeting	15-Aug-07
216	Public Information Open House (PIOH) 5	14 & 15-Aug-07
219	Community Consultation Group Meeting #15	21-Aug-07
220	PIOH 5 Workshop Session	22-Aug-07
218	MAG Meeting	23-Aug-07
221	PIOH 5 Workshop Session	23-Aug-07
222	Presentation to International Joint Commission (IJC)	27-Aug-07
223	Presentation to Tecumseh Council	28-Aug-07
224	Presentation to LaSalle Council	12-Sep-07
225	CANAAG Meeting	13-Sep-07
226	Meeting with ERCA & MNR	19-Sep-07
227	Meeting with Representatives of Affected Municipalities	20-Sep-07
228	Municipal Emergency Services Meeting	4-Oct-07
229	Meeting with City of Windsor	26-Oct-07
230	Meeting with DFO	2-Nov-07
231	Meeting with City of Windsor	14-Nov-07
232	Meeting with Windsor Crossing	19-Nov-07

#	MEETING	DATE
233	Presentation to CSCE	21-Nov-07
234	Meeting with Trillium Court	28-Nov-07
235	MAG Meeting	11-Dec-07
236	First Nations (WIFN)	13-Dec-07
238	First Nations (WIFN)	11-Jan-08
239	Meeting with Ministry of the Environment (MOE)	29-Jan-08
240	First Nations (WIFN) Council Meeting	4-Feb-08
241	Meeting with Oliver Estates	19-Feb-08
242	First Nations (WIFN) PIOH	26-Feb-08
243	Community Consultation Group Meeting #16 - invited to LAC	27-Feb-08
244	PSAG Meeting	19-Mar-08
245	Meeting with DFO	26-Mar-08
246	PSAG Meeting (CAPC)	2-Apr-08
247	MNR/ERCA Meeting	21-Apr-08
248	Essex County Medical Society	6-May-08
249	Meeting with Windsor Crossing Premium Outlets	9-May-08
250	CBSA Meeting	14-May-08
251	MAG Meeting	15-May-08
252	Community Consultation Group Meeting #17	21-May-08
253	Schools Advisory Group (SAG) Meeting	22-May-08
254	Windsor City Council	26-May-08
256	Presentation to Tecumseh Council	27-May-08
258	Presentation to Essex Council	4-Jun-08
259	Presentation to LaSalle Council	10-Jun-08
260	Public Information Open House (PIOH) 6	18 & 19-Jun-08
262	Meeting with Nemak	24-Jun-08
263	CANAAG Meeting	25-Jun-08
264	First Nations (WIFN) Meeting	25-Jun-08
261	PIOH6 Workshops	24 & 25-Jun-08
265	Hydro One Meeting	11-Jul-08
267	Meeting with Spring Garden/Bethlehem Residents	15-Jul-08
266	Meeting with City of Windsor	15-Jul-08
268	CANAAG Agency Meeting	16-Jul-08
269	Municipal Emergency Services Meeting	16-Jul-08
271	Community Consultation Group Meeting #18	16-Jul-08
272	CANAAG Meeting	22-Jul-08
273	Meeting with Windsor Essex County Environmental Committee	23-Jul-08

#	MEETING	DATE
275	CANAAG Agency Meeting	24-Jul-08
274	Context Sensitive Solutions (CSS) Workshops	23 & 24-Jul-08
276	Meeting with Mr. Lalonde & Neighbours	29-Jul-08
277	West Windsor Power Meeting	30-Jul-08
278	Brighton Beach Power Meeting	30-Jul-08
279	WECEC Bus Tour	6-Aug-08
280	Meeting with Southwest Sales	6-Aug-08
281	Presentation at NATPO Conference	11-Aug-08
282	First Nations (WIFN) Council Meeting	12-Aug-08
283	Meeting with PB/City of Windsor	19-Aug-08
284	Bell Utility Relocation Meeting	20-Aug-08
285	Meeting with Huron Church Line Residents	28-Aug-08
286	Union Gas Utilities Meeting	29-Aug-08
288	MNR Meeting	3-Sep-08
289	Meeting with Dainty Foods	3-Sep-08
287	Tecumseh Utilities Meeting	3-Sep-08
290	Trillium Court Meeting	9-Sep-08
291	Meeting with Essex Power Lines	18-Sep-08
292	Meeting with Cogeco Cable	18-Sep-08
293	MNR Meeting	22-Sep-08
294	DFO Meeting & Tour	23-Sep-08
295	Southwestern Sales Meeting	25-Sep-08
296	River Park Board Meeting	30-Sep-08
298	WECEC Meeting	2-Oct-08
297	Meeting with ERCA	2-Oct-08
299	Meeting with LaSalle Planning Department	3-Oct-08
300	Presentation to CAW Retirees	9-Oct-08
301	Meeting with Montessori School	15-Oct-08
302	Meeting with Spring Garden Residents	15-Oct-08
303	Presentation to LaSalle Business Association	5-Nov-08
305	Meeting with Kendleton Court Residents	6-Nov-08
307	Meeting with Sansotta Residents	7-Nov-08
308	Meeting with Trillium Court Residents	10-Nov-08
309	Meeting with CANAAG	12-Nov-08
310	Public Information Open House (PIOH) 7	24 & 25-Nov-08
311	Hydro One Meeting	05-Dec-08
312	Meeting with LaSalle Utilities	09-Dec-08

TABLE 3.2 – CONSULTATION MEETINGS BY CATEGORY

MEETING	DATE
Advisory Group 1	
WECEC Bus Tour	6-Aug-08
WECEC Meeting	2-Oct-08
MAG Meeting	29-Mar-05
MAG Meeting	21-Jun-05
MAG Meeting	14-Jul-05
MAG Meeting	29-Nov-05
MAG Meeting	19-Jan-06
MAG Meeting	7-Feb-06
MAG Meeting	11-Apr-06
MAG Meeting	26-Apr-06
MAG Meeting	24-May-06
MAG Meeting	5-Sep-06
MAG Meeting	29-Nov-06
MAG Meeting	23-Aug-07
MAG Meeting	11-Dec-07
MAG Meeting	15-May-08
Advisory Group 2	
CANAAG Meeting	31-Mar-05
CANAAG Meeting	22-Jun-05
CANAAG Meeting	1-Dec-05
CANAAG Meeting	29-Mar-06
CANAAG Meeting	6-Dec-06
CANAAG Meeting	13-Sep-07
CANAAG Meeting	25-Jun-08
CANAAG Agency Meeting	16-Jul-08
CANAAG Meeting	22-Jul-08
CANAAG Agency Meeting	24-Jul-08
CANAAG Meeting	12-Nov-08
Advisory Group 3	
PSAG Meeting	23-Mar-05
PSAG Meeting	23-Jun-05
PSAG Meeting (CAPC)	17-Nov-05
PSAG Meeting	7-Dec-05
PSAG Meeting	28-Mar-06
PSAG Meeting	6-Apr-06
PSAG Meeting	8-Dec-06
PSAG Meeting	15-Aug-07
PSAG Meeting	19-Mar-08
PSAG Meeting (CAPC)	2-Apr-08
Advisory Group 4	
COOP Meetings (individual by organization)	22 & 23-Mar-05
COOP Meeting	6-Dec-05
Advisory Group 5	
Municipal Emergency Services Meeting	8-Feb-06
RCMP/EMO/OPP/CBSA/Municipal Emergency Services Meeting	12-Apr-06
Municipal Emergency Services Meeting	27-Feb-07
Municipal Emergency Services Meeting	4-Oct-07
Municipal Emergency Services Meeting	16-Jul-08
Advisory Group 6	
School Board Meeting	26-Apr-06
Greater Essex County School Board Meeting	14-Dec-05
School Council Meeting	30-May-06
Presentation to Windsor-Essex County District School Board of Trustees	8-Jul-06
Schools Advisory Group (SAG) Meeting	19-Sep-06
Schools Advisory Group (SAG) Meeting	5-Dec-06
Schools Advisory Group (SAG) Meeting	1-Mar-07
Schools Advisory Group (SAG) Meeting	22-May-08
Advisory Group 7	
CBSA Meeting	17-Mar-05
CBSA Meeting	31-Mar-05
CBSA Meeting	18-May-05
CBSA Meeting	19-Oct-05
CBSA Meeting (+ tour)	11-Jan-06
CBSA Meeting	23-Mar-06
CBSA Meeting	7-Nov-06
CBSA Meeting	23-Jan-07
CBSA Meeting	14-May-08
Advisory Group 8	
RCMP/NRCAN Meeting	10-Jul-06
RCMP/NRCAN Meeting	9-Mar-07
Advisory Group 9	
Ministry of Tourism Meeting	3-Aug-06
Advisory Group 10	
MNR Meeting	18-May-05
MTO Meeting (Noise)	6-Mar-07
Presentation to International Joint Commission (IJC)	27-Aug-07
DFO Meeting	26-Mar-08
MNR/ERCA Meeting	21-Apr-08
MNR Meeting	3-Sep-08
MNR Meeting	22-Sep-08
DFO Meeting & Tour	23-Sep-08
ERCA Meeting	2-Oct-08
Essex Region Conservation Authority Meeting	30-Jan-07
DFO Meeting	15-Feb-07
Natural Science Agencies' Meeting	27-Mar-07
Detroit River Canadian Cleanup	26-Jun-07
ERCA & MNR Meeting	19-Sep-07
DFO Meeting	2-Nov-07
MOE Meeting	29-Jan-08
Advisory Group 11	
Bi-National Coast Guard Meeting	13-Sep-06
Teleconference with Coast Guard	8-Jan-07
Canadian Great Lakes Pilots Association Meeting	4-Apr-07
Presentation to U.S. Coast Guard Working Group	10-Apr-07
Canadian Shipowners Association Meeting	10-May-07
Business Owner	
PSAG Meeting (CAPC)	2-Jun-05
Windsor Port Authority Meeting	2-Dec-05
Essex Aggregates Meeting	15-Dec-05
Essex Terminal Railway Meeting	15-Dec-05
Lou Romano Water Reclamation Plant Meeting	15-Dec-05
Van De Hogen Meeting	15-Dec-05
Windsor Salt Meeting	15-Dec-05
Brighton Beach Power Meeting	16-Dec-05
Hydro One Meeting	16-Dec-05
Coco Corporation Meeting	16-Feb-06
Royal Canadian Legion Br. #594 Meeting	16-Feb-06
Port Authority & Sterling Fuels Meeting	1-Mar-06
St. Clair College Meeting	21-Jun-06
Heritage Park Alliance Church Meeting	21-Jun-06
Huron Church Business Owners Association Meeting	26-Jul-06
Vidican Engineering Meeting	27-Jul-06
Presentation to DaimlerChrysler	15-Aug-06
Valente Real Estate Meeting	7-Sep-06
Dainty Foods Meeting	5-Dec-06
Windsor Port Authority Meeting	10-Jan-07
Windsor Port Authority & Sterling Fuels Meeting	19-Jan-07
Southwest Sales Meeting	30-Jan-07
Royal Canadian Legion Br. 594 Meeting	31-Jan-07
Sterling Fuels Meeting	9-Mar-07
Heritage Park Alliance Church Meeting	16-Mar-07
PSAG Meeting (CAPC)	10-May-07
Windsor Crossing Premium Outlets Meeting	15-May-07
Windsor Crossing Premium Outlets Meeting	28-May-07
Presentation to Heritage Park Alliance Church	30-May-07
Trillium Court Meeting	28-Nov-07
Windsor Crossing Premium Outlets Meeting	9-May-08
Nemak Meeting	24-Jun-08
West Windsor Power Meeting	30-Jul-08
Brighton Beach Power Meeting	30-Jul-08
Southwest Sales Meeting	6-Aug-08
Dainty Foods Meeting	3-Sep-08
Trillium Court Meeting	9-Sep-08
Southwestern Sales Meeting	25-Sep-08
Montessori School Meeting	15-Oct-08
Hydro One Meeting	05-Dec-08

CCG	
Community Consultation Group Meeting #1	11-May-05
Community Consultation Group Meeting #2	9-Jun-05
Community Consultation Group Meeting #3	13-Jul-05
Community Consultation Group Meeting #4 – Joint with LAC	28-Sep-05
Community Consultation Group Meeting #5	25-Oct-05
Community Consultation Group Meeting #6	11-Jan-06
Community Consultation Group Meeting #7	8-Feb-06
Community Consultation Group Meeting #8 – Joint with LAC	22-Mar-06
Community Consultation Group Meeting #9	27-Apr-06
Community Consultation Group Meeting #10	26-Jun-06
Community Consultation Group Meeting #11	6-Sep-06
Community Consultation Group Meeting #12	26-Oct-06
Community Consultation Group Meeting #13 – Joint with LAC	29-Nov-06
Community Consultation Group Meeting #14	21-Feb-07
Community Consultation Group Meeting #15	21-Aug-07
Community Consultation Group Meeting #16 – invited to LAC	27-Feb-08
Community Consultation Group Meeting #17	21-May-08
Community Consultation Group Meeting #18	16-Jul-08
Community Meetings	
Sandwich Community Heritage Group Meeting	15-Dec-05
Sandwich Community Task Force Meeting	10-Jan-06
Huron Church Business Owners Meeting	12-Jan-06
Sandwich Towne Community Task Force Tour of Delray	14-Jun-06
Sandwich Towne Community Meeting	25-Jan-07
Assumption Town Hall Meeting	3-Mar-07
Meeting with Oliver Estates	19-Feb-08
Meeting with Spring Garden/Bethlehem Residents	15-Jul-08
Meeting with Mr. Lalonde & Neighbours	29-Jul-08
Oakwood Parent's Council	10-Apr-06
Talbot Road Residents	18-Apr-06
Armanda Street Residents	10-May-06

Presentation to Bellewood School	14-Nov-06
Meeting with Huron Church Line Residents	28-Aug-08
River Park Board Meeting	30-Sep-08
Meeting with Spring Garden Residents	15-Oct-08
Meeting with Kendleton Court Residents	6-Nov-08
Meeting with Sansotta Residents	7-Nov-08
Meeting with Trillium Court Residents	10-Nov-08
Council	
Windsor City Council	21-Mar-05
LaSalle Town Council	22-Mar-05
Essex County Council	20-Jun-05
Windsor City Council	20-Jun-05
Essex County Council	28-Nov-05
Windsor City Council	28-Nov-05
Windsor Ward 1&2 Councillors' Meeting	18-Jan-06
Windsor City Councillor Meeting	26-Jan-06
Briefing of Mayors & Warden	27-Mar-06
Meeting with LaSalle Councillors (not formal council meeting)	11-Jul-06
Meeting with Councillor Halberstadt	4-Dec-06
Mayor Briefing (PIOH 4)	6-Dec-06
Presentation to County of Essex Council	6-Jun-07
Elected Officials Briefing	14-Aug-07
Presentation to Tecumseh Council	28-Aug-07
Presentation to LaSalle Council	12-Sep-07
Windsor City Council	26-May-08
Presentation to Tecumseh Council	27-May-08
Presentation to Essex Council	4-Jun-08
Presentation to LaSalle Council	10-Jun-08
First Nations	
First Nations (Oneida)	4-May-05
First Nations (WIFN)	27-Jun-05
First Nations (WIFN)	20-Jan-06
First Nations (WIFN)	28-Feb-06
Presentation to WIFN Council	3-Apr-06
First Nations (WIFN)	9-Nov-06
First Nations (WIFN)	23-Feb-07

First Nations (WIFN)	13-Dec-07
First Nations (WIFN)	11-Jan-08
First Nations (WIFN) Council Meeting	4-Feb-08
First Nations (WIFN) PIOH	26-Feb-08
First Nations (WIFN) Meeting	25-Jun-08
First Nations (WIFN) Council Meeting	12-Aug-08
Interest Group	
WWCTWC	26-May-05
MAG	
Meeting with Representatives of Affected Municipalities	20-Sep-07
Media	
Media Briefing	14-Aug-07
Municipality	
Town of LaSalle Meeting	22-Feb-05
City of Windsor Meeting	24-Feb-05
County of Essex Meeting	24-Feb-05
MAG Meeting (Windsor Peer Review Team)	29-Jul-05
MAG Meeting (Tecumseh)	17-Aug-05
MAG Meeting (Windsor)	23-Aug-05
MAG Meeting (Windsor Peer Review Team)	29-Mar-06
Presentation to Windsor Essex County Environmental Committee	3-Apr-06
City of Windsor Representatives Meeting	26-Jul-06
City of Windsor Staff Meeting	13-Dec-06
LaSalle Utilities Meeting	31-Jan-07
Town of LaSalle re: HPAC Meeting	15-May-07
City of Windsor Meeting	18-May-07
City of Windsor Meeting	24-May-07
Town of Tecumseh Meeting	30-May-07
Town of LaSalle and County of Essex Meeting	31-May-07
City of Windsor Meeting	4-Jun-07
City of Windsor Meeting	8-Jun-07
City of Windsor Meeting	26-Oct-07
City of Windsor Meeting	14-Nov-07
City of Windsor Meeting	15-Jul-08
PB/City of Windsor Meeting	19-Aug-08

LaSalle Planning Department Meeting	3-Oct-08
LaSalle Utilities Meeting	09-Dec-08
Other Interest Groups	
Citizens Protecting Ojibway Wilderness Meeting	5-Dec-06
Other Study Area/Interest Group	
Binational Border Agencies Meeting	21-Apr-05
U.S. Border Agencies Meeting	12-May-05
NBEST Meeting	14-Jun-05
U.S. Border Agencies Meeting	19-Dec-05
U.S. Workshop Meeting	21-Dec-05
U.S. Workshop Meeting	4-Jan-06
Windsor & District Chamber of Commerce Meeting	15-Feb-06
Windsor & District Chamber of Commerce Meeting	29-May-06
Windsor Crossing Meeting	19-Nov-07
Presentation to CSCE	21-Nov-07
Essex County Medical Society	6-May-08
Windsor Essex County Environmental Committee Meeting	23-Jul-08
Presentation at NATPO Conference	11-Aug-08
Presentation to CAW Retirees	9-Oct-08
Presentation to LaSalle Business Association	5-Nov-08
BASF Corporation Meeting	12-Jul-05
Other/Interest Group	
Tour of ACA with Mike Weis, University of Windsor	21-Feb-07
Recreational Boaters Meeting	28-Feb-07
PIOHs, Workshops, Public & Community Meetings	
Initial Public Outreach Meeting	5 & 6-Apr-05
Public Information Open House (PIOH) 1	21, 27 & 28-Jun-05
PIOH 1 Workshop	14 & 20-Jul-05
Sandwich Development Task Force Meeting	30-Nov-05

Public Information Open House (PIOH) 2	29 & 30-Nov-05 and 01-Dec-05
PIOH 2 Workshop (Plazas)	25-Jan-06
PIOH 2 Workshop (Routes)	26-Jan-06
Public Question & Answer Session	1-Feb-06
PIOH 2 Workshop (Routes Revised)	7-Feb-06
PIOH 2 Workshop (Plazas and Crossing)	9-Feb-06
Public Meeting (Talbot Road/Huron Church)	21-Feb-06
Protect Windsor Meeting	15-Feb-06
Public Information Open House (PIOH) 3	28 & 30-Mar-06
PIOH 3 Workshop	11-Apr-06
PIOH 3 Workshop	12-Apr-06
PIOH 3 Workshops	23-Jun-06
PIOH 3 Workshops	24-Jun-06
Canadian CSS Bus Tour	26-Jun-06
Drilling Information Session with STCTF	31-Aug-06
Canadian CSS Workshops	2 & 3-Oct-06
Social Impact Assessment Workshop	21-Oct-06
CSS Workshop (Windsor)	15-Nov-06
Presentation to Windsor Essex County Environmental Committee	23-Nov-06
Public Information Open House (PIOH) 4	06 & 07-Dec-06
PIOH 4 Workshop	9-Jan-07
PIOH 4 Workshop	10-Jan-07
Social Impact Assessment Workshop	26-Jan-07
Social Impact Assessment Workshop	27-Jan-07
Public Information Open House (PIOH) 5	14 & 15-Aug-07
PIOH 5 Workshop Session	22-Aug-07
PIOH 5 Workshop Session	23-Aug-07
Public Information Open House (PIOH) 6	18 & 19-Jun-08
PIOH 6 Workshops	24 & 25-Jun-08

Context Sensitive Solutions (CSS) Workshops	23 & 24-Jul-08
Public Information Open House (PIOH) 7	24 & 25-Nov-08
Proponent	
COOP Meetings (DRTP)	8-Apr-05
COOP Meetings (AMB)	28-Apr-05
COOP Meeting	28-Jun-05
U.S. Group	
U.S. Scoping Meeting	31-Aug-05
U.S. LAC Meeting	26-Oct-05
U.S. LAC Meeting	28-Nov-05
U.S. Public Meeting	8-Dec-05
U.S. Workshop Meeting	18-Jan-06
Tour of Sandwich with Detroit City Council	5-Apr-06
MDOT Tour for JIBA	10-May-06
U.S. CSS Bus Tour	8-Jun-06
U.S. CSS Workshops	24-Aug-06
CSS Workshop (Detroit)	3-Nov-06
U.S. Public Meeting	27-Jun-05
Utility	
Hydro One Meeting	11-Jul-08
Bell Utility Relocation Meeting	20-Aug-08
Union Gas Utilities Meeting	29-Aug-08
Tecumseh Utilities Meeting	3-Sep-08
Meeting with Essex Power Lines	18-Sep-08
Meeting with Cogeco Cable	18-Sep-08

3.2 Public Information Open Houses, Workshops and Meetings

Public consultation began at the start of the study in January 2005 with a Notice of Study Commencement published in local newspapers. Over the study period, an Initial Public Outreach Meeting (IPO), seven Public Information Open Houses (PIOHs) and associated workshops have been held in which the study material has been presented to the public for their input and information. Workshops following the PIOHs were used to address specific issues and/or develop context sensitive solutions. The workshops were generally conducted with the aid of a facilitator. The public provided the study team with input into the materials presented. The study team has used this input in modifying the design of the alternatives and in analyzing the data at each step of the study process.

The IPO, PIOH, and workshop sessions are summarized in Table 3.3. Summary reports were prepared following each PIOH. These summaries are supporting documents and are available on the study website www.partnershipborderstudy.com.

TABLE 3.3 – INITIAL PUBLIC OUTREACH MEETING, PUBLIC INFORMATION OPEN HOUSES AND WORKSHOPS

PUBLIC EVENT	Advertising	Attendance	Topics/Material Presented/ Displayed	Handout Material	Comment Sheet Questions	Comments Received	Overview of Comments	Outcomes
Initial Public Outreach (IPO) Meeting April 5 & 6, 2005	• Ontario Government Notice published in the following papers: LaSalle Silhouette, Windsor Star, Amherstburg Echo, Harrow News, Kingsville Reporter, Leamington Post, Essex Free Press, LaSalle Post, Le Rempart • Meeting dates and locations presented to local councils and Advisory Group meetings in advance of the IPO meetings • Notices mailed directly to study team's contact lists (over 400 addresses) • Details posted on project website	Total number of sign-ins: 179 (91 at Windsor session, 88 at LaSalle session)	• Introduction of the study team & the study • Study, evaluation & EA planning processes • Key milestones • Proposed evaluation criteria • Short-term improvements • How to stay involved	• Copy of the presentation boards • Study team contact sheet • Comment sheet	• Indicate citizenship and use of the border for commuting • Rate importance of specific principles while generating or developing new/expanded crossing alternative and connections to existing highways (on scale of 1-5) • Input to evaluation criteria • Mark areas of interest on aerial photo maps	Total number of comment sheets received: 129 • 124 received in person at IPO • 5 received by mail/fax	• Preserve environmentally significant areas (concerned about impacts to Ojibway area) • Consider air quality • Health and quality of life of residents • Consider tunnel option • Consider other modes of transportation • Keep trucks off local roads	Team became aware of community issues re: air quality, significant natural areas and desire to consider tunnels. The interest of the community confirmed the need to develop a wide range of Illustrative Alternatives.
Public Information Open House 1 (PIOH 1) June 21, 22 & 28, 2005	• Ontario Government Notice published in the following papers: Windsor Star, Amherstburg Echo, Harrow News, Kingsville Reporter, Leamington Post, Essex Free Press, LaSalle Post, Le Rempart, LaSalle Silhouette • Meeting dates and locations presented to local councils and Advisory Group meetings in advance of PIOH 1 • Media Briefing Session and drop-in session for Windsor Councillors held prior to PIOH 1 • Notices mailed directly to study team's general public contact list (over 340 addresses) and advisory group contact lists (over 250 addresses) • Details posted on project website	Total number of sign-ins: 477 (255 at Windsor session, 155 at LaSalle session, 97 at Amherstburg session)	• Study schedule and key milestones • Review of IPO • Travel demand information • Development of Illustrative Alternatives • Alternative inspection plaza sites and conceptual layout` • Crossing types • Generation of connecting routes • Evaluation criteria and proposed evaluation method • What's next and how to stay involved	• Copy of the presentation boards • Study team contact sheet • Comment sheet • Sign-up sheets for PIOH1 Workshop sessions • Rating Tool Form	• Agree/disagree with Purpose and Need for study • Any additional plazas, crossings or route alternatives to consider • Mark areas of interest on aerial photo maps • Please comment on Factor Weights Using Rating Tool form	Total number of comment sheets received: 181 • 169 received in person at PIOH • 12 received by mail/fax	• Preserve environmentally significant areas (concerned about impacts to Ojibway area) • Consider air quality • Health and quality of life of residents • Opposed to Schwartz plan • Consider tunnel option • Consider other modes of transportation • Consider routes outside (south) of study area	Team awareness of air quality, natural concerns continued to develop. Many differing viewpoints, re: the Illustrative Alternatives confirmed the need for a thorough and systematic analysis of Illustrative Alternatives.

PUBLIC EVENT	Advertising	Attendance	Topics/Material Presented/ Displayed	Handout Material	Comment Sheet Questions	Comments Received	Overview of Comments	Outcomes
PIOH1 Workshops July 14 & 20, 2005	• Announced workshop dates at PIOH1 • Provided registration forms at PIOH 1 for sign-ups • Followed up with phone call to those who signed up at PIOH to confirm attendance	Total number of participants: 19	• Results of Public Information Open House 1 • Discussion of Purpose and Problem Statement, including Travel Demand • Discussion of Assessment of Other Alternatives (i.e., rail; diversion to Blue Water Bridge) • Review / Discussion of Illustrative Alternatives (Crossings, Plazas and Routes) • Discussion of Evaluation Factors and Methods	• Agenda • Large scale maps (as shown at PIOH 1) were shown to facilitate discussions	• Discussions centred on agenda items, and time was allotted to general questions during in an open forum setting	• N/A	• What are the time requirements and costs involved in this study • Questions re: travel demand, use of other modes • Who makes the decisions and who will own the new crossing • Connections to existing infrastructure • Consultation, public input and next steps	
SUMMARY	At the conclusion of the first round of public consultation the team further appreciated the wide range of (and sometimes competing) interests and preferences for alternative border solutions. This reinforced the team's commitment to proceed based on thorough and systematic analyses.							
Public Information Open House 2 (PIOH 2) November 29 & 30 and December 1, 2005	• Ontario Government Notice published in the following papers: Windsor Star, Amherstburg Echo, Harrow News, Kingsville Reporter, Leamington Post, Essex Free Press, LaSalle Post, Le Rempart, LaSalle Silhouette • Meeting dates and locations presented to local councils and Advisory Group meetings in advance of PIOH 2 • Media briefing and drop-in session for Windsor Councillors held prior to PIOH 2 • Notices mailed directly to study team's general public contact list (over 350 addresses) and advisory group contact lists (over 260 addresses) • Details posted on project website • Public Service Announcements placed on local community electronic billboards & websites	Total number of sign-ins: 433 (106 at Windsor session, 146 at LaSalle session, 181 at Sandwich Towne session)	• Study schedule and key milestones • Review of PIOH 1 • Evaluation process & methods • Evaluation of Illustrative Alternatives • Results of analysis of alternatives • Summary of Arithmetic Evaluation Results • End-to-end evaluation • Area of Continued Analysis • What's next and how to stay involved	• Copy of the key presentation boards • Study team contact sheet • Comment sheet • Sign-up sheets for PIOH 2 Workshop sessions	• Agree with results of Reasoned Argument analysis and Arithmetic Evaluation? • Are there additional plaza, crossing or route alternatives within or outside ACA to consider as practical alternatives? • Mark areas of interest on aerial photo maps	Total number of comment sheets received: 108 • 99 received in person at PIOH • 9 received by mail/fax	• Protect natural areas such as Ojibway, Spring Garden ANSI, Black Oak Woods • Protect established recreational trails & fields • Do not use Schwartz route • Keep away from existing schools • Use existing transportation corridors • Tunnel the route • Concern about decrease in property values	Team determined that a tunnelled alternative should be developed and analysed as a Practical Alternative. Awareness of historical importance of Sandwich Towne was heightened leading to future meetings with key representatives from the community

PUBLIC EVENT	Advertising	Attendance	Topics/Material Presented/ Displayed	Handout Material	Comment Sheet Questions	Comments Received	Overview of Comments	Outcomes
PIOH 2 Workshops January 25 & 26 and February 7 & 9, 2006	• Announced workshop dates at PIOH 2 • Provided registration forms at PIOH 2 for sign-ups • Followed up with letters to those who signed up at PIOH to confirm attendance at January or February workshops	Total number of participants: 183 (121 in January, 62 in February)	January Workshops: • Project Update / What's Next • Brief Presentation by study team • Workshop Exercises • Study team Responses to Issues Raised During Workshop Exercises February Workshops: • Format was question & answer on routes and plazas	January Workshops: • Agenda • Orthophoto of ACA • Plaza visualizations • Comment sheet February Workshops: • Agenda • Proposed Evaluation Factors and Performance Measures table • General and specific comment sheets	January Workshops: • General comment sheet requesting comments on/ questions about the project February Workshops: • What are the priority areas for tunnelling or for a depressed roadway? • Are there other locations where interchanges should be considered? • Where should different highway crossings (vehicular/pedestrian) be located? • What should the Study team incorporate in the design of the roadway to improve its look and aesthetics and have it blend more seamlessly into the community?	• Total number of question cards received: 38 (18 in January, 20 in February) • Total number of comment sheets received: 17	January Workshops: • Received suggestions for suitable/unsuitable plaza locations • Questions regarding alternatives • Avoid natural areas February Workshops: • Suggestions for suitable/unsuitable areas for plazas and tunnelling/ depressed roadway, highway interchange and crossing locations • Suggestions for impacts/ opportunities to assess in evaluation of Practical Alternatives • Suggestions for design components and plantings along the roadway	Team gained better appreciation for local conditions which assisted in development of Practical Alternatives
Public Question & Answer Session February 1, 2006	• Provided registration forms at PIOH 2 for sign-up • Followed up with letters to those who indicated interest at PIOH to confirm attendance	Total number of participants: 78	• Project Status • Common Questions & Answers • Group Questions • Key Dates / What's Next	• Question card (for use during the meeting) • Comment sheet	• General comment sheet requesting comments on/ questions about the project	• Total number of question cards received: 18	• Concerns with air quality • Who makes the decisions and who will own the new crossing • Effects of project on properties and owners • Coordination with U.S. • Next steps and how to stay informed & involved	Team continued to gain appreciation for high level of community interest and concern especially regarding air quality and tunnelling
Public Meeting February 21, 2006	• Hand delivery of meeting notice to properties within and surrounding the Area of Continued Analysis (approximately 3,600 addresses) • Participants asked to email or call to register	Total number of participants: 339	• Project update & current status • Input to develop practical alternatives for new crossing, inspection plaza and connecting route • Question & Answer session	• Proposed Evaluation Factors and Performance Measures • Question card (for use during the meeting)	• Discussions centred on development of practical alternatives; time was allotted to general questions during in an open forum setting	• Total number of question cards received: 52	• Questions about air quality, protection of environmentally sensitive areas, vehicle emissions • Concern with amount of property required • Tunnel the access route • Suggestions for other alternatives	Team continued to gain appreciation for high level of community interest and concern especially regarding air quality and tunnelling

PUBLIC EVENT	Advertising	Attendance	Topics/Material Presented/ Displayed	Handout Material	Comment Sheet Questions	Comments Received	Overview of Comments	Outcomes
SUMMARY	The second round of consultation was instrumental in raising the team's awareness of community concerns in the ACA, particularly as they related to air quality and protection of the natural environment. This awareness led directly to inclusion of below-grade alternatives and a full 6km tunnel as Practical Alternatives that would be subject to full analysis and evaluation.							
Public Information Open House 3 (PIOH3) March 28 & 30, 2006	• Ontario Government Notice published in the following papers: Windsor Star, Amherstburg Echo, Harrow News, Kingsville Reporter, Leamington Post, Essex Free Press, LaSalle Post, Le Rempart • Meeting dates and locations presented at Advisory Group meetings in advance of PIOH 3 • Technical briefing session held for Mayors & Wardens prior to PIOH 3 • Notices mailed directly to study team's general public and Advisory Group contact lists (over 1,400 addresses) as well as to property owners as identified and supplied by municipalities (over 7,500 addresses) • Details posted on project website • Public Service Announcements placed on local community electronic billboards & websites	Total number of sign-ins: 812 (472 at Oldcastle session, 340 at Sandwich Towne session)	• Study schedule and key milestones • Review of PIOH 2 & consultation to date • Evaluation process & methods • End-to-end evaluation • Crossing, plaza & route alternatives • Canadian side analysis results • Sample river crossing visualization • Inspection plaza alternatives • Access route alternatives and access road conceptual visualizations • Tunnelling • Evaluation factors & performance measures • What's next and how to stay involved	• Copy of the presentation boards • study team contact sheet • Comment sheet • Sign-up sheets for PIOH 3 Workshop sessions	• Are there other plaza and crossing options/ modifications to be considered? • Comments on access road alternatives • What are the most important considerations in evaluation of plaza, crossing and access road alternatives • Mark areas of interest on aerial photo maps	Total number of comment sheets received: 232 • 215 received in person at PIOH • 17 received by mail/fax	• Tunnel instead of a bridge • Put crossing outside Windsor • Concerned with neighbourhood access, air quality, noise pollution • Depress the roadway • Consider/minimize impacts during and after construction • Consider emergency access	Team proceeded with full analysis of 5 Practical Alternatives for the Access Road, including a 6km cut and cover tunnel, 3 plaza locations, and 3 bridge crossing locations in the ACA.
PIOH 3 Workshops April 11 & 12, 2006	• Announced workshop dates at PIOH 3 • Provided registration forms at PIOH 3 for sign-ups	Total number of participants: 91	• Public Input from PIOH 3 Sessions • How We Got Here / Area of Continued Analysis / O-D • Tunnelling • April 11th session focused on review/refinements to access road alternatives; April 12th session focused on review/refinements to plaza & crossing alternatives • Air Quality and Noise/Vibration Impact Assessment • Introduction to the Ministry of Transportation Property Acquisition Process • CBSA gave a presentation at April 12th session on roles, functions and responsibilities of CBSA	• Agenda • Comment sheet	• General comment sheet requesting comments on/ questions about the project • Workshop format was general question & answers session on access roads (April 11) and plazas & crossings (April 12)	• Total number of comment sheets received: 24	• Concern about property value/impact to property • Size of plaza footprint • Concern with access to tunnelled portions of route • Impacts to residents during construction • Concerns with air quality and community connections • Suggestions for alternate locations for access road, plaza and crossing	Team increased its awareness of community values and began to gain a better sense of how "greening" could be effective as mitigation

PUBLIC EVENT	Advertising	Attendance	Topics/Material Presented/ Displayed	Handout Material	Comment Sheet Questions	Comments Received	Overview of Comments	Outcomes
CSS Public Workshops June 23 & 24, 2006	• Advertised in local area newspapers • Notices mailed directly to study team's general public contact lists (over 1,500 addresses) as well as to property owners & tenants as identified and supplied by municipalities (over 8,600 addresses) • Participants asked to email or call to register • Followed up with phone calls to those who indicated an interest to confirm attendance	Total number of participants: 189 (116 on June 23, 73 on Jun 24)	• Presentation of examples of design elements to address concerns re: aesthetics and community impacts • Open discussion to generate ideas for design elements for practical alternatives	• Agenda • Workshop booklets and worksheets • Comment sheet • Large scale maps were shown to facilitate discussions and allow comments on specific areas	• What other options/ modifications to the plaza and crossings should be considered? • Concerns or comments about access road alternatives • What are most important considerations in the evaluation of access road and plaza & crossing alternatives?	• Total number of comment sheets received: 11	• Suggestions for alternate locations for access route; request to tunnel whole route • Protect wildlife and green areas; plantings should be easy to maintain • Concern with impacts of exhaust/diesel fumes • Questions about property acquisition, project timeline, and staying involved & informed	
CSS Public Workshops October 2 & 3, 2006	• Advertised in local area newspapers • Notices mailed directly to study team's general public contact lists (over 1,700 addresses) as well as to property owners & tenants as identified and supplied by municipalities (over 7,700 addresses) • Participants asked to email or call to register • Followed up with phone calls to those who indicated an interest to confirm attendance	Total number of participants: 169	• Aesthetic themes for the access road (Carolinian, Rose City, Motor City) • Landscaping elements for the access road corridor and plaza buffer areas • Themes for focus areas	• Workshop booklets and worksheets	Worksheet questions: • Comments on aesthetic themes for access roads • What other themes or landscaping elements should be considered for the access road corridor and plaza buffer areas • General comments	• N/A	• Suggestions for features to incorporate into designs • Concerns about costs related to maintenance, soil quality, safety issues • Mitigate existing sensitive areas (acquire property) • Include Canadian themes for plaza options • Consider safety of pedestrians in landscaped spaces	Team increased its awareness of community values and began to gain a better sense of how "greening" could be effective as mitigation
CSS Public Workshops November 2 & 15, 2006	• Advertised in local area newspapers • Notices mailed directly to study team's general public contact lists (over 1,800 addresses) as well as to property owners & tenants as identified and supplied by municipalities (over 8,300 addresses) • Participants asked to email or call to register • Followed up with phone calls to those who indicated an interest to confirm attendance	Total number of participants: 168	• Conceptual design visions for new international bridge (suspension, cable-stayed) and themes (history, friendship)	• Workshop booklets and worksheets • Computer simulation stations produced postcards for participants in response to answers re: design preferences • Visual artist stations produced sketches for participants in response to answers re: design preferences	Worksheet questions: • Was workshop setup efficient and effective for displaying material and gathering ideas • Are there other tools that could have enhanced the experience for visitors • Was the technology provided intuitive/easy to use • Would you like to see similar technology presented at future meetings • Add any sketches to illustrate your ideas regarding the look & fit of the new crossing • General comments	• N/A	• Comments supported the historical vision for the suspension bridge option and the friendship vision for the cable-stayed bridge option • Preference for natural sustainable vegetation for access road • More intensive plantings in pedestrian-oriented spaces • Incorporate art and natural textures in surfaces	

PUBLIC EVENT	Advertising	Attendance	Topics/Material Presented/ Displayed	Handout Material	Comment Sheet Questions	Comments Received	Overview of Comments	Outcomes
Public Information Open House 4 (PIOH 4) December 6 & 7, 2006	• Ontario Government Notice published in the following papers: Windsor Star, Amherstburg Echo, Harrow News, Kingsville Reporter, Leamington Post, Essex Free Press, LaSalle Post, Le Rempart • Meeting dates and locations presented at Advisory Group meetings in advance of PIOH 4 • Notices mailed directly to study team's general public and Advisory Group contact lists (over 2,000 addresses) as well as to property owners and tenants as identified and supplied by municipalities (over 7,700 addresses) and Canada Post mail walks (over 12,300 addresses) • Details posted on project website • Public Service Announcements placed on local community electronic billboards & websites	Total number of sign-ins: 510 (334 at Windsor session, 176 at Oldcastle session)	• Study schedule and key milestones • Review of PIOH 3 & consultation to date • Practical Alternatives • Crossing & plaza alternatives • Governance • U.S. plaza alternatives • Evaluation Factors • Tunnelling • Context Sensitive Solutions • Evaluation process & methods • Property acquisition • Crossing visualizations • What's next and how to stay involved • Video simulations of access road alternatives	• Copy of the presentation boards • CD of alternatives • Study team contact sheet • Comment sheet • Sign-up sheets for PIOH 4 Workshop sessions	• Comments on preliminary analysis of the seven evaluation factors • Suggestions for refinements/improvements to crossing, plaza or access road alternatives	Total number of comment sheets received: 46 • 36 received in person at PIOH • 7 received by mail/fax • 3 received by e-mail	• Don't sacrifice homes • Relocate wildlife • Keep community linkages intact • Plazas too close to natural areas • Don't make cost a consideration • Reduce impacts to natural areas • Tunnel the route	Continued community concerns, expressed at PIOHs plus other consultation meetings resulted in the team developing a 6th Practical Alternatives for the Access Road, labelled as The Parkway
PIOH 4 Workshops January 9 & 10, 2007	• Announced workshop dates at PIOH 4 • Provided registration forms at PIOH 4 for sign-ups • Followed up with phone call to those who signed up at PIOH to confirm attendance	Total number of participants: 27	• Breakout sessions on Plazas & Crossings and Access Roads • Summary and Next Steps	• Agenda • Comment sheet	• General comment sheet requesting comments on/ questions about the project • Workshop format was general question & answers session on access roads and plazas & crossings	• Total number of comment sheets received: 1	• Concern with location of air quality monitoring stations, accuracy of AQ results, and impacts to cultural heritage features • DRIC can have positive effect on tourism/ economic development • Costs of tunnelling • Concern with noise impacts; what are possible mitigation measures • Next steps and how to stay informed & involved	
SUMMARY	All of the consultation to date and reactions received at public venues led the team to the conclusion that an additional green alternative for the access road should be developed and considered.							

PUBLIC EVENT	Advertising	Attendance	Topics/Material Presented/ Displayed	Handout Material	Comment Sheet Questions	Comments Received	Overview of Comments	Outcomes
Public Information Open House 5 (PIOH 5) August 14 & 15, 2007	• Flyer was placed in the following papers: Windsor Star, Amherstburg Echo, Harrow News, Kingsville Reporter, Leamington Post, Essex Free Press, LaSalle Post, Le Rempart • Full-page advertisement published in Windsor Star • Meeting dates and locations presented at Advisory Group meetings and media events held in advance of PIOH 5 • Media briefing session held in advance of PIOH 5 • Notices mailed directly to study team's general public and Advisory Group contact lists (over 2,100 addresses) as well as to property owners and tenants as identified and supplied by municipalities (over 8,000 addresses) and Canada Post mail walks (over 12,300 addresses) • Details posted on project website • Public Service Announcements placed on local community electronic billboards & websites	Total number of sign-ins: 1,672 (919 at Windsor session, 753 at Tecumseh session)	• Study schedule and key milestones • Review of PIOH 4 & consultation to date • CEAA & OEAA processes & coordination • Governance • Property acquisition • Evaluation process & methods • Summary of analysis of access road, plaza and crossing alternatives • The Parkway alternative • Connecting communities • Context Sensitive Solutions • Bridge types • U.S. study progress • What's next and how to stay involved • Video simulations of access road alternatives	• Copy of the presentation boards • Fact sheets • CD of alternatives • Comment sheet • Sign-up sheets for PIOH 5 Workshop sessions	• Assessment of practical alternatives does not support further analysis of the end-to-end at-grade solution – do you agree/disagree? • Assessment of practical alternatives found limited benefits to end-to-end cut and cover tunnel do not justify associated additional costs & risks – do you agree/disagree? • Suggestions to improve/ refine The Parkway alternative. • Provide comments on practical alternatives, including The Parkway, by marking areas on aerial photo maps • Comments on preliminary analysis of seven evaluation factors	Total number of comment sheets received: 207 • 184 received in person at PIOH • 23 received by mail, fax, e-mail or via the project website	• As the gateway to Canada, Windsor deserves the best solution • Concern about air quality; improve air quality • Tunnel the route • Concerned with traffic flow during construction • Consider wildlife linkages • Protect community connections • Support for The Parkway • Make the short tunnels longer • Protect the natural areas • Cost should not be a factor	The team committed to further develop The Parkway alternative and to conduct a full evaluation of The Parkway. Refinements to The Parkway based on the PIOHs and subsequent community meetings included a new tunnel near Spring Garden and a shift of the Howard tunnel to a location opposite Oliver Estates. The overall length of tunnelling was increased from 1.5km to 1.86km
PIOH 5 Workshops August 22 & 23, 2007	• Announced workshop dates at PIOH 5 • Provided registration forms at PIOH 5 for sign-ups • Advertised on project website and provided sign-up form	Total number of participants: 200+	• Overview of update on study process and progress • Issues/concerns about analysis presented at PIOH 5 • Comments on analysis to date • Comments/ideas on new Parkway alternative	• Comment sheet	• Comment sheet requesting comments/opinions on general topics of discussion	• Total number of comments received: 235	• Suggestions for alternate locations for route, plaza and crossing • Estimated timeframes for construction • Concern about impacts to properties and residents, community connections • Who makes the decisions; coordination with U.S. • Questions about Air Quality modelling, scrubbers, tunnel ventilation, impacts • Consider end-to-end tunnel	

PUBLIC EVENT	Advertising	Attendance	Topics/Material Presented/ Displayed	Handout Material	Comment Sheet Questions	Comments Received	Overview of Comments	Outcomes
SUMMARY	This round of consultation focused attention on the newly developed Parkway Alternative. These meetings and subsequent consultations resulted in refinements to The Parkway and development of The Windsor-Essex Parkway, which eventually became the preferred alternative.							
Public Information Open House 6 (PIOH 6) June 18 & 19, 2008	• An advertisement was placed in the following papers: Windsor Star, Amherstburg Echo, Harrow News, Kingsville Reporter, Essex Voice, Leamington Post & Shopper, Essex Free Press, LaSalle Post, Le Rempart • Meeting dates and locations presented at Advisory Group meetings and media events held in advance of PIOH 6 • Notices mailed directly to study team's general public and Advisory Group contact lists (over 4,400 addresses) as well as to property owners and tenants as identified and supplied by municipalities (over 8,000 addresses) and Canada Post mail walks (over 12,300 addresses) • Details posted on project website • Public Service Announcements placed on local community electronic billboards & websites	Total number of sign-ins: 1,000 (658 at Windsor session, 342 at LaSalle session)	• Study schedule and key milestones • Review of PIOH 5 & consultation to date • CEAA & OEAA processes & coordination • Governance • Evaluation process & methods & study process • Summary of analysis of Illustrative and Practical Alternatives • Connecting communities • Refinements to The Parkway alternative based on consultation • The Windsor-Essex Parkway • The Technically and Environmentally Preferred Alternative (TEPA) • Summary of analysis of access road, plaza and crossing alternatives • Bridge type study and bridge types • Evaluation factors • U.S. study progress • Context sensitive solutions • What's next and how to stay involved • Video simulations of access road alternatives	• Copy of the display boards • Fact sheets • CD containing fact sheets, bridge types, images, display boards and TEPA • Comment sheet • Sign-up sheets for PIOH 6 Workshop sessions	• Comments on evaluation process and choice of TEPA • What mitigation methods should be explored as the TEPA proceeds into the next phase of study/ design? • Do the tunnel locations provide adequate community connections & access to greenspace? • Comments on analysis of seven evaluation factors	Total number of comment sheets received: 196 • 189 received in person at PIOH • 7 received by mail, fax, e-mail or via the project website	• TEPA is excellent choice; good, acceptable solution • Concern re: maintenance of green areas • Concern about air quality; improve air quality • Support for GreenLink • Concern about noise • Protect wildlife • Tunnel the route; add more tunnels • Get started on construction • Add more greenspace areas • Route is close to properties • Thank you for protecting sensitive natural areas • Do whatever it takes, no matter the cost	• The team decided to have follow-up meetings with the Spring Garden community; led to TEPA refinement • The team reconsidered buffer areas near Chappus Street, Sansotta Court, Trillium Court, Kendleton Court, and Todd Lane • The team revised tunnel design at Hearthwood and Cousineau

PUBLIC EVENT	Advertising	Attendance	Topics/Material Presented/ Displayed	Handout Material	Comment Sheet Questions	Comments Received	Overview of Comments	Outcomes
PIOH6 Workshops June 24 & 25, 2008	• Announced workshop dates at PIOH6 • Provided registration forms at PIOH6 for sign-ups • Advertised on project website	Total number of participants: 110	• Design of Windsor-Essex Parkway • Design features of preferred plaza and crossing alternative • Mitigation measures to reduce impacts	• Comment sheet	• General comment sheet requesting comments on/ questions about the project	• Total number of comment sheets received: 25	• Comparison of Windsor-Essex Parkway to GreenLink solution • Concern about impacts to properties and residents, community connections • Concerns with air quality and noise; what is possible for mitigation • Protect human health • Amount of tunnelling is good; consider more tunnels • Support for amount of parkland and green areas	
Public Workshops July 23 & 24, 2008	• Advertised in local area newspapers • Notices mailed directly to study team's general public contact lists (over 2,700 addresses) as well as to property owners & tenants as identified and supplied by municipalities (over 4,400 addresses) • Participants asked to email or call to register	Total number of participants: 86	• Discussion of the TEPA design for the crossing, plaza and access road • Exploration of how to best fit new transportation facilities and access road into the community	• Comment sheet	• General comment sheet requesting comments on/ questions about material presented at workshops	• Total number of comment sheets received: 13	• Comments on at-grade vs. below-grade roadway • Specific comments on plaza and bridge • Concerns about air quality and human health • Suggestion to tunnel more of the route • Support for TEPA • Support for The Windsor-Essex Parkway design • Preference for using natural features over man-made construction features	
SUMMARY	This round of consultation focused awareness on direct impacts to adjacent properties. As a result of these concerns and comments, additional community meetings and reviews by the team were held. These in turn resulted in refinements to the preferred alternative including: • Shifting The Parkway alignment further away from Spring Garden and adjusting ramp geometry to reduce community impacts and impacts to the very significant natural environmental features in the area; • Increasing the buffer areas at Chappus Street, Sansotta Court and Kendleton Court; and • Introducing a cul-de-sac design near the terminus of Huron Church Line to better buffer local residents.							

PUBLIC EVENT	Advertising	Attendance	Topics/Material Presented/ Displayed	Handout Material	Comment Sheet Questions	Comments Received	Overview of Comments	Outcomes
Public Information Open House 7 (PIOH 7) November 24 & 25, 2008	• An advertisement was placed in the following papers: Windsor Star, Harrow News, Kingsville Reporter, Essex Voice, Leamington Post & Shopper, Essex Free Press, Le Rempart (French), Amherstburg Echo, LaSalle Post, LaSalle Silhouette • Meeting dates and locations presented at Advisory Group meetings and media events held in advance of PIOH 7 • Notices mailed directly to study team's general public and Advisory Group contact lists (over 3,200 addresses) as well as to property owners and tenants as identified and supplied by municipalities (over 14,300 addresses) and Canada Post mail walks (over 12,300 addresses) • Details posted on project websites • Public Service Announcements placed on local community electronic billboards & websites	Total number of sign-ins: 1,478 (963 at Windsor session, 515 at LaSalle session)	• Benefits of The Windsor-Essex Parkway • CEAA Process & Coordination of CEAA & Ontario EA Processes • Governance • Purpose and Chronology of study • Illustrative and Practical Alternatives Studied • Evaluation Process, Methods and Evaluation Factors • TEPA Refinements • Roundabouts • The Recommended Plan • Impacts, mitigation and future work related to: ➢ Air Quality ➢ Human Health Risk Assessment ➢ Protection of Community and Neighbourhood Characteristics ➢ Cultural Resources ➢ Noise & Vibration ➢ Natural Environment • Landscape Plan • Property Acquisition • Draft Provincial EA Report Review • Next Steps • U.S. Study Progress	• Comment Sheet • Fact sheets • End-to-End Recommended Plan • CD containing fact sheets, Recommended Plan, display boards, Draft EA Report • Copy of the display boards (available upon request)	• Comments on refinements made to TEPA since PIOH 6 • Comments on proposed mitigation strategies of the Recommended Plan • Suggestions to carry forward to design and construction phase	Total number of comment sheets received: 429 • 398 received in person at PIOH • 31 received by mail, fax, e-mail or via the project website	• Get started on construction • Support for GreenLink • Increase tunnelling • Support for the Recommended Plan; excellent work • The study team is taking public input into account • Concerns about noise, air quality and health • Support for noise berms/barriers • Support for roundabout • Concern with roundabout • Add more greenspace/buffering/ mitigation • Concern that study team is not listening to public • Concern for property value • Concern about impacts during construction • Use local workforce • Add more multi-use trail bridges/connections/ access • Requests for ongoing consultation • Requests for property purchase	• The team refined the alignment of the Howard Avenue Diversion to avoid direct impact to an institution on Howard Avenue • The team revisited the configuration of noise mitigation adjacent to Shadetree Court. to provide an improved concept.
SUMMARY	This round of consultation focused upon presenting and receiving public feedback on the Recommended Plan for the new border transportation system linking Highway 401 in Ontario to a new international bridge. This Recommended Plan consisted of refinements made to the Technically and Environmentally Preferred Alternative (TEPA) since the last round of PIOH's (PIOH 6) and the proposed impact mitigation strategies developed by the study team. The feedback obtained has been utilized to make final refinements to the Recommended Plan for inclusion in this Environmental Assessment Report. These refinements include: • Minor realignment of the Howard Avenue Diversion to avoid direct impact to an institution on Howard Avenue; and • Improvement of proposed noise mitigation in the vicinity of Shadetree Court.							

3.3 Community Groups

In addition to the public events (PIOHs and workshops), the study team met with individual community groups when requested or in response to specific issues and concerns. Meetings with communities have included:

- Sandwich Community;
- Spring Garden / Bethlehem / Armanda Street Community;
- Oliver Estates;
- Huron Church Line Residents;
- Kendleton Court Residents;
- Sansotta Residents;
- Trillium Court Residents; and,
- Talbot Road Residents.

Consultation with each of these groups helped the study team to better understand issues and concerns identified by the communities, and allowed the team to provide clarifications and / or detailed information about the project. The information gained by the study team through these consultations has been included and considered in the analysis and evaluation of alternatives and mitigation for the preferred alternative, and has resulted in decisions including:

- A preferred bridge crossing and plaza location well removed from the historic area of Sandwich Towne;
- An additional tunnel section near Spring Garden / Bethlehem;
- A refined Parkway alignment to integrate the freeway portion of The Windsor-Essex Parkway and E.C. Row Expressway as a core-collector system in the Spring Garden area;
- A relocated tunnel section in the vicinity of Oliver Estates;
- A cul-de-sac design and relocation of existing Huron Church Line to reduce local traffic and provide a better buffer from freeway portion of The Windsor-Essex Parkway;
- Development of a Parkway alternative so as to provide a buffer area along Highway 3 / Talbot Road and Huron Church Road; and,
- Provision of additional buffer zones near Kendleton Court and Sansotta Court.

Consultation was also a key component of the Social Impact Assessment (SIA) carried out for this study. For the assessment of practical plaza, crossing and access road alternatives, data collection for the SIA involved household questionnaires, social feature questionnaires, focus group sessions, input received as part of the public consultation efforts, stakeholder interviews, site visits, and review of various published secondary sources (e.g., Census Canada, City of Windsor). For the assessment of the Technically and Environmentally Preferred Alternative, data collection for the SIA included use of the social household questionnaire data, public consultation activities and comment forms, context sensitive solution workshops, and the review of information provided by the Ministry of Transportation (MTO) property agents.

3.4 Community Consultation Group (CCG)

The Community Consultation Group (CCG) was formed at the commencement of this study in the spring of 2005. The Ontario Ministry of Transportation (MTO) in coordination with Transport Canada (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.

The primary role of the CCG was to operate as a forum for open dialogue and information exchange between the study team and the public. CCG members were asked for their advice and input, and to participate in joint exploration of key issues, concerns, challenges, and opportunities. CCG meetings were held at key milestones of the study to review and comment on project materials and analysis.

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. 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 that included question and answer sessions. The study team presented new data and information to the CCG, and then sought 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. They were encouraged to ask questions at specific points in the meeting.

The CCG has provided the study team with an excellent barometer of community concerns and issues. Members have contributed to the study team's awareness of the need for a new border crossing and connection to the freeway network and have articulated concerns regarding air quality, the natural environment, specific community concerns, and tunnelling. The group's accomplishments are reflected in many of the study decisions and outcomes, including decisions to stay out of the most sensitive natural areas, avoid impacts on the historic area of Sandwich Towne and fully analyze a tunnelling alternative. Of particular note is that the study team modified the analysis to include a full year of air quality monitoring along the Highway 3/ Huron Church Road corridor. This was done as a direct result of consultation with the CCG.

3.5 Municipalities

The following subsections summarize the consultation that took place with the Municipal Advisory Group (MAG) and with individual municipalities.

3.5.1 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. Specifically, the MAG consisted of the following:

- City of Windsor;
- Town of LaSalle;
- Town of Tecumseh;
- Town of Lakeshore;
- Town of Amherstburg;
- Town of Essex; and,
- County of Essex.

Throughout the duration of the study, the following school boards were also invited to join the MAG:

- Greater Essex County District School Board;
- Windsor-Essex Catholic District School Board;
- Conseil Scolaire de District des Ecoles Catholiques du Sud-Quest; and,
- Conseil Scolaire de District Centre-Sud-Quest.

As with the CCG, the MAG has served as an excellent barometer of articulating municipal and community concerns. A series of 14 meetings with MAG have occurred since the study began. The MAG has also contributed significantly to the development and refinement of project alternatives. The MAG has made many positive contributions, however in particular, MAG members highlighted the importance of retaining a roadway that would meet the local and regional functions of the existing Highway 3/Huron Church Road corridor. This was influential in the development of practical alternatives which provided for a service road to separate local / regional traffic from international traffic.

As well, MAG members articulated a vision for the future Highway 3/Highway 401 interchange that would provide full traffic movements as well as divert longer distance traffic away from Howard Avenue in the City of Windsor. This led directly to abandonment of some early alternative interchange layouts and the development of new alternatives (one of which has been selected) at this location that would provide full traffic movements, and divert traffic away from Howard Avenue. The selection of the preferred interchange alternative was a collaborative effort of the MAG team and the study team.

The Municipal Advisory Group also requested that the study team consider the use of roundabouts at one or more strategic locations in the corridor. This led directly to the consideration of roundabouts and selection of a roundabout for the Highway 3/Highway 401 interchange ramps.

In addition to meetings with the MAG, the team has also attended two meetings of the Windsor and Essex County Environmental Committee, a committee that advises both City Council and County Council. Bus tours for members were also arranged. These meetings provided an opportunity for continuing dialogue, particularly relative to The Parkway alternative, discussion of air quality, and the review of issues associated with the plaza alternatives.

Consultations with staff from individual municipalities have also occurred throughout the study. These included introductory meetings early in 2005 and meetings to gain better mutual appreciation of the study and of the concerns of municipalities. Each of these meetings has been beneficial. In general these meetings augmented discussions held at MAG meetings and helped the study team develop the Practical Alternatives, as they related to the configurations of the service road, interchanges and access/egress ramps. The discussions with the City of Windsor and its consultants leading up to and following the development of The Parkway alternative are of particular note and are summarized in Section 3.5.2 below.

3.5.2 City of Windsor

The Schwartz Report was released by the City in January 2005. This report outlined a vision for a new border crossing and plaza in the Brighton Beach area, and a controlled access facility connecting to Highway 401. The report discounted alternatives such as use of E.C. Row Expressway, and the DRTP Corridor through the central parts of Windsor. The report considered access road alternatives in the Highway 3/Huron Church Road corridor, the corridor that was ultimately selected by the study team as the preferred route for the access road.

In the summer of 2005, the City of Windsor formed the Windsor Peer Review Team (WPRT). The WPRT reviewed and provided detailed comments on the illustrative alternatives that had been announced by the study team in June 2005.

In March 2006, the city provided comments and questions to the study team, including questions about the selection of the access road corridor.

In April 2007, city council passed a resolution supporting the inclusion of tunnelling in the access road corridor, and emphasizing the need to mitigate impacts on local residents.

Informal consultations continued into the spring and summer of 2007 with growing interest around a concept which would be a combination of the tunneled and below-grade alternatives. At meetings with the City of Windsor, the vision of a more "green", parkway-like, alternative emerged. The concept, would include a green corridor with tunneled sections, a grade separated recreational trail system, and extensive urban design of the green areas.

The DRIC study team built upon this vision to develop a Parkway Alternative, which was released for public comment in August 2007. The alternative included 10 tunnelled sections (total length 1.5km, a grade separated recreational trail network, and extensive areas of future parkland.

In response to the Parkway, the City of Windsor released a concept for the access road which it called GreenLinkWindsor in October 2007. The GreenLinkWindsor proposal was similar to the August 2007 Parkway in many respects. Both the GreenLinkWindsor proposal and The Parkway alternative, included:

- A six-lane, below-grade freeway with separate service roads for local traffic;
- Tunnelled sections in key locations to link communities;
- Hundreds of acres of green space, with new spaces for community features;
- Walking and biking trails which allow pedestrians and cyclists to travel from E.C. Row Expressway to Howard Avenue without ever crossing paths with a vehicle;
- Air quality and noise improvements by eliminating stop-and-go truck traffic and getting trucks off local streets;
- The same general layout of roadways and interchanges;

- Nearly identical property requirements, with buffer areas between the roadway and the adjacent community; and,
- An opportunity to create a signature gateway welcoming travellers to Canada, Ontario, and Windsor and Essex County.

However, there were also some significant differences. The most significant of these was the fact that GreenLinkWindsor proposed approximately 3.8 km of tunnelled section as opposed to the 1.5 km proposed in the August 2007 Parkway. GreenLinkWindsor featured individual tunnels greater than 240 m in length (two tunnels were greater than 1 km in length). Specifically, GreenLinkWindsor proposed longer tunnelled sections than The Parkway in the areas of Spring Garden/Bethlehem/Grand Marais, Todd Lane/Cabana Road and Cousineau Road/Sandwich West Parkway/Hearthwood Place.

In addition, GreenLinkWindsor included a tunnel section under the Grand Marais Drain. The Parkway alternative was developed to pass over the Grand Marais Drain to avoid construction in difficult ground conditions and the associated problems related to schedule impacts, constructability risks, and the increased costs associated with a tunnelled crossing in this area.

The study team reviewed publicly available information on the GreenLinkWindsor proposal and, in the fall of 2007, met with the City and its consultants on a few occasions. These meetings provided the opportunity for the study team to gain improved understanding of the GreenLinkWindsor proposal and for city representatives to gain improved understanding of The Parkway alternative. Subsequently, in March 2008, the City provided more analysis of the GreenLinkWindsor proposal to the study team.

The study team carefully reviewed and assessed all of the information available about the GreenLinkWindsor proposal, and considered the extent to which it would be appropriate to modify the August 2007 Parkway alternative.

A preliminary review of the air quality implications of the GreenLinkWindsor proposal in comparison to the Parkway alternative was completed by SENES Consultants Limited. SENES is responsible for all of the air quality work undertaken for this study, and is a subconsultant to URS Canada Inc. The review by SENES focused on the potential impacts of the three long tunnel sections proposed as part of the GreenLink alternative.

Based on SENES' detailed work conducted previously for the *Practical Alternatives Evaluation Working Paper*, SENES determined that, on a Windsor airshed basis, the air quality is generally not impacted by any of the alternatives, including a full 6 km tunnel. The GreenLinkWindsor proposal could be considered an "intermediate" alternative between The Parkway and the full 6km tunnel that was assessed previously. The assessment concluded that the greatest impacts from roadways were typically limited to within the first 50-100 m of the roadway corridor when comparing one alternative to another, and in SENES' professional opinion, GreenLinkWindsor was sufficiently similar to the other alternatives that this conclusion would not change. As the six kilometer tunnel alternative did not have substantial air quality benefits, neither would the shorter tunnels that were proposed in the GreenLinkWindsor proposal. Therefore, GreenLinkWindsor was not expected to impact Windsor air quality in any manner that is significantly different from the practical alternatives that were analyzed in detail.

Localized differences are detectable between the GreenLinkWindsor proposal and the practical alternatives. For GreenLinkWindsor, there are three local air quality impacts to consider with the tunnels:

- The impact on the community adjacent to the tunnel;
- The impact on receptors near the tunnel portals; and,
- The impact on the air quality on the tunnel covered area (green space).

An analysis of the GreenLinkWindsor proposal submitted by the City's consultant indicated that predicted concentrations of $PM_{2.5}$ in the Todd Lane / Cabana Road area would be essentially identical ($\pm$ 0.2 ug/m^3) compared to the DRIC forecasts. The study team concluded that the ability to reliably predict concentrations to less than 1 ug/m^3 was questionable, particularly given the inherent uncertainty in many of the model parameters.

Based on the above, the study team concluded that the longer tunnels proposed in the GreenLinkWindsor proposal offered no significant overall air quality benefits over The Parkway or the other practical alternatives.

With respect to any potential noise reductions associated with the longer tunnel sections proposed in the GreenLinkWindsor proposal, the study team again turned to its analysis of Alternative 3, the 6 km (3.7 mi) tunnel, as compared to the below-grade alternatives. That analysis showed that future noise levels for a below-grade freeway could be limited to acceptable levels, and in some cases reduced, from a future 'Do Nothing' scenario particularly when standard noise mitigation measures (berms and/or barriers) were applied. The MTO acknowledged that these mitigation measures would be included with The Parkway and other below-grade alternatives.

The study team also considered the extent to which the longer GreenLinkWindsor tunnels would enhance community connectivity. It is acknowledged that longer tunnel sections potentially provide more space for active recreation on the tunnel roof; however, the team concluded that the 120 – 240m (395-790 ft) lengths provided by the Parkway alternative would provide adequate opportunities for community connections in pedestrian-friendly environment.

The GreenLinkWindsor proposal had the same general footprint and property requirements as that of The Parkway, and therefore, the overall impacts to the natural environment were considered relatively equal. The only difference between the two options from a natural perspective was the potential for restoration and enhancement opportunities on the additional greenspace that could be provided on top of the longer GreenLinkWindsor tunnel sections. However, given the overall anticipated impacts to the natural environment from both alternatives, this additional benefit was considered relatively minor.

Last but not least, the study team assessed the GreenLinkWindsor proposal from the cost and constructability viewpoint. Some of the estimates presented by the City were not comparable to the estimates prepared for the practical alternatives and The Parkway (i.e., length of roadway included, freeway cross-section and inclusion of allowance for inflation). The study team developed a cost estimate for GreenLinkWindsor proposal, on the same basis as the estimates that had been developed for the practical alternatives and The Parkway alternative. Using this approach, the study team estimated the cost of the GreenLinkWindsor proposal at $2.3 to $2.5 billion – about $700 to $900 million more than the estimate of $1.6 billion (CDN – 2011 dollars) that was developed for The Windsor-Essex Parkway alternative in the spring of 2008.

The study team was also concerned that the longer tunnels in the GreenLinkWindsor proposal would require the introduction of mechanical ventilation in tunnels, and would cause increased risk associated with movement of hazardous goods through longer tunnels. The GreenLinkWindsor proposal to tunnel under Turkey Creek added increased risks to construction cost and schedule.

Based on the assessment above, the study team concluded that the benefits of the longer tunnels identified in the GreenLink proposal did not justify the expenditure of an additional $750 million.

The study team had solicited comments on its Parkway alternative at the August 2007 PIOH's in order to identify how The Parkway could be improved. The study team reviewed and assessed the city's material on that basis, along with suggestions of other stakeholders, including other municipalities, ministries agencies and the public. As noted above, the study team concluded that the increased cost of the GreenLinkWindsor proposal ($700 to $900 million) did not result in enough additional benefit in terms of air quality, noise reduction, and community connectivity to warrant its adoption. However, in response to the GreenLinkWindsor proposal and in response to other suggestions received after the August 2007 PIOHs, the study team made a number of refinements to the August 2007 Parkway. These refinements were adopted in order to reduce the negative effects of the Parkway, and to the extent practicable, to improve the transportation benefits and community benefits of the Parkway.

A new tunnel section was added near Spring Garden Road, and the tunnel at Howard Avenue was relocated and lengthened. There were also other minor changes in tunnel lengths and portal locations. In total these changes increased the amount of tunnelled section in The Parkway from 1.5km to 1.86km. Refinements were made to the recreational trail system, to reduce property impacts, and yet retain the principle that trail users are able to traverse the Parkway corridor without having to cross a lane of traffic. A new loop ramp was introduced at Todd Lane, in response to concerns expressed by emergency services regarding access to the freeway. The Howard Avenue/Highway 3 interchange was modified to include a connection to Howard Avenue and the possible future Laurier Parkway extension. Details of these refinements are discussed in Chapter 8.

The refined Parkway alternative was identified as The Windsor-Essex Parkway (refer to Exhibit 8.14). The Parkway alternative was analyzed in accordance with the seven major factors and evaluated against the practical alternatives, i.e., the at-grade and below-grade alternatives, as well as the cut-and-cover tunnel alternative.

3.6 First Nations

Consultation with First Nations began at the start of the study commencement in January 2005. The First Nations groups that were initially consulted include 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 demonstrated 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. All First Nations groups were notified of the Detroit River International Crossing study via a study commencement package and received follow-up phone calls / letters. In addition, mailing notices were also sent to each group prior to Public Information Open Houses and workshops.

To date, 11 meetings have been held with First Nations. A summary of each meeting is provided in Table 3.4. Issues identified at the meetings included:

- Possession of artifacts found;
- Piers in the river/disturbance of river bottom;
- Air and water quality;
- Species at Risk;
- 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 these concerns, the Ontario government has provided funding for Walpole Island to retain a consultant to review and provide input to the study materials and findings. A community meeting was held with Walpole Island First Nations in February 2008 to present the study alternatives and gather the members input and comments about the study. The study team discussed the project with the Council in the summer of 2008. Input received from the Walpole Island First Nation members has related to environmental mitigation, archeological preservation and opportunities for meaningful employment. Walpole Island First Nations were also asked to provide their input and comment regarding the technical work completed at each milestone phase of the study. Input received from Walpole Island has been incorporated into the ongoing evaluation of the illustrative and practical alternatives. Recently, additional discussions with respect to mitigation have occurred.

TABLE 3.4 – SUMMARY OF FIRST NATIONS MEETINGS

Organization	Date	Area Of Discussion	Comments Received	Outcomes
Association of Iroquois and Allied Indians	4-May-05	An introduction to the DRIC project	• Discussion regarding concerns around natural heritage, archaeology, fundamental rights, species at risk and treaty access rights. • The specific meaning the word "consultation" has to First Nations communities in regards to land claims and possible infringement on Native rights was noted. • It was noted that First Nation communities have specific interests related to the Ojibway Prairie and Ojibway Park areas.	• URS would continue to work with First Nations communities throughout the EA process keeping them informed and engaged in the process. • It was agreed that the Partnership would provide a list of possible First Nations contacts
Walpole Island First Nation (WIFN)	27-Jun-05	Introduction to Detroit River International Crossing study	• The WIFN title claim for the Canadian portion of the Lake St. Clair, Detroit River, Lake Erie, and others were presented to the project team. • Some areas of concern the WIFN may have relating to the DRIC project included possible alternations to the landscape, fisheries, water quality, species at risk issues and Ojibway lands. • Material should be provided to WIFN for review • In past projects, WIFN has provided "traditional knowledge" studies which give First Nations perspectives.	• Commitment to continued consultation and ensure WIFN's continued participation • URS to provide WIFN notes and project materials for review.
Walpole Island First Nation (WIFN)	20-Jan-06	Presentation and Evaluation of Illustrative Alternatives	• It was noted WIFN is speaking on behalf of the Three Fires Confederacy. • Litigation is currently underway to establish title to the lands on the Canadian side of the Detroit River. • The results of the Stage 1 Archaeology Review were presented, as well as the work plan for the cultural and heritage impact assessments in the Area of Continued Analysis (ACA) were discussed. WIFN will review the work plan and provide comments. • It was noted that the development and assessment of practical alternatives must include a discussion of the economic and local opportunities associated with a new crossing, as well as the transportation of hazardous goods on the new crossing. • It was noted by a WIFN representative that there should be a Duty to Consult policy in place between the province and First Nation Communities when they have an interest or are impacted by a project.	• Overview of evaluation of illustrative alternatives and the rationale for ACA. • WIFN is to develop a work plan which would the scheduling of quarterly meetings as well as a review of technical and environmental information. • It was noted that WIFN has acquired experience and expertise through other projects which would prove beneficial during the Detroit River International Crossing study. • URS to provide a listing of current documents available to WIFN. • Follow up meeting was scheduled for February 28, 2006.
Walpole Island First Nation (WIFN)	28-Feb-06	Provide WIFN a project update as well as obtain comments on the project work plans which were provided at the last meeting.	• Comments were provided on the Stage 1 Archaeological Impact Assessment Report as well as the Generation and Assessment of Illustrative Alternatives Draft Report. Additional comments will be provided once review of other work plans has been completed. • Areas of concern to the WIFN were discussed. These include the following: protection of the natural environment, protection of cultural resources, the introduction of foreign species, and the protection of other WIFN interests. • Under the JAY Treaty the WIFN are dual citizens and therefore also have an interest in the U.S. project as well. As such, the Project Team will provide information as to the U.S. Project status.	• Coordination with U.S. partners necessary to ensure consistency. • WIFN will continue to offer comments on documents and reports received from URS. • Ongoing meetings between the WIFN and the Project Team will continue. • No decision has been made in regards to funding for WIFN participation. • With the WIFN's comments on study documentation, efforts between the Project Team and WIFN can be more easily coordinated.
Walpole Island First Nation (WIFN)	3-Apr-06	Current status of the DRIC Project was presented.	• Discussion of next steps as well as the overall timeframe for the project. • A discussion of how the Fort Wayne site on the U.S. side would be impacted by the project.	• Continued consultation will occur. • WIFN can provide resumes for archaeological work in preparation for the Stage 2 Archaeological Studies. • While a number of other First Nation communities have been contacted in regards to the project, these groups have not been as engaged as WIFN, but they will still continue to be provided information.

Organization	Date	Area Of Discussion	Comments Received	Outcomes
Walpole Island First Nation (WIFN)	9-Nov-06	Project overview and potential mitigation measures	• It was noted that the First Nations have not surrendered or signed any treaty regarding the title of lands under the Detroit River and the Great Lakes on the Canadian side of the border. • WIFN reiterated that they are interested in working with the Project Team to ensure that there is a First Nation perspective in the decision making process. • Areas identified in the ACA as having potential for archaeological finds were identified as the Lucier Site (E.C. Row/Huron Church Road) and the area of Highway 3/Highway 401 in Tecumseh. Investigations into these areas have discovered no substantive finds. • Found artifacts will be temporally housed at ASI for assessment. Once completed the found materials will be returned to the public domain. • WIFN will be kept informed as to future economic and employment opportunities for WIFN members.	• WIFN will be provided funding to ensure their meaningful participation in the DRIC project. • WIFN will review and update their Work Plan and resubmit it to the Ministry of Transportation. • A series of technical papers documenting the results of the alternatives analysis will be available within the next few months.
Walpole Island First Nation (WIFN)	23-Feb-07	Update on Air Quality monitoring as well as the results of the Public Consultation Events.	• Recognizing the unresolved First Nations land claims to the bottom of the Detroit River, the Project Team is looking for any WIFN concerns regarding the installation of piers in the Detroit River. • In-water investigations were carried out on the river bottom and no notable species or habitat was identified. WIFN will review the reports and provide further comments • WIFN stated an interest in participating in archaeological field work being undertaken. It was noted that employment opportunities for WIFN members was an area of great concern to WIFN.	• URS will provide WIFN a copy of the Pubic Information Open House Summary Reports as well as corresponding displays. Additionally URS provided WIFN two copies of the Draft Preliminary Analysis Report (Dec 2006). • Study Team will take part in presentations/workshops to the Walpole Island community if the WIFN feels it would be beneficial.
Walpole Island First Nation (WIFN)	13-Dec-07	Update WIFN on the Detroit River International Crossing study status and to discuss future consultation activities.	• The Archaeological Report (August 2007) was discussed. • The International Boundary Waters Treaty Act has been consulted for this Study. There will be no piers proposed in the river and no work which would alter the water level in the Detroit River. • Overview of the Parkway Alternative was provided.	• Comments received were in regards to the Parkway Alternative and items affecting the WIFN specifically. • The work plan will be refined based on the current DRIC schedule. • Neegan Burnside will act as a liaison with the WIFN. • Future meeting to be arranged to discuss the differences between the DRIC project and the Ambassador Bridge Project.
Walpole Island First Nation (WIFN)	11-Jan-08	Arrangements for a community meeting and the Neegan Burnside Scope of Work for their review of the DRIC project	• For the community meeting it was suggested that the following content to be presented: a presentation on the project, explanation of difference between the DRIC Project and the Ambassador Bridge Project, natural and archaeological information, • The WIFN mentioned several treaties and land claims that the Project Team should be aware of. • Interest was stated for a bus tour of the project site to be organized. • Discussions regarding the work plan.	• Need to differentiate the DRIC project from the Ambassador Bridge Enhancement Project. • The importance of the Ojibway Prairie was recognized by the study team and WIFN were reassured that any access road would traverse the area.
Walpole Island First Nation (WIFN)	25-Jun-08	Analysis of the Technically and Environmentally Preferred Alternative (TEPA)	• Updated technical reports are available which include the analysis of the Windsor-Essex Parkway. • How the Parkway meets municipal tree cover objectives.	• Team is working to document commitments to mitigation/compensation for EA approvals. Commitments may be presented as conceptual design/objectives for mitigation • During the next council presentation an overview of DRIC will need to be provided as well as information on how the issues raised at the WIFN open house are being addressed.
Walpole Island First Nation (WIFN)	12-Aug-08	Presentation to the Walpole Island First Nation Council	• New bridge is expected to remain in public ownership. It may however be financed in part by the private sector via a P3 finance arrangement • It was confirmed ITS facilities would be included to facilitate the streaming of trucks and lane designations.	• WIFN are reviewing the DRIC technical reports. Their comments will be available in 3 to 4 weeks.

3.7 Schools

The study team recognized the proximity of several schools to the Area of Continued Analysis. Therefore, in addition to inviting Board representatives to MAG meetings, the study team met with specific Boards on request. Also, at the request of representatives of Oakwood Public School Council, a Schools Advisory Group was established. Although only a few meetings have transpired, consultation with this group has heightened awareness of the proximity of the schools and related concerns. This has influenced, in part, the development of The Windsor-Essex Parkway and its 11 tunneled sections as the preferred alternative.

3.8 Business Owners

Over the course of the study there have been numerous consultations with individual business institutions. The study team's economic consultant carried out an overall economic assessment which is documented in the *Practical Alternatives Evaluation Working Paper – Economic Impact, April 2008*. In addition, members of the study team have held more than 35 meetings with individual businesses, institutions and associations. These meetings have provided a forum for useful dialogue so that both the project and its benefits and impacts are understood. Where appropriate, these meetings have resulted in detailed negotiations to proactively mitigate impact.

3.9 Crossing Owners, Operators and Proponents Group (COOP)

At the outset of the study, there were several private interests with specific proposals for new border crossings. These included:

- Canadian Transit Company/Detroit International Bridge Co., owners and operators of the Ambassador Bridge;
- Detroit & Canada Tunnel Corporation;
- The Detroit River Tunnel Partnership (DRTP) – a dedicated international truck route and tunnel river crossing;
- MichCan International Bridge Company – an international bridge proposal in the vicinity of Brighton Beach;
- Hennepin Point Crossing – a proposed international bridge crossing downstream near Amherstberg; and,
- Border Gateways.

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 the Detroit River International Crossing study. Based on these meetings, the above-noted proposals were included in the development, analysis and evaluation of illustrative alternatives.

3.10 Private Sector Advisory Group (PSAG)

The combined Canadian and U.S. 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 study team a better understanding of the economic importance of an efficient border crossing system.

American Chamber of Commerce in Canada	Association of International Automobile Manufacturers (Canada & U.S.)
Automotive Parts Manufacturer's Association	Bison Transport Inc., Border Gateways
BP Canada Energy Company	Brighton Beach Power
Canadian Association of Importers and Exporters Inc.	Canadian Auto Partnership Council, Canadian Chamber of Commerce
Canadian Manufacturers and Exporters	Canadian Shipowners Association
Canadian Trucking Alliance	Canadian Vehicle Manufacturers' Association
Canadian/American Border Trade Alliance	Chamber of Maritime Commerce
City of St. Catharines	CN Rail / U.S. Government Affairs
Canadian Manufacturers & Exporters	Coco Group of Companies
DaimlerChrysler (Canada & Michigan)	Detroit Regional Chamber
Essex Terminal Railway Company / Morterm Limited	Fednav Limited
Ford of Canada, General Motors (Canada & U.S.)	Gorski Bulk Transport Inc.
Great Lakes Pilotage Authority	Honda Canada Inc.
Hydro One Networks Inc.	Industry Canada
International Business Consultants of Canada Inc.	Lake Carriers' Association
Lou Romano Water Reclamation Plant	Michigan Trucking Association
Motor and Equipment Manufacturers Association	Norfolk Southern Railway
Ontario Chamber of Commerce	Ontario Trucking Association

SLH Transport Inc.	Sterling Marine Fuels
Sysco Food Services	The Canadian Salt Company Limited
Tourism Industry Association of Ontario	U.S. Great Lakes Pilotage Association
District 2	United States Consulate General
University of Windsor	Windsor & District Chamber of Commerce
Windsor Construction Association	Windsor-Essex County Development Commission
Southern Ontario Gateway Council	Corp. of Professional Great Lakes Pilots
Lakes Pilots Association, Inc.	Seaway Marine Transport
V.Ships Canada Inc.	

3.11 Canadian Border Services Agency (CBSA)

The study team met numerous times with CBSA throughout the study. CBSA has provided direct input regarding the plaza requirements in terms of size, proximity to the border, capacity, and components. The agency reviewed and commented on alternative layouts and continues to advise on the layout and requirements of the preferred plaza location. To ensure that the plaza alternatives were viable and would operate smoothly, the operations for each practical alternative were simulated under year 2035 traffic conditions using customized simulation software.

3.12 Emergency Services (EMS) / RCMP

The study team has consulted several times with EMS representatives (police, fire, and ambulance) as well as the RCMP. Meetings with EMS representatives have helped to shape the location of access opportunities for the practical alternatives and for the preferred alterative. In particular, EMS input has influenced the access ramp locations at the Todd Land/Cabana Road West interchange.

The team asked the RCMP to review the practical alternatives for the plazas and river crossing from a threat security viewpoint. This review was undertaken and concluded that each alternative was viable and could be made secure with no undue threat to safety and security.

3.13 Environmental Agencies

3.13.1 Canadian Agency Advisory Group (CANAAG) / Individual Ministries and Agencies

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. CANAAG consists of the following:

Canada Border Services Agency	Canada Political/ Economic Relations and Public Affairs
Canadian Coast Guard, Canadian Environmental Assessment Agency	Canadian Transportation Agency
Environment Canada	Essex County OPP
Essex Region Conservation Authority	Fisheries & Oceans Canada
Foreign Affairs & International Trade Canada	Health Canada
Indian and Northern Affairs Canada	International Joint Commission
Medical Officer of Health	National Energy Board
Natural Resources Canada	Ontario Ministry of Agriculture and Food
Ontario Ministry of Culture	Ontario Ministry of Economic Development & Trade
Ontario Ministry of Municipal Affairs & Housing	Ontario Ministry of Natural Resources
Ontario Ministry of Northern Development & Mines	Ontario Ministry of the Environment
Ontario Ministry of Tourism and Recreation	Ontario Realty Corporation
Ontario Tourism Marketing Partnership Corporation	Royal Canadian Mounted Police
Transport Canada – Marine	Windsor Port Authority.

The objective has been to take the concerns and requirements of the agencies into account throughout the development analysis, evaluation and mitigation phases, and to ensure that they in-turn were kept abreast of study developments as they occurred, and had opportunities for input.

The consultation began in 2005 with initial meetings and the development of work plans for major environmental disciplines. The review and approval agencies reviewed and commented on draft work plans and these were amended accordingly. These work plans served to guide the data collection and analysis for these environmental disciplines. To date, 11 meetings with the CANAAG have been held. These meetings have served to update members on study progress, distribute draft reports for review, and receive input.

In addition to the CANAAG meetings, more than 15 meetings have been held with individual ministries and approval agencies, including:

- Essex Region Conservation Authority (ERCA);
- Department of Fisheries and Oceans (DFO);
- Ministry of Environment (MOE);
- Ministry of Natural Resources (MNR);
- International Joint Commission (IJC);
- Transport Canada;
- Health Canada;
- Ministry of Municipal Affairs and Housing;
- Canadian Environmental Assessment Agency;
- Canadian Citizenship and Immigration Office;
- Ministry of Agriculture;
- Ministry of Foreign Affairs;
- Trade Canada; and,
- Ministry of Economic Development Trade.

These meetings have been critical to and have helped shape the extensive environmental mitigation measure outlined in Chapter 10 of this EA Report.

3.14 Individual Detroit River Authorities

The Detroit River authorities include the Transport Canada, the Windsor Port Authority, the U.S. Coast Guard, Canadian Shipowners Association, Canadian Great Lakes Pilots Association, and the International Joint Commission. The study team consulted with these agencies to determine whether it would be viable to have bridge piers in the Detroit River as part of the international crossing. The placement of even one pier in the river would lower the cost of the bridge by tens of millions of dollars. However, after consultation with these groups (and realizing that there would be environmental impacts from having a pier in the river) the Partnership decided that a full span of the river (no piers in the river) was the only viable option. Aside from the environmental concerns, one or more piers in the river would significantly detract from shipping and docking safety in the area.

3.15 Pre-Submission Review

As part of the Ontario Environmental Assessment Act (OEAA) requirements, a Draft Environmental Assessment (EA) Report was prepared for this study that provided information on the technical findings and environmental effects identified throughout the study period. The Draft EA Report was made available for review and comment by the public, external agencies and all interested stakeholders for a 30-day period commencing on Wednesday, November 12, 2008 and ending on Friday, December 12, 2008.

Printed copies of the Draft EA Report were supplied to the following external agencies and stakeholders at the beginning of the review period:

- Canadian Environmental Assessment Agency
- Environment Canada
- Essex Region Conservation Authority
- First Nations (Walpole Island, Aamjiwnaang, Chippewas of Kettle and Stony Point, Munsee Delaware Nation, Caldwell, Moravian of the Thames, Oneida Nation of the Thames)
- Fisheries & Oceans Canada
- Health Canada
- Michigan Department of Transportation
- Municipal Clerks (County of Essex, Town of Amherstburg, Town of Essex, Town of Lakeshore)
- Ontario Ministry of Culture – London & Toronto Offices
- Ontario Ministry of the Environment
- Ontario Ministry of Economic Development & Trade
- Ontario Ministry of Municipal Affairs & Housing
- Ontario Ministry of Natural Resources – Southwest Zone, Ontario-Canada, Aylmer & Peterborough
- Ontario Parks
- Ontario Provincial Police Essex Detachment
- Transport Canada
- Windsor Port Authority

Printed copies of the Draft EA Report were also made available to the general public and any other interested stakeholders at the beginning of the review period at the following locations:

- MTO Windsor Border Initiatives Implementation Group – Windsor Office
- Ontario Ministry of the Environment – London Office
- Ontario Ministry of the Environment – Windsor Office
- Office of the Clerk – City of Windsor

- Office of the Clerk –Town of LaSalle
- Office of the Clerk – Town of Tecumseh
- Office of the Clerk – County of Essex
- Windsor Public Library – Central, Sandwich and Nikola Budimir branches
- LaSalle Public Library
- Tecumseh Public Library
- URS Canada Inc. – Markham Office

Additionally, the Draft EA Report was made available on the study website at www.partnershipborderstudy.com .

Notices of the Draft EA Report review period were distributed via Canada Post to over 29,100 addresses in the study area prior to the review period and published in several local newspapers including the Windsor Star, Harrow News, Kingsville Reporter, Essex Voice, Leamington Post & Shopper, Essex Free Press, Le Rempart, Amherstburg Echo, LaSalle Post, and LaSalle Silhouette at the beginning of the review period. Notification of the Draft EA Report review was also presented at the Public Information Open Houses (PIOH 7) held on November 24 and 25, 2008.

At the time of preparing this report, the study team has received comments from 22 sources including:

- The Canadian Transit Company (Ambassador Bridge)
- The City of Windsor
- Paciorka Leaseholds Limited
- Ontario Provincial Police - Essex Detachment
- Ontario Ministry of the Environment
- Hydro One
- Environment Canada
- Essex Region Conservation Authority
- County of Essex
- Windsor Crossing Outlet Mall
- Walpole Island First Nation (c/o Neegan Burnside)
- Ontario Ministry of Culture
- Town of Tecumseh
- Ontario Ministry of Natural Resources
- Members of the public

The comments received are included in Appendix D of this report. All comments have been reviewed by the study team. The EA Report has been revised in several areas to provide more clarity and/or information. In addition, written responses will be provided to those who provided comments during this review period.

3.16 Summary

Consultation has been an important component of the Detroit River International Crossing study since it began in 2005. Municipalities, agencies, businesses, communities, the public at large, and First Nations have been involved in the over 300 meetings and events convened by the study team. The consultation played an integral role in the development of the Recommended Plan.

4 DESCRIPTION OF THE EXISTING ENVIRONMENT

This section of the report provides an overview of existing environmental conditions within the Preliminary Analysis Area (PAA), which is represented by the highlighted area in Exhibit 1.1 (see Chapter 1). Subsequent to the evaluation of the illustrative plaza, crossing and access road alternatives (refer to Chapter 6), the study team identified an Area of Continued Analysis (ACA), and a more detailed review of existing environmental conditions within this more focused area was undertaken. The reader is referred to Chapter 7 of this report for information regarding the existing environmental conditions within the Area of Continued Analysis.

Two Environmental Overview Papers were prepared to support the study team's assessment of existing conditions within the PAA. These papers, which are summarized below provide a rich source of existing conditions information for the PAA:

- *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.*

To enhance readability, the key findings from these documents are presented in the subsequent sections of this chapter. The reader is referred to each of the above documents, which are available electronically from the study website (http://www.partnershipborderstudy.com). Hard copies of the report are available from URS Canada upon request.

4.1 Air Quality

Southern Ontario is part of a regional airshed that stretches from the U.S. Midwest into Quebec and the northeastern U.S. states. Local air pollution sources are outweighed by pollutants entering the province from U.S. sources. Prevailing wind patterns make U.S. pollution sources the largest contributors to air pollution in Ontario. This is especially true for smog. On average more than 50 per cent of Ontario smog originates south of the border.

The air quality of southwest Ontario and southeast Michigan is of special concern because of the past air quality problems that have been experienced in these areas. The increased air quality episodes in this region are mainly attributed to high population density in the region, a large number of heavy industries and the existing transportation infrastructure (major border crossings between the U.S. and Canada). Special attention has been given to the air quality of these regions to reduce/prevent episodes of bad air quality by identifying the major contributing sources of pollutants and coordinating efforts to reduce/prevent pollutant emissions.

The Ontario Ministry of the Environment (MOE) measures air contaminants at various locations throughout Ontario, and reports on the state of Ontario's air quality on an annual basis. In the *Air Quality in Ontario 2000 Report*, MOE reported trends from 1991 to 2000 for ozone, inhalable particles, nitrogen dioxide, carbon monoxide and sulphur dioxide, for nine U.S. and Canadian cities in the Great Lakes Basin Area, including Windsor. The report showed that Windsor's mean concentrations for these contaminants were below respective *U.S. National Ambient Air Quality Standards (NAAQS)* and Ontario ambient air quality criteria for all contaminants, with the exception of ozone.

The mean concentration of ozone in Windsor during this period exceeded Ontario's standard of 80 parts per billion. The report states that air quality in the province as a whole has improved over the past 30 years despite significant increases in population, economic activity and vehicle travel.

For the Windsor–Essex area, the existing air quality is 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 south-southwest. These winds transport contaminants from the heavily industrialized areas of Detroit and nearby communities. Air quality impacts are dominated by the substances that combine to produce smog or acid rain such as carbon monoxide (CO); nitrogen oxides (NO_x); volatile organic compounds (VOCs); sulphur dioxide (SO_2); and particulate matter (SPM)[1].

To assess the current air quality in the Preliminary Analysis Area, historical air quality monitoring data from provincial (MOE)[2] and federal (Environment Canada)[3] stations, in close proximity to the Preliminary Analysis Area were considered.

Air quality monitoring stations with published data that were located in the vicinity of the Preliminary Analysis Area and had the most complete set of data were selected for use in this study. The following stations were used:

- 467 University Avenue (Station #060204 C);
- College/South St. (Station #060211R);
- Wright/Water St. (Station #060212I); and
- Tecumseh, 9725 Riverside Drive East (Station #012009) (note: removed from the network in 2002).

The location of these ambient air monitoring stations are illustrated in Exhibit 4.1. It should be noted that the stations shown in Exhibit 4.1 are representative of overall air quality conditions in the City of Windsor. They do not reflect particular local conditions, such as the present heavy traffic conditions on Huron-Church Road.

The most recent available data (for 1999 to 2003) collected from these air monitoring stations are summarized in the *Environmental Overview Paper – Canadian Existing Conditions Volume 1*. For each pollutant, statistical analyses including the mean, maximum and 90th percentile as well as the measured concentrations for different averaging times (e.g. one-hour, 24-hour, etc.) are presented in tabular format in the report. Where applicable, numbers of exceedances (when the measured concentrations exceed the ambient air quality criteria (AAQC) for a certain averaging time) are also presented. With the exception of the annual monitoring data for VOCs and PAHs, which is collected by Environment Canada, all other data for conventional pollutants are from the MOE ambient monitoring stations in the vicinity of the Preliminary Analysis Area.

A brief summary of the findings for each pollutant is summarized in the following sections.

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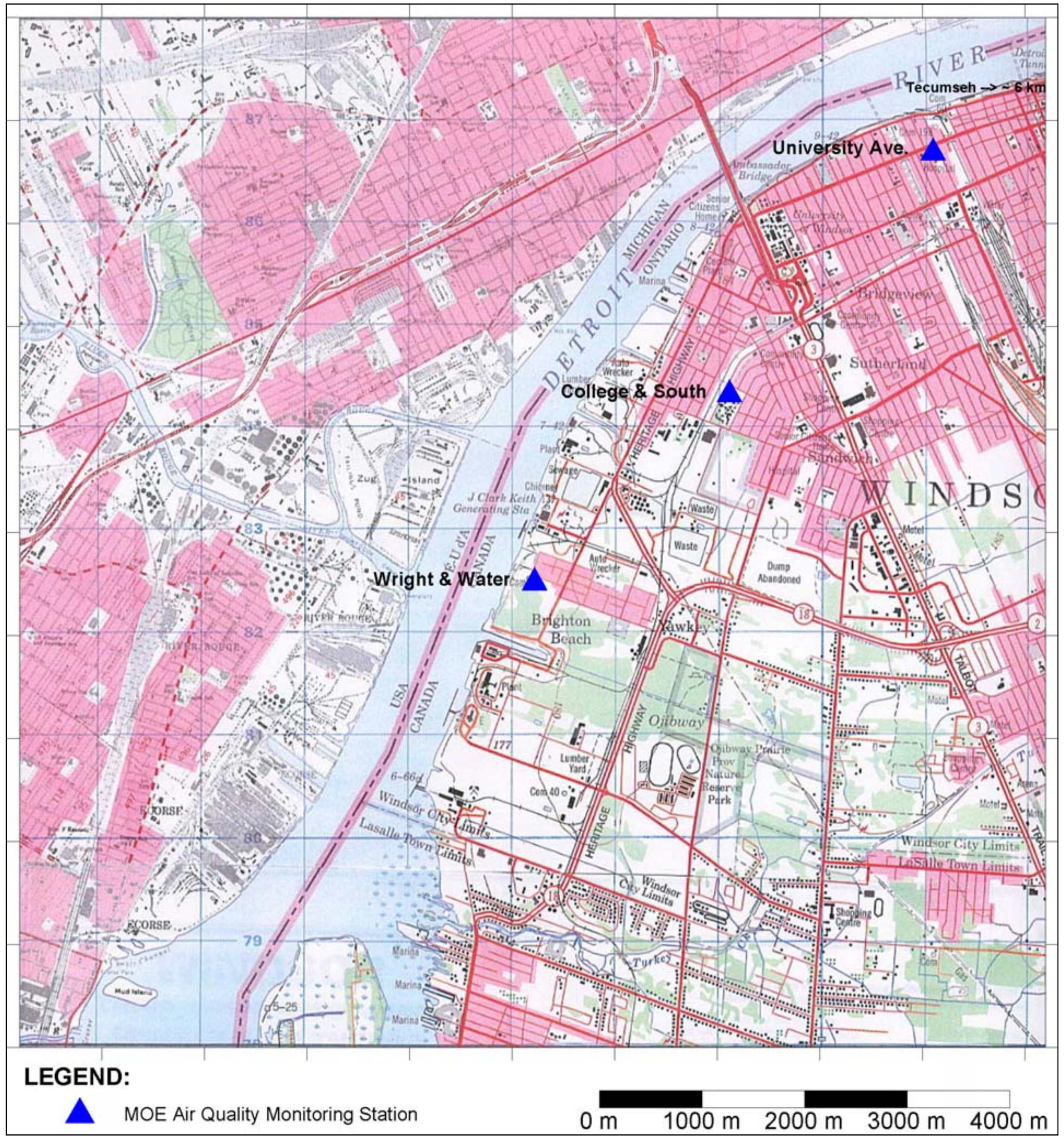
[1] Environment Canada 1999a.
[2] Environmental Monitoring and Report Branch, Ontario Ministry of the Environment, Air Quality in Ontario 1999-2003.
[3] Environment Canada 1999-2003.

EXHIBIT 4.1 – LOCATION OF LOCAL AMBIENT AIR QUALITY MONITORING STATIONS



NITROGEN OXIDES (NO_X) / NITROGEN DIOXIDE (NO_2)

Nitrogen oxides (NO_x) are present in the atmosphere as various species of NO, NO_2, N_2O, etc. NO_2 is monitored at three of the four monitoring locations, namely at College/South Street, Riverside Drive, and University Avenue, however, monitoring at the Riverside Drive Station was halted as of 2002. The one-hour and 24-hour maximum NO_2 concentrations measured at the three stations did not exceed the AAQC of 200 and 100 ppb, respectively.

SULPHUR DIOXIDE (SO_2)

Ambient monitoring data for SO_2 concentrations was collected at all four monitoring locations examined in this study. However, the monitoring at Riverside station was halted in 2002. The available data indicate that the annual mean and the one-hour and 24-hour maximums were not exceeded at any of the four stations, for the years 1999 to 2003.

CONTINUOUS PM_{10} MEASUREMENTS

Continuous ambient monitoring data for PM_{10} was collected at one of the four monitoring locations, namely, the College/South Street Station. However, this monitoring was halted as of 2002. The available data indicate that the Ontario interim criterion of 50 µg/m3 was exceeded sporadically for all the three years of available data, i.e., 1999 to 2001.

CONTINUOUS $PM_{2.5}$ MEASUREMENTS

Ambient monitoring data for $PM_{2.5}$ is available for all four stations. However, the monitoring started in 2002 at the College/South Street Station, in 2001 at the 467 University Avenue Station, and ended in 2001 for the Riverside Drive Station. Only two years of data was collected at the Wright/Water Street Station. Achievement of the Canada Wide Standard (CWS) is based on the 98th percentile over three years, which is equivalent to approximately 22 exceedances during this period. The available data indicate that the proposed CWS of 30 $\mu g/m^3$ was exceeded at all the four stations for all the years of available data.

OZONE (O_3)

Ambient monitoring data for O_3 concentrations is available for two of the ambient monitoring stations, namely, the College/South Street Station and the 467 University Avenue Station. The available data indicate that the one-hour maximum concentrations at both stations exceeded the AAQC of 80 ppb for the years 1999 to 2003.

CARBON MONOXIDE (CO)

Ambient monitoring data for CO concentration is published for one of the ambient monitoring stations, namely, the 467 University Avenue Station. The available data indicate that the one-hour and eight-hour maximum concentrations at both stations did not exceed the AAQC of 30 and 13 ppm from 1999 to 2003, respectively.

VOCS AND PAHS

Published ambient monitoring data for VOC and PAH concentrations is from Environment Canada's monitoring station for the City of Windsor. With the exception of benzo(a)pyrene and one year of data for naphthalene, the data set for the organic contaminants of interest is complete for the period of 1999 to 2003. When compared against the AAQC values, the maximum 24-hour values for the pollutants of concern are all below the associated criteria.

4.2 Socio-economic Environment

This section provides a summary of existing socio-economic conditions within the Preliminary Analysis Area. Existing noise and vibration conditions, and economic conditions, as well as population characteristics are presented in this section. The *Environmental Overview Paper – Canadian Existing Conditions Volume 1* provides detailed documentation of conditions.

4.2.1 Noise and Vibration

The study team obtained information with regard to existing noise conditions in the Preliminary Analysis Area from numerous sources. These sources are described in more detail in the *Environmental Overview Paper – Canadian Existing Conditions Volume 1*.

The Preliminary Analysis Area (**Exhibit 2.1, Chapter 2**) encompasses a range of land use conditions which varies from highly urbanized areas within the City of Windsor and the neighbouring towns of LaSalle and Tecumseh to rural areas with intensive agricultural land uses.

Transportation noise, including road, rail, air and watercraft, is a major contributor to the existing noise environment. Industrial operations, including several large complexes and commercial activities are also significant sources of existing noise.

In rural areas, the existing noise environment is characterized by sounds of nature, domestic activities and farm machinery noises.

4.2.2 Population and Demographic Trends

Table 4.1 lists the population of the Canadian segments of the Preliminary Analysis Area for 1991 and 2001. Although not available at the time of preparing the *Environmental Overview Paper – Canadian Existing Conditions Volume 1*, population and demographic information from the 2006 Canadian Census was available at the time of preparing this EA Report, and has also been presented in **Table 4.1** for comparison purposes.

Between 1991 and 2001 all three communities experienced growth, while higher growth rates were experienced in the surrounding Towns of LaSalle and Tecumseh.

Continued growth was experienced between 2001 and 2006 for the City of Windsor and Town of LaSalle, while a small decline in growth was experienced in the Town of Tecumseh. The highest growth rate was experienced in the Town of LaSalle over the five-year period.

TABLE 4.1 – POPULATION IN THE PRELIMINARY ANALYSIS AREA[4]

Population	Windsor	LaSalle	Tecumseh
Population in 2006	216,473	27,652	24,224
Population in 2001	208,402	25,285	25,105
Population in 1991	191,435	16,628	10,495
1991 to 2001 population change (%)	9%	23.7%	23.9%
2001 to 2006 population change (%)	3.9%	9.4%	-0.4%

As illustrated in **Table 4.2**, the population in the Preliminary Analysis Area is projected to grow moderately over the next twenty years overall. While the City of Windsor is anticipated to experience a decline in population, the populations of the Town of LaSalle and Town of Tecumseh are expected to grow significantly. The most significant growth is expected to occur in the Town of LaSalle, which is a rapidly urbanizing municipality.[5]

TABLE 4.2 – FORECASTED POPULATION CHANGES IN THE PRELIMINARY ANALYSIS AREA[6]

Population	Windsor	LaSalle	Tecumseh
Population in 2001	208,402	25,285	25,105
Population in 2020	200,972	32,400	35,259
2001 to 2020 population change (%)	-3.6%	28.1%	40.4%

With regard to demographic trends, the age characteristics of the population for the three communities are presented in **Table 4.3**. Other characteristics of the population are included in the *Environmental Overview Paper – Canadian Existing Conditions Volume 1*.

TABLE 4.3 – AGE CHARACTERISTICS OF THE POPULATION[7]

Age Characteristics of the Population (2001)	Windsor			LaSalle			Tecumseh		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
Total - All persons	208,405	101,925	106,475	25,285	12,550	12,730	25,105	12,410	12,690
Age 0-4	13,155	6,810	6,345	1,765	945	820	1,420	725	695
Age 5-14	26,495	13,680	12,810	4,095	2,065	2,025	3,955	2,035	1,920
Age 15-19	12,960	6,555	6,400	1,885	935	945	2,035	1,020	1,015
Age 20-24	15,330	7,600	7,730	1,470	745	725	1,550	810	740
Age 25-44	65,915	33,355	32,560	8,245	3,985	4,255	7,255	3,460	3,790
Age 45-54	26,910	13,220	13,690	3,650	1,800	1,845	4,205	2,055	2,150
Age 55-64	18,305	8,800	9,500	2,190	1,130	1,060	2,385	1,240	1,145
Age 65-74	15,595	7,070	8,530	1,295	665	635	1,435	720	720
Age 75-84	10,645	4,015	6,630	585	245	340	685	280	400
Age 85 and over	3,100	815	2,285	110	30	80	175	60	115
Median age of the population	36.0	34.8	37.2	35.1	34.9	35.3	37.1	36.8	37.4
% of the population ages 15 and over	81.0	79.9	82.0	76.8	76.0	77.6	78.6	77.8	79.4

4.2.3 Economic Conditions

This section provides an overview of the existing economic conditions in the Preliminary Analysis Area. At the time of undertaking the analysis, the most recent available information corresponded to 2004. At the time of preparing this report, more recent information was available, and has also been presented throughout this section for comparison purposes.

The economic analysis for this study has been undertaken in two phases:

[4] Statistics Canada 2002 & Statistics Canada, 2007.

[5] URS Canada Inc. Canada - U.S. - Ontario - Michigan Border Transportation Partnership Planning/Need and Feasibility Study: Environmental Overview Report (Amended). January, 2005.

[6] Statistics Canada 2002.

[7] Ibid.

- Phase I consisted of an overview of the existing economic base, urban structure and growth outlook in the Preliminary Analysis Area; and,
- Phase II consisted of a detailed analysis of the economic and business impacts of each route, including an examination of the social and economic fabric of the neighbourhoods. Further information with regard to the Phase II economic analysis is included in Chapter 7.

The focus of the analysis was on local economic impacts. Regional economic impacts related to reducing the cost of congestion were analyzed; however, it was difficult to assign these impacts to any particular person or location. Improving transportation is primarily a benefit to society and the enhancement of the role of Windsor-Essex within southern Ontario.

The analysis considered three main factors:

- The future outlook. A key consideration in determining local economic impact is the effect that a major transportation investment could have on future growth. If the improved capacity results in more rapid growth than is currently anticipated there will be economic impacts related to new jobs and people, the provision of services, and property assessment and other land use planning considerations.
- Urban structure. Major highway corridors can be highly influential in directing the location of urban growth and economic activity. Plans are currently in place to accommodate growth in Windsor for about 20 years. If the planned urban structure is changed this would have economic impacts in terms of land use designations, inefficient use of existing investments and additional infrastructure investment to accommodate growth in new locations
- Real estate in the corridor. There will be economic impacts associated with demand for services related to the construction of the facility, the displacement of people and jobs, changes in property values, and long term changes in access patterns.

CURRENT ECONOMIC SITUATION IS HAVING A SIGNIFICANT IMPACT ON WINDSOR-DETROIT, BUT THE COMPLETE EFFECT IS NOT YET CLEAR

At this time, there is no clarity as to the short-term or long-term consequences of the global financial crisis and stock market turmoil of September and October 2008. While significant effects to the local economy of Windsor and elsewhere are expected, the length and depth of the economic slowdown is highly uncertain.

Additional uncertainty in Windsor is created by the possibility of major restructuring and, perhaps, mergers among the major North American manufacturers. As this is being written, some of the major outcomes are expected soon, but yet unknown.

The current situation will only be understood within a long-term context, recognizing the cyclical nature of economies, particularly a manufacturing-based economy such as Windsor. Future long-term prospects for Windsor, even in a time of great uncertainty, will remain based on its core economic attractions including international trade infrastructure such as is being planned for the long term through the Detroit River International Crossing process.

WINDSOR-DETROIT IS A KEY LINK IN A LARGER ECONOMIC SYSTEM

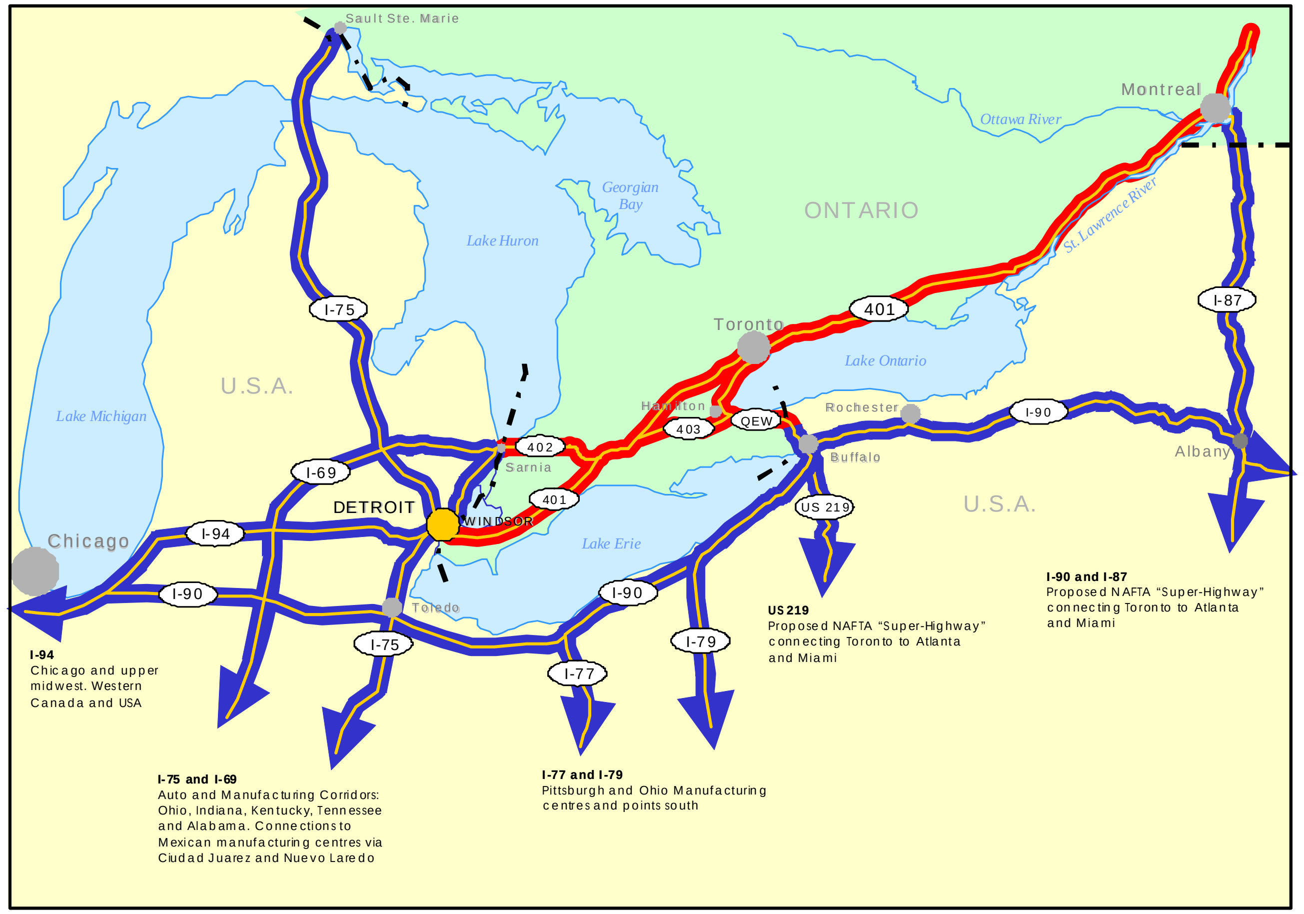
As illustrated below in Exhibit 4.2, the Windsor-Detroit area is one of three major links within a system of highways and trade corridors connecting major urban areas in southwest Ontario to major U.S. centres. A significant amount of trade takes place between Canada and the U.S., and the transportation system in southern Ontario plays a key role in facilitating this economic activity. Major connections to the U.S. served by the Windsor-Detroit crossing include:

- I-94, which provides access to Chicago and the upper midwest, Western Canada and other parts of the U.S.;
- I-75 and I-69, which are major auto and manufacturing corridors providing access to Ohio, Indiana, Kentucky, Tennessee, Alabama and to major Mexican manufacturing centres in Mexico; and
- I-77 and I-79, which provide access to manufacturing in Pittsburgh and Ohio and other southern locations.

In the Windsor-Detroit area, Windsor is by far the smaller of the two urban areas. The Windsor Census Metropolitan Area (CMA) is comprised of the City of Windsor and the Town's of Lakeshore, Amherstburg, Tecumseh, and LaSalle. Windsor represents the major urban area in the CMA with the built up areas of neighbouring Tecumseh and La Salle located along the border. The remainder of the CMA is largely rural with some scattered hamlets and shoreline development. In 2006, the Windsor Census Metropolitan Area (CMA) had a population of approximately 325,000[8]. This is much smaller than the approximately 4.5 million residents within the Detroit Metropolitan Statistical Area (MSA). Within the MSA, Wayne County contains the core urban area within which the City of Detroit is located. The difference in size between Windsor and Detroit is clearly evident in Exhibit 4.3. Because Windsor is relatively small, a major infrastructure investment could have a major economic impact. Windsor is strategically located at the end of one highway corridor in Ontario (Highway 401) and the beginning of a much larger system of highways and trade corridors to the United States. As a result, improving the connection between these two areas could have significant implications for future economic prospects and growth.

[8] http://www.citywindsor.ca/002358.asp

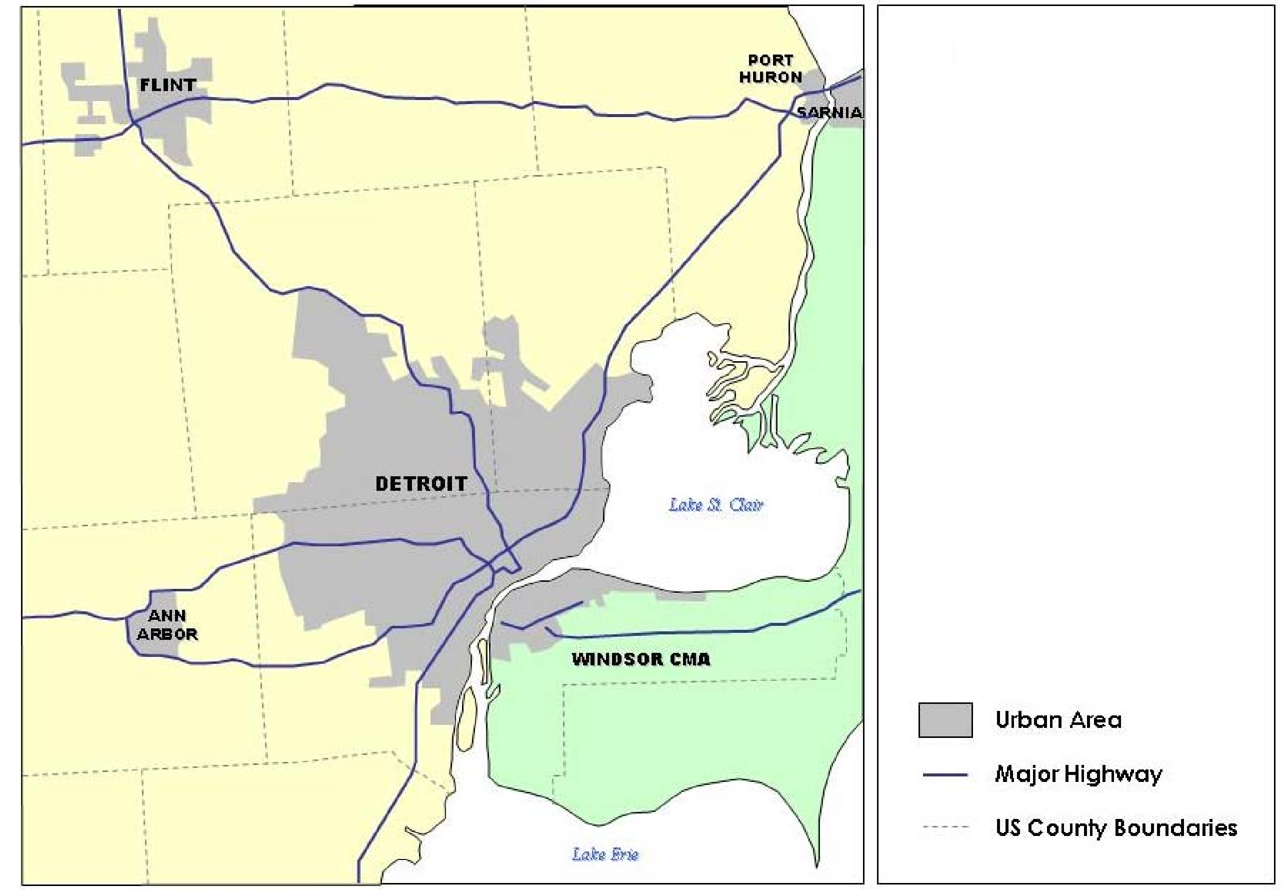
EXHIBIT 4.2– SOUTHWEST ONTARIO – U.S. HIGHWAY SYSTEM



Source: Hemson Consulting Ltd.

NTS

EXHIBIT 4.3 – WINDSOR-DETROIT CONTEXT



NTS

WINDSOR IS SMALLER THAN DETROIT, BUT GROWING

Overall, the population of the Detroit MSA has remained stable at about 4.5 million since 1970. Wayne County, however, which contains the core urban area, has experienced a steady decline in population, from 2.7 million in 1970 to just under 2 million in 2007. By comparison, the Windsor CMA has grown steadily over the past 35 years adding about 140,000 people, as shown in Exhibit 4.4.

A similar situation is observed with employment. Between 1987 and 2008, a net of more than 30,000 jobs have been added with steady gains occurring from 1994 through to a peak of 165,000 in 2006. The last two years have seen some employment decline as the downturn in manufacturing has affected the labour market (refer to Exhibit 4.5).

EXHIBIT 4.4 – POPULATION OF WINDSOR CMA SINCE 1971

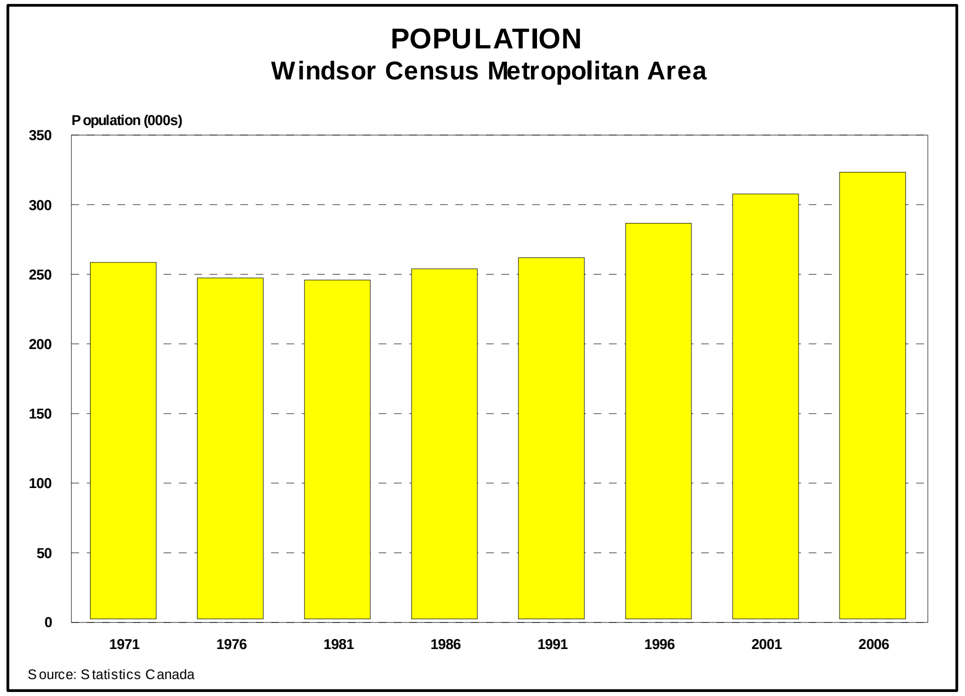
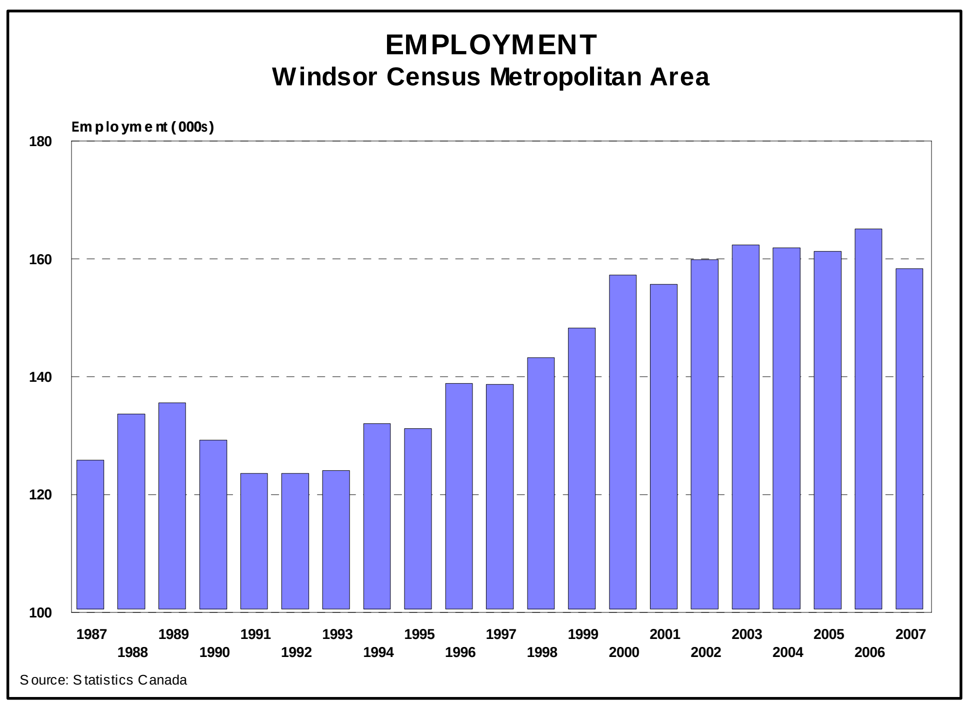


EXHIBIT 4.5 – EMPLOYMENT IN WINDSOR CMA SINCE 1987



BUILDING ACTIVITY HAS BEEN STRONG

Despite some clear cyclical variations, new residential construction has generally been strong over the long term (Exhibit 4.6). Rapid population growth in the 1970s was accompanied by significant housing construction and then halted abruptly by a deep downturn at the start of the 1980s. The remainder of the 1980s and 1990s was characterized by steady growth in new permits, with the peak of the current cycle evident in 2002 but with significant subsequent declines in response to the recent economic slowdown.

In the industrial commercial sector the recession of the early 1980s was followed by more moderate levels of new permit activity. It is only since the 1990s that new construction and investment returned to levels observed in the late 1970s. The peak in 1997 is the Windsor Casino investment, as shown in Exhibit 4.7. Recent permit values have yet to show a pattern of decline seen in the residential permits.

EXHIBIT 4.6 - RESIDENTIAL BUILDING PERMITS IN WINDSOR CMA SINCE 1970

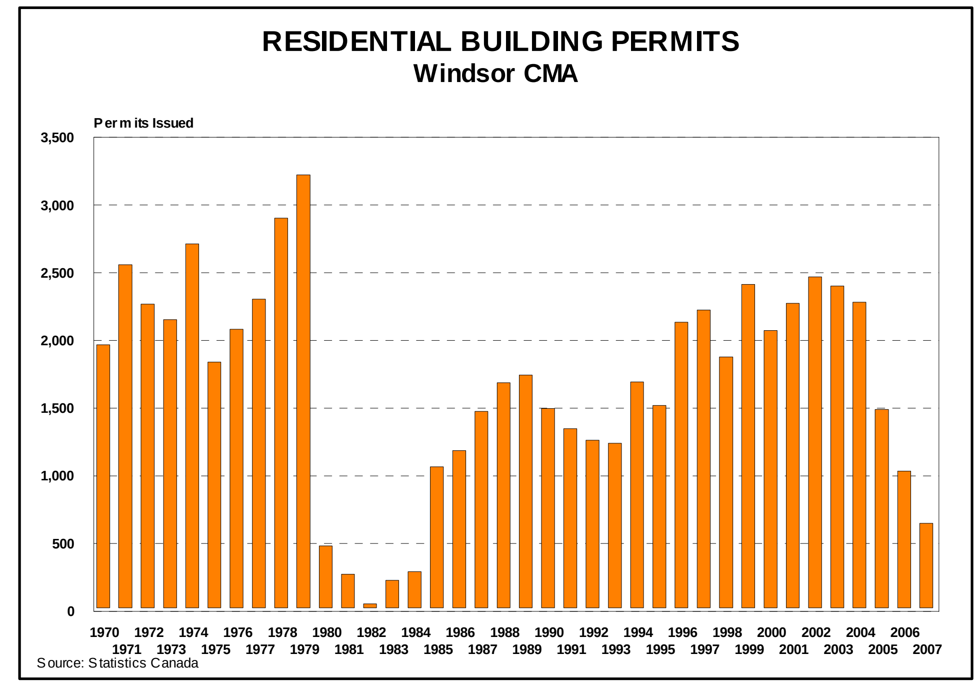
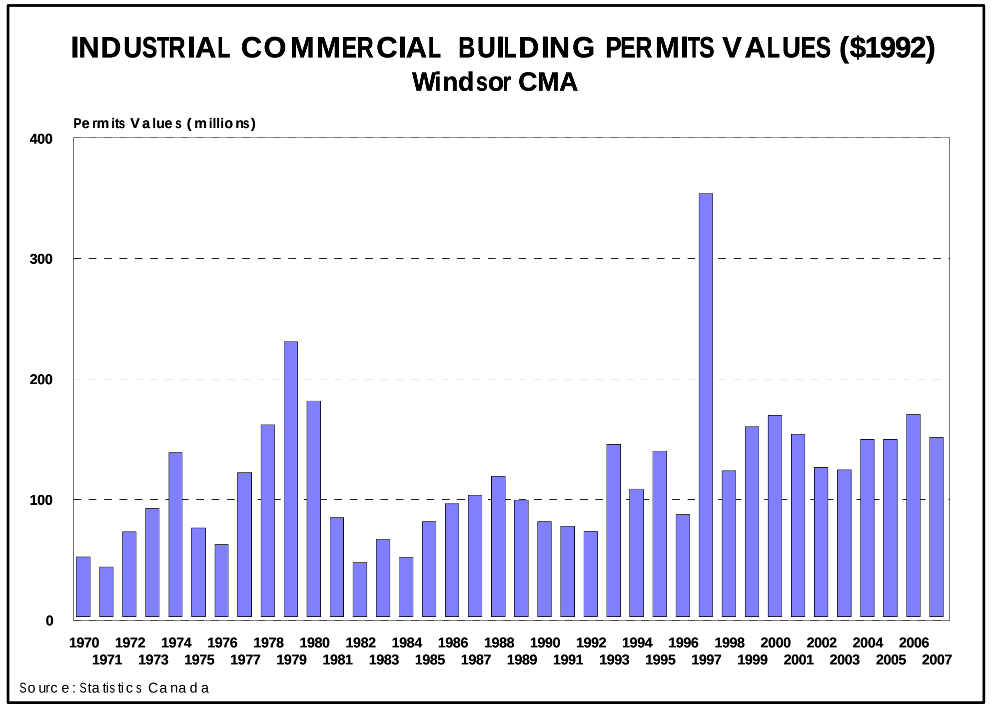


EXHIBIT 4.7– INDUSTRIAL COMMERCIAL BUILDING PERMITS VALUES IN WINDSOR CMA SINCE 1970



ECONOMIC BASE IS CONCENTRATED IN THE AUTOMOTIVE INDUSTRY

Considering the importance of the automotive sector in the Canadian economy the concentration of vehicle and parts manufacturing in Ontario and Windsor's key location in the broader transportation system, it seems logical that Windsor's economic base would also be focused in the automotive sector. The automotive sector is a major contributor to Windsor's manufacturing base. All three of the North American automakers produce car components in Windsor. Chrysler has the only major assembly facility in Windsor, which produces light trucks (mini vans and SUVs), which accounts for almost 13 per cent of the vehicles manufactured in Canada.

In addition to the Chrysler plants, Ford has an engine plant and a test track while General Motors has an engine plant in Windsor among a wide range of other automotive manufacturing activities. General Motors has, however, announced the closing of its engine plant, to occur in 2010.

While declining from earlier peaks, vehicle production in Canada remained relatively robust into 2007 However, when complete statistics are available for 2007 and more so for 2008, a significant decline in production will be evident. Refer to Table 4.4 below for trends in Canadian vehicle production from 2003 to 2006.

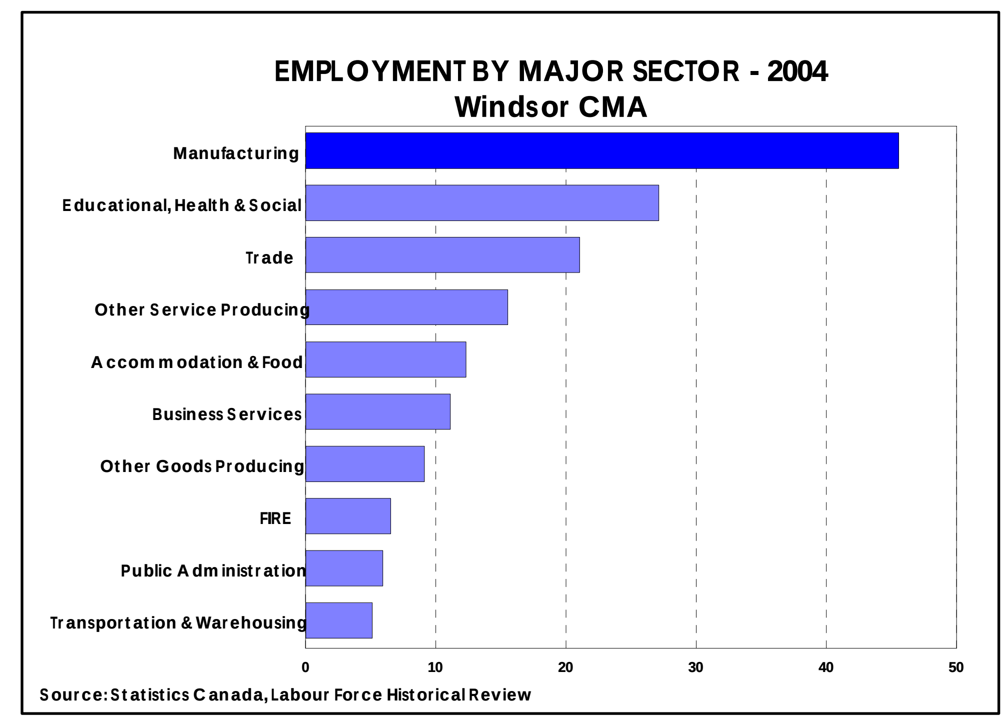
TABLE 4.4– CANADIAN VEHICLE PRODUCTION IN 2003 - 2006[9]

	2003	*Windsor*	2004	*Windsor*	2005	*Windsor*	2006	*Windsor*
Chrysler	447,526	*307,177*	555,278	*346,233*	678,382	*307,477*	605,733	*291,572*
Ford	461,429	-	372,241	-	221,809	-	196,374	-
GM	940,044	-	923,862	-	841,235	-	794,421	-
Honda	392,230	-	325,704	-	385,491	-	387,078	-
Toyota	227,543	-	287,859	-	305,966	-	317,433	-
Total	2,468,772	307,177	2,464,944	346,233	2,432,883	307,477	2,301,039	291,572

In addition to production, Windsor is home to the Chrysler Canadian headquarters and its Automotive Research and Development Centre. At peak production during the middle of this decade, the three major North American automakers together employed approximately 14,000 people in Windsor, almost 10 per cent of the workforce. In total, there are 80 companies involved in automotive parts and assembly in the City of Windsor. Complete recent statistics are not available, but many of these jobs will have been lost, at least temporarily through completed and announced plant closings and layoffs.

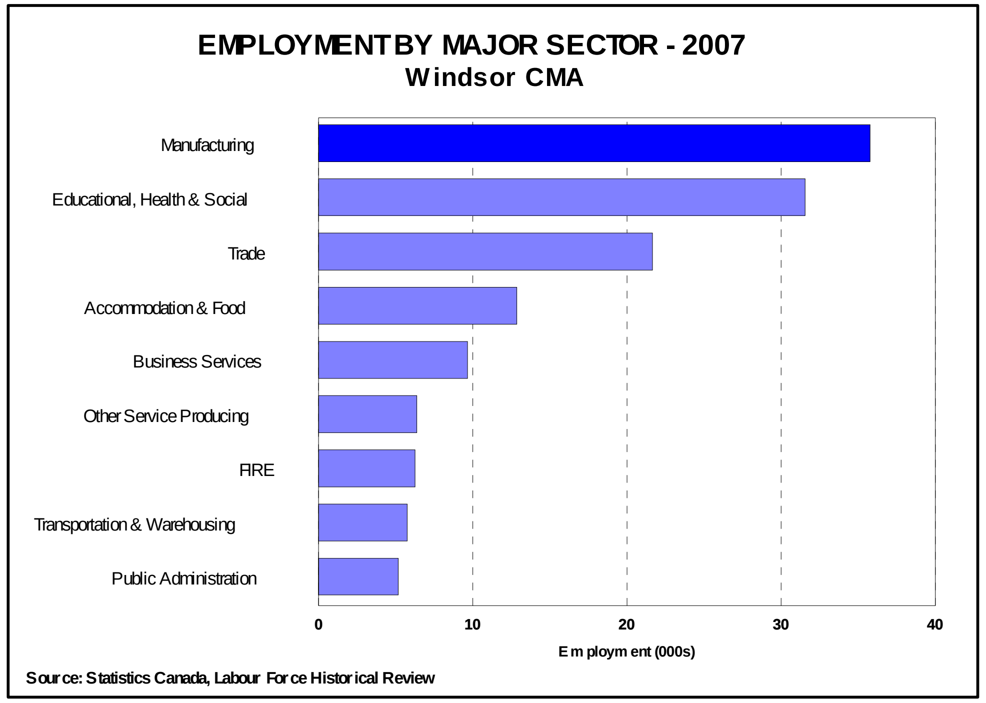
As a result of the focus on the automotive sector, Windsor has a long history as a manufacturing-based economy. In 2004, manufacturing accounted for 46,000 employees and 28 per cent of total employment (Exhibit 4.8). Subsequently, for comparison purposes, in 2007, manufacturing accounted for 36,000 employees and 23 per cent of total employment (Exhibit 4.9).

EXHIBIT 4.8 – EMPLOYMENT BY MAJOR SECTOR IN 2004 IN WINDSOR CMA



[9] Industry Canada; Ward's AutoInfoBank

EXHIBIT 4.9 – EMPLOYMENT BY MAJOR SECTOR IN 2007 IN WINDSOR CMA



The focus of Windsor's economic base on manufacturing is clear when compared to Ontario. Manufacturing is the third largest component of employment in Ontario, where there is a greater diversity in other service-providing sectors, as shown in Exhibit 4.10 and for comparison purposes, Exhibit 4.11.

EXHIBIT 4.10 – EMPLOYMENT BY MAJOR SECTOR IN 2004 IN ONTARIO

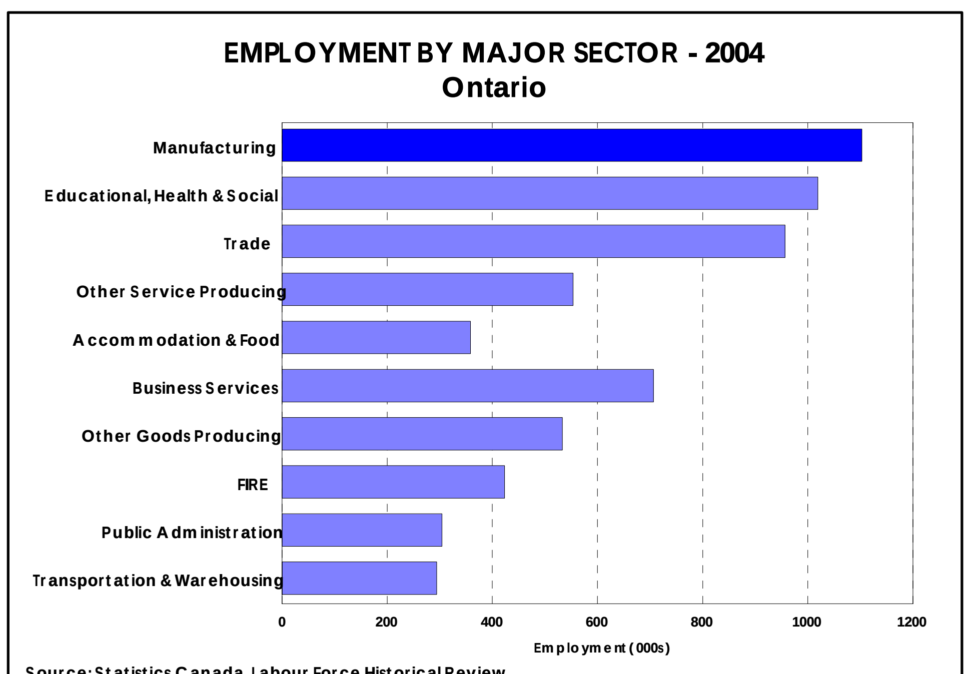
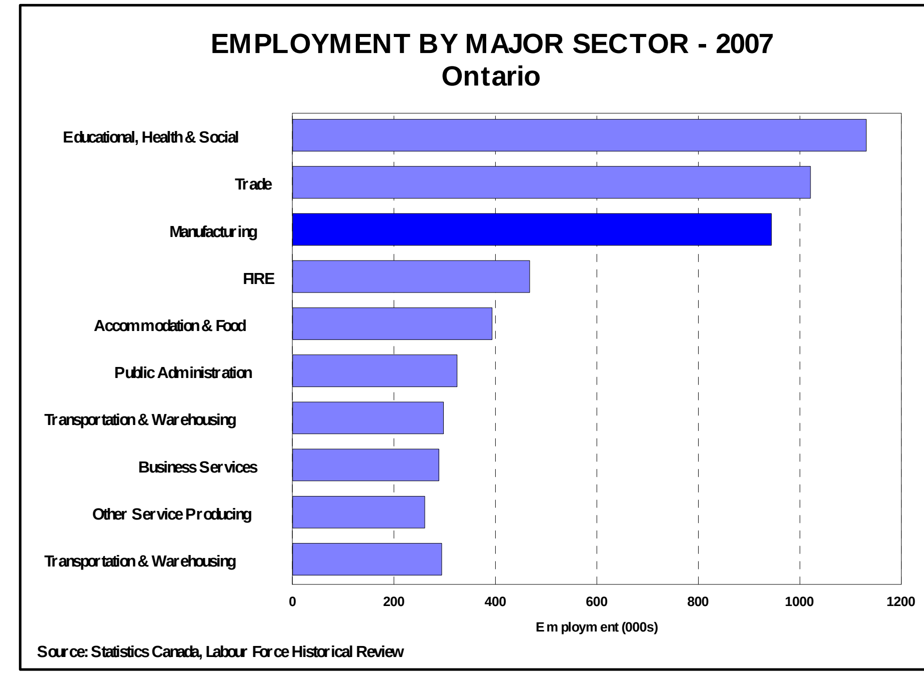


EXHIBIT 4.11 – EMPLOYMENT BY MAJOR SECTOR IN 2007 IN ONTARIO



4.3 Land Use

The Preliminary Analysis Area is comprised of an upper-tier and lower-tier municipal structure. The upper-tier municipalities are the City of Windsor, and the Corporation of the County of Essex.

The City of Windsor is responsible for providing long-range land use planning and policy development, environmental management, recreation, transit and other services (police, fire) for the City. The Official Plan for the City of Windsor provides the policy framework to guide and manage growth within the City.

The Corporation of the County of Essex is comprised of seven newly restructured municipalities –Town of LaSalle, Town of Tecumseh, Town of Lakeshore, Town of Amherstburg, Town of Essex, Town of Kingsville, and Municipality of Leamington. As an upper-tier municipality, Essex County is responsible for providing services that are common to all municipalities in Essex County, thereby avoiding the need for duplicate services and administration. These services include: transportation services, libraries, homes for the aged, planning services, emergency management coordination, community services, land ambulance and general government administration. As well, the county is a funding partner for regional services including: social services, child care, social housing, public health, economic development, tourism and property assessment[10].

With regard to long-range land use planning and other services, each lower-tier municipality within Essex County has an Official Plan to help guide and manage growth. Planning staff from the lower-tier municipalities collaborate with the upper-tier planning staff at the County of Essex to ensure future growth is well managed and in compliance with provincial legislation.

[10] www.countyofessex.on.ca

The following sections provide a brief overview of the Official Plans for the City of Windsor and the three lower-tier municipalities within Essex County that are included within the Preliminary Analysis Area for this study. Of note is that each municipality has planning designations related to floodplains and flooding control. These designations are not related to natural heritage or environmental features, but rather to natural hazards. Accordingly, no references were made to this aspect of planning policy in the following sections. Further to this, the designated environmental areas within the Preliminary Analysis Area are discussed in Section 4.6.6.

4.3.1 City of Windsor

LEGAL STATUS OF PLAN

The *City of Windsor Official Plan (2004)*[11] was adopted on October 25, 1999 by By-law 350-1999. The Plan was approved by the Ontario Ministry of Municipal Affairs and Housing (MMAH), in part, on March 28, 2000. The remainder of the plan was approved by an Ontario Municipal Board (OMB) decision on November 1, 2002.

ENVIRONMENTAL DESIGNATION

Section 5, Volume 1 of the Official Plan identifies designations as being part of the '*Greenway System'* on Schedule B of the city's Official Plan.

Section 6, Volume 1 identifies permitted uses for each of the land use designations in the City.

Public and Private Open Space (Section 6.7)	Identifies the main locations for recreation and leisure activities. Permitted uses include recreation and leisure areas and facilities. Public open spaces include community and regional parks, and neighbourhood parks. Ancillary uses may include residential, commercial or institutional provided that the use is clearly secondary to and complementary with the main open space use.
Natural Heritage (Section 6.8)	Permitted uses include nature reserves and wildlife management. Ancillary uses may include recreation and leisure activities and facilities, provided the use is secondary and complementary to the main permitted use. If development is proposed, an Environmental Evaluation Report (EER) is required to demonstrate that features and functions will not be adversely impacted. EERs are also required for any development on lands adjacent to those designated Natural Heritage.
Waterfront (Section 6.10)	Identifies the main locations for recreation and leisure activities and facilities along the waterfront. Permitted uses include recreation and leisure activities, facilities and marina for pleasure craft. A recreational needs study is required at the time of application to confirm that the change in land use is appropriate.

The following table summarizes subcategories to the land use designations, and is identified as *'Development Constraint Areas'* on Schedule C of the city's Official Plan. These areas afford various levels of protection to the City's natural environmental features.

[11] www.citywindsor.ca

Natural Heritage	Policies identify areas under provincial protection (i.e., Provincially-Significant Wetlands and ANSIs)
Environmental Policy Areas	Identifies areas of significance that may permit development, subject to criteria, including: biological diversity; significant natural community; vulnerable, threatened or endangered species; low levels of disturbance; significant earth science features; and, visual, aesthetic or recreational importance to the city.
Candidate Natural Heritage Sites	Contains potentially significant and/or sensitive environmental features or functions, which are subject to an Environmental Evaluation Report to determine if development is appropriate.
Aggregate Resource Sites & Mineral Mining Sites	Considers temporary land uses, with ultimate land uses identified on Schedule D of the plan.
Floodplain Area	Identifies floodplains determined by the Essex Region Conservation Authority (ERCA).
Shoreline and Floodprone Areas	Identifies areas subject to flooding that were determined by the ERCA. Development in these areas is subject to additional study and setbacks to prove that the development will not be impacted by flooding.
Potentially Contaminated Sites	Requires that Environmental Site Assessments be undertaken to confirm the existence and nature of any contaminants, as well as recommending methods to remediate the site.

SECONDARY PLANNING AREAS

The *Official Plan – Volume 2* contains several Secondary Plans, some of which have natural feature components.

East Riverside Planning Area

- A Greenway System is proposed for this area, which will be composed of a linear assembly of open spaces, natural features, stormwater management areas and community services. It will provide a network of recreational trails, linking planning areas to one another and to natural/recreational areas off-site.

South Cameron Planning Area

- A community park/woodland in the centre of the district is intended for conservation. It contains mature and successional deciduous woods.

Spring Garden Planning Area

- Features in this area are recognized as significant, including Spring Garden Natural Area Complex (Schedule SG-1) and shall be conserved. Development must adhere to the Spring Garden Complex Management Plan.
- All lands within the Spring Garden Natural Area Complex shall be acquired in stages, by means of exchanges, parkland conveyance provisions (*Planning Act*), purchase by city based on independent appraisal, or purchase by appropriate government agencies.
- A noise study shall be undertaken for any development proximate to the E.C. Row Expressway, Huron Church Road and Malden Road.

Forest Glade North Planning Area

- The ERCA identified a '*Candidate Natural Heritage Site'*, which is designated as an *'Environmental Policy Area B*' in the Official Plan. This feature contains mature woods and open fields that are in a shrub-dominated stage of succession.

LEVEL OF PROTECTION

Lands included as part of the Greenway System may be protected via: conveyance/dedication as part of the planning system; land purchase; partnership arrangements with the ERCA or other group; conservation as a condition of planning approval; leases with private property owners to protect all or parts of the identified area; land exchange; donations, gifts and bequeaths from individuals or corporations; conservation easements; stewardship agreements; and other measures.

Environmental land use designations within the City of Windsor are governed by Provincial statute and policy. Only those features/functions identified as Provincially-Significant are afforded protection under the Provincial Policy Statement. However, the *Planning Act*, in combination with the Official Plan and municipal practices, does provide protection through the use of development constraints, or overlays.

4.3.2 Essex County

Of the seven lower-tier municipalities within Essex County described previously, three are within the Preliminary Analysis Area – Town of Amherstburg, Town of LaSalle[12] and Town of Tecumseh[13]. The other four lower-tier municipalities are not within the Preliminary Analysis Area. An overview of the Official Plans for each of these municipalities is included in the following sections.

TOWN OF AMHERSTBURG

Legal Status of Plan

The *Corporation of the Town of Amherstburg Official Plan was* adopted on March 22, 1999. The Plan was approved by the Ministry of Municipal Affairs and Housing (MMAH) on July 6, 1999.

Environmental Designations

Section 2 identifies land use policies for various uses, including: woodlots, developments along inland watercourses, re-use of potentially contaminated sites, and special policy area – species at risk.

Section 3 provides the land use designations, including permitted uses and other restrictions in the Town. These include:

Natural Environment (Section 3.8)	Identifies and protects environmentally significant areas including: valleylands, habitat of endangered and threatened species, fish habitat, significant woodlands, wildlife habitat and ANSIs. Permitted uses include: wildlife management, including hunting and fishing, natural environmental management, passive outdoor recreation, conservation, and associated facilities. Site alteration is only permitted once council and the Conservation Authority are convinced that no adverse impacts will occur. An Environmental Impact Statement may be required to demonstrate this. All Natural Environment lands will be zoned in a Natural Environmental Zone in the implementing Zoning By-law.
Wetland (Section 3.9)	Identifies and designated Provincially Significant wetlands and prohibits development within them. Permitted uses include: conservation, fish and wildlife management areas, passive open space uses, existing agricultural uses, and any buildings or structures associated with a permitted use. Dyked portion of lands are not designated wetland, but rather Natural Environment instead. Development of adjacent lands, as defined by the Provincial Policy Statements, may be permitted if no negative impact on the wetland can be demonstrated. All land-based Provincially Significant wetland areas are zoned Wetland Area by the Town's Zoning By-law.

Level of Protection

All lands designated Natural Environment are protected by the Town's Zoning By-law and the *Planning Act*. In addition, the *Provincial Policy Statements* (PPS) and *Planning Act* provide protection for provincially significant natural heritage features and functions.

TOWN OF LASALLE

Legal Status of Plan

The Town *of LaSalle Official Plan – LaSalle 2016 – Healthy, Vibrant and Caring* was adopted on October 14, 1997. The Plan was approved by the Ministry of Municipal Affairs and Housing (MMAH) on May 18, 1998. The document used for this report is the November 4, 2003 Office Consolidation, which incorporates Official Plan Amendment No. 1, provincially approved on November 4, 2003.

Environmental Designations

Section 2 identifies general development policies for various uses, including: woodlots; developments along inland watercourses; re-use of potentially contaminated sites; and special policy area – species at risk.

Section 3 provides the land use designations for natural heritage sites, including permitted uses and other restrictions in the Town. These include:

Wetland (Section 3.11)	Includes all land-based and submergent wetlands situated on or along the Detroit River, Turkey Creek or the Canard River which have been identified by the MNR as Provincially-Significant. Detroit River Marsh Wetland Complex is the largest in the Town. First evaluated in 1985, it has had several re-evaluations to refine the boundaries of the wetland. Development is prohibited within any 'wetland' designation, except for buildings and structures used in conjunction with a permitted conservation, fish and wildlife management or public passive open space purpose. Permitted uses include: conservation, fish and wildlife management areas, passive open space uses, and existing agricultural uses.

[12] www.town.lasalle.on.ca
[13] www.town.tecumseh.on.ca

Natural Environment (Section 3.8)	Features designated include: woodlots, wetlands and prairie communities. Each of these play an important ecological role in keeping people physically, mentally and spiritually healthy. Permitted uses include: passive recreation, wildlife management, conservation uses and buildings and structures associated with these uses. Utility corridors and inland watercourses should be used as linkages between natural heritage sites, and should be enhanced and maintained as wildlife habitat areas, recreational trails, bikeways and walkways. Preservation and management of these areas shall be via public purchase, private stewardship, conservation easements and management agreements.

Secondary Planning Areas

The Official Plan contains Secondary Plans, some of which have natural feature components.

Bouffard and Howard Planning Districts Secondary Plan

- A Greenway System is proposed for this area, which is in the approved urban growth boundary of the Town of LaSalle. This will involve the creation of linkages, connecting wildlife habitats, human settlements, urban to rural areas, etc.
- Land Use designations include: Recreational, Natural Environment, Natural Corridors/Greenway Linkage, Neighbourhood Centre, Neighbourhood Park and Stormwater Management Pond.
- Permitted uses include: public use and utility facilities, stormwater management facilities, fish, wildlife and conservation management uses, archaeological activities, legally existing uses, buildings and structures and their replacement, and non-intensive recreation uses such as nature trails and parks.

Level of Protection

The Town of LaSalle, through its Official Plan has set a goal of creating a Greenway System, which will comprise trails, parks and woodlots for the benefit and enjoyment of wildlife and residents alike. As a municipal planning policy, this provides a reasonable level of protection for natural features within the proposed Greenway System.

Environmental land use designations within the Town of LaSalle are governed by provincial statute and policy. Only those features/functions identified as Provincially Significant are afforded protection under the *Provincial Policy Statement* (PPS), including the Detroit River Marsh Wetland Complex. However, the *Planning Act*, in combination with the Official Plan and municipal practices, does not provide protection for any regionally or locally significant natural features.

TOWN OF TECUMSEH

Legal Status of Plan

In 1999, the former Town of Tecumseh, Village of St. Clair Beach and Township of Sandwich South were amalgamated. The existing Official Plans of the former municipalities remain in place until a new Official Plan is adopted by the Town of Tecumseh. Details of the existing Official Plan documents are provided in Table 4.5. Since June 13, 1946, the Town of Tecumseh has also been a subsidiary planning unit with the Windsor and Suburban Planning Area.

TABLE 4. 5 - SUMMARY OF TOWN OF TECUMSEH OFFICIAL PLANS

Title	Adopted	Approved
Town of Tecumseh – *Tecumseh Official Plan* (Consolidated January 2000)	November 27, 1973	By OMB in parts: August 4, 1976 July 21, 1977 August 25, 1978
Town of Tecumseh – *St. Clair Beach Official Plan* (Consolidated April 2004)	December 1989	Date of approval not stated. All OPAs adopted and approved by Province as of January 23, 2004
Town of Tecumseh – *Sandwich South Official Plan* (Consolidated July 2003)	June 23, 1997	March 13, 1998

Environmental Designations

The Town of Tecumseh – Tecumseh Official Plan has no environmental or natural heritage designations. Nor does it provide any related policy.

The Town of Tecumseh – St. Clair Beach Official Plan provides general level protection for natural hazards, but no direct or related policies dealing with natural heritage or the environment.

The Town of Tecumseh – Sandwich South Official Plan provides general development policies that use site plan control to incorporate buffering between conflicting land uses, setbacks for development along inland watercourses, and protection of woodlots.

Town of Tecumseh – Sandwich South Official Plan designations includes:

Natural Environment (Section 3.11)	Preserves, protects and enhanced the remaining natural areas for ecological and/or passive open space purposes. Permitted uses include: passive recreation, wildlife management, and conservation uses. Utility corridors and inland watercourses should be used as linkages between natural heritage sites, and should be enhanced and maintained as wildlife habitat areas, recreational trails, bikeways and walkways. Encourage and support private initiatives to maintain/improve the natural character of lands they own.
Natural Environment Land Division Policies (Section 4.8)	Consents permitted for conveyance of land to public or private agencies, conservation groups, etc., that are engaged in protection and conservation of the natural environment.

Level of Protection

While there is no land use designation within the Town of Tecumseh to provide local protection, all development applications are governed by provincial statute and policy. The Official Plan does not identify any features or functions having provincial significance. Current and pending development applications will be subject to municipal review against all current policies and practices.

4.4 Contaminated Properties and Waste Management

This section provides a summary of the study team's assessment of the Preliminary Analysis Area from the perspective of potential property contamination and waste management issues. Several types of potential issues are discussed including contaminated sites, underground storage tank sites, landfills, hazardous waste generators, disposal wells and undiscovered sites.

The information presented in this section of the report represents a summary of more detailed information contained in the *Environmental Overview Paper – Canadian Existing Conditions Volume 1*.

CONTAMINATED SITES

The Government of Canada introduced the *Federal Contaminated Sites and Solid Waste Landfills Inventory Policy* on July 1, 2000. This policy states that departments and agencies that hold property must establish and maintain a database of their contaminated sites and solid waste landfills, and that this information must be submitted to the Treasury Board Secretariat for inclusion in a central inventory.

The inventory includes all known federal contaminated sites for which departments and agencies are accountable. It also includes non-federal contaminated sites for which the Government of Canada has accepted some or all financial responsibility. Suspected sites are not added to the inventory until assessments have confirmed contamination. The inventory does not include properties owned by Crown corporations.

Based on a review of this inventory, one site was identified in the Preliminary Analysis Area, located onshore near the Town of Amherstburg. An additional eight sites were identified in close proximity to the Preliminary Analysis Area, located along the Detroit River on Bois Island and Fighting Island. These eight sites were located along channels and bays in between the mainland and the islands, mostly around navigational towers, dykes and burnpits. At these locations, it was found that the contamination ranged from heavy metals to petroleum hydrocarbons and polyaromatic hydrocarbons. Although these sites are offshore and do not fall within the limits of the Preliminary Analysis Area, their existence may impact construction activity associated with a river crossing.

The Ministry of the Environment has also produced a *Waste Disposal Site Inventory* that lists all the industrial sites that produced or used coal tar and related tars in Ontario prior to 1988. For each site, information is provided on the location, operating period, evidence of buried wastes, site conditions, site assessments conducted, resource characteristics (i.e., surface water, groundwater, wells), etc.

A review of the listings identified three sites located in the Preliminary Analysis Area that produced coal tar. Sites contaminated with coal tar tend to involve expansive contamination that can require extensive clean up of soil and groundwater prior to re-use. Alternative risk management methods for controlling the movement and seepage of coal tar can be conducted to mitigate contamination migration and allow the potential re-use of these properties.

UNDERGROUND STORAGE TANK SITES

In Canada, underground storage tanks containing petroleum products are primarily regulated under the *Technical Standards and Safety Act (TSSA)* and the Ontario *Environmental Protection Act* (OEPA). The Technical Standards and Safety Authority and the Ontario Ministry of the Environment (MOE) coordinate clean up efforts depending on the extent of contamination, whether there are off-property contaminant migration issues, and whether continued use of the property as a fuelling station is desired. The TSSA maintains a database of all registered tanks containing petroleum products that includes a listing of any work orders associated with the property. Based on the ERIS database search conducted, there are 16 registered storage tanks containing petroleum products within the Preliminary Analysis Area.

While underground and leaking underground storage tanks should be avoided if possible, they would not preclude routes, bridges, or other transportation projects. The contamination problems that they pose tend to be localized and relatively easy to address.

LANDFILLS

A *Waste Disposal Site Inventory* prepared by the Ministry of the Environment contains a list of all known active and closed waste disposal sites in the Province of Ontario as of October 31, 1990. For each site, information is provided on the type of wastes, site locations and operating period. The inventory includes both sites that were previously approved and operated under an Approval for which there is adequate information regarding the types of wastes that were deposited, and unapproved sites for which information regarding waste burial is limited.

The sites are classified according to the type of waste it received if known, (industrial, commercial, municipal) and the adjacent land use (urban or rural). Forty-one sites were identified in the Preliminary Analysis Area, and are depicted in Exhibit 4.12. Two liquid disposal dumps are located in Anderson Township near Amherstburg while the regional active landfill is located in the southeast corner of the Preliminary Analysis Area. The potential for re-use of these sites is dependent on the setting and previous landfilling activities and could involve extensive remediation and/or waste removal.

The OEPA restricts the re-use of any former landfill site for any other use for a minimum of 25 years from the day of closure; therefore, these types of sites should be avoided as they would require extensive legal negotiation for re-use.

HAZARDOUS WASTE GENERATORS

Ontario sites that generate subject wastes must register the types of waste classes that are produced under Regulation 347. Generators range from small printing shops to large automotive parts manufacturers. A database of waste generators is maintained and can be accessed. However, as most of these wastes are shipped off-site for disposal, a listing of a waste generator does not necessarily provide any additional information as to the relative risk of acquiring such a site for the purpose of transportation planning. Based on the ERIS database search, there are 122 waste generators within the Preliminary Analysis Area and two registered waste receiving sites. These are depicted in Exhibit 4.12.

While these facilities may use, generate, store, or dispose of hazardous materials or wastes, they do not preclude a route, bridge or other transportation project. Their utilization should be approached with caution, but issues associated with their use are generally readily resolved.

OIL, GAS, MINERAL AND DISPOSAL WELLS

The type of well determines the approvals that are needed for operation. Wells used for disposal of hazardous wastes through deep well injection are regulated under the *Ontario Environmental Protection Act* by the Ministry of the Environment. There are very few licences for deep well injection of hazardous wastes.

The Ministry of Natural Resources regulates oil and gas wells. Based on the EcoLog ERIS database search, nearly 180 wells were identified in the Preliminary Analysis Area.

While their use should be approached with caution, these facilities and sites would not preclude a route, bridge, or other transportation project.

UNDISCOVERED SITES

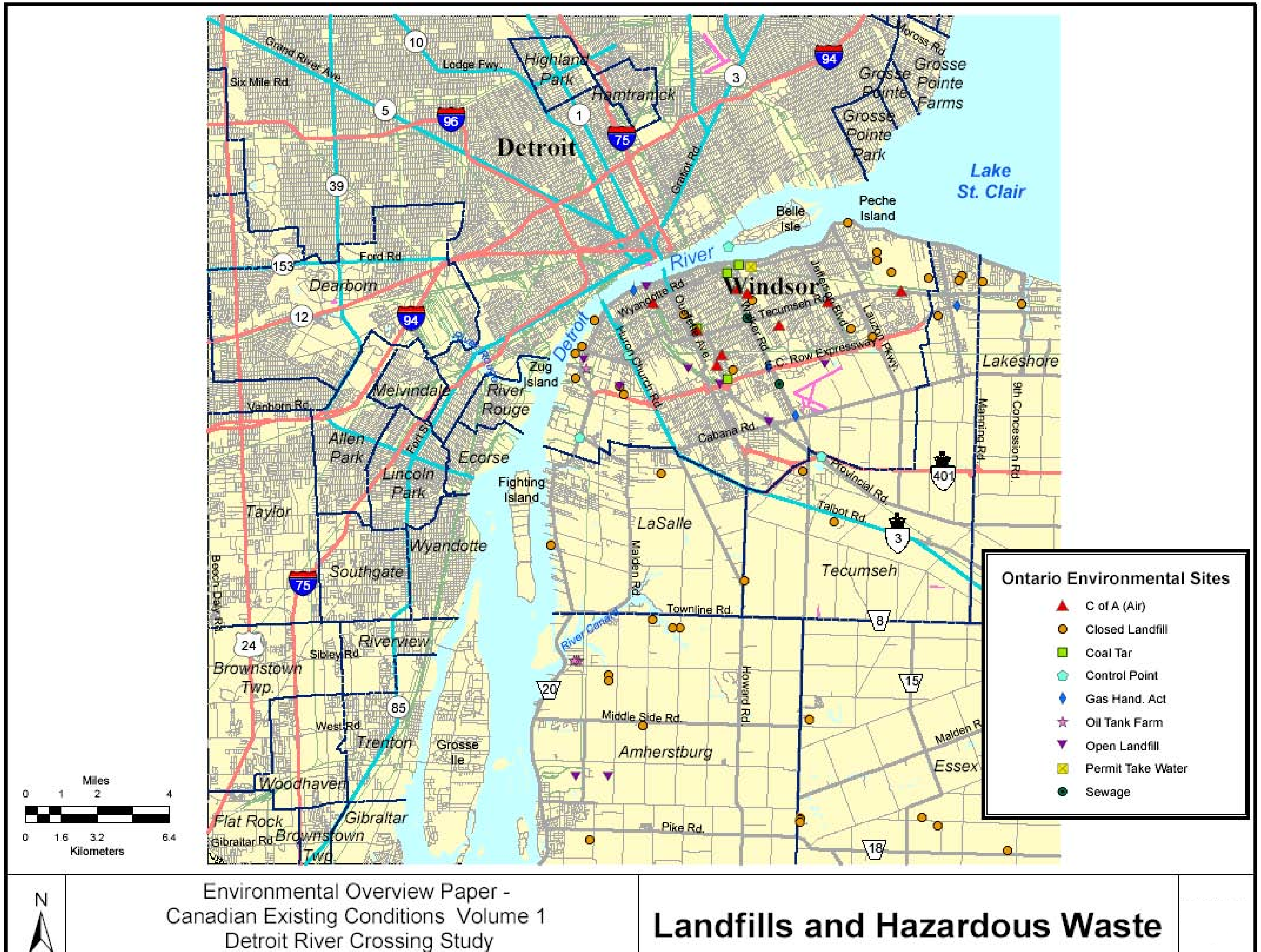
In Ontario, the test of whether a site is contaminated is determined by the presence of an adverse effect, which is broadly defined under the *Ontario Environmental Protection Act*. Owners of properties where an adverse effect has been determined to exist or which has migrated onto adjacent properties must notify the appropriate authority (usually the Ministry of the Environment).

Notification to the Occurrence Reporting Incidence System (ORIS) is also required if a spill or release occurs on-site. If a Record of Site Condition (RCS) in relation to the contamination has been filed, it is listed in a searchable database that is available for use in the planning of transportation routes. However, in Ontario, contaminated sites, which are undergoing remediation are not necessarily public information unless a clean up order or other legislative instrument has been enacted to control the contamination. The Ministry of the Environment will only release information regarding contamination issues if permission from the owner of the property is obtained under the *Freedom of Information Act*.

In addition, known impacts to soil or groundwater on a property that are demonstrated not to have migrated off-site or which do not fit the definition of an adverse effect were not necessarily required to be reported. Typically these types of sites may have low levels of contamination that are stable in the environment but which would be disturbed if redevelopment occurred.

While they should be approached with caution, these sites would not preclude a route, bridge, or other transportation project.

EXHIBIT 4.12 – LANDFILLS AND HAZARDOUS WASTE SITE LOCATIONS



4.5 Cultural Resources

This section provides a summary of archaeological and built heritage features within the Preliminary Analysis Area based on review of secondary source information. The information presented in this section of the report represents a summary of more detailed information contained in the *Environmental Overview Paper – Canadian Existing Conditions Volume 1*.

4.5.1 Archaeological Resources

PREVIOUS ARCHAEOLOGICAL RESEARCH

In order that an inventory of archaeological resources could be compiled for the Preliminary Analysis Area, three sources of information were consulted:

- Site record forms for registered sites housed at the Ontario Ministry of Culture;
- Published and unpublished documentary sources; and,
- In-house archaeological files.

In Ontario, information concerning archaeological sites is stored in the *Ontario Archaeological Sites Database* (OASD) maintained by the Ontario Ministry of Culture. This database contains archaeological sites registered within the Borden system. Under the Borden system, Canada has been divided into grid blocks based on latitude and longitude. A Borden block is approximately 13 km east to west, and approximately 18.5 km north to south. Each Borden block is referenced by a four-letter designator, and sites within a block are numbered sequentially as they are found. The Preliminary Analysis Area under review is located in the Borden blocks AbHa, AbHr, AaHs, and AaHr.

According to the OASD, a total of 64 sites have been registered within the Preliminary Analysis Area. A general overview of the cultural affiliations of the identified sites is provided below. For more detailed information, the reader is referred to the *Environmental Overview Paper – Canadian Existing Conditions Volume 1*.

- 14 – Underdetermined Pre-Contact;
- 11 – Archaic;
- 15 – Historic Euro-Canadian;
- 8 – Unknown;
- 6 – Woodland;
- 1 – Historic Pioneer; and,
- 1 – 20th Century Euro-Canadian.

The remaining 8 sites have been characterized as being a combination of the above affiliations.

PHYSIOGRAPHY AND ASSESSMENT OF PRE-CONTACT ARCHAEOLOGICAL POTENTIAL

The Preliminary Analysis Area is located within the St. Clair Clay Plains physiographic region of Southern Ontario. Adjoining Lake St. Clair in Essex and Kent Counties and the St. Clair River in Lambton County are extensive clay plains covering 587 928 ha[14]. Essex County and the southwestern part of Kent County have a fairly uniform environment and may be discussed together as a sub-region[15]. Lying between the basins of Lake Erie and Lake St. Clair, the surface is a till plain overlaying the Cincinnati Arch, which, in this area, is a low swell in the bedrock[16] . The surface drainage of the plain is nearly all northward to Lake St. Clair, but the gradient is extremely low and the drainage divide near Lake Erie is rather vague[17]. The prevailing soil type is Brookston clay loam, a dark-surfaced gleycolic soil developed under a swamp forest of elm, black and white ash, silver maple, and other moisture-loving tress[18].

Potable water is the single most important resource necessary for any extended human occupation or settlement. Since water sources have remained relatively stable in south central Ontario after the Pleistocene era, proximity to water can be regarded as a useful index for the evaluation of archaeological site potential. Indeed, distance from water has been one of the most commonly used variables for predictive modelling of site location. More specifically, the Detroit River, designated as a Canadian Heritage River in 2001 (and an American Heritage River in 1998), would have served as a vital resource for both pre-contact and historic settlement. The Detroit River is the first River to have dual designations.

The Ontario Ministry of Culture *Primer on Archaeology, Land Use Planning and Development in Ontario*[19] stipulates that undisturbed lands within 300 m of a primary water source, and undisturbed lands within 200 m of a secondary water source, are considered to exhibit archaeological potential.

ASSESSMENT OF HISTORIC ARCHAEOLOGICAL POTENTIAL: SUMMARY OF REVIEW OF HISTORICAL MAPS AND EURO-CANADIAN HISTORY

The 1881 *Essex Supplement in Illustrated Atlas of the Dominion of Canada* was reviewed to determine the potential for the presence of historical archaeological remains within the Preliminary Analysis Area dating from the nineteenth century (Exhibit 4.13).

The Detroit River has been an important asset for the development of Essex County. The first European settlement in the area was in 1701 when Sieur De Lamonthe Cadillac and approximately 100 civilians and military members settled in Fort Pontchartrain on the Detroit side of the river (the north side of the current Detroit River)[20].

European settlement remained largely on the Detroit side until 1748, when the Jesuit mission to the

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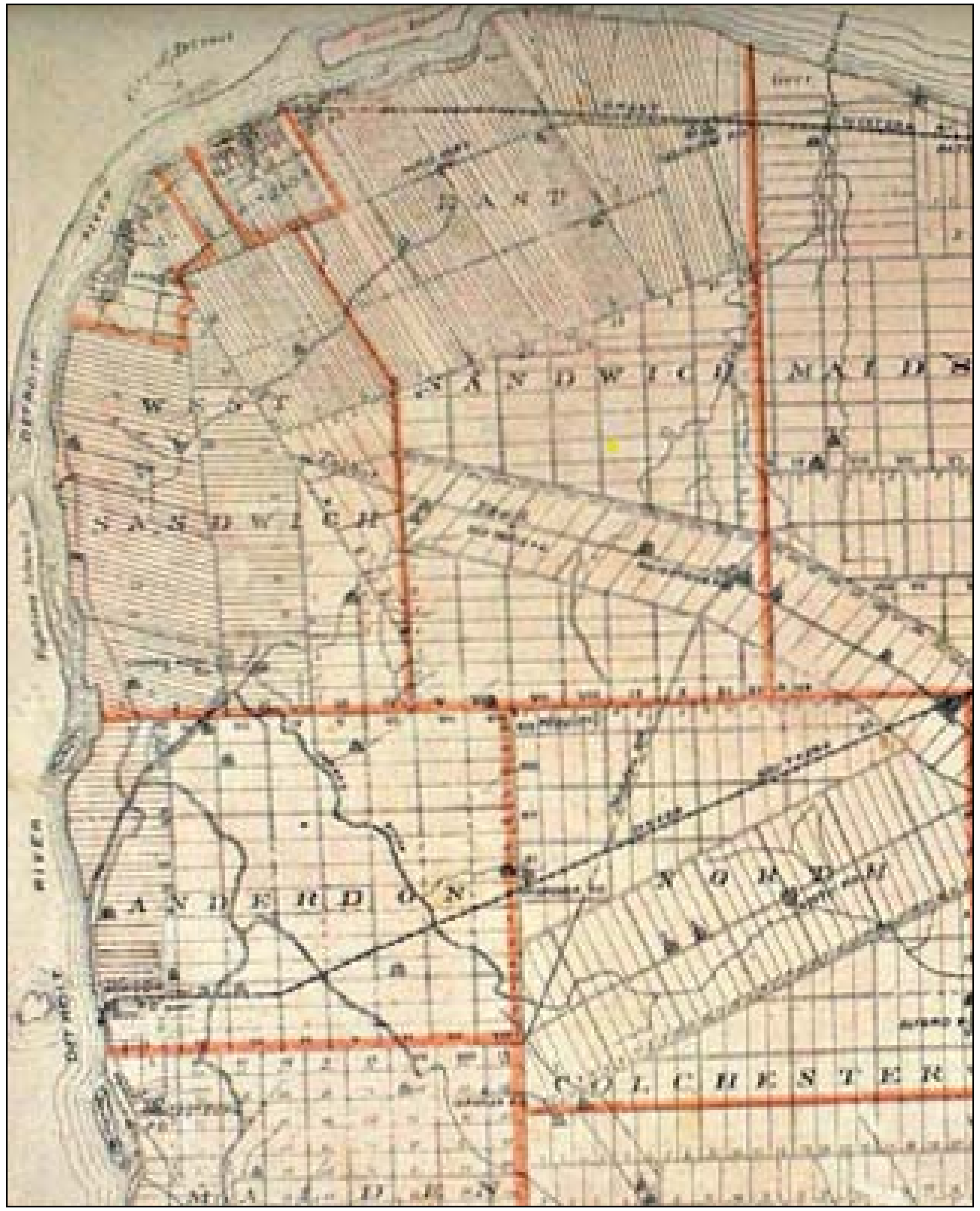
14 Chapman, L.J. and F. Putnam. 1984. *The Physiography of Southern Ontario.* Ontario Geological Survey, Special Volume 2. pp. 147 Ontario Ministry of Natural Resources, Toronto.
15 Ibid. pp 147-149.
16 Ibid.
17 Ibid.
18 Ibid.
19 Ministry of Culture. 1993. Conserving a Future for a Past: Archaeology, Land Use Planning and Development in Ontario. An Educational Primer and Comprehensive Guide for Non Specialists. pp. 12-13.
20 Archaeological Services Inc. 2002. Ontario–Michigan Border Transportation Planning/Need and Feasibility Study: Ontario Portion, Cultural Heritage Assessment. Existing Conditions.

Huron Indians was established on the south shore near the foot of the present Huron Church Road and the Ambassador Bridge. From 1748 to 1760, a French agricultural settlement developed in this area paralleling a similar settlement across the water[21].

EXHIBIT 4.13 – LOCATION OF THE PRELIMINARY ANALYSIS AREA AS DEPICTED IN THE 1881 ESSEX SUPPLEMENT IN ILLUSTRATED ATLAS OF THE DOMINION OF CANADA



[21] Ibid.

Although Fort Pontchartrain surrendered to the British in 1760 and the Detroit side of the river was again officially surrendered to the United States in 1783, both sides remained under British control until 1796, when U.S. forces took up actual occupation of Detroit. During this period, the settlement continued to grow and remained predominantly French in population. Few buildings from the period of French settlement have survived, although the street pattern of the City still reflects the French method of agricultural land division (i.e., long narrow farms fronting the river).

In 1797, the original Sandwich Towne was established to accommodate persons of both French and British origin from the U.S. who wished to remain under British rule following American occupation of Detroit. This constituted the first urban settlement in what is now the City of Windsor, and also the first significant migration of English-speaking people into the Windsor area. Sandwich developed over the following decades as the seat of government and the courts for the County of Essex[22].

As the chief port-of-entry to the region opposite Detroit, the Town of Windsor (now the downtown area) was already catching up to Sandwich, in terms of population, when the Great Western Railway (now part of the CNR system) chose Windsor as its termination point in 1854. The arrival of the railway also marked the beginning of significant industrial development in Windsor, and sparked the foundation of the third of Windsor's oldest settlements, Walkerville.

In 1857, Hiram Walker established his distillery at the point east of downtown where the Great Western Railway first met the waterfront. On his lands running south of the river, Walker planned a complete town, including provisions for industry, commerce, residences and agriculture (Walker Farms). The housing, a large part of which was built by Walker's own contractors, ranged from E. Chandler Walker's estate of Willistead (1906), built in the style of a Tudor manor house, to blocks of row housing for his industrial workers (1880s)[23].

Although the Ford Motor Car Company was established in Windsor as early as 1904 to gain the benefit of Imperial trade preferences, it was the period during and following World War I that saw the auto industry assume predominance in the city. An area known as Ford City was developed around the industrial complex. Numerous large residences were built overlooking the river at that time although most have since been demolished[24].

The automotive industry changed Windsor from a relatively slow-growing collection of border communities to a rapidly growing, modern, industrial city. By the early 1930s, the separate border cities of Windsor, East Windsor (Ford City), Walkerville and Sandwich amalgamated politically into a single community with a population of more than 100,000.

During World War II, industrial production increased dramatically, attracting many new workers and resulting in substantial residential growth within the city and in the surrounding townships. In 1966 the city annexed the Towns of Riverside and Ojibway, and parts of Sandwich East, Sandwich South and Sandwich West Townships[25].

South of Windsor along the Detroit River is the Town of Amherstburg. Amherstburg came into being around 1796 when a portion of the Fort Malden military reserve was laid out as a town site and settled

[22] Archaeological Services Inc. 2002. Ontario–Michigan Border Transportation Planning/Need and Feasibility Study: Ontario Portion, Cultural Heritage Assessment. Existing Conditions.
[23] Ibid.
[24] Ibid.
[25] Ibid.

by United Empire Loyalists from Detroit. However, the region's European history can be traced even earlier to the early French explorers, the days of French rule and the arrival of French traders and settlers in the 1730s. By 1763, when France surrendered Canada to the British, several hundred French settlers were scattered along the Detroit River. The French colony continued to flourish under British rule, and few British settlers came to the area until the American Revolution brought an influx of Loyalists. The first to take up land grants in the vicinity of Amherstburg were members of Butler's Rangers who came in 1784[26].

By 1851, the settlement of Amherstburg was separated from the Township of Malden and incorporated as a village with town powers. Amherstburg was incorporated as a town in 1878 and by the 1880s it had become a thriving mercantile and manufacturing centre. Amherstburg is also known as an important stop along the Underground Railway that helped black slaves escape from their servitude south of the border. By the 1840s, Amherstburg had become the centre of Ontario's Black population[27].

Although separated out in the 19th century, Amherstburg amalgamated with the neighbouring Townships of Anderdon and Malden in January of 1999 to create the Town of Amherstburg. Anderdon Township was surveyed as a part of Essex County in 1839, but settlement had already begun prior to that date in the northern portion around the River Canard by French people coming south from Sandwich Township and in the southern portion by United Empire Loyalists. By 1850 there were 774 settlers in the township, concentrated in two main settlements, Gordon on the shore of the Detroit River, and McGregor on the eastern boundary. In the 1860s the Canada Southern Railway was built through the township and this encouraged growth in the largely agricultural township. There remains only three small communities of any size within the original historic boundary: Auld, River Canard and McGregor[28].

Malden Township was surveyed as part of Essex County in the early 19th century and it likewise contained a mix of early French and Loyalist settlers. Like Anderdon, Malden's rural economy benefited greatly from the construction of the Canada Southern Railway, which constructed a branch line from Amherstburg to Essex[29].

SUMMARY

For the Euro-Canadian period, the majority of early 19th century farmsteads (i.e., those which are arguably the most potentially significant resources and whose locations are rarely recorded on nineteenth century maps) are likely to be captured by the basic proximity to water model outlined above, since these occupations were subject to similar environmental constraints. An added factor, however, is the development of the network of concession roads through the course of the nineteenth century. These transportation routes frequently influenced the siting of farmsteads. Accordingly, undisturbed lands within 100 m of an early settlement road are also considered to have potential for the presence of Euro-Canadian archaeological sites.

Therefore, depending on the degree of previous land disturbance, it may be concluded that there is potential for the recovery of historic cultural material within the Preliminary Analysis Area. Furthermore, it should be noted that not every feature of potential interest today would have been illustrated on the nineteenth century mapping.

4.5.2 Cultural Heritage Resources

The cultural heritage assessment considered cultural heritage resources in the context of improvements to specified areas, undertaken for this study within the Preliminary Analysis Area pursuant to the *Ontario Environmental Assessment Act*. This assessment addresses above ground cultural heritage resources more than 40 years old. The findings of the cultural heritage assessment are summarized in the *Environmental Overview Paper – Canadian Existing Conditions Volume 1*.

Changes to transportation corridors have the potential to affect cultural heritage resources in a variety of ways. These include the loss or displacement of resources through removal or demolition and the disruption of resources by the introduction of physical, visual, audible or atmospheric elements that are not in keeping with the resources and/or their setting.

For the purposes of this assessment, the term cultural heritage resources was used to describe both cultural landscapes and built heritage features. A cultural landscape is perceived as a collection of individual built heritage features and other related features that together form farm complexes, roadscapes and nucleated settlements. Built heritage features are typically individual buildings or structures that may be associated with a variety of human activities, such as historical settlement and patterns of architectural development.

DATA COLLECTION

For the purposes of determining the existence of previously identified built heritage features and cultural landscapes within the Preliminary Analysis Area, contact was made with the City of Windsor's Heritage Planner and the Town of Amherstburg. The Ministry of Culture's *Ontario Heritage Properties Database* was consulted, as was the Parks Canada listing of National Historic Sites.

Historical research was conducted for the purposes of identifying broad agents or themes of historical change and cultural landscape development in this area.

Previously identified heritage resources were then categorized according to their heritage protection status and their inclusion on municipal, provincial and federal inventories and heritage designation lists. All heritage sites and heritage sensitive areas were mapped using GIS data co-ordinates.

HERITAGE SENSITIVE AREAS

The following areas have been identified through various data sources and are considered to be of special heritage significance. They represent aggregate areas of historic activity and resources, and are depicted in Exhibit 4.14.

Ambassador Bridge

The Ambassador Bridge, built in 1929, is listed on the *Ontario Heritage Bridge List*. This list includes approximately 90 heritage bridges of provincial significance. It helps to ensure that the significance of these bridges is taken into account when municipalities undertake construction projects covered by the *Ontario Environmental Assessment Act*.

[26] Archaeological Services Inc. 2002. Ontario–Michigan Border Transportation Planning/Need and Feasibility Study: Ontario Portion, Cultural Heritage Assessment. Existing Conditions.
[27] Ibid.
[28] Ibid.
[29] Ibid.

Sandwich

The original Sandwich Towne retains a number of buildings of the pre-Confederation era that are of historical significance and/or which exemplify the Neo-classical and Georgian styles of architecture, which were in vogue during the first half of the 19th century. A number of designated heritage properties can be found along the following streets: Russell Street, Sandwich Street, Peter Street, Detroit Street, Mill Street, Brock Street, Chippewa Street, South Street, Watkins Street and Prince Road.

Highway 18 (Ojibway Parkway)

Highway 18 (Ojibway Parkway) is a heritage highway and is generally considered to be the oldest road in Ontario.

Huron Church Road

Between University Avenue and Wyandotte Street West, Huron Church Road has several properties of heritage interest.

Town of Windsor

Due to numerous fires and the continuous redevelopment of the area over the decades, few of the early buildings in downtown Windsor still exist, but a number of late 19th century and early twentieth century buildings remain, including in particular a number of larger, upper income houses in areas immediately adjacent to the downtown area. Of particular heritage interest is Victoria Avenue, along which several designated properties are situated.

Highway 3 (The Talbot Road)

First surveyed by Colonel John Talbot beginning in 1809, the Talbot Road (now Highway 3) was interrupted by the War of 1812, but reached Essex County in 1818. The Talbot Road was surveyed to follow a natural ridge of glacial moraine which stretched from Windsor to Point Pelee. It was termed a “corduroy road” for in areas of swampy land, three inch planks, flattened on the upward side, were laid down side by side across the road. Highway 3 (the Talbot Road) is celebrated with a provincial plaque west of St. Thomas that attests to its heritage interest and value. Significant villages along the route include Oldcastle and Maidstone.

Highway 46 (The Middle Road)

The Middle Road was surveyed by Colonel Talbot (and incorporated a native trail). The Settlers along the Middle Road were largely immigrants from Ireland who came to escape the potato famine of the 1840s. Along the Middle Road and up toward Lake St. Clair the "Irish Settlement" grew, and fourth and fifth generation descendants remain today. The village of Maidstone was the centre of the Irish community.

Amherstburg

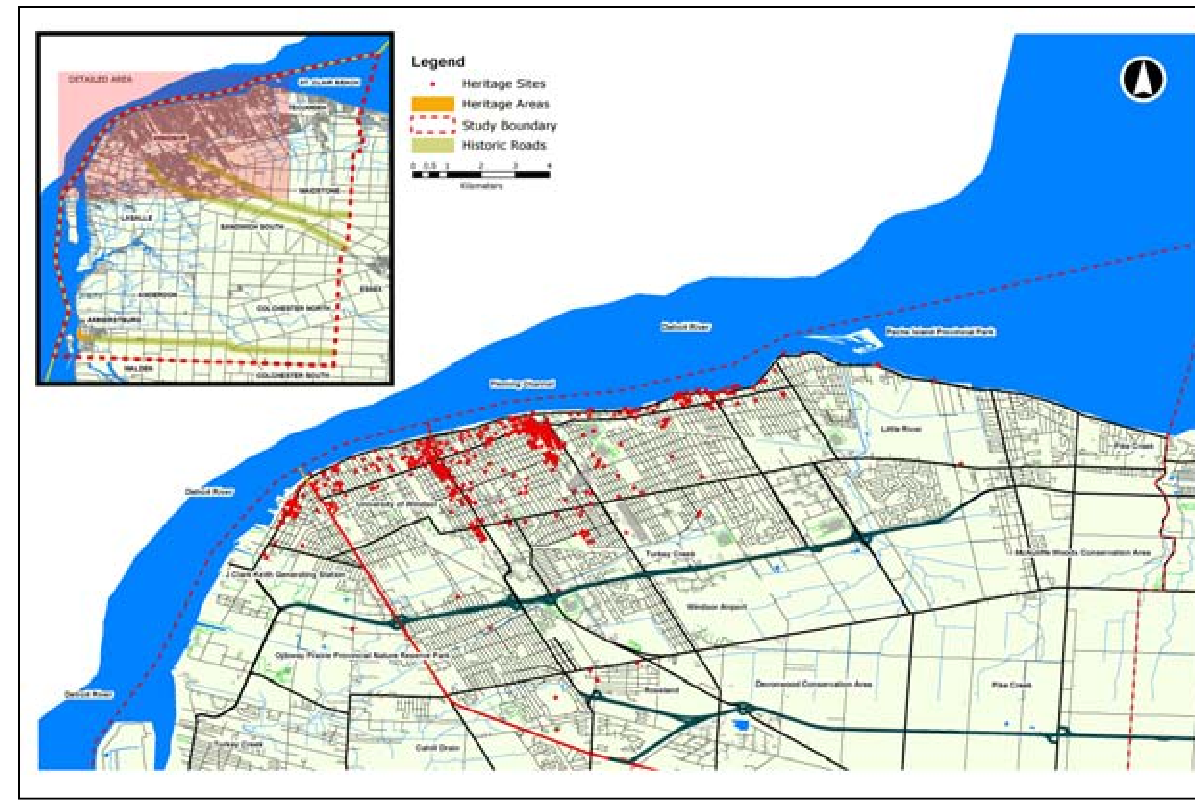
Bounded by the Detroit River to the west, Alma Street to the north, the Lowes Side Road to the south and Meloche Road to the east, and situated approximately 32 km southwest of Windsor across from Boblo Island (Bois Blanc), Amherstburg is one of the oldest towns in the province. A preliminary inventory of heritage properties was completed in 1976 and it has not been updated. However, the following streets have the highest concentration of heritage structures and are therefore considered to be of particular heritage interest: Brock Street, George Street, King Street, Seymour Street, Sandwich Street, Bathurst Street, Ramsay Street, Dalhousie Street, North Road, Rankin Avenue, Richmond Street, Murray Street, Gore Street, Simcoe Street, and Park Street.

Despite its modern business establishment and plants, Amherstburg retains its historic atmosphere. In the older section of town the streets are narrow and houses front directly on the sidewalk.

Fort Malden National Historic Park

Located on Laird Avenue in Amherstburg, Fort Malden preserves elements of the second fort built by the British on the eastern bank of the Detroit River to defend the Canadian border from American attack in the first half of the 19th century. The first post, known as Fort Amherstburg, was constructed in 1796 near the mouth of the Detroit River where it empties into Lake Erie. This post was the headquarters for the British forces in southwest Upper Canada during the War of 1812. Fort Malden was erected after the war and rebuilt in 1838-40 and served once again as a centre for the British defence during the Upper Canada Rebellion of 1837-39. Today the 4.5 ha (11 acres) site includes remains of the 1840-period earthworks and four buildings, including a restored and furnished 1819 brick barracks.

EXHIBIT 4.14 - HERITAGE RESOURCES WITHIN THE PRELIMINARY ANALYSIS AREA



Detroit River

As noted previously, the Detroit River is recognized as a Canadian Heritage River and American Heritage River. From either side it presents a view of a large urban cultural landscape and is itself a cultural landscape. This landscape takes in the shoreline and associated modifications –particularly for the loading/unloading of lake freighters, bridge features, and its recreational cottage developments up and downstream from the centers of Windsor and Detroit. It has been a focus of human occupation and transit for more than 6,000 years and continues to be distinctive in that it is significant

SUMMARY OF HERITAGE PROPERTIES IDENTIFIED IN THE PRELIMINARY ANALYSIS AREA

A total of 139 heritage properties have been identified within the Preliminary Analysis Area, and are categorized as follows:

- 9 – National Historic Sites of Canada
- 14 – Heritage Easement Sites
- 115 – Properties Protected under Part IV of the *Ontario Heritage Act*

In addition, the Ambassador Bridge is identified as an Ontario Heritage Bridge in the Ontario Heritage Bridge List compiled by the Ministry of Culture. Additional details with regard to each of the properties are included in the *Environmental Overview Paper – Canadian Existing Conditions Volume 1*.

4.6 Natural Environment

This section provides a summary of existing natural environmental conditions within the Preliminary Analysis Area. The information presented in this section of the report represents a summary of more detailed information contained in the *Environmental Overview Paper – Canadian Existing Conditions Volume 1*.

4.6.1 Geology / Subsurface Environment

GEOLOGY OF THE WINDSOR AREA

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 thicknesses of 1 to 4 m, though local areas of deeper fills may be present in some areas;
- Native deposits of sand and silt may be present at or near the surface in some locations, particularly in the west end of the City of Windsor and Town of LaSalle;
- Beneath the sand (where present) and overlying bedrock, are thick deposits of silty clay that start out relatively stiff near the surface and become gradually softer and weaker with increasing depth. In the western sections of the Preliminary Analysis Area, beneath the surficial sand deposits identified on Exhibit 4.15, the silty clay is generally less stiff than in the eastern part of the Preliminary Analysis Area, and in some areas this silty clay deposit is very soft;
- Bedrock throughout the Preliminary Analysis Area is generally encountered at depths of 20 m to 35 m but can be found as shallow as 2 m and as deep as 54 m in localized areas. In many areas, a thin layer of dense glacial till overlies the bedrock; and
- Salt formations are found within the bedrock stratigraphy at depths ranging from about 150 to 400m.

Exhibit 4.15 illustrates the general surficial sedimentary geology of the Preliminary Analysis Area based on geologic interpretation of widely-spaced sample locations and an understanding of geomorphologic processes. This figure has been prepared using data and mapping from government agencies in both Ontario and Michigan. Although the surficial sedimentary information is more spatially detailed for Ontario and the nomenclature somewhat different between the two jurisdictions, the general characteristics of the sediments are well known in both areas.

SEDIMENTARY GEOLOGY

The Preliminary Analysis Area is located in the physiographic region of southwest Ontario known as the St. Clair Clay Plains. Within this region, Essex County and the southwest part of Kent County are normally discussed as a sub-region known as the Essex Clay Plain. The clay plain was deposited during the retreat of the ice sheets (late Pleistocene Era) when a series of glacial lakes inundated the area. In general, the ice sheets deposited till in the area of Windsor and Detroit.

A large end moraine of glacial till is mapped in the area of Windsor-Detroit, generally trending northwest to southeast near the outlet of Lake St. Clair as illustrated by the dark-green areas in Exhibit 4.15. Outcrops of this moraine may also be found throughout Essex County near the terminus of Provincial Highway 401. In other areas, the lacustrine deposits overlie the hard glacial till.

The major clay stratum typically ranges in thickness from about 20 m to 30 m. Surficial layers or pockets of more typical layered lacustrine (lake deposited) silty clay, silt, or sand may be encountered overlying the extensive stratum of “till-like” silty clay. Silt and sand deposits, approximately 2 to 4 m thick, are often found near the ground surface in areas near the western side of Windsor and the southwestern limits of the Preliminary Analysis Area. A relatively thin stratum, approximately 1 to 6 m thick, of very dense or hard basal glacial till or dense silty sand is found directly overlying the bedrock surface.

Bedrock Geology

Within the Windsor area, the bedrock geology consists of an evaporate-carbonate sequence of rock formations. These include the Silurian Salina formation, the Devonian Bass Islands dolomite, the Detroit River Group, the Dundee Formation, and the Hamilton Group, respectively, with decreasing age and closer proximity to the ground or bedrock surface. The surface of the bedrock, beneath the overlying sediments, is relatively flat except for “a significant depression in the vicinity of the Windsor airport. The depression may represent a dissolution collapse of either the underlying carbonates or the lower Salina salt beds” [Hudec 1998].

Devonian Age bedrock of dolomite, shaly limestone, limestone and sandstone extends from the bedrock surface, found at depths of between 20 to 40 m, to depths of about 160 m below ground level. These bedrock formations are underlain by the Salina Group of formations that include thick salt beds at depths of about 270, 300, and 400 m below the ground surface. It is also known that relatively small volumes of petroleum are found within the limestone and dolomite strata.

Near the eastern limits of the Preliminary Analysis Area, the bedrock encountered beneath the sedimentary deposits is the Hamilton Group of limestone, shaly limestone, and mudstone formations. Near the southwest tip of Belle Isle, the uppermost bedrock formation is the Dundee limestone formation within the Hamilton Group. Approximately equidistant between Belle Isle and Fighting Island, the uppermost bedrock formation transitions to the Detroit River Group and the Lucas formation of dolomite in particular.

Groundwater Levels

Static groundwater levels within the overburden soil deposits are typically at about 1 to 3 m below the ground surface depending on specific locations and ground surface elevations. Groundwater within the underlying glacial till and bedrock in some areas, however, is known to be under artesian pressures (in which groundwater levels will rise above the ground surface for wells that penetrate the soil overburden and connect with groundwater in the bedrock). In these areas, particularly in the western part of the Preliminary Analysis Area, artesian pressures may be in the order of 2 to 3 m above the river level. In general, groundwater flow will be toward the Detroit River, Lake St. Clair and Lake Erie. Groundwater from within the bedrock is likely to be corrosive because of the salt deposits found at depth.

Gas

It is also known that in some areas the groundwater contains hydrogen sulphide that will be liberated from solution and become hydrogen sulphide gas at normal atmospheric pressures. Hydrogen sulphide gas is toxic at low concentrations. Methane gas has also been encountered during excavations into both soft ground and bedrock in the Windsor-Detroit area. Methane gas can present an explosion hazard if not adequately controlled during construction.

KEY SUBSURFACE CONDITIONS

The following provides a summary of key subsurface conditions that influenced the development of the various alternatives examined through the course of this study. Further details with regard to geotechnical deep drilling investigations undertaken to confirm subsurface conditions are provided in Chapter 7 of this report.

Salt Extraction Activities

Within the Windsor-Detroit area, salt has been extracted from beneath the ground surface since the mid to late 1800s. The salt has been extracted using two different methods: solution mining and underground rock salt mining. Salt extraction by solution mining involves pumping water into wells drilled into the salt formations, dissolving the salt with the pumped water, and extracting salt from the saline water (brine) which is returned to surface. Rock salt mining of the salt typically uses the room and pillar method, whereby mine shafts are excavated from the ground surface down to the level of the salt beds. At the level of the salt beds, rooms are excavated using drilling and blasting, and the rock salt is transported back to the surface in large buckets, or skips. The extraction of salt from deep formations results, in most cases, in subsidence of the ground surface.

Solution Mining

As a consequence of solution mining activities, large caverns have been formed where the salt was removed. Modern methods of cavern development control the shape and size of caverns quite carefully. However, it was not unusual, for the cavities surrounding older wells (those drilled prior to about 1970), to become accidentally interconnected or for accidental interconnection to adjacent aquifers to occur.

Single well caverns have been known to be approximately 200 to 300 m in diameter or more and more than 50 m in height. Caverns may be interconnected in rows as long as 1,000 m or more. Caverns created by single brine wells can be in the range of 0.2 to 1 million cubic metres in volume and that interconnected brine well caverns are typically on the order of 1 million cubic metres in volume or more.

The presence of brine well mining activities in the vicinity of a potential roadway or structure, could lead to the potential for general subsidence or a sudden collapse directly over these areas. The potential for collapse is generally thought to be greater for wells that were in operation prior to about 1980, but this potential depends to a great (and often indeterminate) extent on the well operational methods, local bedrock conditions, interconnection of cavities between wells, and the methods used to abandon or plug the wells.

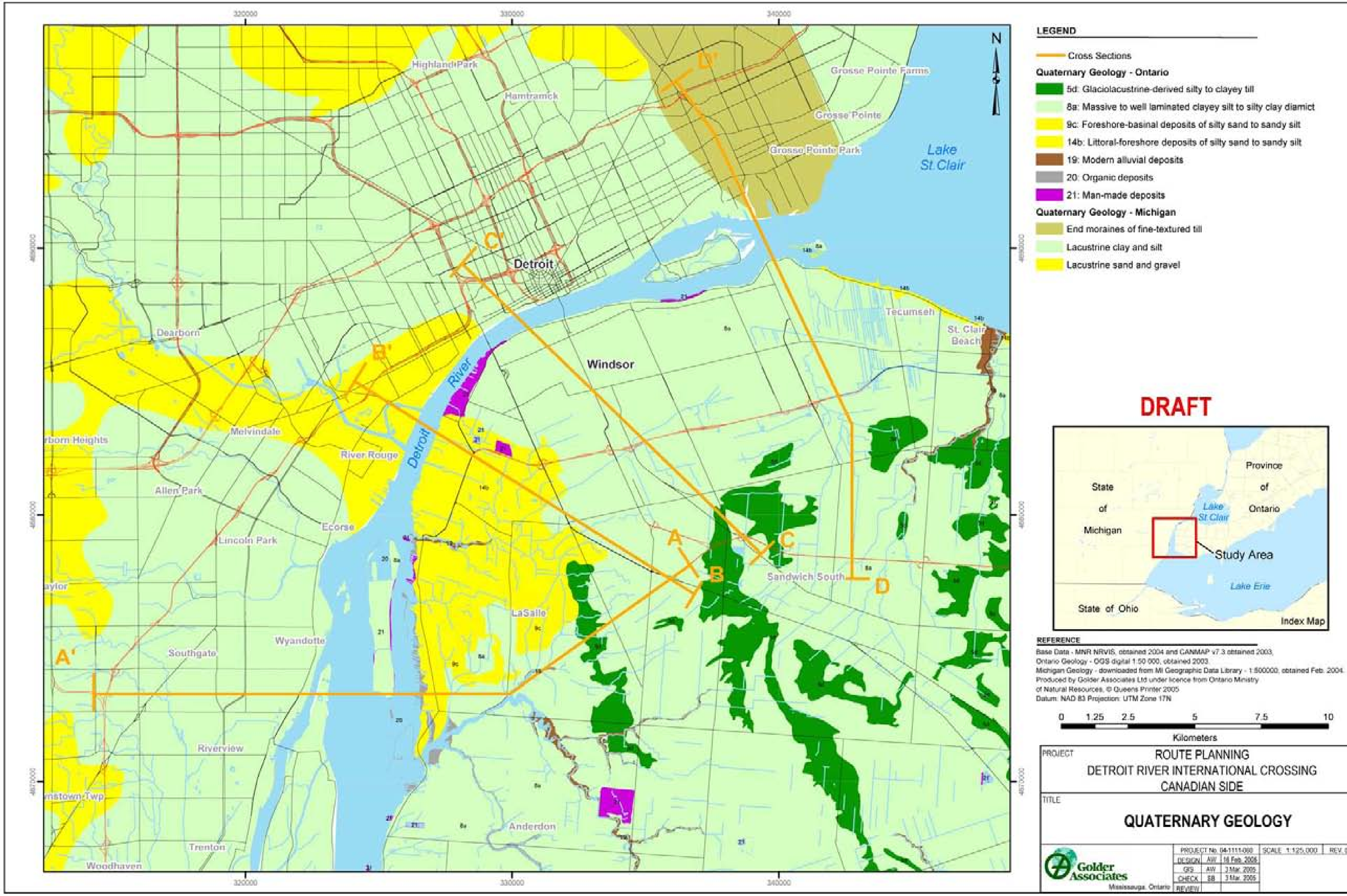
Room and Pillar Mining (Dry Mining)

Salt is also mined in a dry form, mainly for application as a highway de-icing agent. Underground mining of rock salt typically occurs using the “room and pillar” method, whereby mine shafts are sunk from the ground surface down to the level of the salt beds and rooms are then created by horizontal tunnelling. In room and pillar mining, the ore is excavated, leaving pillars to support the roof. Rooms and pillars are dimensioned depending on the depth of the mine and the strength of the rock in the roof and pillars and it is typical to design pillars to be stable for an indefinite time period. Generally, pillars are arranged in a regular pattern, like a checker board. The salt is mined by drilling and blasting, and it is then crushed and the rock salt is transported to the surface in a large box or skip suspended from wire hoisting ropes in the shaft.

Subsidence also occurs over room and pillar mines, though it is more easily predicted since the size of pillars can be easily controlled and it is possible to install support in the mine roof if there is any indication of instability. Subsidence may occur in the context of underground mining due to the gradual deformation or, occasionally, the sudden collapse, of the pillars that remain after salt extraction. Since the pillars are generally very large, it is rare for sudden collapse to occur and so the most common type of subsidence is a very slow, widespread sinking of the ground surface across the entire mining area. As ore is mined from the rooms, the load carried by the overlying “roof” rock is transferred to the pillars.

The presence of deep salt mining activities within a possible route could lead to the potential for general subsidence. General subsidence of the type observed over room and pillar mines in the Windsor area is unlikely to cause significant concerns for highway pavements or embankments, in that repairs could be made if and when needed, but may be undesirable for bridge structures.

EXHIBIT 4.15 - QUATERNARY GEOLOGY



4.6.2 Aquatic Habitat and Communities

The Preliminary Analysis Area encompasses a very large area of Essex County. In addition to the Detroit River, the PAA includes the following five main subwatersheds:

- Pike Creek;
- Little River;
- Turkey Creek;
- Big Creek; and,
- Canard River.

The locations of the corresponding watercourses are presented in **Exhibit** 4.16, and a summary of each watershed is provided in following sections of this report.

The Detroit River and the inland subwatersheds within the Preliminary Analysis Area fall under the jurisdiction of the Essex Region Conservation Authority (ERCA) and the Ontario Ministry of Natural Resources (OMNR) Aylmer District.

Heavy impacts associated with agricultural and/or urban development affect all of these subwatersheds[30]. These impacts include both physical (e.g., channelization, barriers) and chemical (e.g., metals, organic compounds, nutrients) factors[31]. Despite these impacts, the fish communities in these subwatersheds are relatively diverse and most stations sampled historically were found to contain fish[32]. The fish communities found in each of these subwatersheds, as well as in the Detroit River, are discussed briefly below.

Fish species found in the Detroit River are documented by Manny et al. 1988 (in MDNR and MOE 1991). A summary of the fish species known to inhabit the Detroit River is presented in the *Environmental Overview Paper – Canadian Existing Conditions Volume 2*. Fish communities in the subwatersheds of the Detroit River have been sampled historically by the OMNR (1978; 1979; 1980; 1984), the ERCA (1999; 2000; 2001) and others (Gartner Lee 2001). Fish occurrence records for the five inland watersheds and one municipal drain that were provided by the ERCA are also summarized in the *Environmental Overview Paper – Canadian Existing Conditions Volume 2.*

PIKE CREEK

The watercourses within this watershed were sampled at 16 stations historically, with one station sampled twice (17 sampling events). Fish were collected at all but two stations. Available mapping indicates that the watercourses within this watershed, which flow generally north into Lake St. Clair, are in a relatively natural state (i.e., excessive channelization is not evident). A total of 28 species were collected from the Pike Creek watershed, including several sportfish. Fish were well distributed throughout the watershed and the number of species varied from three to 16 per station. Sportfish were collected from 12 of the 14 stations at which fish were present, which indicates that good habitat conditions exist throughout the watershed.

LITTLE RIVER

The Little River flows in a northerly direction and discharges into the upstream end of the Detroit River near Peche Island. Much of this watercourse appears to be heavily channelized, with few areas in a natural state. The upper portion of the watershed consists of channelized ditches that parallel the concession roads to the southeast of the Windsor Airport. This watershed was sampled for fish 19 times at 14 locations; and no fish were captured at six locations. The locations at which no fish were collected were all in the upper portion of the watershed at crossings of Highway 401. Despite the apparently poor habitat conditions in the upper part of the watershed, the Little River supports 25 species of fish, including several sportfish. As with the Pike Creek watershed, fish species were well distributed within the Little River watershed with the number of species captured at each station ranging from two to 15. Sportfish were collected from seven of the eight stations at which fish were collected, indicating that fairly good habitat conditions exist within the lower portions of the watershed.

TURKEY CREEK

Turkey Creek discharges into the Detroit River near the upstream end of Fighting Island. It receives water from many municipal/agricultural drains and has been channelized throughout the watershed. The upper portion of Turkey Creek flows out of South Windsor and through several parks and small residential areas before discharging into the Detroit River. Many of the drains, which historically likely conveyed agricultural run-off, now flow through residential areas. Several of these still flow out of agricultural land. Some of the drains that contribute flow to Turkey Creek are the Cahill, Lennon, Lepain and Tourangeau Drains. The Turkey Creek watershed was sampled for fish at five locations, two within the higher density residential area; one in the lower density residential area along Turkey Creek, and the other two in the drains associated with Brunet Park. All five stations contained fish, with a total of 19 species captured. Each station was sampled only once. The number of species captured at each station ranged from two to 16, with a mean of six species per station. At least one species of sportfish was found at each of the sampling locations indicating the presence of fairly good habitat conditions at these locations.

BIG CREEK

The headwaters of Big Creek are located within the Preliminary Analysis Area in the Town of Amherstburg. This watercourse flows in a north-to-south direction and discharges into Lake Erie. Fish were collected eight times at five stations within the Preliminary Analysis Area. A sixth station was also sampled, but no fish were captured. A total of nine species were collected, including three sportfish species. Diversity at the stations was comparatively low, with two stations at which only one species was captured. Sportfish were collected from three of the five stations at which fish were captured.

CANARD RIVER

The Canard River watershed occupies the most area within the Preliminary Analysis Area. It flows in a northwesterly direction through mainly rural lands and discharges into the Detroit River opposite Grosse Ile. It was sampled 27 times at 19 stations, all of which contained fish. The stations were spread throughout the watershed and likely represented a diversity of habitats. A total of 36 species were recorded from the watershed, including several sportfish species. Sportfish were collected from all but one of the 19 stations, indicating favourable habitat conditions throughout the watershed.

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[30] URS Canada Inc. Canada - U.S. - Ontario - Michigan Border Transportation Partnership Planning/Need and Feasibility Study: Environmental Overview Report (Amended). January, 2005.
[31] Ibid.
[32] Ibid.

EXHIBIT 4.16 - WATERCOURSES WITHIN THE PRELIMINARY ANALYSIS AREA

MARENTETTE DRAIN

This small drain empties into the Detroit River south of the Town of LaSalle at Grassy Island. It flows through agricultural lands and consists of two main branches: the Marentette Drain and the Gignac Drain. ERCA records show that this drain was sampled for fish at one location in 2001. Two species were captured here, including one sportfish.

DETROIT RIVER

Previous reports indicate that at least 65 species of fish inhabit the Detroit River (Manny et al. 1988 in MDNR and MOE 1991). These species include many sportfish as well as migratory species that use the river to move between Lakes Erie and St. Clair. Diverse habitat exists within the river, especially in the wetlands which are used by warmwater species for many of their life functions (spawning, nursery, foraging, etc.). Several provincially significant wetlands exist within the river or are associated with tributary rivermouths. These wetlands cover an area of 462.5 ha (1143 acres)[33]. As reported in MDNR and MOE (1991), 41 fish species have been reported to spawn within the Detroit River and an additional seven species are suspected of spawning. Manny et al.[34] reported that 25 species use the river as nursery habitat, including both warm and coldwater species.

4.6.3 Vegetation and Vegetation Communities

Within the County of Essex, tallgrass prairie and oak savannah vegetation communities were widespread prior to the 20th century. These open communities were maintained by climate and periodic fire events. Since the early 20th century, these communities have rapidly declined with increased settlement and subsequent fire suppression in these areas[35].

Natural vegetation communities within the Preliminary Analysis Area are restricted to areas that are not currently in use for residential, industrial or agricultural purposes. As such, they are limited in number, size and connectivity with other natural vegetation communities. The majority are within or around designated natural areas such as Provincial Parks, Areas of Natural and Scientific Interest (ANSIs), evaluated wetlands, Environmentally Significant Areas (ESAs) and Candidate Natural Heritage Sites (CNHSs). These communities include fragmented oak-hickory forests, oak savannahs, thickets, tallgrass prairies, forb prairies and old field cultural meadows.

Forest communities include those in dry-fresh upland locations and those in fresh-moist lowland locations. Upland forested communities are typically dominated by oak (*Quercus* sp.), hickory (*Carya* sp.), and maple (*Acer* sp.), with associations of sassafras (*Sassafras albidum*), white ash (*Fraxinus americana*), butternut (*Juglans cinera*), basswood (*Tilia americana*), beech (*Fagus grandifolia*), tulip-tree (*Liriodendron tulipifera*), ironwood (*Ostrya virginiana*), trembling aspen (*Populus tremuloides*) and black cherry (*Prunus serotina*). Lowland forested communities are typically dominated by swamp white oak (*Quercus bicolor*), pin oak (*Q. palustris*), silver maple (*Acer* saccharinum), red ash (*Fraxinus pennsylvanica*), white elm (*Ulmus americana*) and red maple (*Acer rubrum*).

In some locations, fire suppression has allowed for the establishment of shrub species. Common shrub thicket species include hawthorns (*Crataegus* sp.), gray dogwood (*Cornus foemina* ssp. *racemosa*), silky dogwood (*C. amomum*), smooth sumac (*Rhus glabra*), common blackberry (*Rubus alleghaniensis*) and riverbank grape (*Vitis riparia*). In other locations the invasion of non-native species into grasslands has resulted in their conversion to old field meadow communities with fewer grass species. In locations where prairie grassland has been maintained, dominant species include big bluestem (*Andropogon gerardii*), tall cord grass (*Spartina petcinata*), Indian grass (*Sorghastrum nutans*), ironweed (*Vernonia gigantea*), showy tick-trefoil (*Desmodium canadense*), giant goldenrod (*Solidago gigantea*), grass-leaved goldenrod (*Euthamia graminifolia*) and many others.

Wetland communities are predominantly riverine, and associated with the Detroit River or its tributaries. These communities are typically marshes dominated by narrow-leaved emergent species such as cattails (*Typha sp.*), reed-canary grass (*Phalaris arundinacea*), or floating leaved and submerged aquatic plants.

Based on secondary sources, a total of 615 plant species have been documented in the Preliminary Analysis Area. Of these species, 133 or 21.6 per cent are considered introduced and non-native to southern Ontario. The majority of these 615 species have been identified in designated natural areas within the City of Windsor and the Town of LaSalle.

Further details with regard to vegetation and vegetation communities are provided in the *Environmental Overview Paper – Canadian Existing Conditions Volume 2.*

4.6.4 Wildlife and Wildlife Habitat

The Preliminary Analysis Area is comprised of urban, industrial, rural, agricultural and natural heritage features with numerous protected parks. Most of the natural heritage areas within the City of Windsor are located in the protected zones of the Ojibway Prairie Complex in the southwest corner of the municipality. Within the Town of LaSalle numerous natural areas, such as the Turkey Creek and Carnard Ecosystem management areas, are also protected with large expansive agricultural areas of creeks and drains making up the southern part of the Detroit River Watershed that runs down to the Canard River. This river opens into the provincially significant Canard River Mouth Marsh, which is adjacent to another provincially significant marsh located on Fighting Island. From the Canard River to Amherstburg, open agricultural areas and a few natural heritage features surrounding Big Creek and its tributaries, dominating the habitat of this region.

The determination of wildlife inhabiting the Preliminary Analysis Area was collected from secondary sources that covered as much of the area as possible. One hundred forty-nine species of wildlife were recorded. Of these, thirty-three species were herpetofauna, most of which were recorded along creeks or within prairie grasslands and forests of the natural heritage areas, and eighty-eight species of birds were documented breeding within the Preliminary Analysis Area. In addition, thousands of migrating birds, comprising many more species, stage in the Detroit River and adjacent marshes each spring and fall. The 28 species of mammals that have also been recorded within the Preliminary Analysis Area finalize the wildlife totals. A summary of the wildlife recorded in the Preliminary Analysis Area based on secondary sources is provided in the *Environmental Overview Paper – Canadian Existing Conditions Volume 2*.

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[33] URS Canada Inc. Canada - U.S. - Ontario - Michigan Border Transportation Partnership Planning/Need and Feasibility Study: Environmental Overview Report (Amended). January, 2005.

[34] Manny, B. A., T. A. Edsall and E. Jawarski. 1988. The Detroit River, Michigan: An ecological profile biological report. US Fish and Wildlife Service, US Department of Interior. Contribution No. 683 of the National Fisheries Research Centre - Great Lakes. Ann Arbor, MI.

[35] OMNR. 1997. Resource Management Plan for Ojibway Prairie Provincial Nature Reserve (Ontario Parks). Ontario Ministry of Natural Resources, Chatham Area Office. 26 pp. + maps.

4.6.5 Designated Natural Areas

A number of Evaluated Wetlands, Areas of Natural and Scientific Interest (ANSIs) and Environmentally Significant Areas (ESAs) and one Provincial Nature Reserve are located within the Preliminary Analysis Area. Two of these natural heritage features have also been evaluated by Carolinian Canada. These features are illustrated in Exhibit 4.17, and summarized in Table 4.6.

In addition, the City of Windsor and the Town of LaSalle have both undertaken biological inventories of the remnant forest and prairie habitat features not already designated and afforded some form of preservation status in planning documents allow for the determination of whether these areas should be included under an Open Space/Greenway system policy to assist in their preservation. These areas are referred to as Candidate Natural Heritage Sites (CNHSs). This section provides a summary of these features within the Preliminary Analysis Area.

PROVINCIAL NATURE RESERVES

Provincial Nature Reserves are areas selected to represent the distinctive natural communities and landforms in Ontario. Ojibway Prairie is a 65 ha (161 acres) Provincial Nature Reserve that was regulated under the *Provincial Parks Act* in 1977 to protect one of the largest remnants of tallgrass prairie and oak savannah in Ontario (OMNR 2002). The dominant feature of this nature reserve is the tallgrass prairie plant community. Within the Ojibway Prairie Provincial Nature Reserve, 533 flowering plant species have been documented, of which more than 60 are of prairie and western affinity. It is home to more than 60 plants that are rare in Ontario as well as a number of animal species that are representative of prairie habitats (Pratt 1979; OMNR 2002).

Vegetation communities in Ojibway Prairie include Old Field (27.5 ha [68 acres]), Forb Prairie (17 ha [42 acres]), Tallgrass Prairie (11.5 ha [28 acres]), Thickets (3 ha [7.5 acres]), Oak Savannah (4.5 ha [11 acres]), and Black Oak/Red Hickory Forest (1.5 ha [3.7 acres]). While some early successional tallgrass prairie species occur in Old Field communities, the majority of species with a prairie affinity are located within the remaining vegetation communities. The Ojibway Prairie contains two vegetation communities that are globally and provincially rare. Moist-Fresh Tallgrass Prairie Type (TPO2-1) and Moist-Fresh Black Oak Tallgrass Savannah Type (TPS2) both have a global rank of G1 (Extremely Rare – having less than five occurrences in the overall range) and a provincial rank of S1 (Extremely Rare in Ontario – having less than five occurrences in the province).

The Ojibway Prairie provides habitat for three nationally and provincially ‘Threatened’ wildlife species listed on SARA, Schedule 1, including eastern foxsnake (*Elpahe gloydi*), Butler’s gartersnake (*Thamnophis butleri*) and eastern hog-nosed snake (*Heterodon platirhinos*). Purple twayblade (*Liparis liliifolia*) and eastern prairie fringed orchid (*Platanthera leucophaea*), both nationally and provincially ‘Endangered’ and listed on SARA, Schedule 1, are present in the reserve. Colicroot (*Aletris farinosa*) and willowleaf aster (*Symphotrichum praealtum*), both nationally and provincially ‘Threatened’ and listed on SARA, Schedule 1, are present in the reserve. Several provincially, regionally and/or locally significant species are also present in the Ojibway Prairie.

EVALUATED WETLANDS

Evaluated wetlands in the Preliminary Analysis Area are predominantly riverine, and the majority are associated with the Detroit River. These evaluated wetlands include:

- Detroit River Marshes;
- Canard River Marshes;
- Fighting Island Wetland; and,
- Turkey Creek Wetland.

Detroit River Marshes

Wetlands located along the Detroit River are remnants of the submergent and land-based wetlands that once made up the more extensive Detroit River Wetland. Presently, the Detroit River Marshes Provincially Significant Watershed (PSW) is a 575 ha (1421 acres) coastal wetland complex comprised of six individual wetlands, including river marshes, Grassy Island, Turkey Island and the north and south ends and east side of Fighting Island. Wetland types include marsh (96 per cent) and swamp (4 per cent) and the dominant vegetation forms include submergent vegetation (59.4 per cent) and emergent vegetation (29.5 per cent). The site type of this wetland is 100 percent riverine, and soils have not been designated (Wormington and Fraser 1985a).

Submergent species such as pondweed (*Potamogeton* sp.), milfoil (*Myriophyllum* sp.) and grassleaf mud-plantain (*Heteranthera dubia*) are dominant in more than 59 per cent of this wetland, by area. Robust emergents such as cattail, reed (*Phragmites* sp.) and bulrush (*Scirpus* sp.) are common in marsh portions of this wetland. Smartweeds (*Polygonum* sp.), sedges (*Carex* sp.) and meadowsweet (*Spiraea* sp.) are also present in marsh communities. Species such as willow (*Salix* sp.), dogwood (*Cornus* sp.) and sumac (*Rhus* sp.) dominate swamp portions of this wetland.

This wetland provides breeding and/or feeding habitat for three nationally and provincially ‘Threatened’ wildlife species listed on SARA, Schedule 1, including eastern foxsnake, Butler’s gartersnake and eastern massasauga (*Sistrurus catenatus*). It also provides habitat for swamp rose-mallow (*Hibiscus moscheutos*), a species listed on SARA, Schedule 3 and as ‘Special Concern’ both nationally and provincially. Several provincially, regionally and/or locally significant species are also present in this wetland.

Canard River Marshes

The Canard River Marshes PSW is a 416 ha (1028 acres) coastal wetland complex comprised of two individual wetlands. This wetland is 100 per cent marsh and the dominant vegetation forms include emergent vegetation, floating plants and submergent vegetation. The site type of this wetland is 100 percent riverine with 100 percent organic soils[36].

Submergent and floating-leaved vegetation and unvegetated water portions of this marsh comprise 50 per cent of this wetland, by area. Species in this community include water lily, and pickerel weed (*Pontederia cordata*). Together, robust emergents and narrow-leaved emergents are dominant in 48 per cent of this wetland, by area. Robust emergents include cattail and reed, and narrow-leaved emergents include grasses. Swamp portions of this wetland are dominated by species such as willows, red maple, silver maple, red-osier dogwood (*Cornus stolonifera*), black ash (*Fraxinus nigra*), green ash (*F. pennsylvanica*), white elm and swamp white oak.

[36] Parker, B. and J. Dawson. 1984. Wetland Data Record and Evaluation – Canard River. Second Edition. Ontario Ministry of Natural Resources. 1984. Manuscript. 12 pp. + 2 pp. supplement.

This wetland provides breeding and/or feeding habitat for Least Bittern (*Ixobrychus exilis*), a nationally and provincially 'Threatened' species listed on SARA, Schedule 1. It provides habitat for swamp rose-mallow, a species listed on SARA, Schedule 3 and as 'Special Concern' both nationally and provincially. Several provincially, regionally and/or locally significant species are also present in this wetland.

Fighting Island Wetland

Fighting Island Wetland PSW is a 113 ha (279 acres) coastal wetland comprised of 94 per cent marsh and six per cent swamp. Dominant vegetation forms include emergent vegetation and submergent vegetation in marsh portions and deciduous trees in swamp portions. This wetland is a dyked wetland, the site type is 100 per cent riverine and soils have not been designated (Wormington and Fraser 1985b).

Robust emergents such as cattail and reed are dominant in more than 75 per cent of this wetland, by area. Narrow-leaved emergents such as rice cut grass (*Leersia oryzoides*) and sedges are also present in these communities. Open water portions of this wetland contain species such as coontail (*Ceratophyllum* sp.), pondweed and milfoil. Species such as willow and dogwood dominate swamp portions of this wetland.

This wetland provides breeding and/or feeding habitat for three nationally and provincially 'Threatened' wildlife species listed on SARA, Schedule 1, including Least Bittern, eastern foxsnake and Butler's gartersnake. It provides habitat for swamp rose-mallow, a species listed on SARA, Schedule 3 and as 'Special Concern' both nationally and provincially. Several provincially, regionally and/or locally significant species are also present in this wetland.

Turkey Creek Wetland

Turkey Creek Wetland PSW is a 32 ha (79 acres) coastal wetland comprised of 77 per cent marsh and 23 per cent swamp. Dominant vegetation forms include emergent vegetation and submergent vegetation in marsh portions and deciduous trees and tall shrubs in swamp portions. This wetland is 80 percent riverine site type and 20 per cent riverine at river mouth site type with 100 per cent organic soils[37].

The majority of marsh areas in this wetland are dominated by robust emergents such as cattail. Narrow-leaved emergents such as rice cut grass are also present in marsh areas. Open water portions of this wetland contain submergent species such as pondweed and milfoil. Species such as willow and dogwood dominate swamp portions of this wetland.

This wetland provides breeding and/or feeding habitat for two nationally and provincially 'Threatened' wildlife species listed on SARA, Schedule 1, including eastern foxsnake and eastern massasauga. Several provincially, regionally and/or locally significant species are also present in this wetland.

AREAS OF NATURAL AND SCIENTIFIC INTEREST

ANSIs in the Preliminary Analysis Area include several provincially and regionally significant Life Science ANSIs. According to the OMNR (1998; 2004a), the Ojibway Prairie Complex provincially significant Life Science ANSI is comprised of the following areas:

- Ojibway Prairie Provincial Nature Reserve;
- Prairie Remnants (Ojibway Park) Life ANSI;
- Prairie Remnants (Titcombe Road North) Life ANSI;
- Prairie Remnants (Spring Garden Road) Life ANSI;
- Prairie Remnants (Black Oak Woods) Life ANSI; and,
- Prairie Remnants (Southeast of Nature Reserve) Life ANSI.

Ojibway Prairie Provincial Nature Reserve

The Ojibway Prairie Provincial Nature Reserve is discussed previously in this section.

Ojibway Park

Ojibway Park is a 64 ha (158 acres) site dominated by a Swamp White Oak Mineral Deciduous Swamp (SWD1-1), which has a provincial rank of S2S3 (Very Rare to Uncommon in Ontario – having five to 100 occurrences in the province). Prairie, savannah and woodland communities are also present. At least three different prairie communities have been identified in the park based on differing herbaceous layer species assemblages. Woody species in savannah and woodland communities include pin oak, swamp white oak, black oak (*Q. velutina*), and red maple.

Slender bush-clover (Lespedeza virginica), which is nationally and provincially 'Endangered' and listed on SARA, Schedule 1, is present in Ojibway Park. Several provincially, regionally and/or locally significant species are also present in Ojibway Park (OMNR 2002).

Titcombe Road North

This 40 ha site consists of tallgrass prairie and oak woodland communities. At least three different prairie communities have been identified in the Titcombe Road North ANSI based on differing herbaceous layer species assemblages. Woody species in woodland communities include black oak, white oak (*Quercus alba*) and red hickory (*Carya ovalis*).

Spring Garden Road

This 165 ha (408 acres) consists of tallgrass prairie and oak savannah site communities, all of which have a provincial rank of S1 ('Extremely Rare' in Ontario – having less than five occurrences in the province). Other vegetation communities present in Spring Garden Road ANSI include a large wetland and old field communities. The wetland was originally an artificially constructed lagoon and is presently the largest remaining wetland within the City of Windsor[38].

Spring Garden Road ANSI is home to approximately 475 species of plants, 66 species of breeding birds, 14 species of mammals, 10 species of reptiles, four species of amphibians and 66 species of butterflies. Many of the plant species have a prairie affinity[39]. Purple twayblade, which is nationally and provincially 'Endangered' and listed on SARA, Schedule 1, is present in Spring Garden Road ANSI. Two nationally and provincially 'Threatened' species listed on SARA, Schedule 1 are present including

[37] Wormington, A. and D. Fraser. 1985c. Wetland Data Record and Evaluation – Turkey Creek. Second Edition. August 1985. Ontario Ministry of Natural Resources, Chatham. Manuscript. 22 pp. + 2 maps + 3 pp. supplement.

[38] Woodliffe, P. A. 1994. Spring Garden Road Prairie. OMNR, Chatham. Unpublished letter. 3 pp. + map.
[39] Ibid.

colicroot and dense blazing star (*Liatris spicata*). American chestnut (*Castanea dentata*), which is nationally and provincially 'Threatened' and listed on SARA, Schedule 2, and prairie rose (*Rosa setigera*) and Riddell's goldenrod (*Solidago riddellii*), which are listed on SARA, Schedule 1 and as 'Special Concern' both nationally and provincially, are present in Spring Garden Road ANSI. Several provincially, regionally and/or locally significant species are also present in Spring Garden Road ANSI[40].

Black Oak Woods

This 46 ha (114 acres) site is dominated by a Moist-Fresh Black Oak-White Oak Tallgrass Woodland community (TPW2-1). This community type has a global rank of G1 ('Extremely Rare' – having less than five occurrences in the overall range) and a provincial rank of S1 ('Extremely Rare' in Ontario – having less than five occurrences in the province). Dominant tree species include black oak and white oak, with some particularly large specimen trees situated at the north end of the woodland.

This ANSI is home to at least 24 prairie indicator species. Purple twayblade, which is nationally and provincially 'Endangered' and listed on SARA, Schedule 1, willowleaf aster (*Symphotrichum praealtum*), which is nationally and provincially 'Threatened' and listed on SARA, Schedule 1, and American chestnut, which is nationally and provincially 'Threatened' and listed on SARA, Schedule 2 are all present in Black Oak Woods ANSI. Several provincially, regionally and/or locally significant species are also present in Black Oak Woods ANSI (OMNR 2002).

Regionally Significant Life Science ANSIs

In addition, two regionally significant Life Science ANSIs are located within the Preliminary Analysis Area, including:

- Canard River Kentucky Coffee-tree Woods; and,
- Canard River Scout Camp.

These regionally significant Life Science ANSIs are also designated as ESAs.

ENVIRONMENTALLY SIGNIFICANT AREAS

A number of Environmental Significant Areas (ESAs) are located within the Preliminary Analysis Area. Sixty-three (63) potential ESAs were inventoried in 1981 and/or 1982 and summarized by Oldham[41]. These ESAs were evaluated based on several physical, ecological and social criteria, including:

- Significant Landforms;
- Linkage System;
- Migratory Stopover;
- Significant Communities;
- Hydrological Significance;
- Diversity;
- Significant Species;
- Size;
- Research/Education; and,
- Aesthetic/Historical.

A location was deemed to be an ESA if at least two of the ten criteria were met. Eight ESAs were established within the study, including:

- Allied Chemical Brine Wells ESA;
- Canard River Kentucky Coffee-tree Woods ESA;
- Canard River Scout Camp ESA;
- Devonwood ESA;
- Sandwich West Woodlot (LaSalle Woods) ESA;
- Ojibway Black Oak Woods ESA;
- Spring Garden Road Prairie ESA; and,
- Upper Big Creek Woods ESA.

An update of ESAs within the County of Essex was undertaken in 1991 to evaluate supplementary sites, including previously considered sites and newly identified candidate ESA sites. A resolution was passed that all PSWs and ANSIs in the County of Essex be included as ESAs. An ESA update report was prepared by ERCA (1994), which detailed the criteria met by locations not already designated as a PSW or ANSI. In addition to the above-referenced PSWs and ANSIs, six additional ESAs were identified within the Preliminary Analysis Area, including;

- Fairplay Woods ESA;
- New Canaan Woods ESA;
- Peche Island ESA;
- Green Dragon Woods ESA;
- Reaume Prairie ESA; and,
- St. Clair College Prairie ESA.

A summary of the ESAs located within the Preliminary Analysis Area which have no other designation (e.g., PSW or ANSI) is presented in **Table** 4.6 and illustrated in **Exhibit** 4.17.

CAROLINIAN CANADA SITES

Carolinian Canada is a coalition of groups, agencies and individuals working to halt the loss of and achieve a substantial increase in the size and quality of natural communities characteristic of Carolinian Canada.

Two Carolinian Canada sites are present within the Preliminary Analysis Area, the Ojibway Prairie Remnants (site #31) and the Canard River Kentucky Coffee-tree Woods (site #32). The Ojibway Prairie Remnants site is now encompassed within the Ojibway Prairie Complex ANSI, and the Canard River Kentucky Coffee-tree Woods site is now encompassed within the Canard River Kentucky Coffee-tree Woods ESA.

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[40] Oldham, M. J. 1994. Spring Garden Road Plant List. Natural Heritage Information Centre, Peterborough. Unpublished list. 7 pp.
[41] Oldham, M. J. 1983. Environmentally Significant Areas of the Essex Region. Essex Region Conservation Authority, Essex, Ontario. 426 pp.

EXHIBIT 4.17 – DESIGNATED NATURAL AREAS IN THE PRELIMINARY ANALYSIS AREA

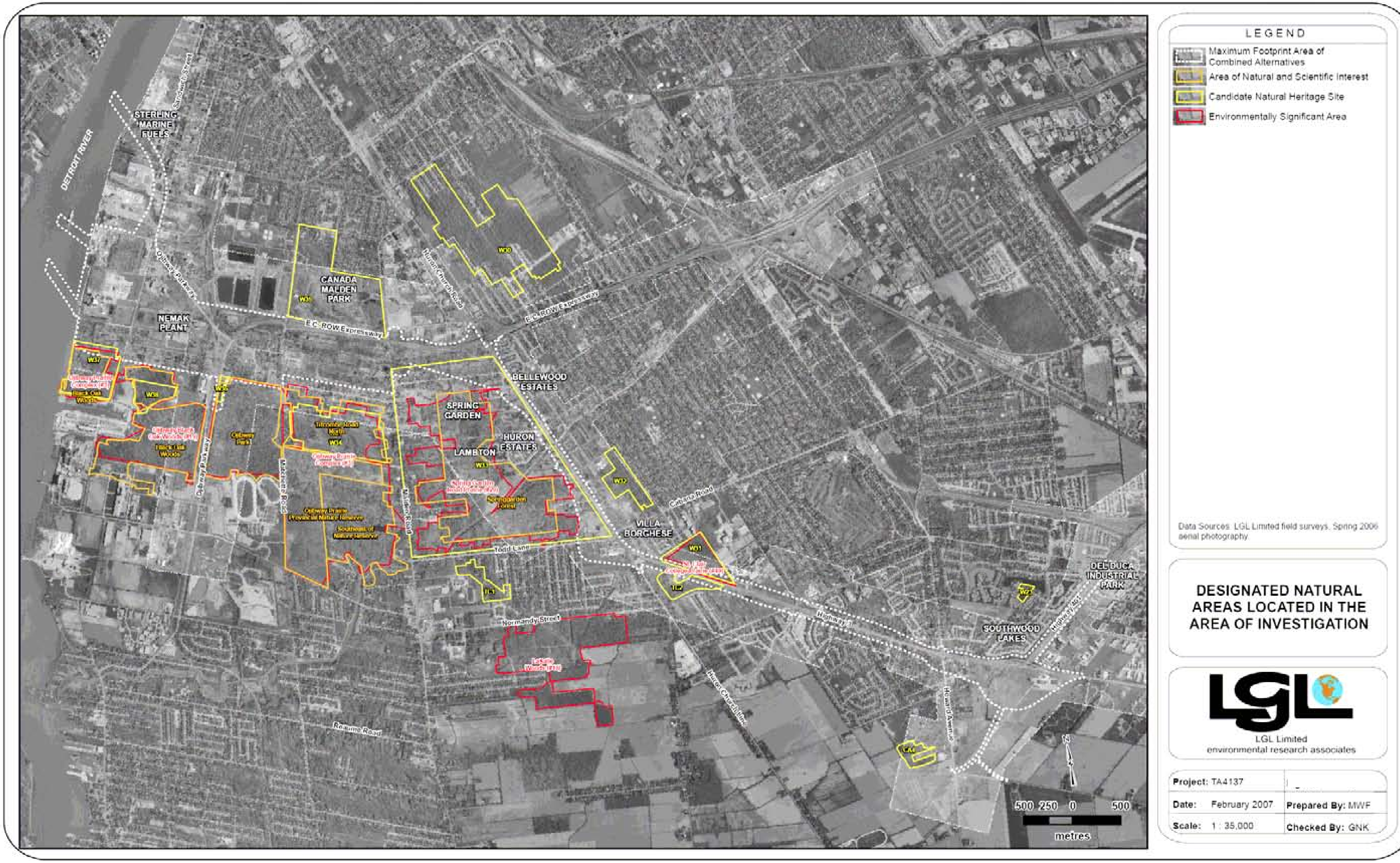


TABLE 4.6 – SUMMARY OF ENVIRONMENTALLY SIGNIFICANT AREAS IN THE PAA

ESA Name (ESA Number)	Significant Landforms	Linkage System	Migratory Stopover	Significant Communities	Significant Habitats/ Hydrological Significance	Diversity	Significant Species	Size	Research/ Education	Aesthetic and/or Historical Values
Canard River Scout Camp (#1)	n/a	Connected to the longest stretch of relatively continuous woodland in Essex County.	n/a	Largest upland wooded area remaining on the Canard River.	n/a	Good	Two SARA, Schedule 1 species, several provincially and locally significant species.	35 ha	Scout Camp.	Sites with adequate trails through continuous woodland are uncommon in Essex County.
Canard River Kentucky Coffee-tree Woods (#2)	n/a	Forms part of a wooded corridor along the Canard River.	n/a	The only example of a lowland forest community containing Kentucky Coffee-tree in the Essex Region.	n/a	Good	Three SARA, Schedule 1 species, several provincially and locally significant species.	99 ha	n/a	n/a
Ojibway Prairie Complex (#3)	See Section 4.6.6									
Canard River Marsh (#13)	See Section 4.6.6									
Allied Chemical Brine Wells (#14)	n/a	n/a	Used by migrating shorebirds and waterfowl.	Unusual inland assemblage of halophytic (salt-tolerant) plants.	The alkaline, salt-rich soil and water provide unusual habitat.	n/a	Three SARA, Schedule 1 species, several provincially and locally significant species.	180 ha	Researched and documented by Catling and McKay in Canadian Field-Naturalist.	n/a
Sandwich West Woodlot/LaSalle Woods (#18)	n/a	Linkage with Turkey Creek and Ojibway Prairie via a hydro corridor.	n/a	Species assemblages include species with a prairie affinity.	Prairie habitat.	Good	Six SARA, Schedule 1 species, one SARA, Schedule 2 species, several provincially and locally significant species.	115 ha	Associated with Brunet Park. Potential for scientific research on prairie flora and fauna.	n/a
Ojibway Black Oak Woods (#19)	n/a	Linkage with Ojibway Prairie.	n/a	Species assemblages include species with a prairie affinity.	n/a	n/a	One SARA, Schedule 2 species, several provincially and locally significant species.	67 ha	n/a	n/a
Spring Garden Road Prairie (#29)	n/a	Linkage with Ojibway Prairie.	n/a	Considered to be one of the best prairie remnants remaining in Essex County.	Prairie habitat.	n/a	Three SARA, Schedule 1 species, one SARA, Schedule 2 species, several provincially and locally significant species.	145 ha	n/a	Impressive display of fall-blooming prairie wildflowers.

ESA Name (ESA Number)	Significant Landforms	Linkage System	Migratory Stopover	Significant Communities	Significant Habitats/ Hydrological Significance	Diversity	Significant Species	Size	Research/ Education	Aesthetic and/or Historical Values
Peche Island (#30)	One of five main islands in the Detroit River.	n/a	n/a	n/a	n/a	Good	Five SARA, Schedule 1 species, several provincially and locally significant species.	40 ha	n/a	Used as a fishing station, both by natives and by settlers. It contains the foundation of a summer residence constructed by the famous distiller Hiram Walker.
Fighting Island (#32)	Largest of the five main islands in the Detroit River.	n/a	Used as a feeding stop for migratory waterfowl.	Carolinian forest communities present.	n/a	Good	One SARA, Schedule 1 species, one SARA, Schedule 3 species, several provincially and locally significant species.	148.8 ha	n/a	Occupied by the Wyandot Native Americans until 1820. Well known for its role in the Patriot War (1837-38). Promoted as a resort area from 1890-1918.
Upper Big Creek Woodlot (#33)	n/a	Linkage along Big Creek to Big Creek Marsh (#15).	n/a	Species assemblages include species with a prairie affinity.	Habitat for eastern foxsnake, Butler's gartersnake, White-eyed Vireo and Yellow-breasted Chat.		Four SARA, Schedule 1 species, one SARA, Schedule 3 species, several provincially and locally significant species.	97 ha	Resident snakes researched and documented by Freedman and Catling in Canadian Field-Naturalist.	n/a
New Canaan Valley (#36)	n/a	Longest natural linkage in the region (12 km) and linkage with Canard River Kentucky Coffee-tree Woods (#2)	n/a	Communities which are provincially unusual include buttonbush thickets and yellow pond-lily/lizard's tail marshes.	The Canard River is the region's largest natural watercourse. New Canaan Valley provides floodwater storage capacity and flow attenuation	Good	One SARA, Schedule 1 species, one SARA, Schedule 3 species, several provincially and locally significant species.	220 ha	n/a	Named after the New Canaan Settlement founded by runaway slaves from the U. S. in the 1850s. Union Cemetery is located in the ESA. A portion of a railroad built by Hiram Walker is located in the ESA.
Fairplay Woods (#38)	Contains portions of a river channel which predates 19th century settlement. Provides an example of pre-settlement channel configuration and capacity.	n/a	n/a	n/a	Provides floodplain storage and reserve flow capacity for Pike Creek.	Good	One SARA, Schedule 1 species, one SARA, Schedule 3 species, several provincially and locally significant species.	48 ha	n/a	n/a

ESA Name (ESA Number)	Significant Landforms	Linkage System	Migratory Stopover	Significant Communities	Significant Habitats/ Hydrological Significance	Diversity	Significant Species	Size	Research/ Education	Aesthetic and/or Historical Values
Devonwood (#45)	n/a	n/a	n/a	Unique woodlot contains eight oak species plus hybrids.	n/a	n/a	Two SARA, Schedule 1 species, one SARA, Schedule 3 species, several provincially and locally significant species.	40 ha	Presence of eight oak species plus hybrids provides an opportunity to study this group.	n/a
St. Clair College Prairie (#49)	n/a	n/a	n/a	n/a	Species assemblages include species with prairie and savannah affinities.	Good	Three SARA, Schedule 1 species, several provincially and locally significant species.	15 ha	The St. Clair College of Applied Arts and Technology is adjacent to this ESA.	n/a
Green Dragon Woods (#62)	n/a	Forms part of a wooded corridor along the Canard River.	n/a	n/a	The floodplain contains oxbows and braided channels which provide flood storage capacity and reduce main channel velocity.	n/a	One SARA, Schedule 1 species, one SARA, Schedule 3 species, several provincially and locally significant species.	32 ha	n/a	n/a
Reaume Prairie (#64)	n/a	n/a	n/a	Considered to be one of the best prairie remnants remaining in Essex County.	n/a	Good	Four SARA, Schedule 1 species, one SARA, Schedule 3 species, several provincially and locally significant species.	14 ha	n/a	n/a
Detroit River Marshes (#77)	See Section 4.6.6									

Note: “n/a” indicates that this criterion does not apply to the Environmentally Significant Area.

4.7 Transportation Network

This section provides an overview of the existing transportation system in the Preliminary Analysis Area (PAA), comprising the road, rail and marine border crossing facilities and the supporting transportation infrastructure for the Detroit River and St. Clair River crossings.

BRIDGE AND TUNNEL CROSSINGS

There are three road crossings between southeast Michigan and southwest Ontario. These include the Ambassador Bridge and Detroit-Windsor Tunnel, which cross the Detroit River in Windsor-Detroit, as well as the Blue Water Bridge, which crosses the St. Clair River in Sarnia-Port Huron.

Ambassador Bridge

The Ambassador Bridge was opened in 1929 and connects the local road network in west Windsor with the U.S. interstate system in southwest Detroit. From entrance to exit, the suspension bridge is 2.8 km long, and rises as high as 46 m above the Detroit River at its centre. Two lanes in each direction are provided along its length; currently one is used for cars and one for commercial vehicles. All tolls are collected on the U.S. side of the bridge, although toll collection facilities also exist on the Canadian side on the approach to the bridge.

For entry to the U.S., Department of Homeland Security (DHS) operates separate border processing facilities for commercial vehicles and for passenger cars. Commercial vehicles are routed via a ramp from the bridge to a processing area below and to the east of the bridge with 13 primary inspection booths. Passenger cars continue straight ahead from the bridge to 12 primary inspection booths. Toll booths are provided after primary inspection for cars and commercial vehicles.

For entry to Canada, Canada Border Services Agency (CBSA) operates ten passenger car and ten truck primary inspection lanes. Secondary inspection for cars occurs beyond the primary inspection booths. Secondary inspection for commercial vehicles is located off-site at Malden Road, approximately two kilometres south, and west of Huron Church Road, although there is a small area for secondary commercial inspection at the plaza.

Detroit-Windsor Tunnel

The Detroit–Windsor Tunnel was opened in 1930 and connects downtown Windsor and downtown Detroit. The tunnel is approximately 1.6 km long and extends 23 m below the surface of the Detroit River. The tunnel is illuminated and ventilated. One lane is provided in each direction. The tunnel has a height clearance of 4.0 m and a 330-degree bend, which restricts the types of commercial vehicles that can use this crossing.

Primary inspection facilities are provided at the entry to both Canada and the U.S. Due to the downtown location of the plazas, the space for secondary commercial inspection is limited and most secondary inspection for commercial vehicles is carried out off-site.

There are 12 primary inspection lanes on the U.S. side, including three booths available for use by commercial vehicles. Secondary inspection for cars is carried out immediately adjacent to the primary inspection with 23 spaces available. In Canada, there are 12 primary inspection lanes, with commercial vehicle primary inspection lanes to the east of the tunnel exit portal and leading onto Goyeau Street. Primary inspection lanes for cars are on the west side of the tunnel exit portal, leading onto Park Street.

Secondary inspection for cars is located directly after passing through the primary inspection. Secondary inspection for commercial vehicles is located off-site at Hanna Street, approximately 1.5 km south of the tunnel plaza, although there is a small area for secondary commercial inspection on the plaza itself.

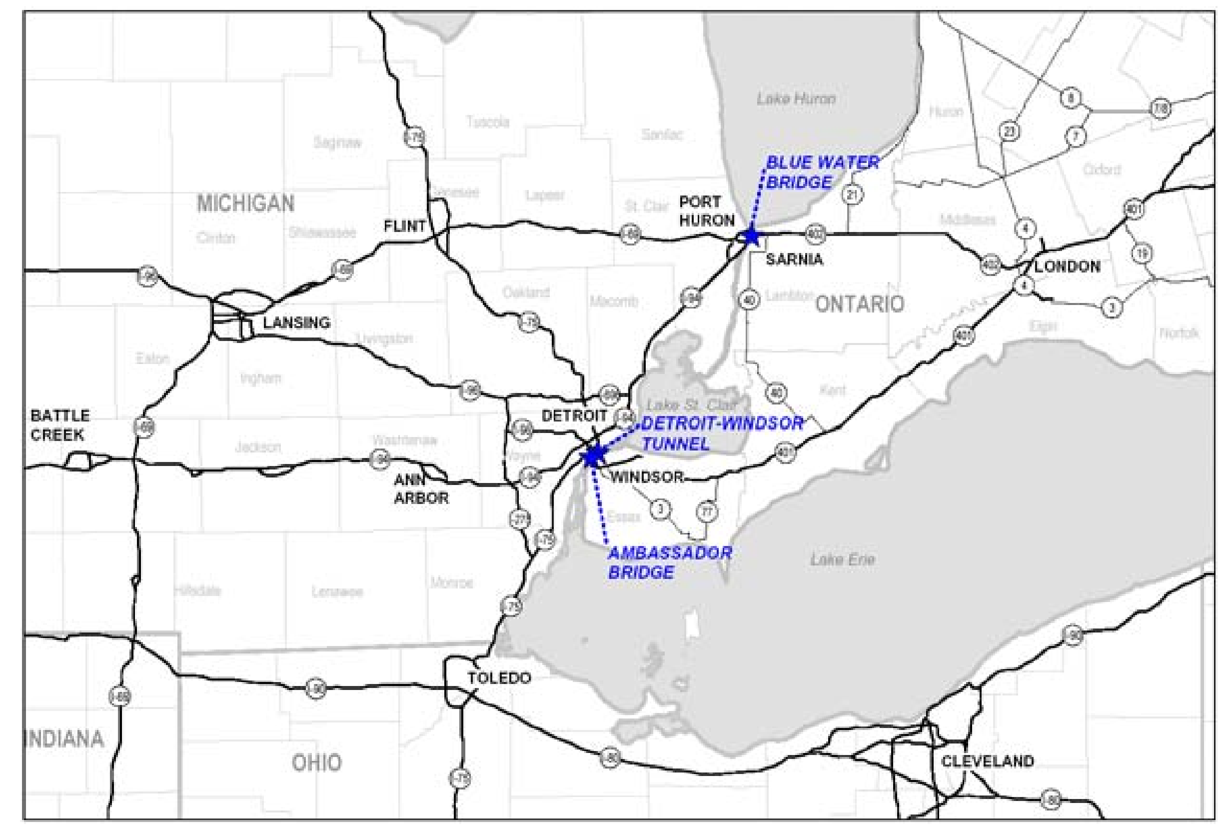
Blue Water Bridge

The Blue Water Bridge was opened in 1938. The original three-lane, 1.88 km cantilever truss bridge over the St. Clair River connects Sarnia and Port Huron. A second three-lane, 1.86 km continuous tied arch bridge was opened in 1997 to allow the closure of the first span for major deck rehabilitation. In 1999, both spans were open to traffic, providing a significant increase in roadway capacity.

HIGHWAY SYSTEM

The road border crossings in the Preliminary Analysis Area are served by a network of provincial highways in Ontario and interstate highways in Michigan. The layout of the highway network in the broad geographic Preliminary Analysis Area is a key aspect of cross-border route selection (see Exhibit 4.18).

EXHIBIT 4.18 - SOUTHWEST ONTARIO / SOUTHEAST MICHIGAN HIGHWAY SYSTEM



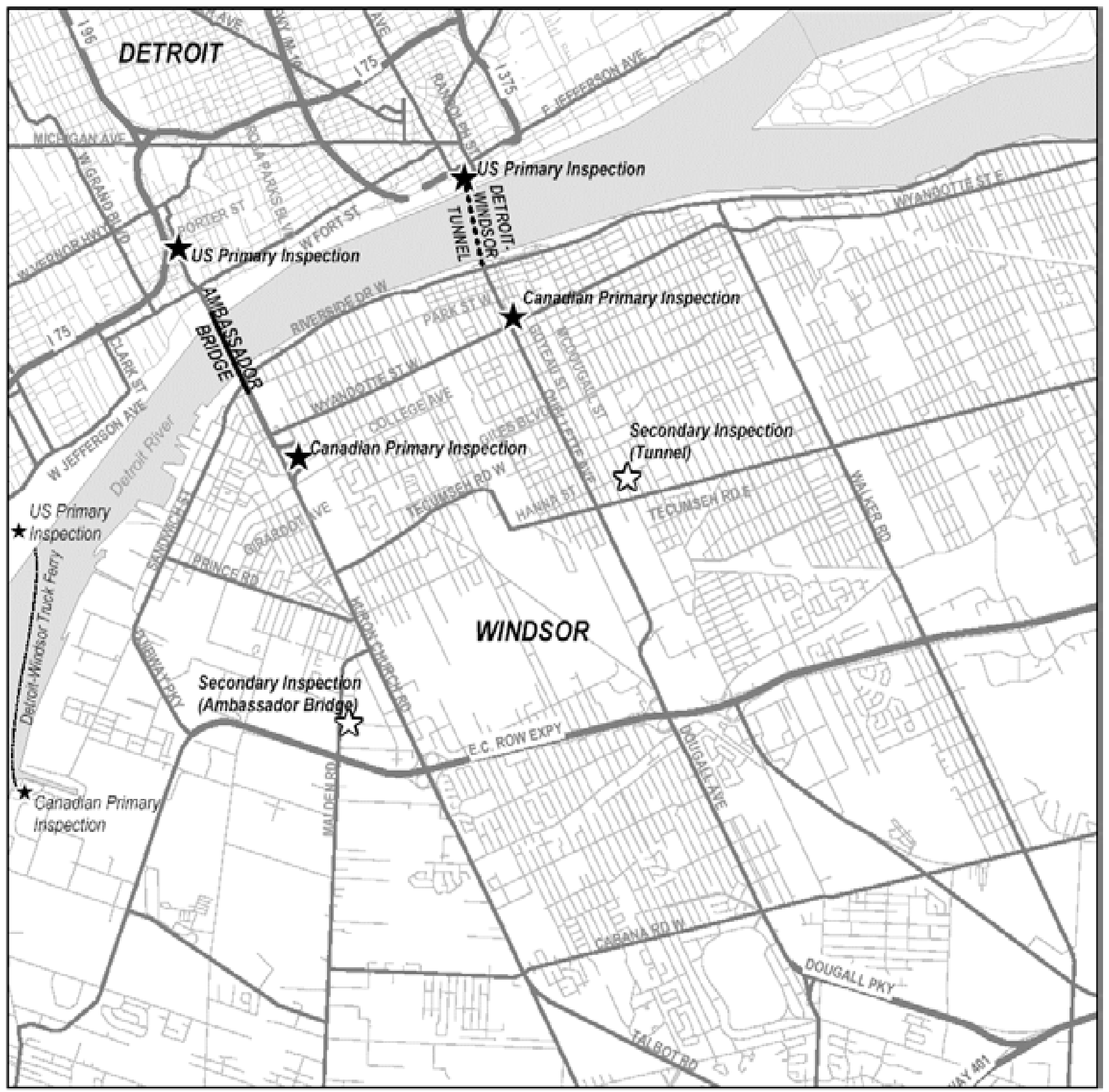
Highway 401 is the dominant corridor in Canada, extending from beyond the Greater Toronto Area to Windsor, with local road access to the Ambassador Bridge. In Detroit, the Ambassador Bridge connects with the interstate system, with the main long distance travel flows being I-75 for travel to south U.S. and I-94 for travel west to Chicago and beyond.

For travel via Sarnia-Port Huron, Highway 402 branches off of Highway 401 west of London towards Sarnia, where it connects with the Blue Water Bridge. In the U.S., I-94 connects with the Blue Water Bridge and provides freeway access south to Detroit. I-69 provides a westward connection from Port Huron, linking with I-94 near Battle Creek. For trips from Highway 401 to points west via I-94 or south via I-69, the routes using the Ambassador Bridge and the Blue Water Bridge are almost equal in length.

ROAD SYSTEM

Exhibit 4.19 illustrates the local road system and access roads in the vicinity of the Ambassador Bridge and the Detroit-Windsor Tunnel.

EXHIBIT 4.19 – LOCAL ROAD SYSTEM



Canadian Access Roads

Huron Church Road is the main access road to the Ambassador Bridge on the Canadian side; this six-lane urban arterial road links Highway 401 to the Ambassador Bridge via Highway 3/Talbot Road. The posted speed limit on Huron Church Road is 80 km/h from Highway 3/Talbot Road to Pulford Street (south of the E.C. Row Expressway), and 60 km/h from Pulford Street to College Avenue, near the bridge plaza. There are 17 signalized intersections on Huron Church Road and Highway 3/Talbot Road between Highway 401 and the Ambassador Bridge.

In consideration of the high commercial vehicle volumes, overhead signs direct commercial vehicles to use the centre lane, local traffic to use the right lane, and international cars to use the left lane. Further north, at Northwood Street (north of the E.C. Row Expressway) cars are directed to use the left lane, while commercial vehicles use the centre and right lanes.

Significant development and facilities along Huron Church Road also contribute to traffic levels on this route. Significant traffic generators along Huron Church Road include, from north to south, the University of Windsor at College Avenue, Assumption High School at Wyandotte Street, the University Mall at Tecumseh Road, and, further south on the Highway 401/Huron Church Road corridor, St. Clair College on Talbot Road.

The Detroit-Windsor Tunnel is accessed from Goyeau Street, an arterial road in the central business district. From Highway 401, the route to the tunnel follows the urban arterial roads of Dougall Avenue/Ouellette Avenue, then Wyandotte Street and Goyeau Street to the tunnel entrance in downtown Windsor. For trips arriving in Canada from the tunnel, exit from the tunnel into Windsor is onto Park Street, then either onto Goyeau Street or Ouellette Avenue. The route along Dougall Avenue/Ouellette Avenue is a four-lane urban arterial road. The Dougall Avenue exit on westbound Highway 401 is signed on the highway as a route to the Detroit-Windsor Tunnel, although the primary function of these roads are as local roads.

U.S. Access Roads

For traffic using the Ambassador Bridge, cars and commercial vehicles have many route options, given the close proximity to several Interstate freeways. Cars exit onto Porter Street, which has ramps at signalized intersections to/from I-75 and I-96 and intersects with service roads paralleling the freeways. All commercial vehicles entering the U.S. from the Ambassador Bridge follow a ramp to the truck customs inspection facility, and then exit onto West Fort Street, south of the plaza. Commercial vehicles can link with I-75 by travelling west on Fort Street then north on Clark Street, or by travelling east then north on Rosa Parks Boulevard. I-75 provides a connection south toward Ohio and north toward northern Michigan. It can also be used to access I-96, which connects to western Michigan and is the link to I-94 for travel toward Chicago. The arrangement from the bridge to the Interstate freeway systems is a confusing arrangement for drivers and hazardous due to the high level of weaving traffic. The Ambassador Bridge Gateway Project, which is currently under construction and is expected to be completed by December 2009, will address these traffic issues.

At the Detroit-Windsor Tunnel, commercial vehicles are part of the same traffic stream as cars. All traffic entering or leaving the Detroit-Windsor Tunnel must pass through the signalized intersection of the tunnel access to the south, Randolph Street to the north, and Jefferson Avenue to the east and west. Interstate 375 and M-10 (John C. Lodge Freeway) link with Jefferson Avenue in close proximity to the tunnel. The M-10 provides access to the I-96 and I-75 freeways from the tunnel.

RAIL SYSTEM

The rail network serving the Preliminary Analysis Area roughly parallels the U.S. interstate/Ontario provincial road system. Exhibit 4.20A is a map of the rail network and operators.

A Canadian National Railway (CN) line runs from London to Sarnia parallel to the Highway 402 corridor, and continues through Port Huron, following I-69 to Battle Creek, then continues toward Illinois and beyond. VIA rail and Amtrak passenger services use this line, although the one through-train was discontinued in 2004. Another CN line roughly follows the Highway 401 corridor from London to Windsor, carrying VIA passenger service. The line continues through Detroit, northwest toward Flint. Amtrak passenger services are available on this line from Detroit to Pontiac. In Canada, this line roughly parallels a Canadian Pacific Railway (CPR) line from London to Windsor. The CPR line continues through Detroit to Lansing, Chicago (via trackage rights), and beyond. A CN line connects Detroit and Port Huron on the Michigan side.

Other rail operators have connections in Detroit. A Norfolk Southern (NS) line, used by Amtrak, runs between Detroit and Chicago roughly along I-94. Another NS line runs south toward Toledo then branches east and west. An Indiana & Ohio Railway (IORY) line runs south toward Cincinnati. CSX Transportation (CSXT) lines run north toward Saginaw, and south toward Cincinnati or Columbus. A Tuscola and Saginaw Bay Railway Company (TSBY) line connects in Ann Arbor to service northwest Michigan. A CSXT line also links Sarnia and Chatham on the Canadian side, roughly along the Highway 40 corridor.

For rail freight, two underground railway crossings are located at Sarnia-Port Huron and at Windsor-Detroit. The former is owned and controlled by CN and the latter, comprised of one well-used line and one unused line, is controlled by CPR and owned by a joint venture of CPR and Borealis Infrastructure Fund. The locations of the Detroit-Windsor tunnels are also shown in Exhibit 4.20B.

During the 1990s, both crossings were expanded to accommodate larger vehicles. The CN tunnel at Sarnia accommodates the largest vehicles that operate across the North American railway system. CPR expanded one of the two existing tunnels between Detroit and Windsor to the maximum dimensions structurally possible; this is not quite as large as the CN tunnels and cannot accommodate double-stack domestic containers; however, it is capable of handling double-stack international containers, intermodal trailers on flat cars (TOFC), as well as domestic auto tri-level cars, which were the primary target market.

EXHIBIT 4.20A – RAIL SYSTEM: SOUTHEASTERN MICHIGAN/SOUTHWEST ONTARIO

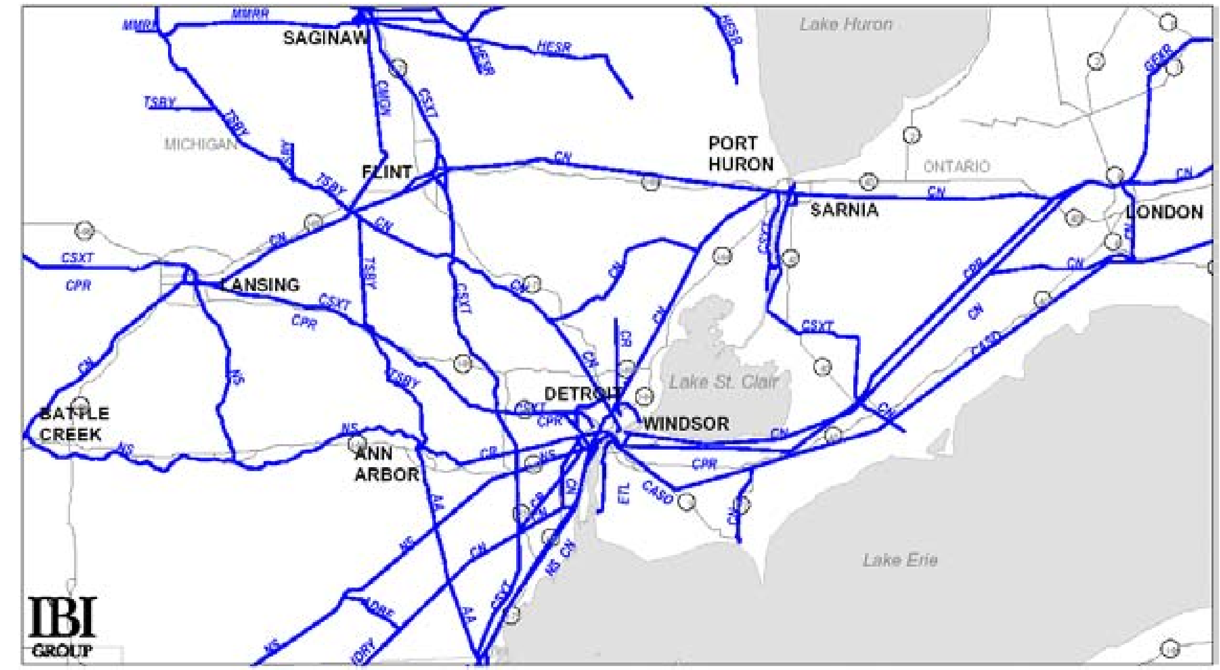
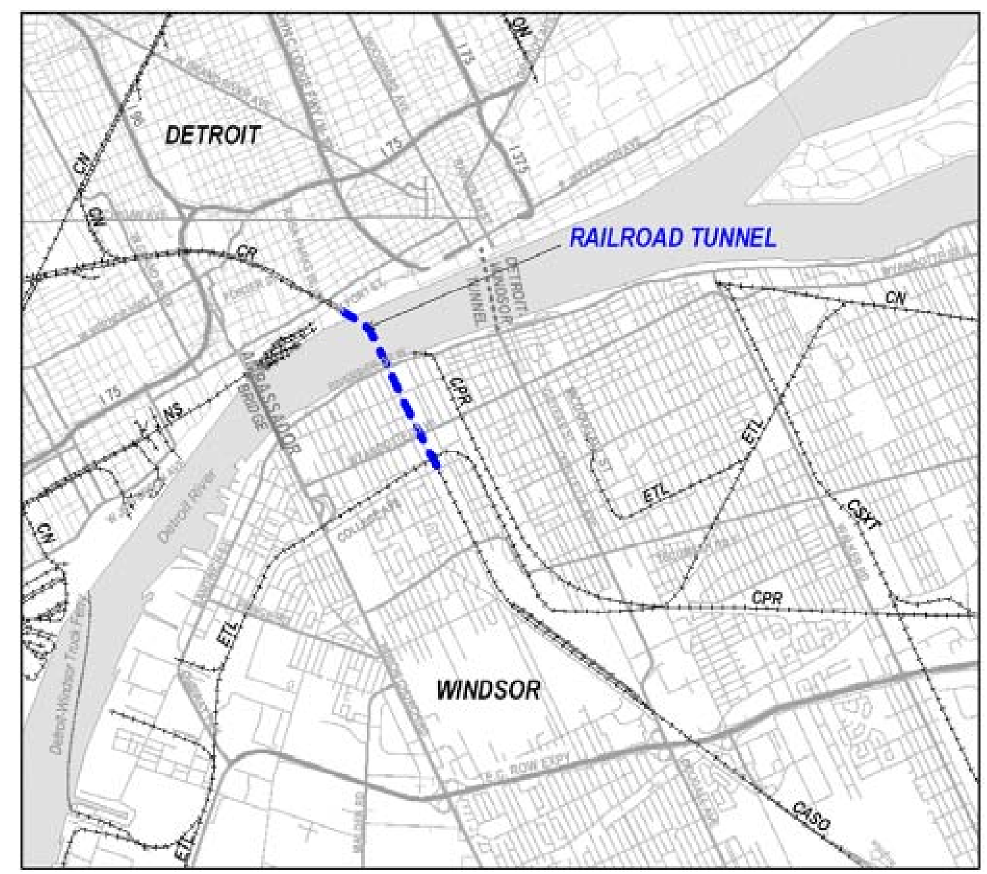


EXHIBIT 4.20B – RAIL SYSTEM: WINDSOR-DETROIT



MARINE SYSTEM

There are currently three ferry services operating in the Preliminary Analysis Area, consisting of the Walpole Island Ferry, Marine City Ferry and Detroit–Windsor Truck Ferry. The locations of these are shown in Exhibit 4.21. Each service has relatively limited vehicle capacity.

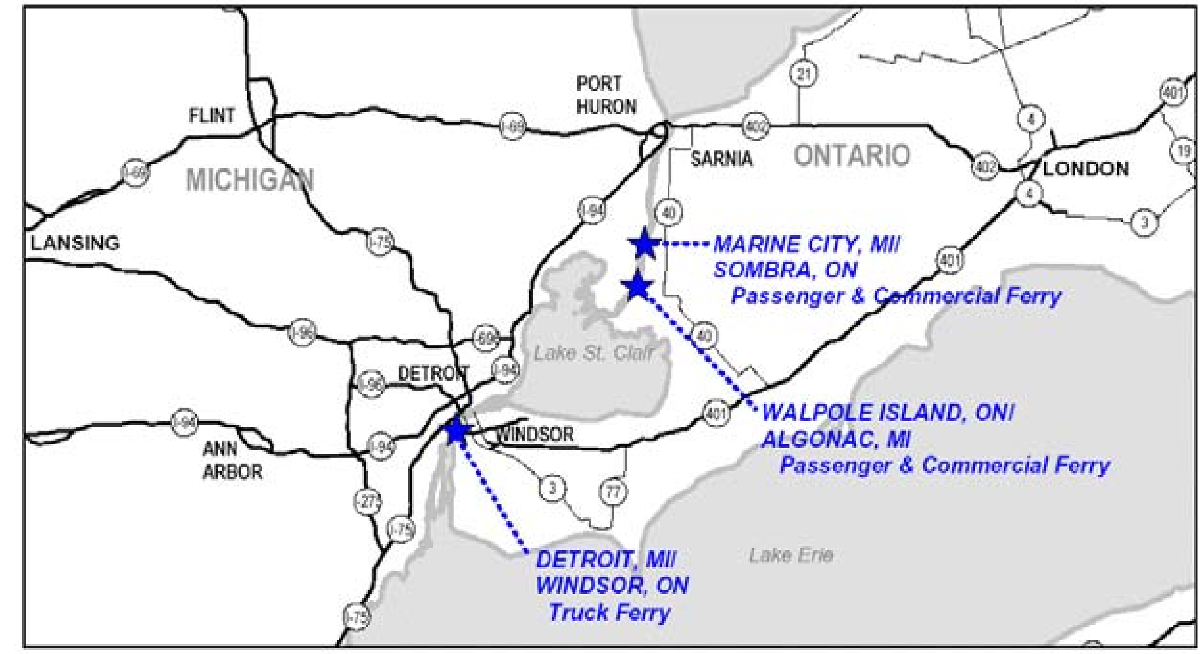
The Walpole Island Ferry provides daily service at 20-minute headways between Algonac, Michigan and Walpole Island, Ontario at the northern end of Lake St. Clair, weather permitting. Two boats are available, each capable of servicing 20 passenger cars and/or small commercial vehicles. Ferries leave Walpole Island from 6:20 a.m. to 9:45 p.m., and return from Marine City from 6:50 a.m. to 10:00 p.m. The one-way cost is approximately $4 US and travel time is six minutes.

The Marine City Ferry operates daily between Marine City, Michigan and Sombra, Ontario, weather permitting. Two boats are used when busy. The ferries can transport 12 passenger cars each, but will also take commercial vehicles. The larger of the two ferries can hold up to two tractor trailers or larger vehicles up to 80,000 pounds gross weight each. The service runs approximately every 15 minutes, seven days a week year round at a cost of $5 US per car each way and $2 for foot passengers. Ferries leave Sombra from 6:40 a.m. to 10:15 p.m., and return from Marine City from 7:00 a.m. to 10:30 p.m. Travel time is seven minutes.

The Detroit-Windsor Truck Ferry was started in 1990 for the purpose of handling commercial vehicles carrying dangerous goods (Classes 1, 3, 7 and 8), which are banned from the bridge and tunnel crossings in accordance with Michigan State law. The ferry also handles over-sized loads that cannot use the bridge or tunnel, but its use is not restricted to these two markets. The ferry operates hourly 10 hours per day and can accommodate eight trucks per crossing.

The truck ferry provides a significant distance savings to commercial vehicles carrying dangerous goods or heavy loads by allowing them to cross at Windsor-Detroit as opposed to having to travel to alternate ports that support this market. The alternative for vehicles with dangerous goods within the Preliminary Analysis Area is Port Huron-Sarnia. Heavy vehicles must cross much further away by land between Minnesota and Ontario. It is estimated that more than 50 per cent of the trips using the ferry crossing are from London (i.e., the point at which travel distances across the corridor via Port Huron-Sarnia and Windsor-Detroit are similar) inward, with a similar market range on the Michigan side.

EXHIBIT 4.21 – MARINE SYSTEM



5 TRANSPORTATION NEEDS ASSESSMENT

As discussed in Section 1.1, the Partnership jointly commissioned a *Planning/Need and Feasibility Study (P/NF)* in 2001, which identified a long-term strategy to promote the safe and efficient movement of people and goods between southwest Ontario and southeast Michigan.

Although conducted in a manner consistent with the environmental study processes in both countries, the P/NF Study was not completed within the formal environmental study framework. The findings of the P/NF Study, however, served as an important basis for governments to move forward in the development and improvement of cross-border transportation services, which included proceeding with the environmental study processes in the U.S. and Canada for major transportation improvements at the Detroit River international crossing.

A consultation component was incorporated in the P/NF Study process. Canadian and U.S. government departments, ministries and agencies, local municipalities, First Nations groups, private sector stakeholders in border transportation issues, as well as the general public were engaged in the course of the study.

Throughout the P/NF Study, the Partnership affirmed that the findings of the P/NF Study may be used to initiate environmental studies in accordance with the requirements of the *U.S. National Environmental Policy Act* (NEPA), *Canadian Environmental Assessment Act* (CEAA) and *Ontario Environmental Assessment Act* (OEAA). This step would be followed by completion of the appropriate environmental impact/assessment studies, design of the approved improvements and ultimately, construction.

The transportation problems and opportunities identified during the P/NF Study provided the basis for the Partnership to initiate the environmental study processes for the development and assessment of transportation alternatives at the Detroit River international crossing.

The findings of the P/NF Study were brought forward into the formal environmental study process for consultation. The work completed under the P/NF Study was updated to reflect changes in traffic and network demands. Specifically, changes in travel behaviour and trip patterns across the southeast Michigan/southwest Ontario border have occurred since the P/NF study was undertaken. A decline in the U.S. economy, 9-11, a SARS outbreak in Toronto, the Iraq war, a rising Canadian dollar and the opening of three casinos in Detroit and other events have all contributed to a large decline in cross-border passenger car traffic and has limited commercial vehicle growth. None of these events were reflected in the previous 2000 base year data that provided the basis for the 30-year passenger car and commercial vehicle forecasts prepared for the previous Bi-national Partnership P/NF Study.

The updated transportation problems and needs are documented in the following sections. These sections provide a summary of the key findings of the study. For further details, the reader is referred to the following supporting documents:

- *Draft Feasible Transportation Alternatives (Alternatives to the Undertaking) Report (February 2006);*
- *Transportation Planning and Need Study Report (November 2005);*
- *Travel Demand Forecasts Working Paper (September 2005);*
- *Travel Demand Model Update Working Paper (September 2005); and*
- *Regional and National Economic Impact of Increasing Delay and Delay-Related Costs at the Windsor-Detroit Crossings (August 2005).*

5.1 Transportation Problems and Needs

5.1.1 Transportation Problems

CAPACITY

The current and future deficiencies in the roadway network serving the international border crossings at Windsor-Detroit that are anticipated within the 30-year timeframe are documented in the *Travel Demand Forecasts Working Paper*.

For this study, capacity was defined as the maximum vehicle service flow rate that can be sustained by a facility and represents a severe breakdown in traffic operations. This is a very undesirable condition with long queues and delays.

Although traffic volumes up to the capacity can be accommodated, it was considered prudent to provide a level-of-service that is better than that provided when traffic volumes reach capacity. As such, capacity values within this study were defined as a range, with the upper limit corresponding to the maximum rate (as defined above) and the lower limit corresponding to the flow rate at which traffic operations start to become unstable due to the high number of vehicles using the facility.

Given the high importance of an international crossing, the long lead time to construct/expand a crossing, the large economic costs associated with unstable cross-border traffic and the range of uncertainty inherent in the forecasts (which represent the peak conditions for a typical day and not the periods of extreme traffic volume that inevitably occur from time to time), the lower limit was identified as a practical volume that should not be exceeded for an extended period of time.

This suggested that, while a crossing is able to accommodate higher traffic volumes than the lower capacity limit, those within the range defined by the lower and upper limits are not desirable and a new or expanded crossing is needed before consistently high levels of congestion and unstable operations are reached.

Crossing Capacity

The determination of the upper and lower limit capacities for the Ambassador Bridge and the Detroit-Windsor Tunnel are documented in the *Travel Demand Model Update Working Paper*. Table 5.1 presents the existing volume and capacity for each bridge/tunnel and the total for the Detroit River crossings.

The roadway crossing upper limit capacities were estimated to be 1,750 PCE/hour/lane for the Ambassador Bridge and 1,500 PCE/hour/lane for the Detroit-Windsor Tunnel. The lower limit capacities are estimated to be 1,450 PCE/hour/lane for the Ambassador Bridge and 1,250 PCE/hour/lane for the Detroit-Windsor Tunnel. Passenger Car Equivalents (PCEs) are a measure of total combined passenger car and commercial vehicle volumes, where commercial vehicles are expressed as a multiple of passenger cars and then added to passenger cars.

Based on fall 2004 peak hour traffic volumes, the volume-to-capacity (v/c) ratio for the Ambassador Bridge was estimated to be 0.67. The Detroit-Windsor Tunnel was found to have a similar v/c ratio of 0.65.

TABLE 5.1 - ASSESSMENT OF EXISTING ROADBED CAPACITY

Measure	Crossing		
	Ambassador Bridge	Detroit-Windsor Tunnel	Detroit River Crossings
Peak Hour Capacity (PCE/h/lane)	1,750	1,500	N/a
Number of Lanes (one-way)	2	1	3
One-Way Capacity (PCE/h)	3,500	1,500	5,000
Peak Hour Demand[1]			
Passenger Cars	1,176	931	2,106
Commercial Vehicles	390	14	404
Peak Hour Total PCE Demand[2]	2,346	973	3,319
Peak Hour & Direction Volume-to-Capacity Ratio	67%	65%	66%

[1] Represents 4 p.m. to 5 p.m. of average Thursday/Friday in September, 2004.
[2] Based on PCE factor of 3.0 for commercial vehicles.

The projected Base Forecast future year peak hour, peak direction traffic volumes and v/c ratios are presented in Table 5.2. Based on these results, the year in which crossing capacity is reached is illustrated in Exhibits 5.1A and 5.1B.

The high and low forecast bounds that bracket the Base Forecast line represent the future range of uncertainty in the forecasts. The results show that the Ambassador Bridge has adequate capacity to accommodate growth in cross-border traffic until approximately the year 2020. The lower capacity limit indicates that bridge traffic operations will become unstable by approximately 2011. The Detroit-Windsor Tunnel is not expected to reach capacity until approximately 2035, with unstable traffic operations projected by approximately 2015.

Table 5.5 provides an overall summary of the year that capacity is reached at the two crossings, as well as for the access/egress roads and plazas on the Canadian and U.S. side of the border. These elements are discussed in the following sections.

Canadian Access/Egress Roads

The traffic analysis for the Ambassador Bridge access/egress roads on the Canadian side of the border was based on traffic modelling of the seventeen intersections between Highway 401 and the Ambassador Bridge Plaza. The 2004 base year conditions and future year analyses were based on 2004 intersection counts and traffic signal timings for Huron Church Road and Highway 3/Talbot Road, as obtained from the City of Windsor, as well as from traffic model estimates. The analysis focused strictly on the Canadian side of the border, as the Ambassador Bridge Gateway Project (refer to Section 1.7) addressed future access/egress road needs on the U.S. side.

In 2004, adequate road capacity was provided between the Ambassador Bridge Canadian Plaza and Highway 401, with acceptable traffic operations in the afternoon peak hour. This was also verified by observations of current traffic conditions, with queuing of commercial vehicles on Huron Church Road no longer a problem since additional U.S. border processing capacity was provided in June 2004.

By 2015, traffic volumes are projected to be at or above the road capacity for many sections of this corridor, with unacceptable traffic operations in the afternoon peak hour. By 2025, the majority of sections are projected to be over capacity and exhibiting unacceptable traffic operations during both the morning and afternoon peak hours.

Access roads leading to the Detroit-Windsor Tunnel were near capacity during peak hour traffic conditions on the Canadian side of the border based on 2004 traffic counts, with traffic operations at intersections impacted by the high volumes of local traffic travelling through downtown Windsor.

Taking the access/egress road system as a whole, it is projected that capacity will be reached by approximately 2010, although localized intersection improvements at critical locations could potentially extend the timeframe before capacity is reached by several years.

TABLE 5.2 – EXISTING AND BASE FORECAST DETROIT RIVER CROSSINGS VOLUMES AND CAPACITY UTILIZATION

Crossing	Year	PCE Volume (1-way)		Volume / Capacity Ratio	
		AM Peak Hour	AM Peak Hour	AM Peak Hour	PM Peak Hour
Ambassador Bridge	2004	1,930	2,350	55%	67%
	2015	2,510	3,180	72%	91%
	2025	2,900	3,880	83%	111%
	2035	3,300	4,520	94%	129%
Detroit-Windsor Tunnel	2004	900	970	60%	65%
	2015	1,070	1,250	71%	84%
	2025	1,190	1,370	79%	91%
	2035	1,310	1,480	87%	99%
Detroit River Crossings	2004	2,830	3,320	57%	66%
	2015	3,580	4,440	72%	89%
	2025	4,090	5,250	82%	105%
	2035	4,610	6,000	92%	120%

Note: Morning peak direction is Canada to US, afternoon peak direction is US to Canada.

EXHIBIT 5.1A – BASE FORECAST YEAR – AMBASSADOR BRIDGE CAPACITY REACHED

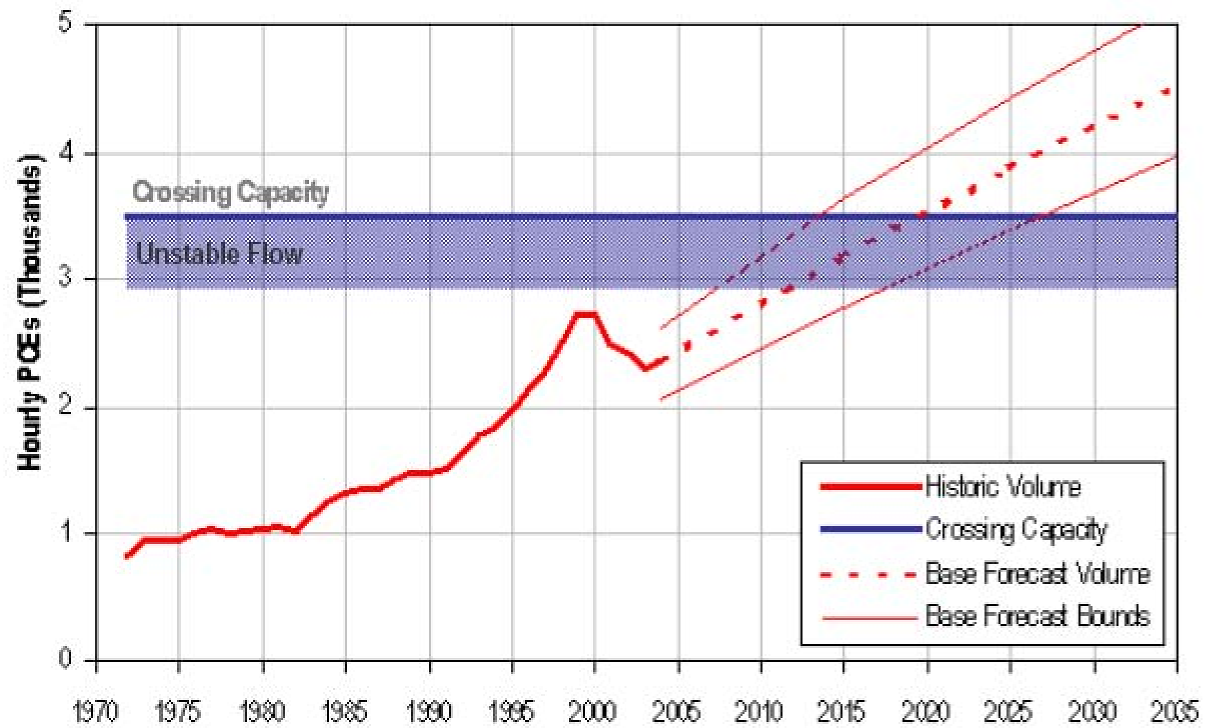
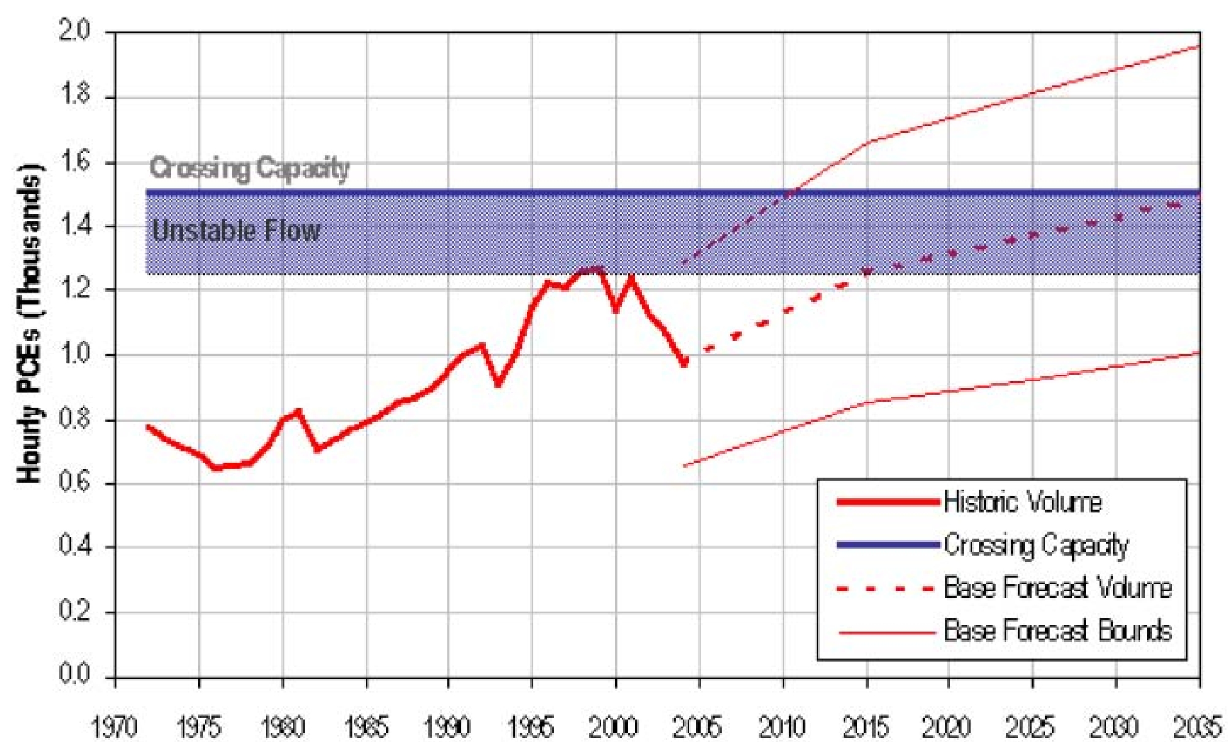


EXHIBIT 5.1B – BASE FORECAST YEAR – DETROIT-WINDSOR TUNNEL CAPACITY REACHED



U.S. Access/Egress Roads

The Ambassador Bridge access/egress road conditions on the U.S. side of the border were addressed by the *Ambassador Bridge Gateway Project*. The project is currently under construction, and is expected to be completed by December 2009.

The project will provide acceptable freeway operations through 2035 according to the Michigan Department of Transportation (MDOT), as documented in the *1999 Final Traffic Report Supplement* and the *2003 Ambassador Bridge Gateway Project Reassessment Final Traffic Technical Report*. Therefore, no further analysis was conducted regarding access/egress conditions on the U.S. side of the Ambassador Bridge.

The Detroit-Windsor Tunnel access/egress road analysis on the U.S. side of the border modelled five intersections adjacent to and connecting the Detroit-Windsor Tunnel with Jefferson Avenue in downtown Detroit.

In the base year (2004), unstable road capacity was evident at the entrance of the Detroit-Windsor Tunnel, with congested traffic operations in the afternoon peak hour, as verified by field observations of current traffic conditions. Detroit Police personnel manage traffic operations at the Detroit-Windsor Tunnel's entrance during recurring periods of high traffic congestion, which typically occur on Thursday and Friday afternoons. Even with managed traffic operations, traffic will frequently back up onto the Lodge freeway under Cobo Hall, and onto I-375.

The capacity and operational issues of the access road into the Detroit-Windsor Tunnel are significantly influenced by the geometric configuration of the Detroit-Windsor Tunnel entrance. Through traffic, moving from southbound Randolph Street to the Detroit-Windsor Tunnel is limited to vehicles enrolled in the NEXUS program. This traffic is provided an exclusive lane through the plaza entrance and exclusive use of a tollbooth.

The roadway immediately downstream from this movement narrows to the equivalent of 1½ lanes due to the exclusive NEXUS lane. This causes frequent backups onto Jefferson Avenue. Queues and delays downstream are not affected by the signal timing at Jefferson Avenue and the Detroit-Windsor Tunnel entrance. Limited sight distance and maneuvering space at the tollbooths exacerbate these delays.

The existing tollbooths on the U.S. side of the Detroit-Windsor Tunnel further limit capacity. During peak-hour traffic conditions, non-NEXUS vehicles are limited to four tollbooths that are unable to process the traffic at a rate that prevents significant queuing. The storage for traffic at the Detroit-Windsor Tunnel entrance is very limited and quickly causes the backup to spill over onto Jefferson Avenue. The U.S. Customs plaza for inbound traffic, the historic Mariner's Church, the Duty Free shop, and the roadway configuration that eventually narrows to one lane as it enters the Detroit-Windsor Tunnel limit possible expansion of the number of tollbooths.

Border Processing

Border processing includes customs and immigration inspection on entry to Canada and the U.S. and is performed by Canada Border Services Agency (CBSA) and U.S. Department of Homeland Security (DHS), Customs and Border Protection (CBP), respectively. Upon entry to the country, vehicles are required to stop at primary inspection where an officer performs checks on the vehicle, driver and passengers. Individuals requiring further questioning or carrying goods requiring further inspection are directed to secondary inspection.

Discussions were held with CBSA and DHS to determine appropriate border processing assumptions for this study. The processing times that were confirmed at that time do not reflect new initiatives/technologies that may result in reductions or increases in these processing times.

The capacity of primary inspection is a function of the number of primary inspection lanes and the processing time per vehicle. There is a high degree of variability in processing times depending on the circumstances of the driver and/or passenger(s) and the nature of the contents of the goods within the vehicle.

The existing number of primary inspection lanes at the Detroit River crossings is shown in **Table 5.3** for travel to Canada and to the U.S.

TABLE 5.3 – NUMBER OF PRIMARY INSPECTION LANES

Facility	To Canada		To US	
	Autos	Trucks	Autos	Trucks
Ambassador Bridge	10 / 16 [1]	10 / 13 / 19 [2]	12	13 [3]
Detroit-Windsor Tunnel	9	3	9	3

[1] The regular number of auto lanes is ten. When required in special circumstances, six truck lanes can be converted to auto lanes for a total of sixteen lanes.
[2] Three new lanes are to be opened in July, 2005. Six additional lanes are to be added in the next two to three years.
[3] 13 lanes are open for primary inspection. A 14th lane is used for trucks exiting from secondary inspection.

Table 5.4 presents the estimated processing time per passenger car and per commercial vehicle at primary inspection.

NEXUS is a joint U.S./Canada program for passenger car travel designed to simplify border crossing for frequent low-risk travellers. At the time of undertaking this analysis of crossing capacity, the average processing time for a passenger car was 15 seconds and approximately 25 per cent of passenger cars travelling during peak periods were enrolled in the NEXUS program.

Regular or non-NEXUS travellers undergo questioning by border inspection officers. As a result, the average processing time per vehicle was estimated at 35 seconds for travel to Canada and 40 seconds to the U.S.

CBSA and CBP consider the existing NEXUS participation rates and overall processing rates to be appropriate in future years, given that NEXUS enrolment has reached a mature state and with dedicated lanes and/or other incentives required to increase participation over current levels.

Commercial vehicle processing times at primary inspection depend on the line release program. Most commercial operators use the Pre-Arrival Review System (PARS), which allows pre-approved shippers/carriers to transmit documents to customs in advance of arrival at the border to expedite border processing.

The U.S. Trade Act (2005) requires all commercial vehicles entering the U.S. to transmit documentation electronically at least one hour in advance of crossing. For travel to Canada, non-PARS commercial vehicles will also be phased out in the near term with the introduction of the Advanced Commercial Information program. The elimination of non-PARS traffic will reduce the number of vehicles referred to secondary inspection given that all documentation will be electronically transmitted resulting in a higher proportion of the inspections occurring strictly at primary inspection. The processing time for PARS commercial vehicles entering Canada was 85 seconds on average and two to three minutes for those entering the U.S.

The Fast and Secure Trade (FAST) program is the commercial vehicle equivalent of NEXUS and provides expedited processing for low-risk pre-approved carriers. The processing time for FAST commercial vehicles entering Canada was estimated to be approximately 30 seconds. Expedited processing is provided to FAST commercial vehicles travelling to the U.S. and also those enrolled in the Pre-Arrival Processing System (PAPS) program, which uses barcode technology for the release of commercial shipments. The average processing time for FAST/PAPS eligible commercial vehicles entering the U.S. was 80 seconds.

Given the projected demand and the processing times per vehicle, **Table 5.5** presents the existing (2004) and projected required future number of passenger car and commercial vehicle primary inspection lanes for the Detroit River crossings.

For passenger car traffic, the existing/planned number of primary inspection lanes is considered sufficient to accommodate future cross-border travel demands in the near term, with capacity increases needed by 2015. Projected commercial vehicle growth will result in the need for additional capacity at primary inspection by 2035 for travel to Canada and before 2015 for travel to the U.S.

Given the above, the improvements required for primary inspection at the Detroit River crossings to meet the projected 2035 demand are as follows, based on existing productivity levels:

- Seven additional auto and one additional commercial vehicle lanes for vehicles entering Canada; and
- Six additional auto and ten additional commercial vehicle lanes for vehicles entering the U.S.

These primary inspection needs would have to be adjusted for new initiatives/requirements that may be implemented in the future.

With regard to secondary inspection, given the direction to pre-clearance and automated commercial inspection, the proportion of commercial vehicles referred to secondary inspection is expected to decrease in the future, thereby reducing secondary inspection capacity needs. As such, existing capacity at secondary inspection is considered adequate to accommodate the long-term capacity needs. However, the existing off-site Canadian secondary inspection location for commercial vehicles raises a number of operational and security issues, and is not an acceptable long-term solution.

TABLE 5.4 – PRIMARY INSPECTION PROCESSING TIMES

A. Autos Passenger Cars

Factor	Type / Country	Year	
		2004	Future
Distribution – Peak Period (Daily)	NEXUS	25% (12%)	25% (12%)
	Regular	75% (88%)	75% (88%)
Processing Times (sec/veh)	NEXUS	15	15
	Regular – To Canada	35	35
	Regular – To US	40	40
Average Time – Peak Period	To Canada	30.0	30.0
	To US	33.8	33.8

B. Commercial Vehicles

Factor	Line Release / Country	Year	
		2004	Future
Distribution by Line Release Program	Non-PARS – to Canada	22%	0%
	Non-PARS – to US	22%	0%
	PARS/ACI – to Canada	66%	85%
	PARS – to US	66%	75%
	FAST – to Canada	12%	15%
	FAST/PAPS – to US	12%	25%
Processing Times (sec/veh)	Non-PARS – to Canada	120	n/a
	Non-PARS – to US	120 – 180	n/a
	PARS – to Canada	85	85
	PARS – to US	120 – 180	120 – 180
	FAST – to Canada	30	30
	FAST/PAPS – to US	80	80
Weighted Average Processing Time (sec/veh)	To Canada	78.4	76.8
	To US	141.6	132.5

Source: Discussions with CBP and CBSA

Toll Collection

The capacity of the toll collection component is a function of the number of toll collection lanes/booths and the time that is required to process each vehicle. Manual collection (e.g., cash, commuter cards) and electronic toll collection utilizing transponders is provided in both directions at the Detroit River crossings. At present, toll collection facilities are able to accommodate peak hour demands and are not a bottleneck in the border crossing system.

Toll collection is the responsibility of the bridge/tunnel operator and it is in the operator's best interest to provide adequate capacity. Given the efficiencies of electronic toll collection and the relatively low cost to increase capacity, it is assumed that toll collection will not be a future constraint to border crossing system capacity and that the appropriate bridge/tunnel operators will make the necessary improvements to ensure that the revenue stream generated by cross-border traffic is not compromised by insufficient toll collection capacity.

Table 5.5 below, summarizes the future capacity deficiencies for the various elements of the overall border crossing system, based on the information provided in the previous sections.

TABLE 5.5 – SUMMARY OF FUTURE DETROIT RIVER CROSSINGS CAPACITY DEFICIENCIES

Crossing	Time Capacity Reached				
	U.S. Road Access	U.S. Border Processing	Bridge/ Tunnel Roadbed[1]	Canadian Border Processing	Canadian Road Access
Ambassador Bridge	Beyond 30 years	5 to 10 years	10 to 15 years	5 to 10 years	5 to 10 years
Detroit-Windsor Tunnel	0 to 5 years	5 to 10 years	30 years[1]	5 to 10 years	5 to 10 years

[1] If no improvements are made at the Detroit River, there would be some diversion from the Ambassador Bridge to the Detroit-Windsor Tunnel. Diversion of car traffic may move the timeframe that capacity is reached to between 25 and 30 years. Physical restrictions of the Tunnel limit the diversion of most types of trucks.

The Ambassador Bridge and Detroit-Windsor Tunnel represent two of the busiest border crossings in North America. In 2006, they carried more than 11 million passenger vehicles and more than 3.7 million commercial vehicles annually and handled 28 per cent of the total surface trade between Canada and the U.S.. The delays and resultant queuing at these crossings will have several negative effects associated with poor transportation network operations, including the following:

- Increased highway safety concerns, including higher potential for collisions at intersections, entrances and queue ends;
- Lost economic opportunity costs;
- Increased air pollution;
- Impacts to access and adjacent land uses in the vicinity of the border crossings;
- Infiltration of cross-border traffic onto local roads;
- Impacts to incident/emergency response;

- Increased vehicle operating costs and fuel consumption; and
- Increased driver frustration.

Over time, the effects of increased congestion and delays will continue to worsen.

Given the importance of this trade corridor and the substantial number of people dependent upon safe, reliable access across the Detroit River on a daily basis, the capacity deficiencies discussed in this section are a serious problem that needs to be corrected.

Recent Trends

As noted previously, the traffic projections used for the DRIC EA are documented in the Travel Demand Forecasts Working Paper, September 2005, which is available on the Partnership's website. The commercial vehicle forecasts in this report were based on Government of Canada trade projections by major commodity group, thereby capturing the different cross-border markets and associated travel characteristics to assess future commercial vehicle demand.

At the present time there is significant economic uncertainty. However, the forecasts were based on reasonable assumptions using the most current information available at the time, with extensive review and scrutiny by modeling experts from the Partnership agencies. This forecasting approach addressed future uncertainty through extensive sensitivity analyses, which capture a realistic range in the forecasts. The low growth scenario was intended to reflect much lower levels of demand which could be brought about by a variety of circumstances including, low economic growth, currency exchange rates, the Western Hemisphere Travel Initiative, City of Windsor or provincial non-smoking initiatives, fuel prices and other such factors. Similarly, high growth scenarios were tested to determine the upside potential in cross-border demand based on more optimistic, yet reasonable growth assumptions.

Since the traffic forecasts were completed, there have been declines in cross border passenger car traffic (see Exhibit 5.1.C). However, truck traffic remained fairly stable between 2001 and 2007 (see Exhibit 5.1.D) and in fact 2006 represented the peak in commercial vehicle traffic at the Ambassador Bridge. The most recent economic downturn will result in a truck volume decline in 2008. The recent declines in passenger car trips across the border coupled with the current economic downturn would indicate that the volumes are tending towards the lower range of the forecasts (see Exhibit 5.1.E). It is prudent to assume that even considering some industry restructuring that Canadian / U.S. trade will ultimately recover and grow. Assuming only a very modest economic recovery over the long-term, the existing crossing facilities will reach their practical capacity within the planning horizon.

EXHIBIT 5.1.C. HISTORICAL BORDER CROSSING PASSENGER VEHICLE VOLUMES (SOURCE: BTOA)

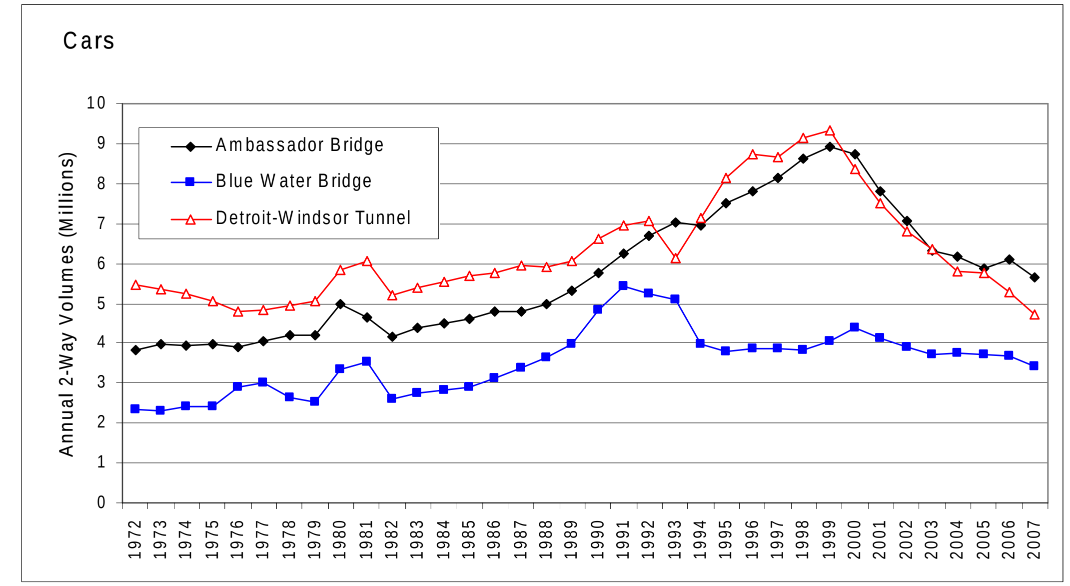


EXHIBIT 5.1.D. HISTORICAL BORDER CROSSING TRUCK VOLUMES (SOURCE: BTOA)

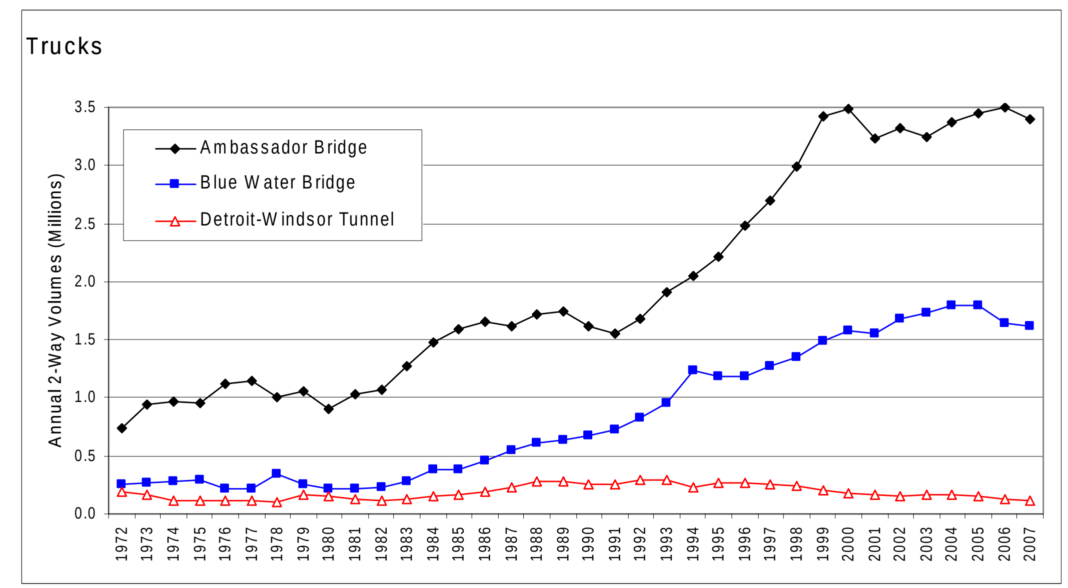
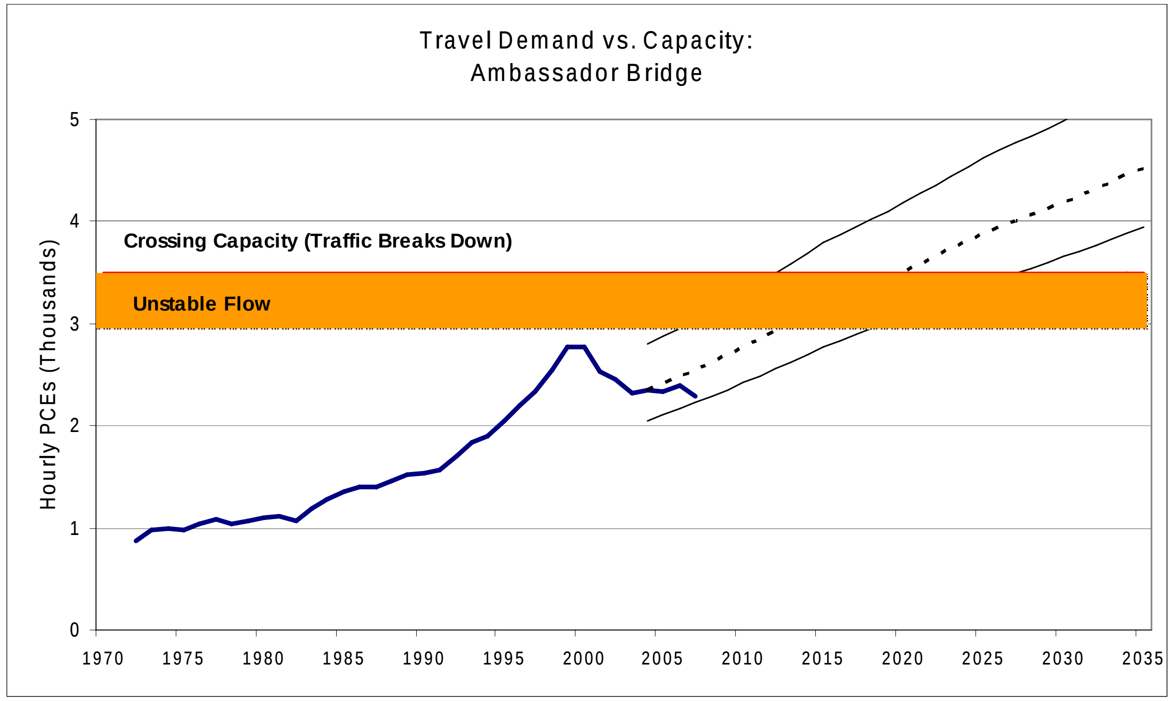


EXHIBIT 5.1.E. TRAVEL DEMAND VS CAPACITY: AMBASSADOR BRIDGE CROSSINGS (REFERENCED FROM DETROIT RIVER INTERNATIONAL CROSSING STUDY, TRAVEL DEMAND FORECASTS PREPARED BY IBI GROUP DATED SEPTEMBER 2005)



SYSTEM CONNECTIVITY

In general, MTO strives to have an interconnected network of highways so that people and goods can move through the province on a continuous and efficient inter-regional transportation system. This is an appropriate way to help minimize long-distance traffic movements (cars and trucks) on local municipal road networks, and thereby reduce traffic-related impacts on local communities, and maximize economic and personal productivity.

As well as being connected throughout the province, it is also important that the provincial transportation network connect directly with the United States. Again, direct connections can help maximize productivity while minimizing negative impacts associated with congested transportation corridors.

The provincial highway network connecting Highway 401 with the Windsor-Detroit crossings is not continuous. In fact, traffic on Highway 401 must travel along Highway 3 and Huron Church Road a distance of approximately 11 km before reaching the Ambassador Bridge. A total of 17 signalized intersections are situated along this section of road, as well as numerous commercial and residential entrances.

At the time of this analysis, travel time along this section of roadway was estimated to be 17 minutes even under relatively non-congested traffic conditions. This represents a delay of approximately 10 minutes compared to a freeway network that would directly connect Highway 401 to the Ambassador Bridge. The increased delay at times increases the traffic congestion and results in queuing, which in turn results in increased noise, air pollution and travel costs for both cars and trucks, and inhibits economic productivity in Ontario and other parts of Canada.

The lack of system connectivity from Highway 401 to the U.S. interstate network system is a serious network deficiency.

BORDER PROCESSING

Addressing issues related to border processing facilities, resources and procedures is not within direct control of the transportation agencies sponsoring this study. This responsibility lies primarily with agencies such as Canada Border Services Agency (CBSA), U.S. Department of Homeland Security (DHS) and U.S. General Services Agency (GSA). However, it is recognized that delays in border processing can result in congestion and delays at the Ambassador Bridge border crossing. Similarly, delays in border processing and lack of capacity at the connections to the plazas at the Detroit-Windsor Tunnel result in congestion and delays at the Detroit-Windsor Tunnel.

During the P/NF study and throughout the Detroit River International Crossing study, border processing agencies have been working to identify issues and concerns related to border processing at the existing crossings, as well as to identify the proposed increases to staffing, improvements to border processing facilities to increase capacity, and programs needed to facilitate border processing procedures.

As a result of the terrorist attacks on the U.S. on September 11, 2001, and of ongoing national security concerns, heightened border security is a new reality facing all border crossings. Security priorities affect border crossing operations. Periods of rigorous inspection of all passengers and goods using border crossings effectively reduce border crossing capacity, and can lead to congestion on the road network in the vicinity of the border crossings. Transportation agencies must develop solutions to accommodate the capacity requirements of international traffic, while ensuring security concerns are also addressed.

The border processing agencies and border crossing owners and operators have moved forward on implementing improvements to the border crossings, to increase capacity and reduce congestion, while maintaining their objectives related to having a safe and secure border. Initiatives such as the Ambassador Bridge Gateway Project and the proposed improvements to the Detroit-Windsor Tunnel plaza are intended to increase capacity of border processing facilities at these crossings.

Similarly, programs such as NEXUS and FAST are reducing processing times for vehicles and cargo crossing the border, thereby increasing capacity and potentially lessening the need for additional staffing at the crossings.

In addition, the U.S. government enacted the *U.S. Trade Act (2005)* which requires all U.S.-bound carriers to provide pre-notification of their shipment to U.S. Customs one hour in advance of their truck arriving at the border (30 minutes advance notice is required for FAST trucks).

The ability of these improvements and programs to meet future travel demand is not certain. Staffing at the border crossings will continue to be of critical importance to the border capacity issue. In addition, at the Ambassador Bridge, expansion of the existing Canadian bridge plaza to accommodate additional primary and on-site secondary inspection is not feasible given the urban constraints surrounding the existing plaza.

The increasing participation rate in the various border crossing programs will have a direct effect on the success of these programs to increase capacity of border processing. Transportation agencies will need to continue to coordinate border processing capacity and security issues with border processing agencies.

NETWORK OPTIONS (REDUNDANCY)

As discussed earlier in this report the international crossings at Windsor-Detroit are vital to the local, provincial and national economies. Although there are two crossings (the bridge and tunnel), the vast majority of trucks use the bridge. This is due to the fact that the tunnel is only one lane per direction with a height restriction that limits the use of many trucks. As well, the dense urban fabric of downtown Windsor and Detroit effectively limits roadway access and the size of the customs plaza.

Therefore, the majority of trade crossing at Windsor-Detroit is dependent on one facility, the Ambassador Bridge. Any prolonged capacity reduction or shut down at the Ambassador Bridge and/or its customs plazas would have serious implications on the national and local economies in both Canada and the United States.

5.1.2 Transportation Needs

In order to relieve the above-noted problems and meet the purpose as defined in Chapter 1 of this document, the Detroit River International Crossing study has strived to address the following regional transportation and mobility needs:

- Provide new border crossing capacity to meet increased long-term travel demand;
- Improve system connectivity to enhance the continuous flow of people and goods;
- Improve operations and processing capabilities at the border; and
- Provide reasonable and secure crossing options (i.e., network redundancy).

A range of transportation alternatives that could potentially respond to these needs are discussed in the next section of this report.

5.2 Alternatives to the Undertaking

This section describes the transportation planning alternatives (Alternatives to the Undertaking) considered, and the assessment of those alternatives, to address the need for a new international crossing of the Detroit River. For further detail, the reader is referred to the *Draft Feasible Transportation Alternatives (Alternatives to the Undertaking) Report, February 2006*.

Transportation planning alternatives represent reasonable means of addressing the stated transportation problems, as well as meeting the purpose of the undertaking.

5.2.1 Alternatives Considered

The Canada-U.S.-Ontario-Michigan Border Transportation Partnership (the Partnership) prepared a *Planning/Need and Feasibility (P/NF) Report, November 2005* that identified several transportation planning alternatives, which have been revisited in the Detroit River International Crossing study.

The alternatives considered included the following, and are discussed in greater detail in the following paragraphs:

- Do Nothing;
- Improvements to border processing;
- Transportation demand management;
- Transportation systems management;
- New and/or improved rail alternatives including a new and/or expanded international rail crossing;
- New and/or improved transit services;
- New and/or improved marine services;
- New and/or improved road alternatives with a new or expanded international road crossing; and
- Combinations of the above.

The assessment of transportation planning alternatives provided an opportunity to examine fundamentally different ways of addressing transportation problems. In recognition of these fundamental differences among the planning alternatives, it was considered appropriate to assess the effectiveness of each type of alternative in addressing the problems and taking advantage of opportunities at a functional level.

THE "DO-NOTHING" ALTERNATIVE

This alternative was defined as taking no significant action to expand infrastructure, manage demand or improve operations. It included transportation improvements already contained in the existing plans and programs for geographical areas encompassed by the Southeast Michigan Council of Governments (SEMCOG) and the Windsor-Essex area. It did not include improvements to existing border processing capacity.

IMPROVEMENTS TO BORDER PROCESSING

Border processing is a key component in the transportation network in that it can restrict the capacity of the transportation network. Alternatives that improve border processing rates to a level equal to or greater than the flow rate of traffic across the border will to some degree address the transportation problems on the network.

TRANSPORTATION DEMAND MANAGEMENT

Transportation Demand Management (TDM) and Transportation Systems Management (TSM) focus on the optimal use of existing and future infrastructure. These alternatives include measures such as Intelligent Transportation Systems (ITS) technologies as well as transportation and land use policies with incentives to reduce, shift or divert transportation demand, thereby deferring the need for expansion of the transportation network.

NEW AND / OR IMPROVED RAIL ALTERNATIVES WITH NEW OR EXPANDED INTERNATIONAL CROSSING

Rail currently plays a role in the movement of international and inter-regional goods in the area. Improvements to the rail network and/or expansion of the existing rail crossing may address transportation problems by diverting sufficient truck traffic from the road network to impact the need or timing of roadway-based improvements.

NEW AND / OR IMPROVED TRANSIT AND MARINE SERVICES

Capacity and/or service improvements/expansions to transit and marine services may reduce, shift or divert road-based passenger and freight travel demand.

NEW AND / OR IMPROVED ROAD ALTERNATIVES WITH NEW OR EXPANDED INTERNATIONAL CROSSING

Provincial roads are generally freeways and highways designed to accommodate high volumes of international and inter-regional long distance traffic. Connections between Highway 401 in the Windsor-Essex County area to the interstate freeway system in the Detroit-Wayne County area are required with this alternative to maintain continuity of the freeway network. The highway connections would be designed to appropriate freeway standards.

The Detroit River crossing could be either a new crossing (bridge or tunnel) or an expanded existing crossing. For the purposes of this study, a second span at the Ambassador Bridge crossing was considered to be an expansion of the existing crossing. Converting a rail tunnel to accommodate vehicular traffic was considered to provide a new crossing for road-based traffic.

Operational or structural changes of the existing crossings, such as modifications to plaza layouts or lane configurations were considered as expansion to existing crossings.

COMBINATIONS OF THE ABOVE

This involves the consolidation of the above alternatives to form a transportation network improvement strategy to expand the transportation network and reduce, shift or divert various aspects of travel demand.

The above-noted alternatives were assessed during the P/NF Study. As noted at the beginning of this chapter, the P/NF Study was conducted in a manner consistent with the environmental study processes in both countries, but was not completed within the formal environmental study framework. For the Detroit River International Crossing study, the work completed under the P/NF Study was updated to reflect changes in traffic and network demands.

The transportation planning alternatives were assessed and evaluated using broad factors to determine which alternatives were practical and feasible from a transportation, environmental and border processing perspective.

Evaluation factors were established to achieve the objectives of the Detroit River International Crossing study and were consistent with environmental approval processes in both Canada and the U.S. The factors developed for evaluating the transportation alternatives were as follows:

- Transportation Network Improvement;
- Transportation Opportunities;
- Governmental Land Use, Transportation Planning and Tourism Objectives;
- Border Processing;
- Environmental Feasibility; and,
- Technical Feasibility.

The rationale and method of assessment used in the evaluation are listed in **Table 5.6**.

TABLE 5.6 – EVALUATION FACTORS

Factor	Rationale	Method of Assessment
Transportation Network Improvement	Alternative would be considered feasible only if it enhances the performance of the transportation system with respect to the quality of travel as defined by levels of service and volume/capacity at the crossings of the Detroit River.	Assessment of ability of the alternative to address congestion and provide for continuous ongoing river capacity on the transportation network by improving travel time and reliability for international passenger and freight movement.
Transportation Opportunities	Improvements to transportation efficiency may be gained by improving the utility of inefficient or underutilized transportation corridors as well as making use of planned network improvements.	Assessment of the ability of the alternative to optimize use of existing transportation corridors or planned network improvements.
Governmental Land Use, Transportation Planning and Tourism Objectives	Recognizing the importance and impacts of accommodating the free flow of international passengers and goods, consideration must be given to the degree to which alternatives support local, regional, provincial, state and national planning and tourism objectives.	Assessment of the degree to which the alternative is consistent with approved land use, transportation planning and tourism objectives.
Border Processing	Alternatives would be considered feasible only if the long-term needs of the U.S. and Canadian border processing agencies can be met.	Assessment of the ability of the alternative to meet long-term needs of border processing agencies.
Environmental Feasibility	Consideration of potential impacts to environmental constraints (including natural, social and cultural features) is required under the environmental approval processes in both Canada and the U.S.	Assessment as to whether environmental constraints in the area (including natural, social and cultural features) preclude the alternative.
Technical Feasibility	Alternatives requiring new or expanded facilities would be considered feasible only if technical requirements related to alignment (both horizontal and vertical) and cross-section can be achieved at a reasonable cost.	Assessment of the ability of alternative requiring new or expanded facilities to achieve minimum technical requirements at a reasonable construction/ implementation cost.

The following paragraphs provide a summary of the study team's evaluation of each of the transportation planning objectives based on the broad level evaluation factors in **Table 5.6**. **Exhibit 5.4**, which follows the evaluation summary for each alternative, provides a graphical overview of the evaluation.

DO NOTHING

One objective of the Detroit River International Crossing study was to identify feasible alternatives to address the transportation problems associated with the international road network. Traffic forecasts show clearly that delays and queuing experienced in the past years at the Ambassador Bridge and the Detroit-Windsor Tunnel will return and be significant in the future. Doing nothing will not reduce the likelihood of disruption to the transportation network on this strategic trade corridor, nor will it address the lack of sufficient river crossing capacity to meet existing and future travel demand in the Windsor-Detroit area.

Doing nothing will result in capacity deficiencies and increased travel delays. Extended delays at border crossings and queuing on approach roadways will negatively impact the local communities. The effects of congested border crossings in Windsor-Detroit will extend beyond the border communities to other regions in both countries.

Based on the findings of the *Regional and National Economic Impact of Increasing Delay and Delay-Related Costs at the Detroit River Crossings Report, August 2005*, by 2025, mounting congestion and delay will cost the United States more that $1.4 billion (US) and Canada more than $206 million (CAN) a year in foregone production and output, unless steps are taken to expand infrastructure capacity at the principal border crossings between Michigan and Ontario. Exponentially rising congestion over the subsequent ten years (2025 to 2035) would lead to further production losses of $9.3 billion (US) per year to the U.S. and $ 1.5 billion (CAN) per year by 2035.

Lost production means fewer jobs. Failure to address the congestion problem, and the resulting production losses, means 10,000 fewer jobs in the U.S. and 3,000 fewer jobs in Canada by 2025, rising to more than 94,000 fewer jobs by 2035 in both countries. Job losses on this scale imply sharp reductions in personal incomes and living standards, and lost tax revenues for the provision of public services, particularly in the local jurisdictions of Michigan and Ontario.

The "do-nothing" alternative was not carried forward as a possible solution. However, it was carried forward as a benchmark from which to compare and assess other alternatives.

IMPROVEMENTS TO BORDER PROCESSING

Many of the delays and much of the queuing experienced in recent years on the approaches to the border crossings were related to border processing deficiencies and border security concerns. The issues of border security are anticipated to be ongoing and will require additional efforts among border processing agencies, transportation agencies and local community agencies to accommodate security procedures implemented during periods of high level risk.

In the past, many of the deficiencies in border processing related to improper or inaccurate documentation by drivers, passengers or shippers, a lack of available border processing staff and facilities to accommodate border processing requirements, limited use of Intelligent Transportation Systems (ITS), and a low participation rate in border processing programs. These issues combined to result in delays and queuing at the border crossings.

In recent years, the U.S. government has provided additional staffing at the Detroit border crossings and the launch of the NEXUS and FAST programs is addressing to some degree the need to identify high and low risk border users and ensure proper documentation. In addition, commercial vehicle pre-processing centres have been brought into use in Ontario to ensure the documentation of commercial border users is properly and accurately completed. The Canadian Transit Company, owner of the Ambassador Bridge, has opened such a centre along the Highway 401 corridor west of London, as well as one in Windsor at Industrial Road. The purpose of these facilities is to reduce processing times at the border crossings. In addition, the number of primary inspection booths for trades has been increased to 13.

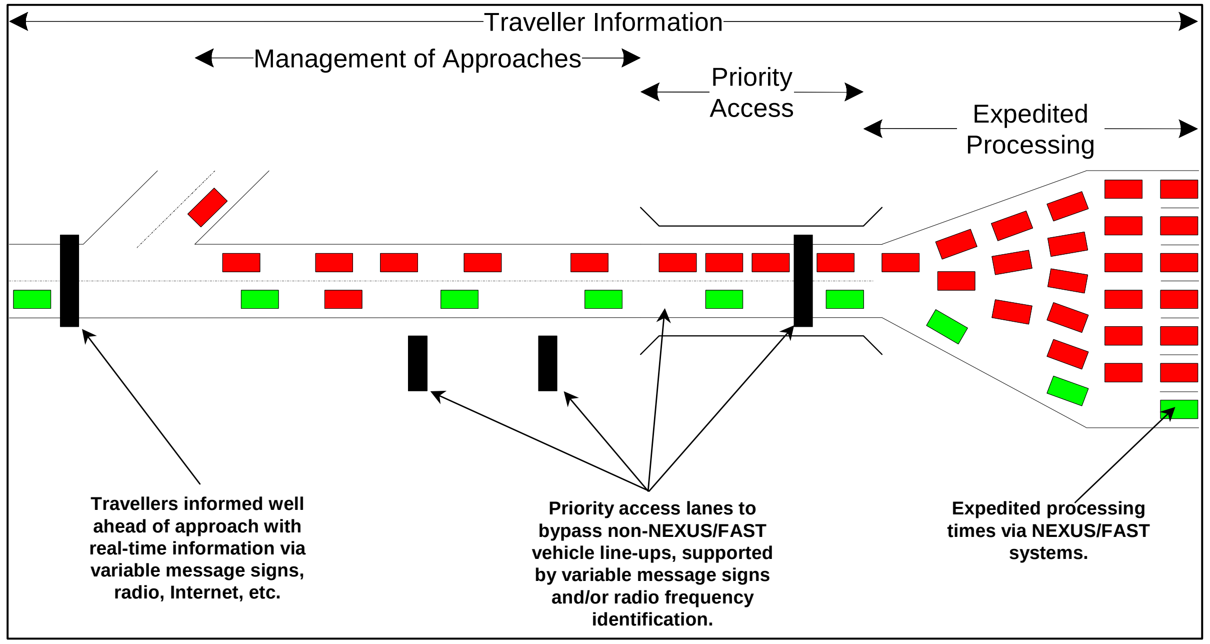
In November 2004, the U.S. Government began enforcing the U.S. Trade Act, which requires all U.S.-bound shipments to forward data to the U.S. port of entry one hour prior to the shipment arriving (30 minutes advance notice is required for FAST trucks). This requirement has reduced the need to send trucks to a secondary inspection area to complete paperwork and has contributed to reductions in extended delays at Ambassador Bridge.

Operators at the existing border crossings have identified additional facilities and additional staffing as being the most important issue facing the border over the short term. Governments have responded and are adding more staff and opening more inspection booths at the border crossings. In the longer term, more inspection facilities, increased staffing and greater use of NEXUS and FAST are seen as being the more cost-effective method of addressing the projected increases in travel demand at the border crossings.

International border crossings present unique opportunities for the implementation of Intelligent Transportation System (ITS) technologies and systems, particularly in terms of improving the security, safety and efficiency of passenger and commercial vehicle processing. In particular, ITS could provide expedited processing, priority access, approach management and traveller information in support of the NEXUS and FAST systems at the Windsor-Detroit crossings.

The NEXUS and FAST systems are designed to expedite inspection and processing times for passengers and commercial vehicles as well as their drivers. Ensuring effective use of these programs and higher participation rates will require that users experience travel time or convenience benefits. This may require infrastructure improvements such as providing priority access lanes for NEXUS and FAST users to get around other vehicles queuing for inspection. ITS applications that can support these lanes include variable message signs (i.e., signs that can be automatically altered) to indicate priority lanes or radio frequency identification (RFID) to enforce their use by NEXUS/FAST participants only (refer to illustration in Exhibit 5.2).

EXHIBIT 5.2 – POSSIBLE APPLICATIONS FOR ITS AT BORDER CROSSINGS



The efficient use of a system of several border crossings can be managed well ahead of arrival through the implementation of traveller information systems. Real-time (i.e., up-to-the-minute) knowledge of the conditions at each crossing would allow more effective management of the border crossing system as a whole and provide useful guidance and information to cross-border travellers in determining the time and route of travel. Real-time information can be used to distribute resources and manage traffic at crossings and assist in the staffing of inspection resources. The media that could be used to disseminate this information could include dynamic signs at strategic road junctions, local low power radio (highway advisory radio), Internet information channels (which could be used, for example, by truck dispatchers) and closed-circuit television. Such information dissemination would not only use these diversion strategies but also might influence the timing of arrival at the border.

Improvements to border processing can maximize the use of existing transportation corridors and would be consistent with government planning and tourism objectives in that they lead to improved flow across the border. Less congestion and delay may encourage cross-border travel, which in turn helps the regional tourism industry and the economies in general.

Improvements to border processing facilities may result in impacts to area features. However, the impacts can be avoided, minimized or mitigated through proper development and application of border processing technologies.

Improvements to border processing address one of the four needs of the undertaking as stated in Section 5.1.2, and should be a component of any solution to the transportation problems in the area. However, in itself, it cannot meet the purpose of this undertaking and was not considered on its own as an alternative means of addressing the stated problems.

TRANSPORTATION DEMAND MANAGEMENT

Transportation Demand Management (TDM) is the application of technologies, policies or other methods to reduce, shift or divert transportation demand.

Canadian residents employed in the U.S. account for the majority of cross-border work and business travel. In 2004, there were approximately 2,000 fall weekday and 4,000 summer weekday vacation trips using the Detroit River crossings. This represented five per cent of the international passenger car traffic on a typical fall weekday. Vacation travel was found to be much less affected by delays at the border as compared to same-day discretionary trips, as delays at the border represent a much smaller proportion of the travel time for longer-distance overnight trips.

There were approximately 15,000 same-day recreation, entertainment, and shopping trips using the Detroit River crossings on a summer weekday and 14,000 on a fall weekday in 2004. This represents 40 per cent of cross-border travel on a summer 2004 weekday, but is a dramatic decrease from 27,000 trips and 49 per cent of summer 2000 weekday trips.

This information, together with the findings of the Travel Demand Study undertaken for this project was used to evaluate the feasibility and practicality of TDM as a transportation alternative.

Demand Reduction Measures

Demand reduction measures for passenger trips in the area, such as ride sharing and use of transit would have little effect on the operations of the transportation network. In 2004, the average auto occupancy for cross-border trips at the Ambassador Bridge was 1.85 and at the Detroit-Windsor Tunnel, 1.75, which suggests that ride-sharing was already being practiced by cross-border travellers (typical occupancy rates for metropolitan areas are around 1.1 persons per vehicle). Further promotion of ride sharing can be expected to yield only marginal reductions in demand on the network.

Demand reduction measures for freight traffic in the area include use of rail and marine. These alternatives are discussed separately in this section.

Challenges and possible benefits of improving transit ridership are discussed under “New and/or Improved Transit and Marine Services”.

Measures to Shift Demand

Shifting travel demand to less busy days of the week or off-peak periods of the day or to other international crossings was also considered. At present, congestion at the border crossings is not severe. However, based on the findings of the *Existing and Future Travel Demand Working Paper – November 2002* (available under separate cover) prepared as part of the P/NF Study, the transportation network exhibited attempts by users at that time to manage demand during peak travel periods throughout the week. For example:

- The number of passenger cars crossing the Ambassador Bridge and Detroit-Windsor Tunnel was greatest on the weekend and Fridays when commercial vehicle traffic is lowest, suggesting drivers were deferring leisure trips to non-workdays;
- Commercial vehicle traffic volumes were found to be relatively low throughout the overnight hours;
- Weekday cross-border passenger car travel was characterized by morning and afternoon peaks; weekday cross-border commercial vehicle traffic was highest during midday periods, suggesting truckers attempted to avoid peak periods for passenger car travel; and,
- Weekday to weekend traffic volume comparisons suggested passenger car traffic diverted to the Detroit-Windsor Tunnel during the week to avoid high truck traffic levels on the Ambassador Bridge.

Given the degree of demand management currently practiced by network users, encouragement of any such measures would be expected to yield only marginal improvements to network operations once congestion becomes a recurring problem.

Measures to Divert Demand

One measure to reduce demand on the traffic network across the Detroit River is to divert travel demand to other international crossings outside of the area. Shifting passenger and commercial traffic to border crossings in the Sarnia-Port Huron area, for example, would preserve capacity on the Windsor-Detroit crossings.

The findings of the Travel Demand Study undertaken for this project identified a significant proportion of commercial vehicle traffic currently using the Ambassador Bridge on a weekday could also use the Blue Water Bridge without significant travel time increases.

There are a number of possible reasons why the Windsor-Detroit crossings are preferred by such trip-makers, including:

- Operators may be more familiar with the routing and comfortable with customs brokers at the Ambassador Bridge, resulting in the formation of travel habits;
- The Blue Water Bridge has experienced queues and delays as well;
- It is easier (or habitual) for the administrative departments of operators to deal with one bridge for matters such as pre-clearance papers;
- Voucher redemption programs and marketing by the Ambassador Bridge;
- Convenient rest stops en route to the Ambassador Bridge;
- There is better access to I-75 south of Detroit via Windsor, as travelling down I-94 via Sarnia-Port Huron requires going through the core of Detroit; and,
- There is a perception of a shorter trip distance via the Ambassador Bridge for more of the total trips between Ontario and Michigan.

Changes to border processing procedures under the FAST program to allow for the use of any border crossing in southwestern Ontario/southeastern Michigan, as well as increased education and awareness programs may encourage long-distance travellers to divert from the Windsor-Detroit border crossings. The findings of the Travel Demand Study indicated that diversion of traffic to the Blue Water Bridge could increase the timeframe at which the Windsor-Detroit crossings reach capacity by about six years. Achieving a high degree of diversion from these candidate trips would defer, but not eliminate the need for improvements to the transportation network across the Detroit River.

Other Measures

Other measures considered to reduce travel demand included:

- Incentives to encourage reduction of trips (e.g., promoting telecommuting); and
- Land use and transportation planning policies and other policies and procedures that result in less single occupancy vehicle use, less commuting, higher transit use, and more efficient use of the transportation network.

The development of effective measures to divert demand away from the Detroit River is made complicated by the bi-national nature of the transportation network. Implementation of some of these measures would require international agreement by various levels of governments in both countries, each with their own legislation and policies to address issues that are unique to them. Nevertheless, measures to reduce or change this aspect of travel demand may be effective in achieving some reduction in the growth of travel demand across the transportation network.

Summary

The nature of international travel demand on the transportation network means that implementing TDM measures alone will not eliminate the need for other network improvements to accommodate the 2035 travel demand. In addition, TDM does not address the need for reasonable options for maintaining the movement of people and goods on the transportation network. However, implementing TDM measures could provide some benefit to network operations, and would support other government and tourism objectives. In addition, TDM could be implemented in conjunction with border processing requirements with minor impacts to environmental features.

Therefore, TDM (including encouraging long distance trips to use the Blue Water Bridge) will be pursued by the Partnership as part of a long-term strategy. However, in itself, TDM is not a long-term solution to the international transportation needs at Windsor-Detroit.

TRANSPORTATION SYSTEMS MANAGEMENT

Transportation Systems Management (TSM) relates to a wide range of systems and technology to improve the efficiency and safety of existing and future highways. Driver messaging and directional signing, traffic metering, and incident monitoring can improve traffic flow during high congestion periods, bad winter weather, traffic accidents, special events, etc.

Operations on the transportation network are carefully monitored by a number of sources, including local media, border agencies, border crossing operators and the trucking community. These various information sources provide updates of border crossing conditions, allowing motorists, and trucking dispatchers, to make informed choices about whether and where to travel. Improving communications and the increased use of technologies to better inform drivers may provide some benefit to network operations, but would not eliminate the need for other improvements, including additional road-based capacity.

Localized improvements, such as improved signal timing and improvements to intersections may better utilize existing facilities and roads by increasing their efficiency, but would similarly yield only marginal improvements to network operations.

NEW AND/OR IMPROVED RAIL ALTERNATIVES

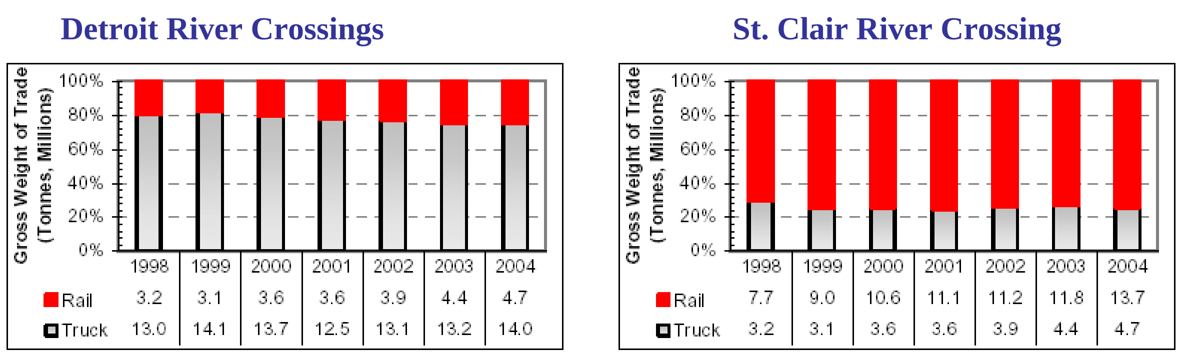
The capacity of the existing rail network has been determined to be sufficient to meet the long-term needs of rail transport. The rail network in the area is capable of accommodating projected 2035 demand, assuming mainline capacity on links outside the area also keep pace with the growth through investment in additions and renewals. Rail alternatives considered in this study were therefore of two types: 1) alternatives that provide new rail service and facilities where not currently provided across the Detroit River, and 2) alternatives that increase the use of rail.

There is no international passenger rail service across the Detroit River, and rail presently carries approximately 20 per cent of the value of international freight. Measures could be introduced to encourage the use of railway passenger services across the border. At present, there are no known plans for the introduction of passenger rail services across the Detroit River. It is unlikely that such a service could achieve appropriate ridership to sufficiently address network operational needs.

The modest shift of freight transport from truck to intermodal rail observed over the past five years at Detroit River and St. Clair River crossings (see Exhibit 5.3) has been supported by significant investment in intermodal facilities infrastructure. Although the existing rail crossing facilities have sufficient capacity, further growth will require continued investment, notably to mainline capacity in Canada, which is currently restricting cross-border intermodal rail growth. CP cancelled its *Toronto-Detroit Expressway* service in 2004.

It is technically feasible to construct rail corridors, and implementing rail improvements would allow for the use of existing transportation corridors. In addition, a new or expanded international rail crossing would provide an option for maintaining the movement of people and goods in cases of disruption to any of the existing border crossings on the transportation network.

EXHIBIT 5.3 - GROSS SHIPPING WEIGHT OF TRADE BY MODE FOR DETROIT AND ST. CLAIR RIVER CROSSINGS, 1998- 2004, CANADA TO US



The truck mode share is anticipated to remain constant over the study horizon. This is based on the relatively mature state of the auto industry's use of intermodal rail, as well as the significant proportion of the machinery and electronics goods that are transported at the border crossing, which are not conducive to intermodal rail.

However, the possible impact of alternatives that could divert demand from over-capacity road-based crossings, to other modes where there is excess capacity available was considered. This would involve fundamental changes in the transportation characteristics and behaviour currently exhibited by the passenger car and commercial vehicle users of the Detroit River border crossing facilities. This corresponds to a shift in the proportion of commercial vehicles to intermodal rail for trip markets that could be diverted where rail transportation has become (or is becoming) competitive with truck transportation in terms of price and service. Divertible traffic generally consists of relatively long-distance trips. The vast majority of traffic at the Detroit-Windsor Tunnel is considered non-divertible.

A scenario involving significant diversion of freight to intermodal rail through major investments and transportation policies was considered and is documented in the *Travel Demand Forecast Working Paper, September 2005*. That paper concludes that, even under such an optimistic diversion scenario, rail improvements would defer, but not eliminate the need for improvements to the transportation network. This alternative would therefore only marginally improve congestion on the road-based transportation network.

As a result, delays and queuing on the road network would continue to occur and gradually worsen as traffic volumes increased. Such delays and queuing on the road-based network of this international trade corridor are not consistent with governmental planning objectives or tourism objectives. Similarly, improvements to rail would only partially address border processing needs. Improvements to rail may assist in the processing of freight traffic, but would have little benefit to truck and passenger vehicle inspection processes on the road network. Rail improvements would likely also result in impacts to environmental features within or adjacent to existing or proposed rail corridors, but these impacts could be avoided or mitigated to the extent possible as with the road alternatives.

As noted in the previously completed *Planning/Need and Feasibility Study*, improvements to rail services were recommended as part of a long-term border strategy. However, diversion of truck and passenger car traffic to intermodal rail will not, in itself, address the identified problems or meet the long-term transportation requirements.

NEW AND/OR IMPROVED TRANSIT AND MARINE SERVICES

Presently, transit and marine services across the Detroit River serve minor roles in the transportation network.

Transit

Currently, the only public transit available between Windsor and Detroit is the Tunnel Bus operated by Transit Windsor. In developing the travel demand projections, increased frequencies of existing services were assumed at levels to support a continuation of current market shares, but no new local or intercity services were included.

However, a number of alternatives for improving transit services can be implemented to provide choices for cross-border travelers. These alternatives include:

- Increase Tunnel Bus services - Current levels of service are rather low and increased services might encourage greater utilization.
- Extend Tunnel Bus or introduce new commuter express services to major destinations - For example, many Windsor residents work at the hospital complex in downtown Detroit. A direct bus to the hospital complex could encourage transfers. Similarly, the other origins and destinations in Windsor-Detroit might be linked with a better bus service.
- Introduction of Ambassador Bridge bus service - Similar to the bus through the tunnel, a bus crossing Ambassador Bridge could provide connections between areas in Windsor and Detroit for local commuters and visitors.
- Alternative public transit systems - These could include new systems such as a gondola system across the river, the introduction of a passenger ferry service (possibly similar to the Seabus service in Vancouver), development of a shuttle rail service through the existing rail tunnel, extension of planned commuter rail services in the Detroit region to Windsor and other measures.

Improvements to transit services are not likely to reduce travel demand on the road network sufficiently to overcome the need for road improvements. Transit improvements could make use of existing transportation corridors and can be implemented, in most cases, at a reasonable cost and in a relatively short timeframe (as compared to major infrastructure improvements).

However, delays and queuing on the road-based network would result even with the transit service improvements. This result is not consistent with planning or tourism objectives. Similarly, improvements to transit services would only partially address border processing needs (for example, transit improvements would only address passenger travel). Transit improvements may result in impacts to environmental features within or adjacent to existing or proposed new transit corridors, but these impacts could be avoided, minimized or mitigated to the extent possible as with other infrastructure improvement alternatives.

Marine

Marine services can be considered as being of two types – long-distance and local. Long-distance marine services are comparable to rail in that such services can reduce travel demand at the Detroit River crossings. Local ferry services are comparable to the Tunnel Bus service for passengers and an alternative road-based crossing for trucks and cars (the ferry terminals are accessed via the road network).

Long-distance shipping on the Great Lakes primarily serves bulk goods transport (e.g. ore, aggregates, salt). In the past, package freighters have operated on the Great Lakes. However, given the "just-in-time" inventory processes now practiced by many North American industries and the time sensitivities to many goods presently being transported by truck, the potential market for long-distance shipping is only a fraction of that which crosses the Windsor-Detroit border today.

The Detroit-Windsor Truck Ferry provides local ferry services. Currently, the truck ferry has a relatively small but vital role. The service is relied upon to ferry oversize shipments and hazardous goods across the Detroit River, but in no way restricts its use to these two markets. At the time of preparing this report, improvements to the terminal area, access road and dock are planned on the Canadian side to enhance the service. There are possibilities to increase the use of the service to divert passengers and other freight services from the bridge and tunnel. The ferry is currently operating at about 25 per cent of capacity. The operation also has the capability of adding barges and tugs to increase its daily operating capacity. Others have expressed an interest in launching new truck and passenger ferry services on the Detroit River.

Adding or improving these marine services is technically feasible, can make use of use of existing transportation corridors along the riverfront and can be implemented, in most cases, at a reasonable cost and in a relatively short timeframe (as compared to major infrastructure improvements). It is possible that these services could be increased to the point that several hundred trucks per day could be transported across the border. This would be an important contribution to the overall capacity of the border crossing system. However, the traffic demand analysis projects an increase of several thousand trucks per day. At full capacity and with additional barges, ferry services alone cannot provide sufficient transportation network improvements to meet the long-term needs of the region.

Delays and queuing on the road-based network would result even with the marine service improvements. This result is not consistent with planning or tourism objectives. Similarly, improvements to marine services would only partially address border processing needs (for example, new ferry services could increase border processing staffing requirements at the border). Marine services would likely also result in impacts to environmental features within or adjacent to existing or proposed marine terminals and facilities, but these impacts could be avoided, minimized or mitigated to the extent possible, as with other alternatives.

NEW AND / OR IMPROVED ROAD ALTERNATIVES WITH NEW OR EXPANDED INTERNATIONAL CROSSING

Expanding the road network will provide an option for maintaining the movement of people and goods and alleviating congestion. The majority of cross-border trips on the network currently use road-based transportation modes. This trend is likely to continue over the planning horizon of this study. Providing additional road-based capacity directly addresses the needs of the network. Through proper planning, such expansion can maximize use of existing corridors and be implemented in a manner consistent with planning and tourism objectives.

New or expanded border crossings must be designed to meet the long-term needs of border processing agencies. These needs include: adequate size and flexibility of plaza area to accommodate border processing requirements, the ability to identify and separate low and high-risk traffic, and security of the primary and secondary inspection areas. These improvements can be incorporated into existing border crossings or a new crossing.

Improvements to the existing crossings can provide some relief but would not fully address the need for reasonable options for maintaining the movement of people and goods in cases of disruption at any of the existing border crossings. Further, while improvements to existing crossings would achieve limited additional road capacity, such improvements are not likely to provide sufficient capacity to address future travel needs. However, improvements to the existing crossings can increase utilization of existing infrastructure and improve operations on the network.

New road alternatives, whether federal, provincial, state or municipally governed, will be designed to comply with design standards. Given the nature and extent of development and other land uses in the area, expansion of the road network will have an impact on natural, socio-economic and cultural features. The four transportation agencies that comprise the Partnership, in consultation with other agencies, government offices and departments, stakeholder groups and the public, will develop and apply methodologies to avoid, minimize or mitigate impacts to the extent possible, as appropriate.

'New and/or Improved Road Alternatives with New or Expanded International Crossing' is a feasible alternative and was carried forward for further study.

COMBINATIONS OF THE ALTERNATIVES

In order to satisfy the study goals and objectives, it is apparent from the traffic analysis, that several of the transportation planning alternatives, implemented in concert will be required to address future transportation needs across the Detroit River.

Border processing improvements will be required on a continuing basis. The implementation of these improvements is not under the direct control of the Partnership. However, the Partnership will continue to work with border processing agencies to encourage and support initiatives that improve border processing at the Windsor-Detroit crossings.

It is also clear that the only combination of alternatives that can practically accommodate a significant amount of increased demand for travel and effectively provide reasonable options for maintaining the movement of people and goods in cases of disruptions at any of the existing border crossings is one which includes the 'New and/or Improved Roads with a New or Improved Crossing' alternative. All other alternatives, even in combination, will not provide sufficient long-term border capacity to meet future needs.

EVALUATION SUMMARY

The evaluation of transportation alternatives is summarized in graphic form in **Exhibit 5.4**.

EXHIBIT 5.4 – SUMMARY OF EVALUATION OF TRANSPORTATION ALTERNATIVES

Factor	Do Nothing	Border Processing	TDM/ TSM (including diversion)	Rail	Transit	Marine	New and/or Expanded Roadways
Transportation Network Improvement	○	◑	◑	◔	◔	◔	●
Transportation Opportunities	○	◑	●	●	●	●	●
Governmental Land Use, Transportation Planning and Tourism Objectives	○	●	◑	◑	◔	◔	●
Border Processing	○	●	◑	◑	◔	◔	●
Environmental Feasibility	◑	◑	◑	◑	◔	◔	◑
Technical Feasibility	N/A	●	●	●	●	●	●

Shading represents the degree to which the alternative addresses each factor, relative to the other alternatives

○ → ●
Low High

As illustrated in **Exhibit 5.4** and discussed in the preceding sections, 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 has been identified as the most effective at addressing the transportation network requirements, border processing requirements, and provides the highest overall level of support to planning and tourism objectives. This alternative has a comparable degree of environmental and technical feasibility as the other alternatives on the basis that impacts could be avoided, reduced or mitigated to the extent possible as with other infrastructure improvement alternatives. It is also recognized that improved and expanded border processing capacity is an integral component of this solution.

In terms of addressing transportation network requirements for people and goods movement, a multi-modal approach provides choice for travellers and offers viable mechanisms to reduce auto use.

Although alternatives for travel demand management, rail, transit, ferries, etc., cannot independently address the diverse user needs, sufficiently alleviate traffic congestion on the transportation network or effectively provide reasonable options for maintaining the movement of people and goods in cases of disruptions at any of the existing border crossings, these alternatives should be included as part a multi-modal strategy to meet the medium and long-term needs of the transportation network in the area.

6 ILLUSTRATIVE ALTERNATIVES FOR CROSSINGS, PLAZAS AND ACCESS ROADS

This chapter summarizes the generation, assessment and evaluation of the illustrative crossing, inspection plaza and access road alternatives. For further details, the reader is referred to the following document, which is available as a supporting document:

- *Generation and Assessment of Illustrative Alternatives Report (November 2005)*

The illustrative alternatives were developed within the Preliminary Analysis Area (PAA; refer to Exhibit 2.1). The term "illustrative" is used to describe the conceptual, "long list" alternatives determined from the PAA. This terminology was adopted on both sides of the border to promote the coordinated approach between the two environmental study processes.

Based on an evaluation of the illustrative alternatives, the study team identified an Area of Continued Analysis (ACA), which served as the basis for the development of the practical crossing, plaza and access road alternatives. The ACA is presented in Exhibit 6.17, at the end of this chapter. The term "practical" is used to describe the more refined alternatives that emerge from the assessment and evaluation of the broader level conceptual alternatives, i.e. the illustrative alternatives. For further information with regard to the generation, assessment and evaluation of the practical crossing, plaza and access road alternatives, the reader is referred to Chapter 8.

6.1 Generation of Illustrative Alternatives

Generally, the alternatives to be considered for a new or expanded border crossing can be categorized into the following components:

- A new or expanded crossing (tunnel or bridge)
- Plazas connected to the crossing (either directly or through a secure connection) for border agencies to inspect inbound and outbound drivers, passengers, vehicles and freight. These inspection plazas may also include other functions, such as toll collection and crossing maintenance facilities, and other border related services such as duty-free shopping, brokerage offices, and other agency offices; and
- Controlled access roadways connecting the crossing plazas to the provincial or interstate freeway system.

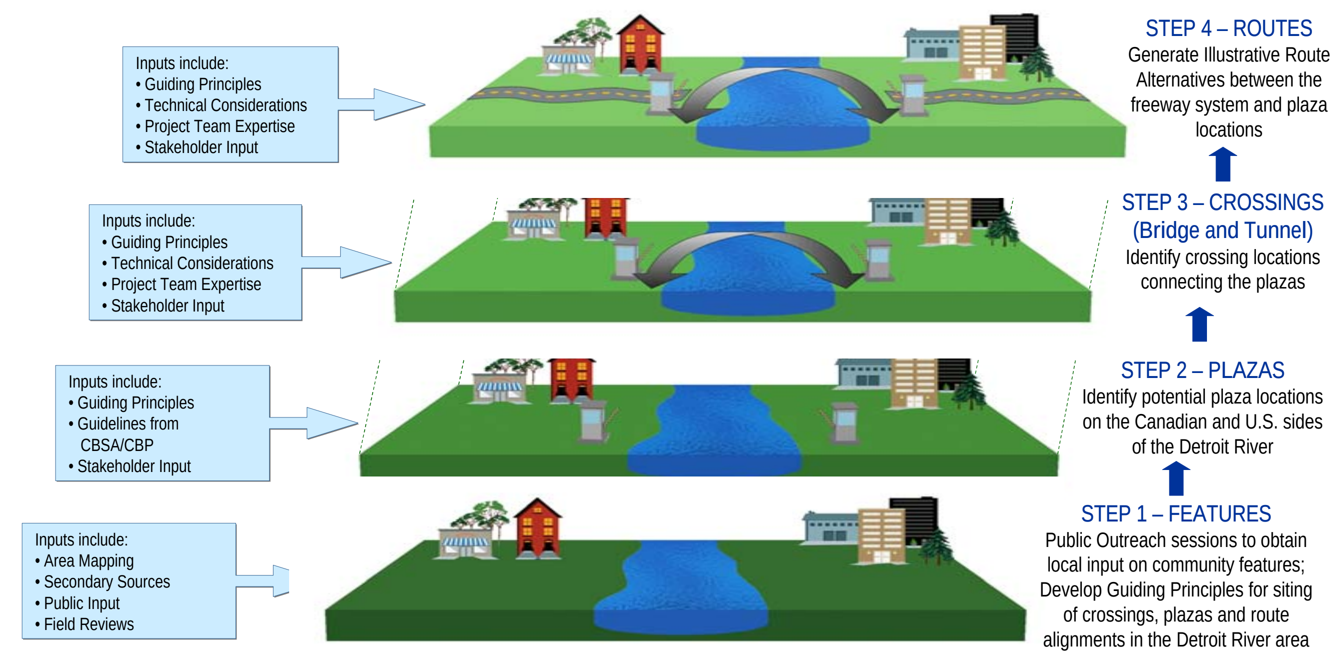
For this study, inspection plazas approximately 30 to 40 ha in size were considered for new crossings, based on the preliminary assumption that international truck traffic will be distributed equally between the new crossing and the Ambassador Bridge.

Committed road and highway improvements were identified through consultation with the Ministry of Transportation (MTO), City of Windsor and a review of the relevant area transportation plans. Through this consultation it was confirmed that Highway 401 will ultimately be widened in the Windsor area from 0.5 km east of Highway 3 to 1.0 km east of County Road 42. On this basis, an ultimate six-lane cross-section was assumed for all access road alternatives. However, as discussed, in Section 6.1.3, it was envisioned that four lanes would be constructed initially.

The following steps were undertaken in the generation of illustrative alternatives (refer to Exhibit 6.1):

- Collect data for features in the Detroit River area. This step included Initial Public Outreach sessions (refer to Chapter 3) to obtain local input on community features;
- Develop guiding principles for siting of river crossings, inspection plazas and access road alignments in the Detroit River area;
- Identify potential inspection plaza locations on the Canadian and U.S. sides of the Detroit River;
- Identify crossing locations connecting these plazas; and
- Generate illustrative access road alternatives between the freeway system and inspection plaza locations.

EXHIBIT 6.1 – DEVELOPMENT OF ILLUSTRATIVE ALTERNATIVES



As identified in Section 3.3.1 of the EA Terms of Reference (EA TOR), 2004, the objectives for generating alternatives were to:

- Develop alternatives that are efficient/direct;
- Meet objectives and design requirements of Partnership agencies;
- Reflect the needs of border agencies; and
- Minimize/avoid impacts to significant features to the extent possible.

Due to the nature and extent of development in the Detroit River area, it was recognized that there are no opportunities to develop a new or expanded crossing with connections to the provincial and interstate freeway system without impacting some level of environmental and community features. The following guiding principles were developed to assist in the development of the illustrative crossing, inspection plaza and access road alternatives:

- Utilize existing infrastructure to the maximum extent - taking advantage of existing transportation and other linear corridors may improve usage of the transportation network and/or reduce impacts to other land uses;
- Seek areas or land uses that are compatible with transportation corridors and facilities, or areas in transition to compatible land uses - compatible areas are those that are considered to be less impacted by new crossing, inspection plaza and access road alignments than other land uses (e.g., industrial areas may be considered to be less impacted by a new inspection plaza than residential areas). Areas in transition allow the opportunity to incorporate new access road alignments in the area planning;
- Minimize impacts to significant natural features - such features are usually regionally unique, protected by legislation/designations and may preclude a transportation facility; and
- Minimize impacts to city centres - such areas generally provide a focus for cultural, social and economic activities.

The guiding principles reflect the objectives of the Partnership to address transportation needs, take advantage of transportation opportunities, and avoid generating unacceptable impacts to the extent possible.

6.1.1 Plaza Alternatives

The identification of possible sites for inspection plazas was the initial step in the development of illustrative alternatives. This was due to the relatively large associated property requirement and specific siting requirements unique to their purpose. The crossing alternatives and road alternatives were developed subsequently, based on the alternative plaza locations.

Building upon the guiding principles for generating illustrative alternatives, the following specific siting considerations were developed for generating alternative plaza sites in consultation with the Canadian Border Service Agency and the U.S. Department of Homeland Security, Customs Border Protection Branch:

- Proximity to Border: Canada Border Services Agency (CBSA) and U.S. Customs and Border Protection (CBP) require that the plazas be located as close to the border as possible, to reduce security / monitoring requirements for border agencies. Where plazas cannot be directly connected to the bridge, secure connections would be required to prevent goods and travellers from avoiding inspection. In Canada, a secure roadway of 1.5 km was considered the maximum reasonable distance, subject to consideration of land use and line of sight concerns. (In the U.S., connecting the plaza directly to the crossing is the only acceptable alternative).
- Site Area: The site must provide adequate space to accommodate projected traffic demand, as well as turn-around opportunities for drivers and the installation of equipment systems prior to and after inspection points, on-site secondary inspection, some storage capacity for traffic queues on the plaza, and the ability to expand in the future. As discussed in the previous section, inspection plazas approximately 30 to 40 ha in size were considered for new crossings.
- Adjacent Land Use: The site should be located away from residential areas, schools and other community uses. Sites should not be visible from neighbouring lands, but should provide good visibility to surrounding areas and approaches. Areas with significant development should also be avoided.
- Environmental Sensitivities: Consideration should be given to the presence of toxic and/or hazardous materials, wetlands and/or endangered species, cultural, social and economic impacts.
- Existing Easements and Right-of-Ways: Consideration should be given to gas lines, water and sewer lines, power and telecommunication lines, rail lines, and local and private roadways;
- Emergency Services and Access: The site should be served by more than one roadway to allow for roadway interruption; consideration should be given to response time for medical and fire emergency services, and proximity to hospitals.
- Site Topography: Relatively flat sites are preferred, with grades less than two to three per cent. Floodplains and/or elevations close to river or lake levels should be avoided.
- Water Availability: Consideration should be given to water sources and protection from sabotage or other threats of contamination.

On the basis of the guiding principles and the siting considerations identified by the study team, 13 potential plaza locations were identified on the Canadian side of the river (refer to Exhibit 6.2). The identification of plaza locations on the Canadian side was coordinated with the identification of plaza locations on the U.S. side.

In urban areas, plaza sites were generally sized closer to the required footprint of 30 to 40 ha in recognition of adjacent land use features. In rural areas, where there are fewer land use features, plaza opportunity areas of substantial size were identified. These areas provide the maximum flexibility for accommodating a variety of configurations of plazas.

The plaza sites were divided into three geographical categories – east plaza sites, central plaza sites, and south plaza sites. Each site is illustrated and described briefly in Exhibits 6.3A to 6.3C.

EXHIBIT 6.2 – POTENTIAL PLAZA LOCATIONS (CANADIAN AND U.S.)

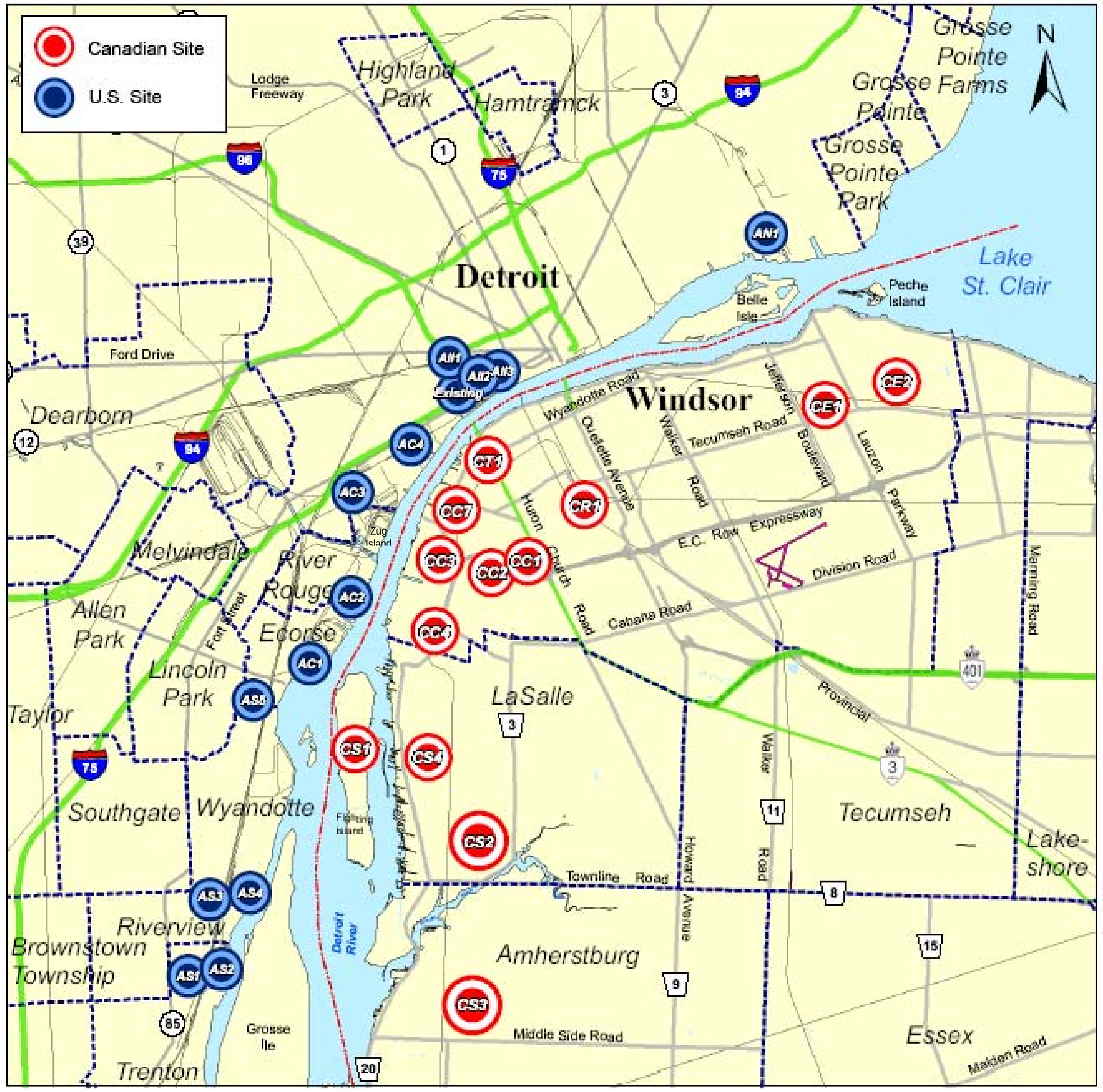


EXHIBIT 6.3A – EAST PLAZA SITES

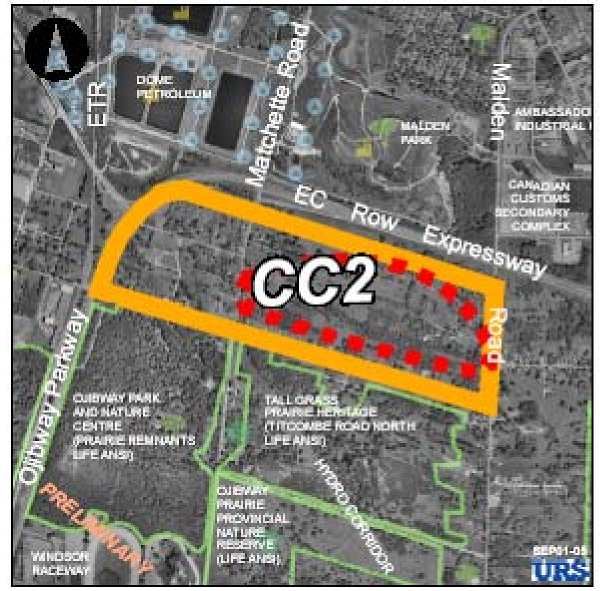
Plaza Site CE1
Size: 200 acres ±
Distance to River: 1.6 km

Plaza Site CE2
Size: 520 acres ±
Distance to River: 0.6 km

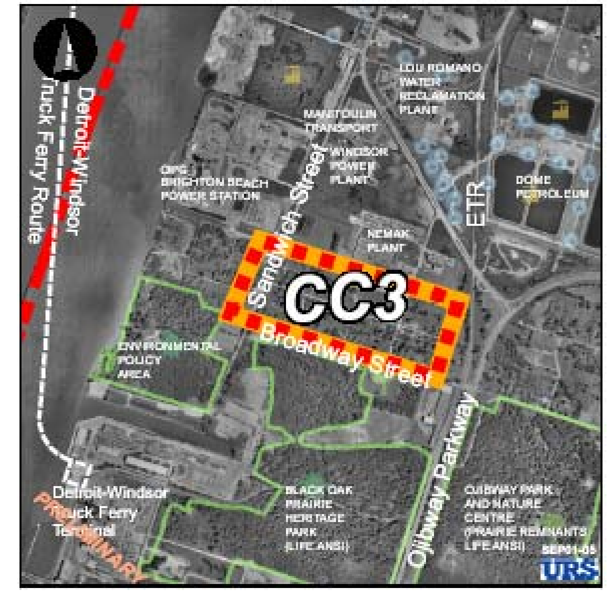
LEGEND
Broader Plaza Area
Area of Opportunity

EXHIBIT 6.3B – CENTRAL PLAZA SITES

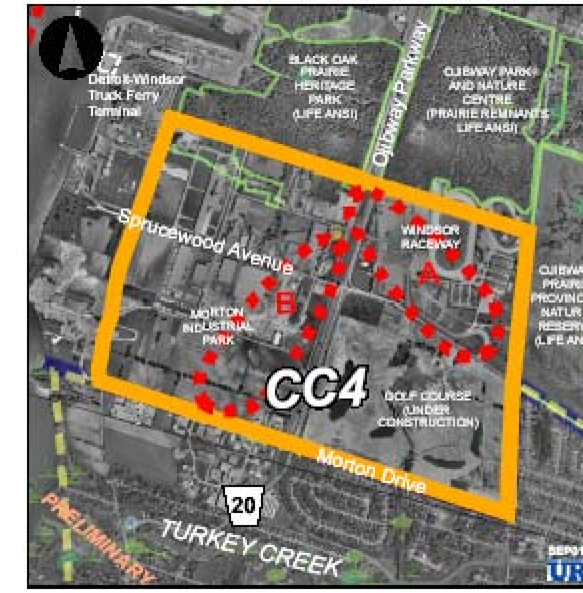
Plaza Site CC1
Size: 80 acres $\pm$
Distance to River: 3.0 km



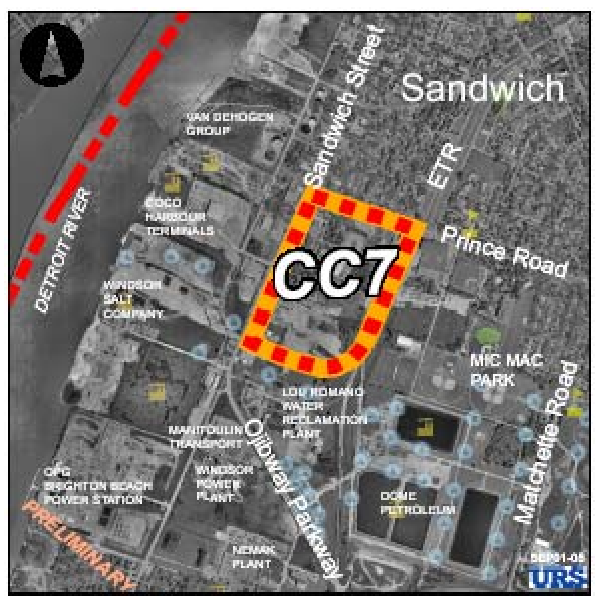
Plaza Site CC2
Size: 214 acres $\pm$
Distance to River: 1.5 km



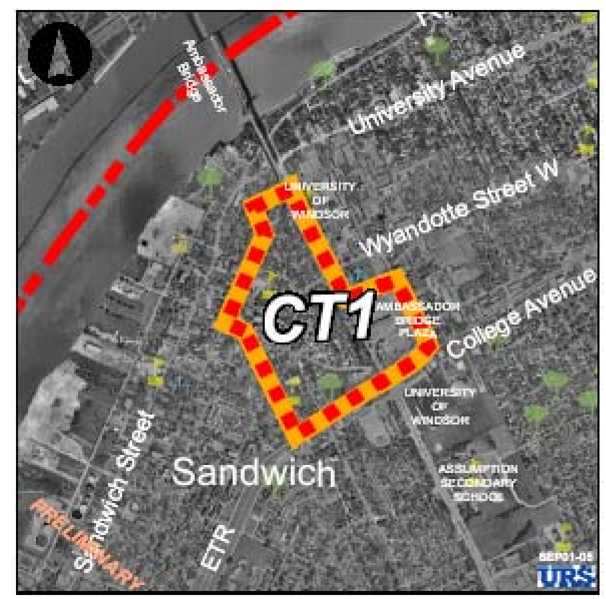
Plaza Site CC3
Size: 80 acres $\pm$
Distance to River: 0.5 km



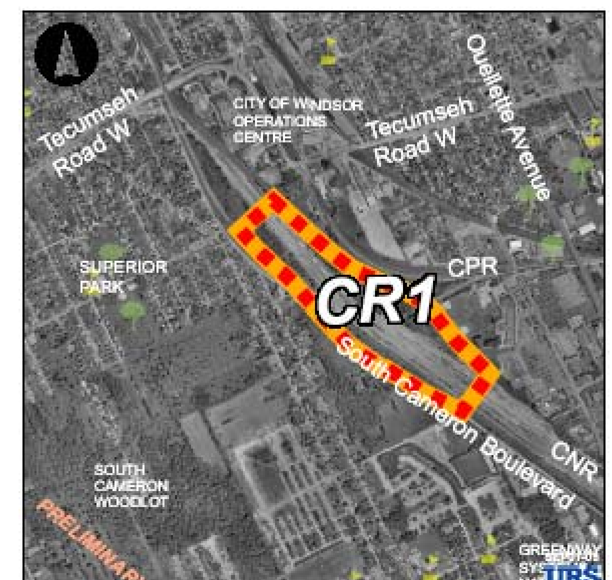
Plaza Site CC4
Size: 760 acres $\pm$
Distance to River: 0.5 km



Plaza Site CC7
Size: 80 acres $\pm$
Distance to River: 0.6 km



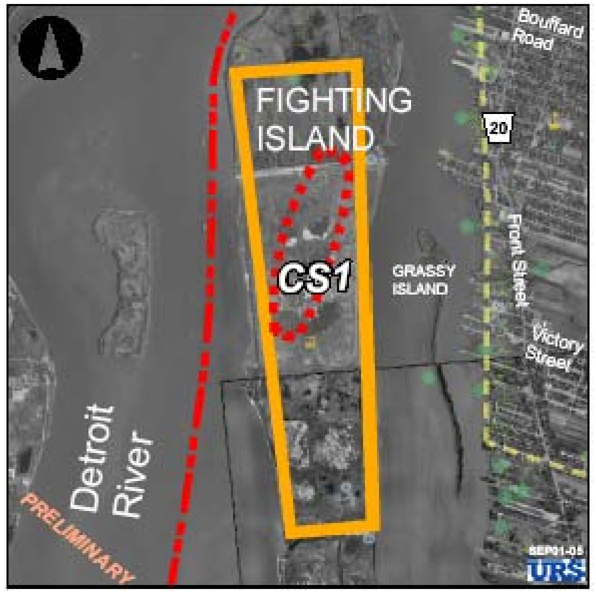
Plaza Site CT1
Size: 120 acres $\pm$
Distance to River: 0.8 km



Plaza Site CR1
Size: 80 acres $\pm$
Distance to River: 0.8 km

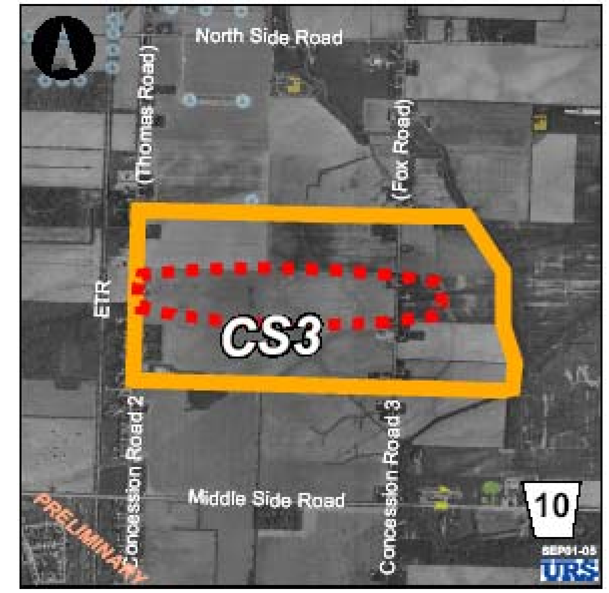
LEGEND
Broader Plaza Area
Area of Opportunity

EXHIBIT 6.3C –SOUTH PLAZA SITES



Plaza Site CS1
Size: 573 acres ±
Distance to River: N/A

Plaza Site CS2
Size: 1451 acres ±
Distance to River: 0.5 km



Plaza Site CS3
Size: 430 acres ±
Distance to River: 2.0 km

Plaza Site CS4
Size: 254 acres ±
Distance to River: 0.5 km

LEGEND
Broader Plaza Area
Area of Opportunity

6.1.2 Crossing Alternatives

Once the plaza locations were identified on the Canadian and U.S. side of the Detroit River, the study team developed international crossing alternatives (bridge and tunnel options were considered) to connect the plaza sites. New crossing alternatives were developed based on providing six lanes over/under the Detroit River.

The Detroit River is an important waterway for marine traffic on the Great Lakes. Bridges are therefore required to span the river at a clearance of at least 46 m at the shipping channel, as defined by the U.S. Coast Guard and Transport Canada – Navigable Waters Division. The height requirements and potential span lengths suggested that any bridge on the Detroit River north of Fighting Island would need to be either a suspension bridge or a cable-stayed bridge, as illustrated schematically in Exhibit 6.4.

The study team also undertook a review of available geotechnical information to assess the feasibility of constructing a tunnel below the Detroit River (refer to sketches in Exhibit 6.5 for schematic illustrations of the tunnel options considered).

The preliminary findings of the suitability of bridge and tunnel crossings are presented in Table 6.1. These findings suggested that:

- Rock tunnelling would be difficult and potentially not feasible due to the depth to bedrock in the upper portions of the river (refer to Exhibit 6.5), and the poor rock conditions in the lower portions of the river.
- Earth (bored) tunnelling may be feasible for crossings upriver of the Zug Island area, where depths of soft earth are suitable.
- Submerged tunnels in the Detroit River are not preferred due to the disruption to river sediment and impacts to shoreline natural areas such alternatives would have on the river. Initial discussions with Ontario Ministry of Natural Resources (MNR) and Michigan Department of Environmental Quality were held to discuss the possibility of using sunken tunnels. These agencies raised serious concerns as to the acceptability of this method of tunnel construction given that other less disruptive options were available.

Subsequent assessment of soft ground tunnelling upriver of Zug Island identified issues with respect to uplift and available soft earth cover over a new tunnel in this area of the river.

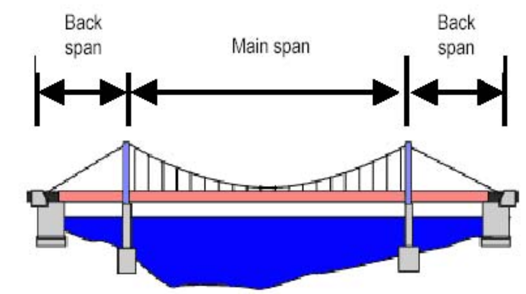
Both the Canadian and U.S. study teams concluded that for the purposes of the Detroit River International Crossing study, roadway tunnels under the Detroit River were not practically feasible upriver of Zug Island. In addition, poor rock conditions downriver of the Zug Island area and inadequate soft earth cover led both the Canadian and U.S. study teams to conclude that roadway tunnels are not practically feasible for all crossing locations.

The illustrative crossing alternatives are shown on Exhibit 6.6.

EXHIBIT 6.4 – DETROIT RIVER BRIDGE OPTIONS NORTH OF FIGHTING ISLAND AREA

Suspension Bridge

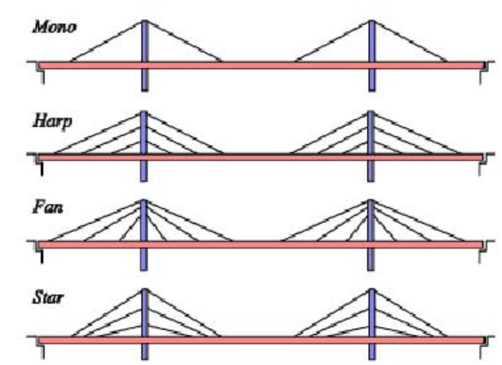
Suitable for spans over 500m.



Typical Elevation (left) and Ambassador Bridge, Windsor/Detroit (right)

Cable Stayed Bridge

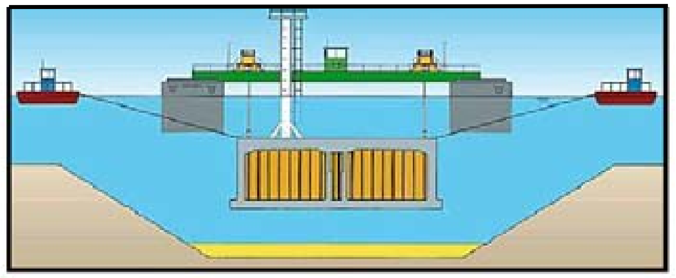
Suitable for spans up to 900m.



Typical Elevations (left) and Pont de Normandie, France (right)

EXHIBIT 6.5 – DETROIT RIVER TUNNEL OPTIONS CONSIDERED

Submerged Tunnel



Tunnel Boring Machine (Rock or Soft Ground Tunnelling)

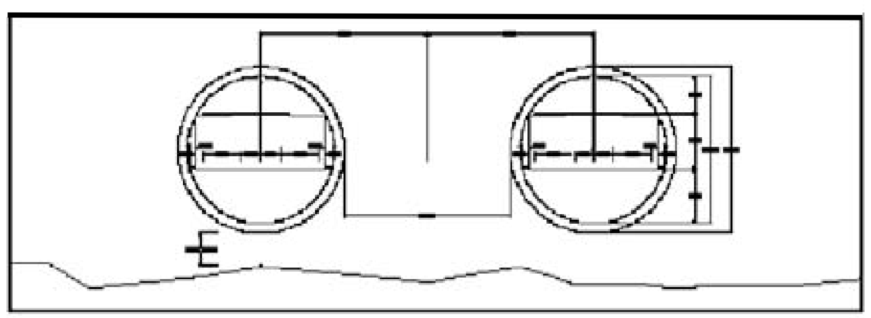


Image courtesy of Parsons Transportation/The Corradino Group

Triple-Tunnel

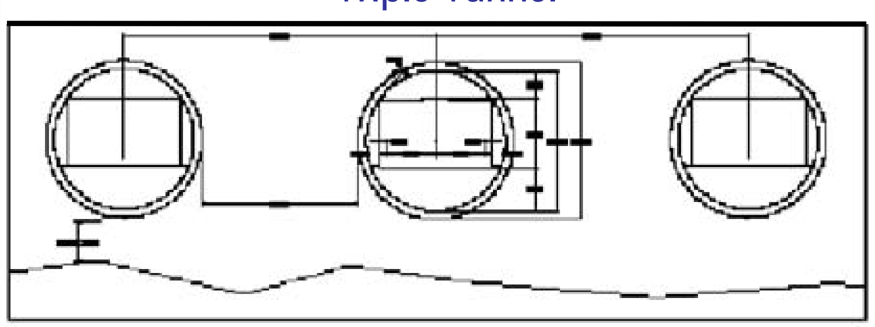


Image courtesy of Parsons Transportation/The Corradino Group

TABLE 6.1 – GEOTECHNICAL SUMMARY OF CROSSING OPTIONS AND CONCERNS

Location	Area of Fighting Island	Area of Zug Island	Area of Ambassador Bridge	Area of Belle Isle
Bridge	• Solution Mining • Foundations on bedrock, 15 to 20m below ground surface • Potential artesian groundwater • Methane and hydrogensulphide • Approach embankments on compressible soils ✓Carried forward for continued study	• Solution Mining • Foundations on bedrock, 25 to 30m below ground surface • Methane and hydrogensulphide • Potential artesian groundwater • Dry salt mining ✓Carried forward for continued study	• Solution Mining • Foundations on bedrock, 35 to 40m below ground surface • Methane and hydrogensulphide • Potential artesian groundwater • Approach embankments on compressible soils ✓Carried forward for continued study	• Foundations on bedrock, 40 to 50m below ground surface • Methane and hydrogen sulphide • Potential artesian groundwater • Approach embankments on compressible soils ✓Carried forward for continued study
Immersed Tube	• Solution Mining • Excavations in bedrock required • Potential artesian groundwater • Sediment disturbance and disposal creates numerous environmental concerns X Not practically feasible	• Solution Mining • Excavations may penetrate near the bedrock interface • Potential artesian groundwater • Sediment disturbance and disposal • Dry salt mining X Not practically feasible	• Excavations may penetrate near the bedrock interface • Potential artesian groundwater • Sediment disturbance and disposal creates numerous environmental concerns X Not practically feasible	• Tunnel potentially seated on soft clay • Sediment disturbance and disposal creates numerous environmental concerns X Not practically feasible
Soft Ground Tunnel	• Solution Mining • Insufficient soft earth cover in river bed therefore not feasible for 13m diameter tunnel • Groundwater control X Not practically feasible	• Solution Mining • Insufficient soft earth cover in river bed therefore not feasible for 13m diameter tunnel • Groundwater control • Dry salt mining X Not practically feasible	• Insufficient soft earth cover therefore not feasible for 13m diameter tunnel • Groundwater control X Not practically feasible	• Groundwater control • Limited soft earth cover • Approach construction in soft soil X Not practically feasible
Rock Tunnel	• Solution Mining • Potential artesian groundwater • Approach construction, excavations of 15 to 20m • Use of double-shield rock TBM • Poor quality of rock X Not practically feasible	• Solution Mining • Groundwater control • Gas control • Approach construction, excavations of 25 to 30m • Dry salt mining areas • Use of double-shield rock TBM • Poor quality of rock X Not practically feasible	• Approach construction, excavations of 30 to 35m • Groundwater control • Gas control • Use of double-shield rock TBM • Uplift and lack of adequate cover X Not practically feasible	• Groundwater control • Gas control • Approach construction excavations of 40 to 50m, beyond practical limit • Use of double-shield rock TBM • Uplift and adequate cover X Not practically feasible

Note: Area of Fighting Island relates to south plaza sites: CS1, CS2, CS3 and CS4
Area of Zug Island relates to central plaza sites: CC1, CC2, CC3 and CC4
Area of Ambassador Bridge relates to central plaza sites: CC7, CT1 and CR1
Area of Belle Island relates to east plaza sites: CE1 and CE2

EXHIBIT 6.6 – ILLUSTRATIVE CROSSING ALTERNATIVES (X1 TO X15)

URS
Canada
U.S. Department of Transportation Federal Highway Administration
Ontario
MDOT Michigan Department of Transportation

6.1.3 Access Road Alternatives

Illustrative access road alternatives connecting Highway 401 in the Windsor-Essex County area to the alternative plaza locations are illustrated on **Exhibit 6.7** and were developed based on the guiding principles identified in **Section 6.1**. The significant features considered during the development of access road alternatives included the following:

Component	Feature
Natural Environment	Groundwater Quality and Quantity Surface Water Quality and Quantity Agricultural Lands Wetlands Areas of Natural and Scientific Interest (ANSIs) Environmentally Sensitive Areas (ESAs) Woodlands Wildlife Preserves Species at Risk / Endangered Species
Cultural Environment	Historical, Archaeological and Cultural Sites National, State & Provincial Parks, and Conservation/Recreational Areas
Social Environment	Landfills and Hazardous Waste Sites Areas of Residential Development Areas of Commercial / Institutional Development

The access road alternatives were developed as multi-lane freeways with the following design characteristics:

- Design speed of 120 km/h;
- Initially four-lane urban freeway, but will protect sufficient property for ultimate six lanes;
- 80 m to 110 m Right-of-Way;
- Three per cent maximum mainline grade;
- 650 m minimum horizontal curve radius in urban areas; and
- 1700 m minimum horizontal curve radius in rural areas.

Route optimization software (Quantm) was also used to aid in the generation of illustrative access road alternatives to verify the range of alternatives identified by the study team. Quantm utilizes a computerized approach that considers environmental features and cost data to identify optimal route locations. The information generated by Quantm was incorporated in the set of illustrative access road alternatives developed by the study team.

SOUTH ALTERNATIVES

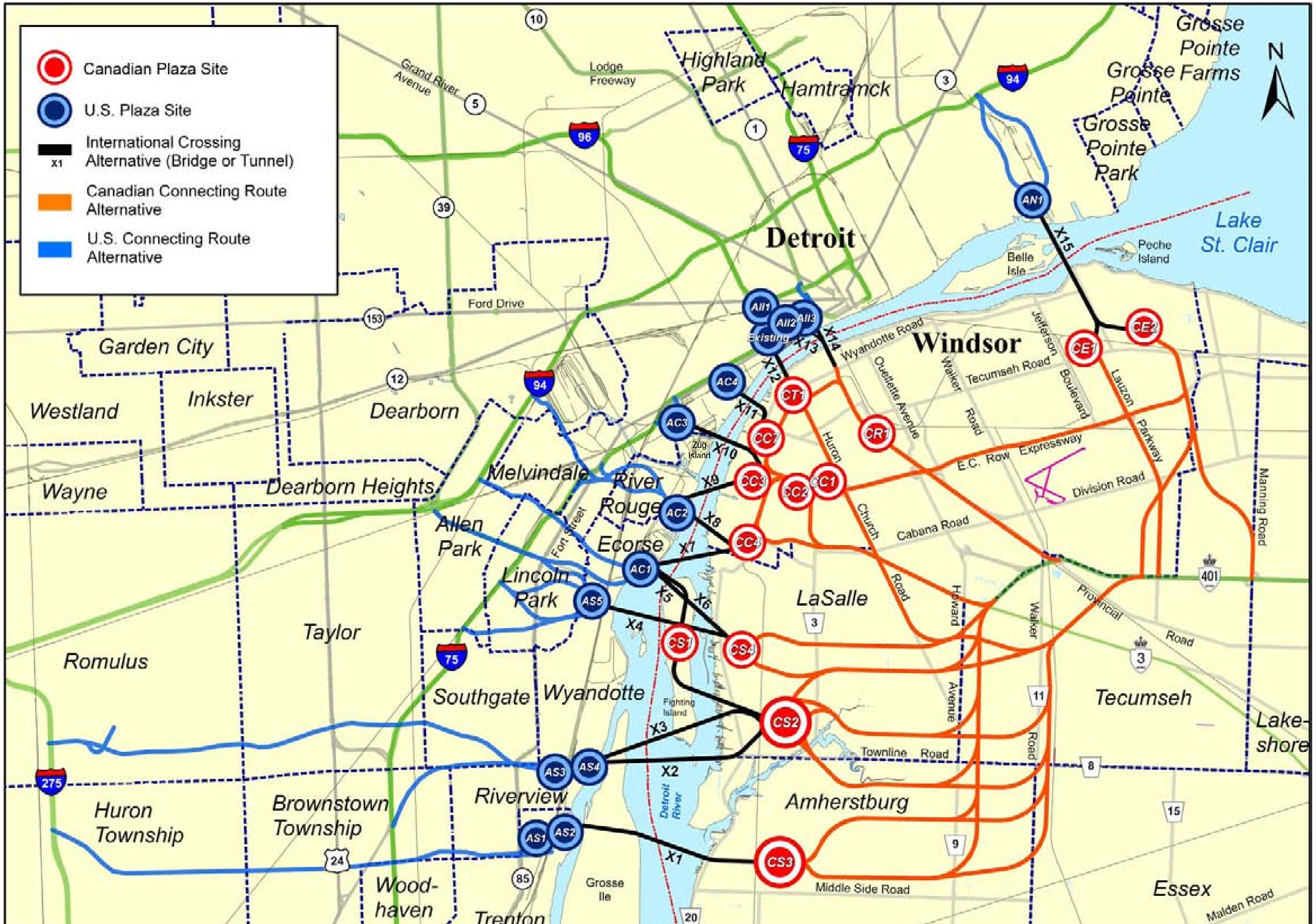
Considering the plaza locations along the Detroit River and the location of Highway 401, the study team developed alignments for access roads that would reduce impacts to land uses and avoid where possible impacts to key community features would occur (refer to **Exhibit 6.8A**). The land use in the southern area is primarily agricultural. Therefore, alignments were developed which generally followed the property and field fabric in LaSalle, Amherstburg and Tecumseh. This resulted in alignments that were generally aligned east-west and north-south, rather than diagonally, to reduce impacts to agricultural operations and minimize landlocked severances.

The east-west access road segments connecting to Plaza CS3 were developed to avoid the active Allied Chemical Quarry between Concession Road 6 and Howard Avenue in Amherstburg. The north-south segments followed the rear lot lines paralleling Walker Road and Howard Avenue to avoid the existing development (agricultural buildings, residences and other retail/industrial uses) that is generally located along the frontages of these principal roads. The segment paralleling Howard Avenue connects to Highway 401 at the Highway 3 interchange. The segment that parallels Walker Road avoids the settlement area of Oldcastle in the Town of Tecumseh and connects to Highway 401 in the area of Concession Road 10, where Highway 401 is on tangent.

The east-west access road segments connecting to Plazas CS1 and CS2 were developed to avoid the clusters of residential development and improved lands (e.g., golf courses, race tracks) found south of the future urban area boundary in LaSalle. As can be seen in **Exhibit 6.8A**, one east-west access road segment (CF–CG) follows along this boundary north of the plaza, while another (SE-SM) is approximately one-half concession north of the LaSalle/Amherstburg municipal boundary. This latter segment swings north to avoid a crossing of the Canard River and the residential area along the north bank of the river near Malden Road. A third access road segment (SH-SM) is located approximately one-half concession south of the LaSalle/Amherstburg municipal boundary. This alternative crosses the Canard River immediately east of the settlement area along the southern bank of the river. The connection to Plaza CS1 is aligned south of Martin Lane, parallel with the property fabric, which is generally perpendicular to the Detroit River. As with the other southern alternatives, the east-west segments were connected to two north-south segments, connecting to Highway 401 at either Highway 3 or near Concession Road 10.

The east-west segments connecting to Plaza CS4 in LaSalle include an alignment that follows the town's future urban area boundary, then swings south to avoid the Essex Golf and Country Club, which was identified as a significant community feature. The other access road segment is located south of Bouffard Road within the town's future urban area to determine whether there would be any advantage to having a new east-west freeway facility to serve this growing community, and whether the plans for the urban area of LaSalle could accommodate a new east-west transportation corridor. These east-west segments were also connected to the two north-south segments connecting to Highway 401 at either Highway 3 or at the end of the long tangent section near Concession Road 10.

EXHIBIT 6.7 – ILLUSTRATIVE CROSSING, PLAZA AND ACCESS ROAD ALTERNATIVES



CENTRAL ALTERNATIVES

Most of the central alternatives were located in the highly developed urban areas of Windsor and LaSalle (refer to **Exhibit 6.8B**). To reduce impacts to existing communities and neighbourhoods, existing transportation corridors were considered for a new freeway connecting the central plaza sites (CC1, CC2, CC3, CC4, CC7, CT1 and CR1) to Highway 401. The Huron Church/Talbot Road/Highway 3 corridor was one alternative, as was the former Canadian Southern (CASO) rail corridor (now the Detroit River Tunnel Partnership [DRTP] Rail Corridor). The E.C. Row Expressway corridor, with connections at Huron Church Road, the DRTP rail corridor, or a Lauzon Parkway Extension, were also considered as corridors for conveying international traffic between Highway 401 and the Detroit River.

A new highway corridor was considered in the Talbot Road area to bypass the existing residential uses that currently have direct access to Talbot Road. This segment (CC-CE-CI) passes within the designated urban area boundary of LaSalle, through an active development area, and along the Huron Church Line corridor to the Huron Church Road/Todd Lane area.

Other new highway corridors were developed in the area of Ojibway Prairie. One such segment parallels Todd Lane west of Huron Church Road along the Windsor/LaSalle municipal boundary, westerly to Ojibway Parkway. This alignment is derived from the recommended alignment for a truck bypass route connected to a traffic management centre in the Brighton Beach area identified in the *Windsor Gateway Study, Sam Schwartz Engineering, January 2005*.

Another segment parallels Todd Lane west of Huron Church Road along the Windsor/LaSalle municipal boundary to Malden Road, then follows the Malden Road corridor to the E.C. Row Corridor. This segment avoids severance impacts to the Ojibway Prairie Provincial Nature Reserve and the development along Huron Church Road north of Todd Lane/Cabana Road West.

Alternative routes to using the Highway 3/Huron Church Road corridor to access the Ambassador Bridge were also developed. These included a new corridor from the western terminal of the E.C. Row Expressway along the Essex Terminal Railway (ETR) corridor to the Ambassador Bridge plaza (segment CP-CQ-CT). This segment is a part of what has been referred to locally as the Ambassador Ring Road concept. Another corridor was developed with a similar concept for using the ETR corridor to access the Ambassador Bridge from the DRTP Rail Corridor (segment CS-CT).

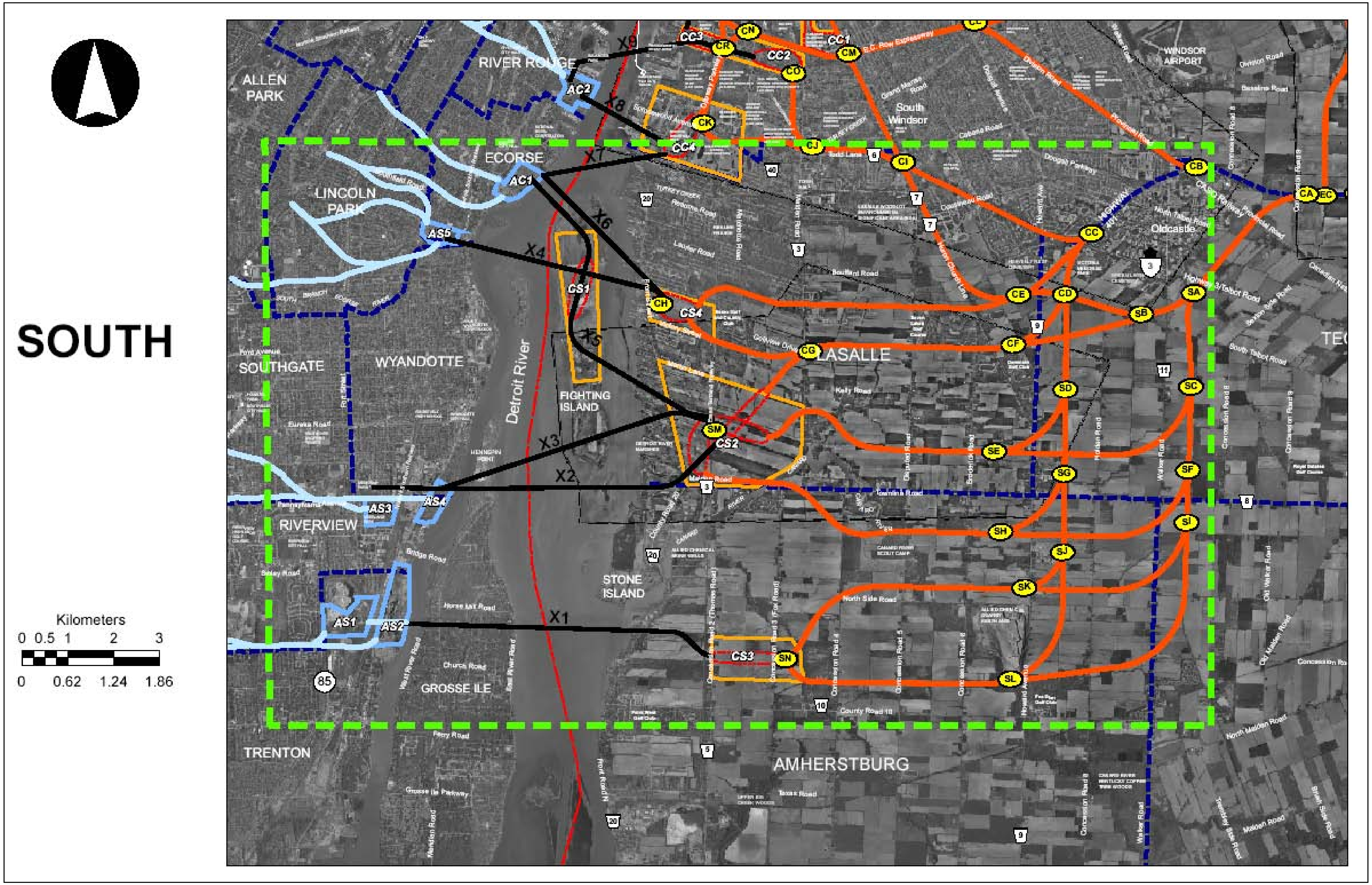
EAST ALTERNATIVES

To connect plazas CE1 and CE2 to Highway 401, access road segments were developed along the Lauzon Parkway/Concession Road 10 corridor and the Banwell Road/Manning Road corridor (refer to **Exhibit 6.8C**). North of the E.C. Row Expressway, existing transportation corridors were considered for a new freeway to reduce impacts to existing communities and neighbourhoods. South of E.C. Row, the land uses are primarily agricultural. Two segments were considered in the Concession Road 10 corridor: one segment along Concession 10, and another between Concession 9 and 10 to reduce impacts to agricultural operations, residences and other development that is presently along the frontage of Concession Road 10.

Connections between the Concession Road 10/Lauzon Parkway corridor and the Banwell Road corridor were provided via access road segments ED-EE and EG-EF (i.e., E.C. Row Expressway).

The illustrative crossing, plaza and access road alternatives were carried forward for analysis and evaluation to determine the practical alternatives to be carried forward for additional analysis.

EXHIBIT 6.8A – ILLUSTRATIVE ALTERNATIVES – SOUTH CORRIDOR – ACCESS ROAD ROUTES CONNECTING TO CROSSINGS X1, X2, X3, X4, X5 AND X6



Canada
U.S. Department of Transportation Federal Highway Administration
Ontario
MDOT Michigan Department of Transportation
URS

EXHIBIT 6.8B – ILLUSTRATIVE ALTERNATIVES – CENTRAL CORRIDOR – ACCESS ROAD ROUTES CONNECTING TO CROSSINGS X7, X8, X9, X10, X11, X12, X13 AND X14

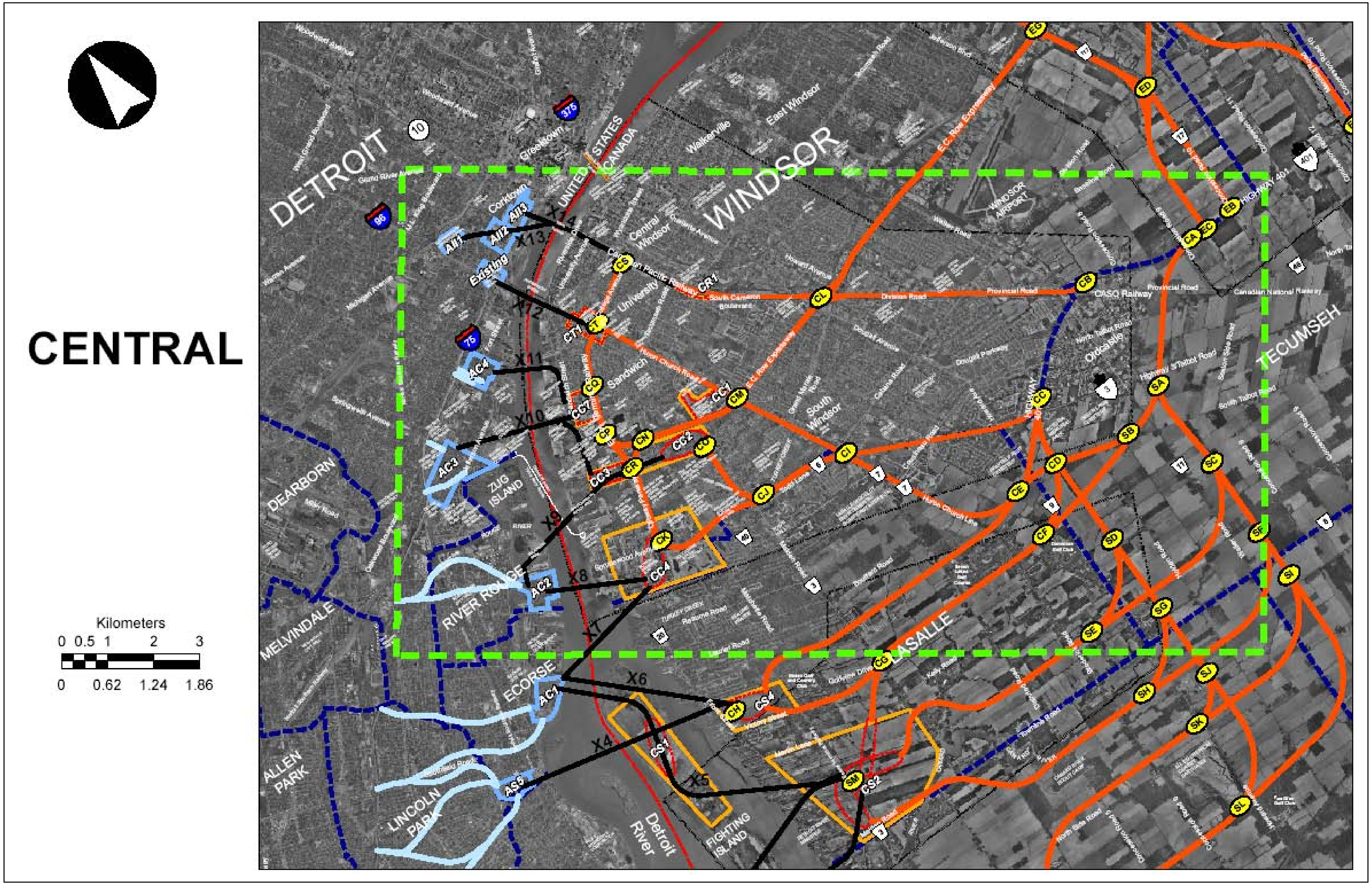
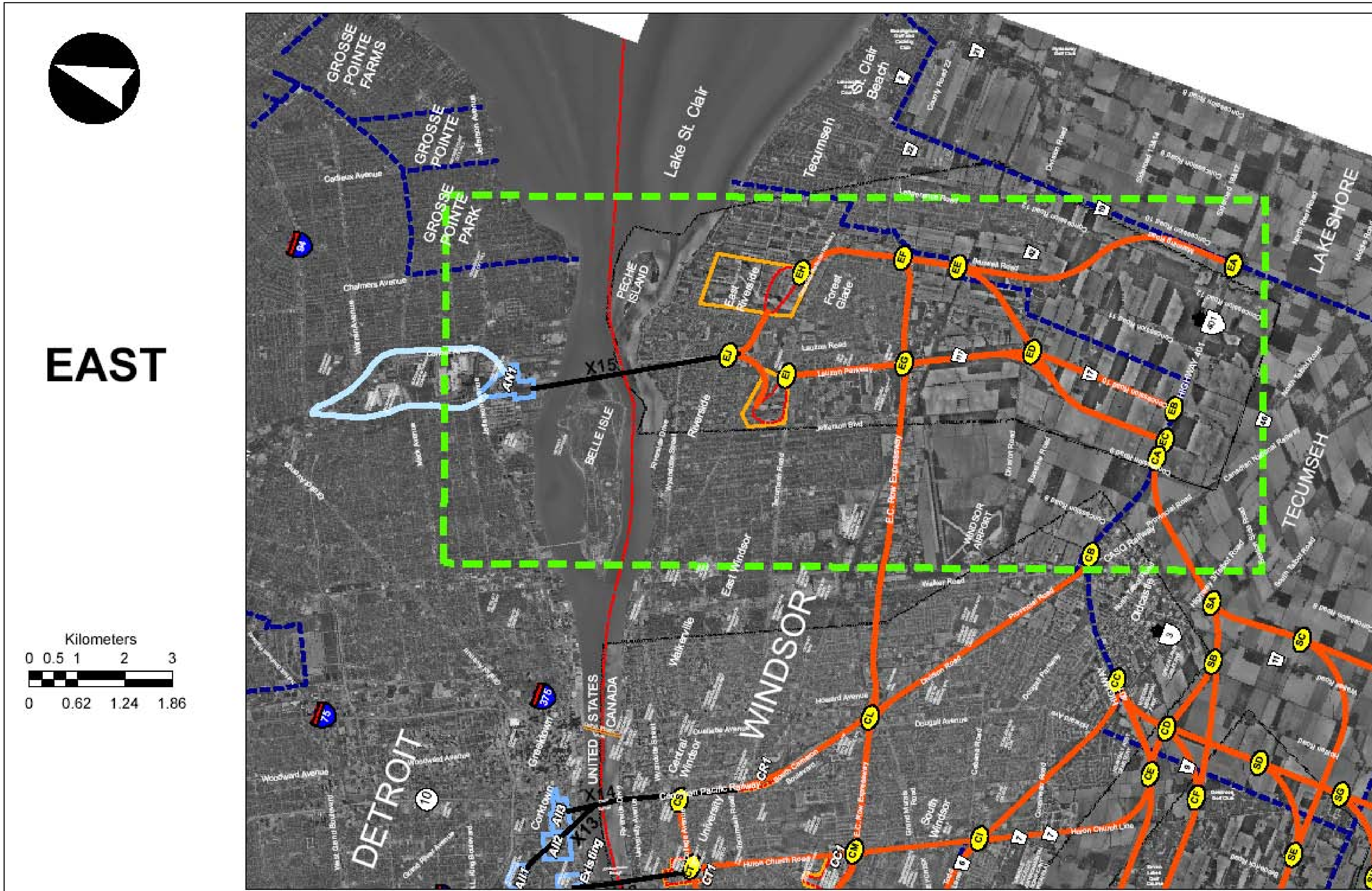


EXHIBIT 6.8C – ILLUSTRATIVE ALTERNATIVES – EAST CORRIDOR – ACCESS ROAD ROUTES CONNECTING TO CROSSING X15



6.2 Process for Evaluating Illustrative Alternatives

Given the nature and extent of land uses and development along the Detroit River in both Canada and the U.S., it was recognized that it is not possible to develop a new or expanded river crossing, plaza and access road that entirely avoids impacts on local communities and the environment.

This section describes the approach implemented on the Canadian side for evaluating the illustrative crossing, inspection plaza and access road alternatives in order to identify an Area of Continued Analysis (ACA) within which to develop the more refined practical crossing, inspection plaza and access road alternatives.

6.2.1 Evaluation Sequence

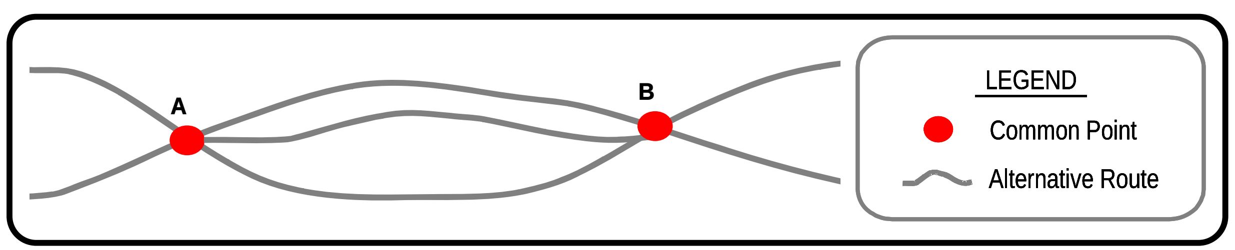
The illustrative crossing, inspection plaza and access road alternatives were evaluated following a multi-stage process, which is summarized in Section 6.3.

Initially, the illustrative crossing, plaza and access road alternatives were assessed and evaluated separately on the Canadian and U.S. sides. The U.S. study team used the same evaluation criteria as the Canadian study team, with modifications as appropriate to reflect the unique requirements and characteristics of the U.S. study area.

The results of the U.S. and Canadian analyses were compiled for an end-to-end assessment of illustrative crossing, plaza and access road alternatives for connecting Highway 401 in Ontario to the interstate freeway system in Michigan.

It should be noted that in evaluating the access road alternatives, an analysis was undertaken to determine preferred alternatives for portions of the PAA rather than comprehensively examining all combinations of alternatives for the entire region. Common points among the alternatives were identified, and alternative segments between each common point were evaluated. For example, in Exhibit 6.9, access road alternatives between common points “A” and “B” were compared to select a preferred alternative for that segment of the access road prior to assessing alternatives beyond common point “B”.

EXHIBIT 6.9 – GENERIC ROUTE SEGMENT



6.2.2 Evaluation Criteria

Table 3.4 of the approved EA TOR provides a listing of 18 proposed evaluation factors and 35 criteria for the Detroit River International Crossing study (refer to Table 6.2). The Canadian and U.S. study teams developed a revised evaluation table that simplified the number of factor areas to be considered from 18 to seven, to enable the public to more easily provide input to the study teams in terms of rating the importance of the factors.

The seven factors in the revised evaluation table are consistent with those of the approved EA TOR and cover a broad range of issues, including the ability of the alternative to meet the Partnership's underlying transportation objectives, as well as natural, social, cultural, economic, and technical considerations.

Performance measures used in the analysis of illustrative alternatives include the 35 criteria from the approved EA TOR. These have been retained and added to, based on comments received during the public consultations.

The seven evaluation factors and the performance measures used for the Detroit River International Crossing study, as well as the corresponding criteria reference from Table 3.4 of the approved EA TOR (where applicable) are shown in Table 6.3.

TABLE 6.2 – CRITERIA FOR EVALUATING ILLUSTRATIVE AND PRACTICAL ALTERNATIVES – FROM APPROVED OEA TOR

FACTOR	CRITERIA
Socio-Economic Environment	
1. Property and Access	1) Impacts to residential areas (i.e., property, access impacts) 2) Impacts to commercial/industrial areas (i.e., property, access impacts) 3) Impacts to agricultural operations
2. Community Effects	4) Nuisance impacts (e.g., noise, lighting) 5) Impacts to cemeteries, schools, places of worship, unique community features 6) Effects on community activity / mobility 7) Effects on aesthetics / community character
3. Governmental Land Use Strategies	8) Compatibility with government goals / objectives / policies 9) Effects on approved private development proposals
Cultural Environment	
4. Archaeology	10) Impacts to historic/archaeological sites
5. Heritage and Recreation	11) Impacts to built heritage features and cultural landscape units 12) Impacts to National, State/Provincial and local parks/recreation sites
Natural Environment	
6. Groundwater	13) Impacts to groundwater recharge and discharge areas, as well as identified wellhead and source protection areas and areas susceptible to groundwater contamination
7. Aquatic Habitat, Fisheries, and Surface Water	14) Impacts to critical fish habitat features (spawning, rearing, nursery, important feeding areas) 15) Number of watercourse crossings required 16) Impacts to water bodies, including channel realignments and fill
8. Agricultural	17) Impacts to prime agricultural areas
9. Wetlands	18) Impacts to Provincially Significant Wetlands and wetland function 19) Impacts to evaluated and unevaluated wetlands

FACTOR	CRITERIA
10. Wildlife	20) Effects on species at risk / endangered species (vegetation, fish and wildlife) 21) Effects on ecologically functional areas such as connective corridors or travel ways
11. Special Areas	22) Impacts to important wildlife areas such as deeryards, heronries, waterfowl areas, important bird areas (IBA). Other areas to be considered are any identified wildlife management, rehabilitation and research program sites. 23) Impacts to environmentally significant features such as Environmentally Sensitive Areas (ESAs), Areas of Natural and Scientific Interest (ANSIs) or other areas of provincial, regional or local significance and the functions of these features 24) Impacts to special spaces including the Detroit River, Conservation Authority Lands and NEPA 4(f) lands including the function of these features
12. Air Quality	25) Effects on sensitive receptors to air quality 26) Air pollutants and GHG emissions
13. Woodlands	27) Impacts to significant forest stands and woodlots (including interior forest habitat)
14. Resources	28) Impacts to mineral, petroleum and mineral aggregate resources
15. Property Waste & Contamination	29) Effect on operating and closed waste disposal sites 30) Impacts to other known contaminated sites
Technical Considerations	
16. Transportation	31) Transportation Operations 32) Network Compatibility 33) Border Processing
17. Engineering	34) Constructability Issues
18. Cost	35) Cost

Note: The EA TOR identified that this set of factors and criteria represents the minimum criteria to be considered during the evaluation of alternatives (practical and illustrative alternatives) and are subject to refinement and modification during the Integrated Environmental Study Process based on study findings and input received from stakeholders.

TABLE 6.3 – EVALUATION FACTORS AND PERFORMANCE MEASURES – CANADIAN SIDE

RATING FACTOR	PERFORMANCE MEASURE CATEGORIES	PERFORMANCE MEASURE	CORRESPONDING CRITERIA REFERENCE IN EA TOR TABLE 3.4
Changes in Air Quality	Regional Burden	Analysis based on traffic model results.	25, 26
	Dispersion (CO and $PM_{2.5}$ and other Greenhouse Gases/pollutants)	Analysis for key roadway links [to be measured at practical alternatives stage]	25, 26
Protect Community/ Neighborhood Characteristics	Traffic Impacts • Volumes by Vehicle Type	Peak period volumes on specific links by mode (cars, trucks, and int'l. trucks).	31, 33
	• Local Access	Number of streets crossed, closed, or connected with an interchange.	31, 33
	Noise	Analysis based on traffic model results for key roadway links.	4
	Community Cohesion/Community Character	Encroachment/severance on neighborhood based on professional judgment. Impact on delivery of community services (function of road closures) based on professional judgment.	6, 7
	Acquisitions (Whole or Partial) • Residential	Number of dwelling units by type; population estimate based on average persons per dwelling unit	1
	• Business	Number of business establishments; employment estimate based on average employees per business for area.	2

RATING FACTOR	PERFORMANCE MEASURE CATEGORIES	PERFORMANCE MEASURE	CORRESPONDING CRITERIA REFERENCE IN EA TOR TABLE 3.4
	• Institutions	Number of institutions by type (church, schools, etc.).	5
	• Farm Property / Structures	Operations/structures affected.	3
	Public Safety/Security (Plaza Only)	Assessment based on professional judgment.	NEW
Maintain Consistency with Existing and Planned Land Use	Land Use (existing and planned)	Designation of "consistent," "not consistent," or "not applicable" with goals, objectives and/or policies based on review of official planning documents.	8
	Development Plans	Designation of "compatible," "not compatible," or "not applicable" with plans for upcoming development that may not be covered by official plans.	9
	Contaminated Sites/Disposal Sites	Number of documented sites affected.	29, 30
Protect Cultural Resources	Historical	Number of listed sites affected.	10, 11
	Parklands	Number of parks by type; number of hectares affected. Includes subset for Coastal Zone Management sites.	12
	Archaeological Sites	Number of known sites affected.	10
Protect the Natural Environment	Environmentally Significant Features	Area (in hectares) affected by type.	14-19, 21, 23, 24, 27
	Surface Water Quality/Groundwater	Area of floodplains affected (hectares); number of water crossings (including secondary rivers and streams); Detroit River channel alteration; number and general location of in-water piers; wells/groundwater sources affected; number of water intakes affected.	13, 16
	Environmentally Significant Species/ Habitat	Area of habitat (hectares) affected by type; list of species; other significant features.	20, 23
	Farmland/Prime Agricultural Soils	Area affected (hectares) by soil type	17
	Other Natural Resources	Area affected measured by area of right-of-way.	28
Improve Regional Mobility	Highway Network Effectiveness		
	• Service Levels	Level of Service (LOS) classification by major facility type.	31, 32
	• Vehicle Kilometres of Travel	By major facility type.	31, 32
	• Vehicle Hours of Travel	By major facility type.	31, 32
	• Distance Travelled	Average kilometres for car, local truck, and international truck.	31, 32
	Continuous/ongoing river crossing capacity (i.e., redundancy)	Assessment of availability of crossing options.	32, 33

RATING FACTOR	PERFORMANCE MEASURE CATEGORIES	PERFORMANCE MEASURE	CORRESPONDING CRITERIA REFERENCE IN EA TOR TABLE 3.4
	Operational Considerations of Crossing System (River Crossing and Plaza)	Distance to plaza from international border; accessibility; serviceability; security; flexibility for expansion.	32, 33
Minimize Cost	Millions of Dollars (2005)	Length of alternative, preliminary construction costs, constructability including site constraints; geotechnical constraints; construction staging/ duration; traffic maintenance; risk assessment.	34, 35

6.2.3 Evaluation Methods

The approved EA TOR, 2004 identified two evaluation methods to be employed in the evaluation process: reasoned argument method and arithmetic method. Each method is summarized in the following sections:

REASONED ARGUMENT METHOD

The reasoned argument method was the primary evaluation method employed. This method highlights the differences in net impacts associated with the various alternatives. Based on these differences, the advantages and disadvantages of each alternative are identified. The relative importance of the impacts is examined to provide a clear rationale for the selection of a preferred alternative. The rationale that favours the selection of one alternative over all others is derived from the following sources:

- Government legislation, policies and guidelines;
- Existing land use and municipal policy (i.e., Official Plans);
- Technical Considerations (i.e., degree to which the identified transportation problems are addressed);
- Issues and concerns identified during consultation with ministries, departments and agencies, municipalities, ratepayer and interest groups and the general public - including input obtained through the weighting of the relative level of importance of evaluation criteria (described in further detail in the next section); and
- Study team expertise.

ARITHMETIC METHOD

The arithmetic evaluation was the secondary method employed for this study. This method incorporates numeric values for both the level of importance of each environmental attribute (referred to as the weight) and the magnitude of the impact or benefit associated with an alternative (referred to as the score). The weight is multiplied by the score to obtain a total weighted score. The totals for each alternative are compared to determine the preferred alternative. The Arithmetic Method also allows for sensitivity testing as numerous weighting scenarios can be developed.

Weighting (level of importance)

For the evaluation of illustrative alternatives, separate Canadian and American weighting scenarios were developed to allow the Canadian and U.S. teams to reflect the unique differences in study areas in the evaluation. Within Canada, one weighting scenario was developed by the Canadian study team (refer to Table 6.4). In addition, the Partnership recognized that input from the public, government ministries, departments and agencies, local municipalities and other stakeholders is essential to successful planning of major transportation improvements, such as the Detroit River International Crossing study. Stakeholders and interested individuals were encouraged to provide input to the evaluation of illustrative alternatives.

Public input to the weighting of the seven evaluation factors was obtained through a rating tool distributed at the first round of public consultation in June 2005. Rating tools were made available at Public Information Open Houses as well as at the local Project Office and on the project website. Interested members of the public were asked to provide the study team with their opinion as to how highly (on a scale of 0 to 100) each factor should be considered in deciding on what alternatives to carry forward for additional study.

A total of 61 valid rating tools were received, including 45 responses from the general public, 15 responses from members of the Community Consultation Group (CCG) and one from a government agency.

The rating tools received from the public and other stakeholders were arithmetically combined and normalized to percentages. The public and CCG weighting scenarios were developed mathematically. The weighting scenarios therefore do not reflect a consensus among study participants. Individuals that participated in the rating exercise may hold views that vary significantly from those represented in the weighting scenarios.

In addition, more than 150 comment sheets were received during the first round of consultation. The most frequent comments received included concerns with:

- Protection of natural features;
- Reduction of impacts to residential areas; and
- Air quality/human health.

The range of views represented in the rating tools and comment sheets received from the first round of consultation provided the Canadian study team with an understanding of community values with respect to the relative importance of each environmental feature, which subsequently was considered in the study team weighting.

Scoring (degree of impact)

Study team specialists with expertise in all of the environmental factors areas assessed the degree of impact and benefit and assigned a score for each alternative. The study team specialists based their assessment of impacts on field measurements, results of prediction models, secondary data sources and other means as appropriate.

The score assigned to each environmental attribute by the qualified specialist was based on the relative degree of impact or benefit generated. Relative impacts can range from those that are positive (benefit the environment) to negative (detrimental to the environment).

TABLE 6.4 – CANADIAN STUDY TEAM WEIGHTING SCENARIO

Factor	Rationale	Rating
Improve Regional Mobility	The study team considered this factor of highest importance as it reflects one of the primary purposes of the project; a new or expanded crossing and associated inspection plazas and freeway connections are essential to the international economies of Canada and the U.S., Ontario and Michigan and the local economies in the Windsor/Essex County-Detroit/Wayne County region. The new facility will serve the border transportation network well beyond the 30-year planning horizon of this study. Given that this project is likely to have an impact on the local communities, and over time, communities will adjust to the new transportation network, it is imperative that the selected improvements satisfy the long-term mobility needs of the border transportation network.	100
Protection of Community & Neighbourhood Characteristics	The study team considered this factor of high importance on the basis that the community and neighbourhoods are sensitive to impacts associated with a major transportation project such as the DRIC. The DRIC will provide direct freeway access from Highway 401 to the new/expanded crossing; as a high-volume, high-speed facility, this project will have an impact on properties and access that could change the function and character of a community or neighbourhood. Reducing the impacts on the community associated with the international traffic facility is a high priority of the study team.	90
Protection of Natural Environment	The study team considered this factor to be of high importance on the basis that the remaining woodlot, prairie and wetland features provide unique habitat for some rare and endangered species. Federal, provincial and local municipal designations have been placed on many of the remaining natural features in the Preliminary Analysis Area. Local municipalities have incorporated the sensitive natural areas into their local planning to preserve and protect these features for their habitat value, as well as their community recreational benefits.	90
Minimize Cost	The study team considered this factor to be of moderate to high importance on the basis that this factor addresses cost and constructability of the new or expanded crossing. This project will be paid for by government funds and/or through tolls paid by users; minimizing the costs of the project will reduce the costs to users and/or taxpayers. In addition, the objectives of this project call for a new or expanded crossing to be in place as quickly as possible to reduce the potential for disruption to the movement of people and goods at this crucial border crossing. Reducing construction impacts and risks is important for the timely completion of this project.	75
Changes to Air Quality	This factor was considered of moderate importance by the study team on the basis that transportation is a minor contributor to ambient pollutants in the Windsor-Essex area. The majority of airborne pollutants and toxins are from industrial sources in the Windsor-Detroit area and external sources. The study team observed that by giving greater importance to protection of community and neighbourhood characteristics and protection of natural features, impacts to sensitive receivers for air quality will be reduced.	70
Protection of Cultural Resources	The study team considered this factor to be of moderate importance on the basis that much of the project area is disturbed by development and/or agriculture. As well, the level of importance assigned to this factor reflects that impacts to such features can usually be mitigated to reduce the effects to the resource. MTO has established procedures to avoid or minimize impacts to archaeological features. Built features can usually be mitigated by avoidance or relocation of the feature.	70
Maintain Consistency with Existing and Planned Land Use	The study team considered this factor to be of moderate importance on the basis that many of the aspects of minimizing impacts to existing land use are addressed in the assessment of impacts to neighbourhoods and communities, and that future land use designations can be changed to reflect provincial and federal land use initiatives and priorities. It is recognized that the local municipalities in the Windsor-Essex County area have Official Plans that identify municipal planning objectives for land use and municipal aspirations for growth.	70

6.3 Analysis and Evaluation of Illustrative Alternatives – Canadian Side

6.3.1 Access Road Alternatives

As noted in **Section 6.2**, the illustrative access road alternatives were evaluated on a segmental basis. Common points among the alternatives were identified, and alternative segments between each common point were evaluated. The following sections summarize the evaluation of the illustrative access road alternatives.

SOUTH ALTERNATIVES – CORRESPONDING TO CROSSINGS X1, X2, X3, X4, X5 AND X6

As shown in **Exhibit 6.10**, the south alternatives share a common connection to Highway 401 at Highway 3, they all bypass the existing metropolitan areas of Windsor, LaSalle and Tecumseh, and they primarily traverse sparsely populated rural lands. Another defining characteristic common to the south alternatives is the width of the Detroit River, which varies from approximately 4500 m at the north end of Grosse Ile to 2500 m at the north end of Fighting Island. At these lengths, multi-span structures with piers in the river and/or on the islands in this area of the river would be required. In comparison, the width of the river in the central sections near the Ambassador Bridge is in the order of 600 to 900 m, and 1500 m in the eastern sections of the river near Belle Isle.

Connecting Route to Plaza CS3/Crossing X1

Table 6.5 provides a summary of the evaluation of the route segments connecting to plaza CS3. The best way to Plaza CS3/Crossing X1 was determined as the combination of route segments CC-CD-SD-SG-SJ-SK-SN. Details of this assessment are included in the *Generation and Assessment of Illustrative Alternatives Report (November 2005)*.

From the Highway 401/Highway 3 interchange, the alignment generally parallels Howard Avenue north-south through the Town of LaSalle into the Town of Amherstburg, and runs east-west along a line north of North Side Road to Plaza CS3.

Connecting Route to Plaza CS2/Crossing X2/X3 and Plaza CS1/Crossing X5

Table 6.6 provides a summary of the evaluation of the route segments connecting to plaza CS2 and the east portion of crossing X5. The best way to Plaza CS2 and the east portion of crossing X5 was determined as the combination of route segments CC-CD-CF-CG-SM. Details of this assessment are included in the *Generation and Assessment of Illustrative Alternatives Report (November 2005)*.

From the Highway 401/Highway 3 interchange, the alignment generally aligns with the southern limit of the future urban area in the Town of LaSalle. At Malden Road, the alignment bears south-westerly across Martin Lane, to a plaza opportunity area designated CS2, which is a large area of agricultural land north of River Canard. Within this opportunity area, plazas can be configured to connect to Crossings X2 and X3. Crossing X2 is aligned to avoid Fighting Island and cross at 90 degrees to the Detroit River.

Connecting Route to Plaza CS2/Crossing X3

Similar to Crossing X2, Crossing X3 also connects to Plaza CS2. The X3 crossing/plaza/connecting route combination also incorporates the combination of route segments CC-CD-CF-CG-SM. The alignment of Crossing X3 crosses over the south end of Fighting Island, resulting in a slightly different location for Plaza CS2.

Connecting Route to Plaza CS4/Crossings X4 and X6

Table 6.7 provides a summary of the evaluation of the route segments connecting to plaza CS4. The best way to Plaza CS4 was determined as the combination of route segments CC-CD-CF-CG-CH. From the Highway 401/Highway 3 interchange the alignment also aligns with the southern limit of the future urban area in the Town of LaSalle. However, at Malden Road, the alignment continues westerly to a large open area west of the Essex Golf and Country Club, north of Victory Street. From Plaza CS4, connections to Crossing X4 over central Fighting Island to U.S. Plaza AS5, and Crossing X6 to U.S. Plaza AC1 were considered.

EXHIBIT 6.10 – SOUTH ALTERNATIVES

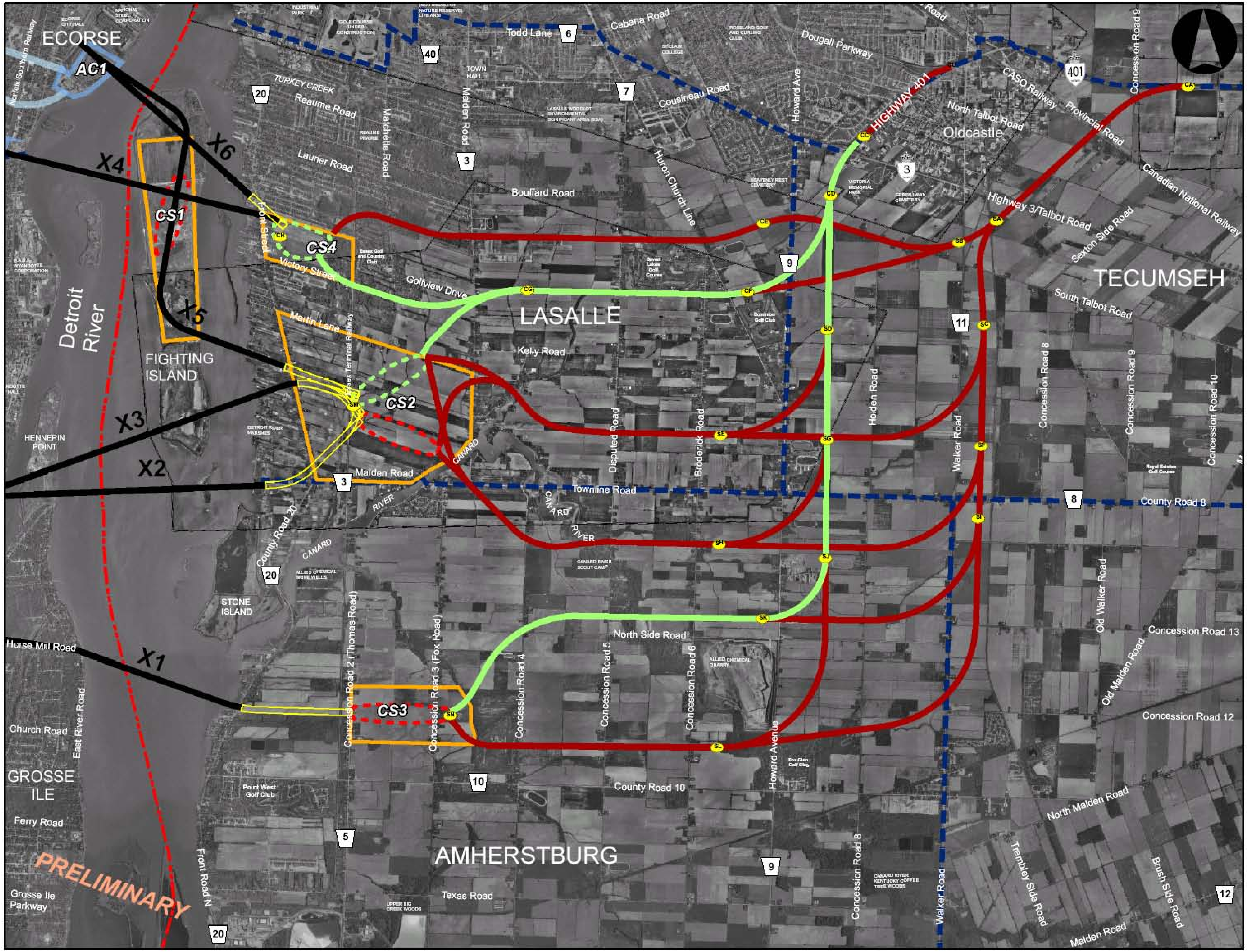


TABLE 6.5 – SUMMARY OF ASSESSMENT OF SOUTH ROUTE SEGMENTS – CONNECTION TO PLAZA CS3/CROSSING X1

FACTOR	Howard Ave/North Side Road (CC-SK-SN)	Walker Rd/North Side Road (CA-SK-SN)	Howard Ave/Cty Rd 10 (CC-SL-SN)	Walker Rd/Cty Rd 10 (CA-SL-SN)
Changes to Air Quality	Small to moderate increase in pollutants on a system-wide basis	Small to moderate increase in pollutants on a system-wide basis	Small to moderate increase in pollutants on a system-wide basis	Small to moderate increase in pollutants on a system-wide basis
Community and Neighbourhood Impacts	Impacts to agricultural area: Displacements: <10 Households; <5 Businesses; <10 Farm building complexes Disruption: 60+ Households within 250 m of centreline; <5 Businesses; <20 Farm building complexes	Impacts to agricultural area and hamlet of Paquette Corners: Displacements: 10+ Households <5 Businesses; <10 Farm Building Complexes Disruption: 60+ Households within 250 m of centreline; <5 Businesses; 20+ Farm building complexes	Impacts to agricultural area: Displacements: <5 Households <5 Businesses; <5 Farm Building Complexes Disruption: 60+ Households within 250 m of centreline; <5 Businesses; 10+ Farm building complexes	Impacts to agricultural area, MacGregor Square (development area) and hamlet of Paquette Corners: Displacements: 10+ Households <5 Businesses; 5+ Farm Building Complexes Disruption: 80+ Households within 250 m of centreline; <5 Businesses; <20 Farm building complexes
Consistency with Land Use	Impacts to rural agricultural uses; generally consistent	Impacts to rural agricultural uses; generally consistent; impacts to hamlet of Paquette Corners and Oldcastle settlement area and Trans-Canada Trail	Impacts to rural agricultural uses; generally consistent; impact to proposed gravel pit operation	Impacts to rural agricultural uses; generally consistent; impacts to MacGregor, hamlet of Paquette Corners and Oldcastle settlement area and Trans-Canada Trail
Impacts to Cultural Resources	2 known significant archaeological sites impacted; low potential for impacting unknown sites	3 known significant archaeological sites impacted; low potential for impacting unknown sites; impacts Trans-Canada Trail	3 known significant archaeological sites impacted; low potential for impacting unknown sites	4 known significant archaeological sites impacted; low potential for impacting unknown sites; impacts Trans-Canada Trail
Natural Environment	Proximity impacts to two ESAs; overall low impacts	Impacts a greater area of forest blocks than Howard Ave alternatives; overall low impacts	Direct impacts to natural features; overall low impacts	Impacts a greatest area of forest blocks than other alternatives; overall low impacts
Improve Regional Mobility	Provides new freeway route; limited improvement for local Windsor area international traffic	Provides new freeway route; limited improvement for local Windsor area international traffic	Provides new freeway route; limited improvement for local Windsor area international traffic	Provides new freeway route; limited improvement for local Windsor area international traffic
Cost	Comparable to other options for cost and constructability;	Comparable to other options for cost and constructability;	Comparable to other options for cost and constructability;	Comparable to other options for cost and constructability;
Conclusions	The Howard Avenue alternatives avoid impacts to Paquette Corners, as well as MacGregor and Oldcastle developments; North Side Road alignment preferred over County Road 10 alignment due to lower impacts to cultural and natural features. Route segment CC-SK-SN is preferred.			

TABLE 6.6 – SUMMARY OF ASSESSMENT OF SOUTH ROUTE SEGMENTS – CONNECTION TO PLAZA CS2/CROSSING X2/X3 AND PLAZA CS1/CROSSING X5

FACTOR	Howard Ave/LaSalle Urban Boundary (CC-CF-SM)	Walker Rd/LaSalle Urban Boundary (CA-SB-CF-SM)	Howard Ave/North of Townline Road (CC-SE-SM)	Walker Rd/North of Townline Road (CA-SC-SE-SM)	Howard Ave/South of Townline Road (CC-SH-SM)	Walker Rd/South of Townline Road (CA-SF-SH-SM)
Changes to Air Quality	Small to moderate increase in pollutants on a system-wide basis	Small to moderate increase in pollutants on a system-wide basis	Small to moderate increase in pollutants on a system-wide basis	Small to moderate increase in pollutants on a system-wide basis	Small to moderate increase in pollutants on a system-wide basis	Small to moderate increase in pollutants on a system-wide basis
Community and Neighbourhood Impacts	Impacts boundary of LaSalle future urban area and agricultural area: Displacements: <5 Households <5 Businesses; 0+ Farm Building Complexes Disruption: 80+ Households within 250 m of centreline; <5 Businesses; <10 Farm building complexes	Impacts boundary of LaSalle future urban area, parks and agricultural area, Displacements: <5 Households <5 Businesses; <5 Farm Building Complexes Disruption: <50 Households within 250 m of centreline; <5 Businesses; 15+ Farm building complexes	Impacts to agricultural area: Displacements: 10+ Households; 0+ Businesses; 5+ Farm building complexes Disruption: <95 Households within 250 m of centreline; <5 Businesses; <15 Farm building complexes	Impacts to agricultural area Displacements: <10 Households 0+ Businesses; 10+ Farm Building Complexes Disruption: 70+ Households within 250 m of centreline; <5 Businesses; <30 Farm building complexes	Impacts to agricultural area and hamlet of Loiselleville: Displacements: 5+ Households; 0+ Businesses; <10 Farm building complexes Disruption: 140+ Households within 250 m of centreline; <5 Businesses; 20+ Farm building complexes	Impacts to agricultural area: hamlets of Paquette Corners and Loiselleville: Displacements: <15 Households; 0+ Businesses; 5+ Farm building complexes Disruption: 140+ Households within 250 m of centreline; 0+ Businesses; <25 Farm building complexes
Consistency with Land Use	Impacts boundary of LaSalle future urban area and to rural agricultural uses; generally consistent	Impacts boundary of LaSalle future urban area and to rural agricultural uses; generally consistent; impacts to Oldcastle settlement area and Trans-Canada Trail	Impacts to rural agricultural uses; generally consistent	Impacts to rural agricultural uses; generally consistent; impacts to Oldcastle settlement area and Trans-Canada Trail	Impacts to rural agricultural uses; hamlet of Loiselleville generally consistent	Impacts to rural agricultural uses; generally consistent; impacts to Oldcastle settlement area and hamlets of Paquette Corners and Loiselleville and Trans-Canada Trail
Impacts to Cultural Resources	No known significant archaeological sites impacted; moderate potential for impacting unknown sites	No known significant archaeological sites impacted; moderate potential for impacting unknown sites	No known significant archaeological sites impacted; low potential for impacting unknown sites	No known significant archaeological sites impacted; low potential for impacting unknown sites	No known significant archaeological sites impacted; moderate potential for impacting unknown sites	No known significant archaeological sites impacted; moderate potential for impacting unknown sites
Natural Environment	Avoids impacts to Canard River; low impacts to other features	Avoids impacts to Canard River; higher impacts to forest blocks and watercourses than Howard Ave option;	Direct impacts to Canard River and marshes (provincially significant);	Direct impacts to Canard River and marshes (provincially significant);	Direct impacts to Canard River and marshes (provincially significant);	Direct impacts to Canard River and marshes (provincially significant);
Improve Regional Mobility	Provides new freeway route; limited improvement for local Windsor area int'l traffic	Provides new freeway route; limited improvement for local Windsor area int'l traffic	Provides new freeway route; limited improvement for local Windsor area int'l traffic	Provides new freeway route; limited improvement for local Windsor area int'l traffic	Provides new freeway route; limited improvement for local Windsor area int'l traffic	Provides new freeway route; limited improvement for local Windsor area int'l traffic
Cost	Comparable to other options for cost and constructability;	Comparable to other options for cost and constructability;	Comparable to other options for cost and constructability;	Comparable to other options for cost and constructability;	Comparable to other options for cost and constructability;	Comparable to other options for cost and constructability;
Conclusions	Alternatives south of Townline Road impact the community of Loiselleville and provincially significant Canard River wetlands and are the least preferred; alternatives following LaSalle future urban boundary avoid Canard River wetlands and are therefore preferred over other alternatives; Howard Avenue alternative identified as having slightly fewer impacts to community characteristics, land use, cultural resources and natural environment. Route Segment CC-CF-SM is preferred.					

TABLE 6.7 – SUMMARY OF ASSESSMENT OF SOUTH ROUTE SEGMENTS – CONNECTION TO PLAZA CS4/CROSSING X4 AND X6

FACTOR	Howard Ave/LaSalle Urban Boundary (CC-CF-CH)	Walker Rd/LaSalle Urban Boundary (CA-SB-CF-CH)	Howard Ave/Laurier Drive (CC-CE-CH)	Walker Rd/Laurier Drive (CA-SC-CE-CH)
Changes to Air Quality	Small to moderate increase in pollutants on a system-wide basis	Small to moderate increase in pollutants on a system-wide basis	Small to moderate increase in pollutants on a system-wide basis	Small to moderate increase in pollutants on a system-wide basis
Community and Neighbourhood Impacts	Impacts boundary of LaSalle future urban area, residential area at Victory Street inside urban boundary; Displacements: 75+ Households <5 Businesses; <5 Farm building complexes Disruption: 155+ Households within 250 m of centreline; <5 Businesses; 10+ Farm building complexes	Impacts boundary of LaSalle future urban area, parks and agricultural area, Displacements: 75+ Households <5 Businesses; <5 Farm building complexes Disruption: 125+ Households within 250 m of centreline; <5 Businesses; 15+ Farm building complexes	Impacts to LaSalle's new community centre and recreation complex and planned Town Centre Displacements: <30 Households; <5 Businesses; 0+ Farm building complexes Disruption: 215+ Households within 250 m of centreline; <5 Businesse; <10 Farm building complexes	Impacts to LaSalle's new community centre and recreation complex, parks and planned Town Centre Displacements: <30 Households <5 Businesses; 10+ Farm building complexes Disruption: 175+ Households within 250 m of centreline; <5 Businesse; <15 Farm building complexes
Consistency with Land Use	Impacts boundary of LaSalle future urban area and residential uses near Victory Street;	Impacts boundary of LaSalle future urban area and residential uses near Victory Street; impacts to Oldcastle settlement area and Trans-Canada Trail	Not consistent with Town of LaSalle's existing and planned urban area uses; impact to new Town Centre	Not consistent with Town of LaSalle's existing and planned urban area uses; impact to new Town Centre; impacts to Oldcastle settlement area and Trans-Canada Trail
Impacts to Cultural Resources	No known significant archaeological sites impacted; high potential for impacting unknown sites	No known significant archaeological sites impacted; high potential for impacting unknown sites	No known significant archaeological sites impacted; high potential for impacting unknown sites	No known significant archaeological sites impacted; high potential for impacting unknown sites
Natural Environment	Minimal impacts to ETS[1]/habitat	Minimal impacts to ETS[1]/habitat; higher impacts to forest blocks and watercourses than Howard Ave option;	Direct impacts to <10 ha of ETS[1]/habitat	Direct impacts to <10 ha of ETS[1]/habitat; higher impacts to forest blocks and watercourses than Howard Ave option
Improve Regional Mobility	Provides new freeway route; limited improvement for local Windsor area int'l traffic	Provides new freeway route; limited improvement for local Windsor area int'l traffic	Provides new freeway route; limited improvement for local Windsor area int'l traffic	Provides new freeway route; limited improvement for local Windsor area int'l traffic
Cost	Comparable to other options for cost and constructability;	Comparable to other options for cost and constructability;	Comparable to other options for cost and constructability;	Comparable to other options for cost and constructability;
Conclusions	Laurier Drive alternatives impact LaSalle's future urban area and carry higher natural environment impacts; Alternatives that follow urban boundary have higher direct impacts to existing residential area at Victory Street; the impacts to the planned Town Centre for LaSalle are considered to be of higher significance so Laurier Drive alternatives are least preferred; Howard Avenue alternative following LaSalle future urban boundary identified as having slightly fewer impacts to community characteristics, land use, cultural resources and natural environment. Route Segment CC-CF-CH is preferred.			

[1] Endangered or Threatened Species

EAST ALTERNATIVE – CORRESPONDING TO CROSSING X15

The best way to Crossing X15 was determined as the combination of route segments EC-ED-EG-EI to Plaza CE1 (refer to **Table 6.8**). This route generally follows the alignment of Lauzon Parkway/Lauzon Road (see **Exhibit 6.11**). The proposed plaza site for this alternative is located north of Tecumseh Road west of Lauzon Road in an area currently occupied by 'big box' commercial uses, including Wal-Mart, Home Depot, Rona and other ancillary retail. The alignment of the crossing X15 is parallel to and adjacent to Lauzon Road. Due to the location of the shipping channel relative to the shoreline in this area of the Detroit River, a bridge crossing designed to provide the required navigational clearances would extend inland approximately 800 m. This area of the Detroit River features Belle Isle, a 390 ha (980 acre) urban park owned by the City of Detroit on the American side of the river, and Peche Island, a small day-use only provincial park on the Canadian side of the river.

RAIL CORRIDOR ALTERNATIVES – CORRESPONDING TO CROSSINGS X13 AND X14

The use of the former CASO rail corridor was considered in two ways. First, the study team considered the Detroit River Tunnel Partnership (DRTP) proposal for a two-lane truckway connecting to the refurbished rail tunnel. The study team also considered the use of the rail corridor for a new six-lane freeway connecting Highway 401 in Windsor to a new river crossing (bridge or tunnel) also connecting to the freeway system in Detroit. The rail corridor is identified in **Exhibit 6.12**.

For more information on the summary of assessment of the rail corridor alternatives considered as part of the illustrative alternatives stage, the reader is referred to the *Generation and Assessment of Illustrative Alternatives Report (November 2005).*

Crossing X13 (DRTP Proposal)

DRTP is a partnership between two major private enterprises, Canadian Pacific Railway and Borealis Transportation Infrastructure Trust. CP Rail controls the operating rights on the rail corridor that extends from the Detroit River southerly to Highway 401 and beyond (segments CB-CL-CS).

In September 2002, DRTP filed a Notice of Intent to make an application to the Canadian Transportation Agency for approval to construct the Canadian portion of the truckway project. DRTP had begun to prepare an environmental assessment in accordance with the *Canadian Environmental Assessment Act* (CEAA).

A new truck route on the Canadian side will be built along the rail corridor from the existing tunnels to Highway 401. The truckway will make use of available portions of the rail right-of-way north of the Van der Water Yard. South of the Yard, the proposal will use the entire rail right-of-way by taking the CASO rail line out of service.

DRTP owns the rail corridor and additional properties adjacent to the rail corridor. Some additional property is required on the Canadian side in the vicinity of proposed grade separations at Howard Avenue, Walker Road, Cabana Road West and 6th Concession Road.

Crossing X14 (Rail Corridor with Freeway and New Crossing)

As part of the generation of illustrative alternatives, the study team developed an option for a six-lane controlled access roadway that makes use of the rail corridor in connecting Highway 401 to the Detroit River.

This alternative utilizes the DRTP rail corridor to connect Highway 401 to the river. The assessment of this corridor was based on a six-lane freeway designed for use by both truck and auto traffic; a right-of-way of 80 m was assumed for the freeway connection, which is wider than the existing rail corridor south of E.C. Row. In addition, this assessment has assumed that the use of the rail corridor south of Van der Water Yard by CN will be discontinued either through termination of lease agreements between CP and CN, or through agreements worked out through the Rail Rationalization Study being undertaken by the City of Windsor.

EXHIBIT 6.11 – EAST ALTERNATIVE – CROSSING X15

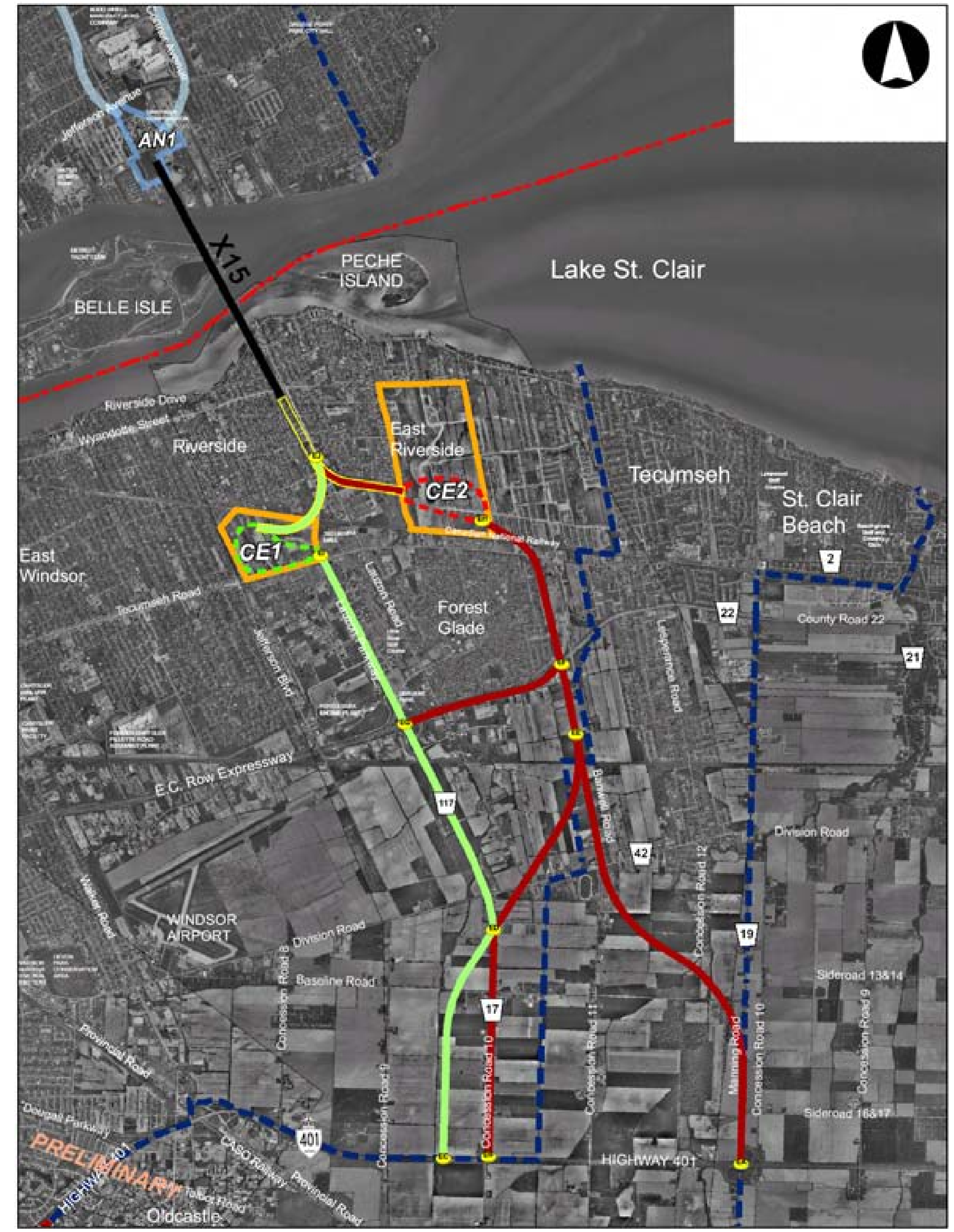
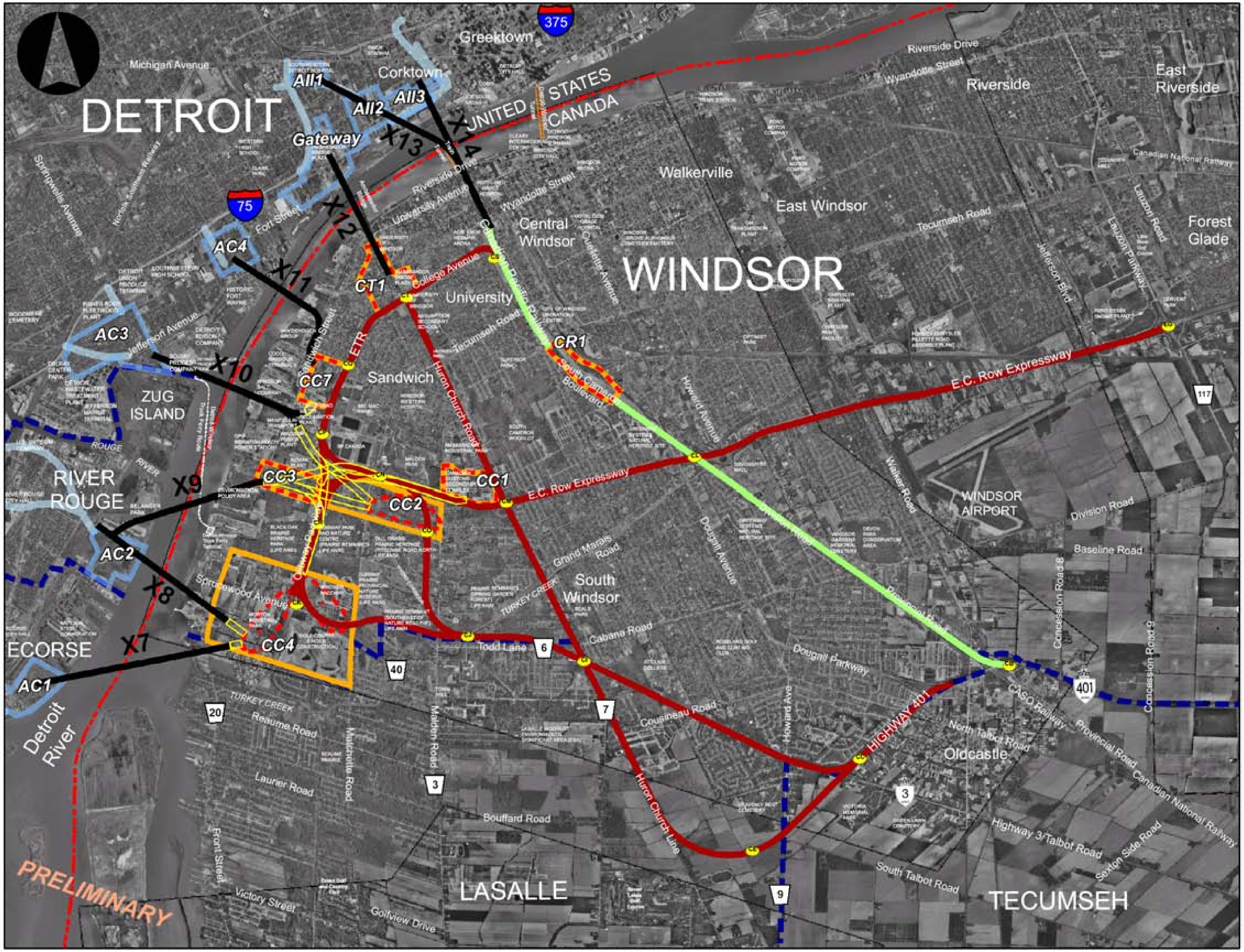


TABLE 6.8 – SUMMARY OF ASSESSMENT OF EAST ROUTE SEGMENTS – CONNECTION TO CROSSING X15

FACTOR	Con Rd 10/Lauzon Pkwy (EC-EG-EJ) to Plaza CE1	Manning Road/Banwell Road (EA-EF-EJ) to Plaza CE2	Manning Road/E.C. Row/Lauzon Pkwy (EA-EF-EG-EJ) to Plaza CE1	Con Rd 10/E.C. Row/Banwell Road (EC-EG-EH-EJ) to Plaza CE2
Changes to Air Quality	Small to moderate increase in pollutants on a system-wide basis;	Small to moderate increase in pollutants on a system-wide basis	Small to moderate increase in pollutants on a system-wide basis	Small to moderate increase in pollutants on a system-wide basis
Community and Neighbourhood Impacts	Impacts urban areas of east Windsor north of E.C. Row; south of E.C. Row, impacts to agricultural area; following rear lot lines west of Con Rd 10 avoids impacts to 8 residences and 13 farm complexes fronting this road Displacements: 380+ Households 15+ Businesses; <5 Farm building complexes Disruption: 1140+ Households within 250 m of centreline; <75 Businesses; <5 Farm building complexes	Impacts urban areas of east Windsor north of E.C. Row; south of E.C. Row, impacts to agricultural area Displacements: 1030+ Households <35 Businesses; <5 Farm building complexes Disruption: 1610+ Households within 250 m of centreline; <10 Businesses; <15 Farm building complexes	Impacts urban areas of east Windsor north of E.C. Row; south of E.C. Row, impacts to agricultural area Displacements: 1020+ Households 30+ Businesses; 5+ Farm building complexes Disruption: 1980+ Households within 250 m of centreline; <10 Businesses; <5 Farm building complexes	Impacts urban areas of east Windsor north of E.C. Row; south of E.C. Row, impacts to agricultural area; following rear lot lines west of Con Rd 10 avoids impacts to 8 residences and 13 farm complexes fronting this road Displacements: 390+ Households 15+ Businesses; <5 Farm building complexes Disruption: 1570+ Households within 250 m of centreline; <75 Businesses; <15 Farm building complexes
Consistency with Land Use	Consistent with land uses south of E.C. Row; Plaza and route north of E.C. Row is not consistent with existing and planned land uses (residential/retail commercial)	Consistent with land uses south of E.C. Row; Plaza and route north of E.C. Row is not consistent with existing and planned land uses (residential/retail commercial); greater impacts to land use than Lauzon Pkwy options	Consistent with land uses south of E.C. Row; Plaza and route north of E.C. Row is not consistent with existing and planned land uses (residential/retail commercial)	Consistent with land uses south of E.C. Row; Plaza and route north of E.C. Row is not consistent with existing and planned land uses (residential/retail commercial); greater impacts to land use than Lauzon Pkwy options
Impacts to Cultural Resources	No known significant archaeological sites impacted; low to moderate potential for impacting unknown sites	1 known significant archaeological site impacted; low potential for impacting unknown sites	No known significant archaeological sites impacted; low potential for impacting unknown sites	1 known significant archaeological sites impacted; low potential for impacting unknown sites
Natural Environment	Avoids designated Environmentally Significant Area but directly impacts 2+ha ETS[1]/habitat	Proximity impacts to 15+ ha designated Environmentally Significant Area; directly impacts 4+ha ETS[1]/habitat	Proximity impacts to 15+ ha designated Environmentally Significant Area; directly impacts 4+ha ETS[1]/habitat	Proximity impacts to 15+ ha designated Environmentally Significant Area; directly impacts 2+ha ETS[1]/habitat
Improve Regional Mobility	Provides new freeway route; limited improvement for local and long distance int'l truck traffic	Provides new freeway route; limited improvement for local and long distance int'l truck traffic; EA-EE-EF segment noted as being substantially more direct than the EC-EE-EF segment, reducing vehicle-km and vehicle-hours	Provides new freeway route; limited improvement for local and long distance int'l truck traffic; utilizes a portion of E.C. Row for international traffic; lower ability to provided continuous capacity for international traffic; EA-EE-EF segment noted as being substantially more direct than the EC-EE-EF segment, reducing vehicle-km and vehicle-hours	Provides new freeway route; limited improvement for local and long distance int'l truck traffic; utilizes a portion of E.C. Row for international traffic; lower ability to provided continuous capacity for international traffic; EA-EE-EF segment noted as being substantially more direct than the EC-EE-EF segment, reducing vehicle-km and vehicle-hours
Cost	Lower costs in comparison to other options for cost and constructability; 1 complex interchange at E.C. Row	Lower costs in comparison to other options for cost and constructability; 1 complex interchange at E.C. Row	Substantially higher costs and constructability risks in comparison to other options associated with widening and 2 complex interchanges at E.C. Row;	Substantially higher costs and constructability risks in comparison to other options associated with widening and 2 complex interchanges at E.C. Row;
Conclusions	All options resulted in high community impacts to area north of E.C. Row Expressway and overall low benefits to regional mobility. The route segments that did not use a portion of E.C. Row Expressway were preferred over other alternatives due to lower community and cost impacts and greater mobility benefits; Con Rd 10/Lauzon Parkway has lower impacts to existing and planned land uses and natural features. Route Segment EC-EG-EJ to Plaza CE1 is preferred			

[1] Endangered or Threatened Species

EXHIBIT 6.12 – RAIL CORRIDOR ALTERNATIVES – CROSSINGS X13 AND X14



CENTRAL ALTERNATIVES – CORRESPONDING TO CROSSINGS X7, X8, X9, X10, X11

Connecting Route CC-CI-CM

In determining the best route to the plazas serving the central crossings (i.e., Plazas CC1, CC2, CC3, CC4, CC7), the study team considered connecting route alternatives along segment CC-CI-CM that included:

- Expand Huron Church Road/Talbot Road to a freeway from E.C. Row Expressway to Highway 401;
- Widen E.C. Row Expressway from Huron Church Road easterly to Lauzon Parkway, with an extension of the Parkway southerly to Highway 401;
- Widen E.C. Row Expressway from Huron Church Road easterly to the DRTP Rail Corridor, with a new roadway connection constructed using the rail corridor southerly to Highway 401;
- A new route from Talbot Road/Todd Lane utilizing a portion of the Huron Church Line to by-pass the Talbot Road area, connecting to Highway 3/Highway 401.
- A new route from Ojibway Parkway using E.C. Row Expressway/Malden Road or passing through Ojibway Prairie to north of Todd Lane, connecting to Huron Church Road, then expanding Huron Church Road/Talbot Road to a freeway to Highway 401; and,

The illustrative crossing, inspection plaza and connecting route alternatives are shown in Exhibit 6.13. The results are summarized in Table 6.9. Recognizing the greater complexity of the trade-offs to be made in the evaluation of these segments, a discussion of the results of this analysis is provided below.

Changes to Air Quality

Changes to air quality were assessed on a system-wide basis. A new freeway from Highway 401 to the Detroit River was found to have no impact or low impacts to the regional airshed, with small to moderate increase in pollutants on a system-wide basis.

Impact to community and neighbourhood characteristics

Talbot Road (Highway 3) is situated within the Town of LaSalle, along the Town's boundary with the City of Windsor. Lands south of Talbot Road in LaSalle are currently undergoing development to residential subdivisions. This development is a part of the Town's approved plans for the growth of the urban area that will see the population in the Town grow from more than 25,000 to between 35,000 and 40,000 by the year 2019. In the Town's development plans, Huron Church/Talbot Road is identified as the major transportation corridor serving this area of the Town. A new route aligned to by-pass the Talbot Road area and follow the Huron Church Line corridor would displace approximately 85 households, and disrupt approved development plans, in addition to disruption of planned local community retail and social services. The Talbot Road by-pass alternative would have a high impact to community cohesion and character in that the area between the new route and Talbot Road would be segmented by two major transportation facilities.

Huron Church Road/Talbot Road is a high volume multi-lane roadway serving international traffic. Between Howard Avenue and E.C. Row Expressway, the existing Huron Church Road/Talbot Road corridor dominates the character of the neighbourhoods. While recent development along this corridor has been built around a high volume road corridor, many of the residences along this corridor were built prior to 1990, when volumes, particularly truck volumes on the roadway began increasing substantially. Upgrading Huron Church Road/Talbot Road to a freeway will impact approximately 130 households, primarily single-family units. Although the Huron Church Road/Talbot Road alternative will impact more residences and businesses, changing the Huron Church Road/Talbot Road corridor to a freeway has a relatively lower impact to community character and cohesion than a Talbot Road by-pass.

A new 80 m freeway right-of-way from Highway 401 to E.C. Row Expressway along the DRTP rail corridor would displace the rail corridor as well as the lands between the rail corridor and Provincial Road. Approximately 45 businesses would be displaced, including one major industrial use (ThyssenKrupp Falco), as well as commercial and retail uses, including retail shopping centres, supermarkets, car dealerships, etc., and mid-size industrial operations. Devonshire Mall, the Roundhouse Plaza and numerous other retail uses would also be affected by a new freeway facility in the rail corridor. The businesses along the rail corridor represent a more sizable portion of regional economic activity and some may not be easily replaced if impacted.

By comparison, approximately 25 businesses would be impacted by the expansion of Huron Church Road/Talbot Road, many of which are highway-oriented (e.g., accommodations, restaurants, gas stations). Few of these businesses would be considered to significantly contribute to the neighbourhood retail structure and none would be considered significant to the regional retail structure. The industrial businesses along this section of Huron Church Road/Talbot Road are also smaller and more related to auto and truck services. These businesses would be more likely to find alternative locations to provide this locally-oriented activity. The business impacts associated with the expansion of the Huron Church Road/Talbot Road corridor were considered to be substantially less than those of the rail corridor/E.C. Row Expressway alternative.

While both alternatives will result in the disruption of a significant number of residences, the change from a low volume rail line to a high volume freeway was considered to be a higher community impact.

As for the alternative that passes north of Todd Lane, the study team found that local neighbourhoods in the Todd Lane/Malden Road area strongly identify themselves with the natural features in this area of Windsor and LaSalle. The neighbourhoods are within walking distance of large wooded areas, many of which are designated natural areas, and a recreational trail system. Separating these neighbourhoods from the natural features with a new freeway corridor was considered as having a higher impact to the community character and cohesion in this area of Windsor/LaSalle than the expansion of Huron Church Road/Talbot Road.

Consistency with existing and planned land use

Generally, alternatives that made use of existing infrastructure were considered to be more consistent with existing and planned land use than other alternatives. The alternative north of Todd Lane impacting the Ojibway Prairie Provincial Nature Preserve, Spring Garden Forest and other designated natural areas was considered to be highly inconsistent with local land use. The expansion of Huron Church Road/Talbot Road is considered compatible with existing and planned land use.

Impacts to Cultural Resources

All the alternatives would result in some impacts to cultural resources. The Todd Lane/Malden Road alternatives would have higher impacts than the others as they impact four known significant archaeological sites.

Impacts to Natural Environment

An alternative extending from Huron Church Road towards the river north of Todd Lane would have significant impacts to the natural areas west of Huron Church, namely Ojibway Prairie Provincial Prairie Reserve and Spring Garden Forest. The Ojibway Prairie is designated as a Provincial Nature Reserve, Provincially Significant Life Science Area of Natural and Scientific Interest (ANSI), Environmentally Sensitive Area (ESA) and Candidate Natural Heritage Site (CNHS). Numerous plants and animals inhabiting this natural heritage area are designated as "special concern", "threatened" or "endangered" under the *Species at Risk Act* and vegetation communities located within this natural heritage area are considered extremely rare on a global and provincial basis. The Ojibway Prairie is connected to the Detroit River by the Black Oak Woods, thus creating an ecologically important landscape linkage. The study team specialists in natural environment noted that the local, provincial and national significance of the Ojibway Prairie cannot be overstated. More than 21 ha of this protected habitat area would be impacted directly with an alternative along Todd Lane, and more than 140 ha of features would be disrupted (i.e., are within 250m of the centreline).

Routes that severed portions of the Ojibway Prairie or created major barriers across natural corridors were considered to be a high impact. These high impact routes included the alignment north of Todd Lane as proposed by the *Windsor Gateway Study*[1], January 2005, as well as options that utilize the Malden Road corridor and the Ojibway Parkway corridor south of E.C. Row. In its assessment, the study team specialists noted that a large, contiguous natural area is more diverse and stable than a small, fragmented natural area. The approach used in the assessment also follows the ecological principle that natural corridors should be maintained as pathways for material flows and animal/plant migration/dispersion.

The Huron Church Road/Talbot Road alternative would avoid altogether the natural heritage areas designated as Provincial Nature Reserve, ANSI and ESA with one possible minor exception on the west side of Huron Church Road. However, the route would encroach along the perimeter of natural heritage areas identified as Candidate Natural Heritage Sites by Windsor/LaSalle and Potential Natural Heritage Features identified by the study team. These areas, such as along the west side of Huron Church Road, are located adjacent or in close proximity to the Ojibway Prairie and may support similar composition, structure and function as the Ojibway Prairie. As a result, while the Huron Church/Talbot Road route is superior to a route that severs these designated features, there may still be substantial adverse environmental effects (both displacement and disturbance) that will require mitigation.

Improve Regional Mobility

Expansion of Huron Church Road/Talbot Road has a greater ability to provide continuous/ongoing capacity for the border transportation network as compared to widening of E.C. Row Expressway, while also providing the means to separate local and long-distance international traffic. The E.C. Row Expressway extends from the Ojibway Parkway near the river in the west end of Windsor, to County Road 22 in the Town of Tecumseh. Passing through central Windsor with interchanges at major north-south arterial roads, the expressway is a key link in the regional road network. Portions of this expressway are currently operating at or near capacity during peak travel periods. Studies have identified that expansion of this facility from the current four lanes to six to eight lanes is required by 2021 to serve the projected growth in local traffic. Using E.C. Row Expressway east of Huron Church Road to convey international traffic to a new or expanded crossing will require additional widening of this facility to 10 to 12 lanes. While this widening can generally be accommodated within the existing right-of-way on the sections east of Dougall Avenue, west of this point, additional property will be required.

The major road network in the Windsor-Essex County region serves two primary functions: one function is to facilitate access to areas within Windsor-Essex County for local traffic. The second function, owing to the region's unique proximity to border crossings into the United States, is to efficiently convey international traffic to the border crossings to facilitate the movement of people and cross-border goods. Using E.C. Row Expressway to serve both of these primary functions would provide substantially fewer benefits to regional mobility. Reliable access to border crossings in this key trade corridor is of vital importance to the national, regional and local economies. Multiple freeway links connecting to the border crossings would improve regional mobility. A freeway facility on the Huron Church Road/Talbot Road corridor would have greater benefits to regional mobility than widening E.C. Row Expressway by:

- Serving long distance international traffic, while also providing a choice for local traffic;
- Providing additional roadway capacity to meet the long-term needs of the region;
- Providing flexibility in the regional network to respond to incidences (such as collisions or maintenance) and unusual events; and
- Providing flexibility to respond to future changes, such as changes in local land use or changes in manufacturing processes or increased trade, resulting in increased goods movement.

On this basis, alternatives that required use of portions of E.C. Row Expressway east of Huron Church Road to convey international traffic were not preferred.

Cost

In terms of cost and constructability, the widening of the section of E.C. Row Expressway from Huron Church Road to Lauzon Parkway to accommodate local and long distance international traffic as well as local east-west traffic, is more complex and would have a higher associated cost (approximately $650 million [CDN]) than either the construction of the new freeway on the rail corridor or on Huron Church Road/Talbot Road (approximately $560 million [CDN]). The rail corridor option would also require widening of a section of E.C. Row. The costs and constructability of this option were considered comparable to the Huron Church Road/Talbot Road option.

The constructability of the alternatives that involve a new alignment north of Todd Lane does not involve complex traffic management, but would require consideration of minimizing impacts to the sensitive natural features associated with the Ojibway Prairie.

Conclusion

The Huron Church Road/Talbot Road (Segments CC-CI-CM) was preferred on the basis that this alternative:

- Would provide greater improvement to regional mobility than the alternatives that utilize the E.C. Row Expressway by providing another freeway connection leading to the border crossings.
- Would be less disruptive to existing and planned land uses than the Talbot Road bypass alternative and the Todd Lane/Malden Road/Ojibway alternatives; and

[1] Windsor Gateway Report, dated January 2005, Prepared by Sam Schwartz Engineering PLLC

- Would have fewer impacts to the important natural features west of Huron Church Road than the Todd Lane/Malden Road/Ojibway alternatives.

Although the options that would utilize all or a portion of E.C. Row Expressway would avoid the sensitive natural features west of Huron Church Road, the benefits to regional mobility associated with the Huron Church Road/Talbot Road alternative were considered of greater importance than the impacts to the edges of these features in selecting the alternative to carry forward for further study.

EXHIBIT 6.13 – CENTRAL ALTERNATIVES – CROSSINGS X7, X8, X9, X10 AND X11

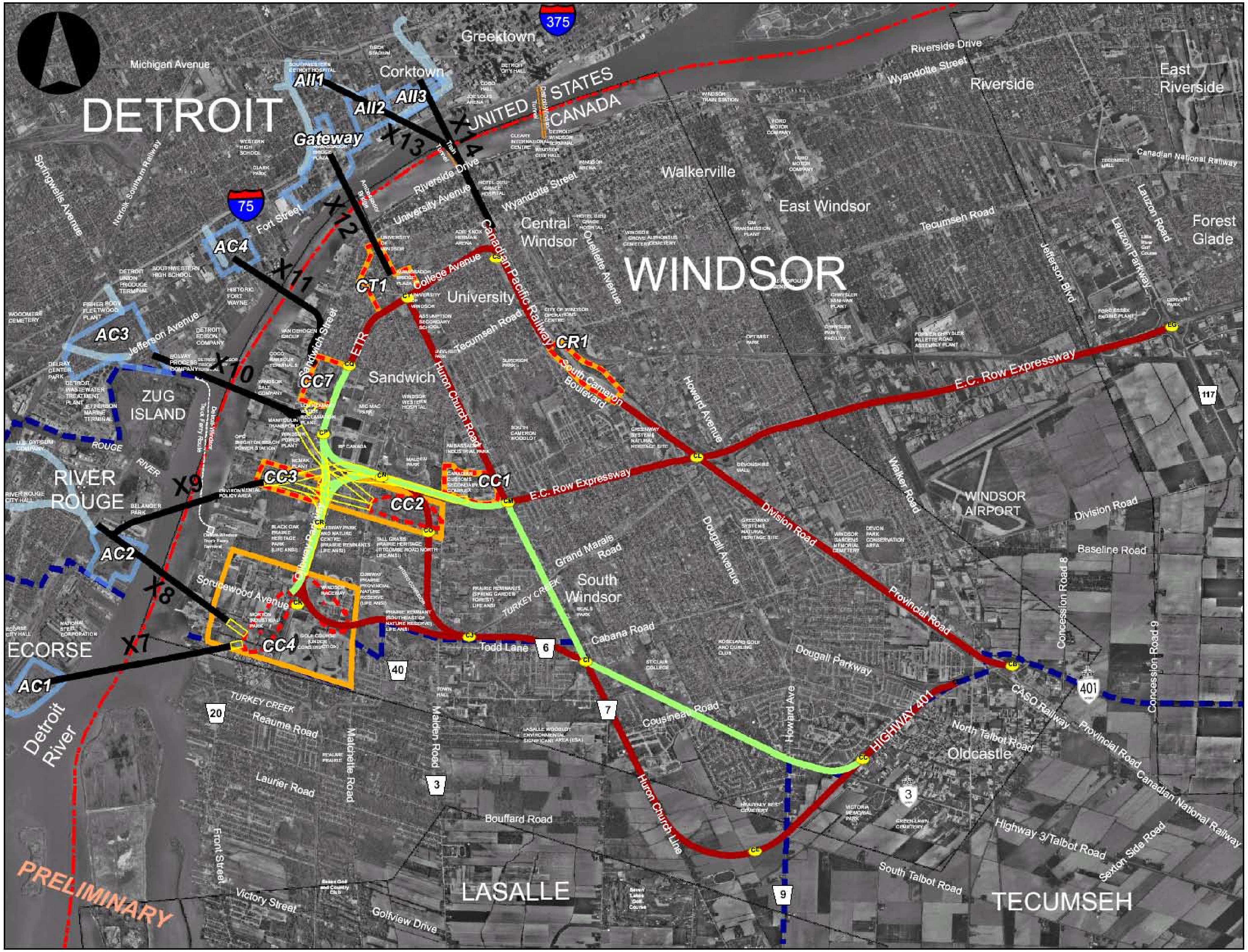


TABLE 6.9 – SUMMARY OF ASSESSMENT OF CENTRAL CONNECTING ROUTE SEGMENTS

FACTOR	HCR/ Talbot Road to ECR (CC-CI-CM-CN)	ECR/Lauzon Pkwy (EG-CL-CM-CN)	ECR/Rail Corridor (CB-CL-CM-CN)	Talbot Road Bypass/HCR (CB-CC-CE-CI-CM-CN)	HCR/Talbot Road – Todd Lane/ Malden Road (CB-CC-CI-CJ-CO-CN)
Changes to Air Quality	No to Low impact Small to moderate increase in pollutants on a system-wide basis	No to Low impact Small to moderate increase in pollutants on a system-wide basis	No to Low impact Small to moderate increase in pollutants on a system-wide basis	No to Low impact Small to moderate increase in pollutants on a system-wide basis	No to Low impact Small to moderate increase in pollutants on a system-wide basis
Community and Neighbourhood Impacts	Impacts along existing road corridor: Displacements: 130+ Households 25+ Businesses Disruption: 1260 households within 200 m	Impacts along existing road corridor; creates new road corridor in rural area of east Windsor: Displacements: 40+ Households <10 Businesses Disruption: 1850 households within 200 m	Impacts along existing road corridor; creates new road corridor in urban area: Displacements: 40+ Households 45+ Businesses Disruption: 1890 households within 200 m	Impacts along existing road corridor; creates new corridor in LaSalle Displacements: 85+ Households 5+ Businesses Disruption: 1300+ households within 200 m	Impacts along existing HCR corridor and creates new corridor in natural areas: Displacements: 120+ Households 25+ Businesses Disruption: 1270-1370 households within 200 m
Consistency with Land Use	Consistent as existing route to Ambassador Bridge; not consistent as freeway	Consistent as freeway; not consistent as primary route for int'l traffic to border crossing(s)	Consistent as freeway for ECR portion; not consistent as primary route for int'l traffic on ECR; not consistent in changing rail corridor to freeway in central urban area of Windsor	Not consistent with current/future residential community development	Not consistent with protected natural areas, residential community
Impacts to Cultural Resources	1 locally designated Heritage site; 2 known significant archaeological sites impacted	2 known significant archaeological sites impacted	2 Built Heritage sites; 2 known significant archaeological sites impacted	2 known significant archaeological sites impacted	2 Built Heritage Sites; 4 known significant archaeological sites impacted
Natural Environment	Impacts to edges of sensitive natural areas	Avoids sensitive natural areas; low impacts to other features	Avoids sensitive natural areas; low impacts to other features	Avoids sensitive natural areas; low impacts to other features	Severance impacts to designated natural areas
Improve Regional Mobility	Provides new freeway route; can separate int'l traffic and provide choice for local traffic	Widening of existing freeway; mixing of int'l and local traffic; no choice for local traffic	Widening of existing freeway; mixing of int'l and local traffic; no choice for local traffic	Provides new freeway route; can separate int'l traffic and provide choice for local traffic	Provides new freeway route; can separate int'l traffic and provide choice for local traffic
Cost	Comparable to other options for cost and constructability; traffic management	Higher costs; greater complexity of construction	Comparable to other options for cost and constructability; traffic management; complex freeway construction	Comparable to other options for cost and constructability; relocate municipal infrastructure	Comparable to other options for cost and constructability; mitigation of natural features impacts during construction

[1] Endangered or Threatened Species

TWINNED AMBASSADOR ALTERNATIVE – CROSSING X12

The illustrative access road route alternatives assessed to connect to a twinned Ambassador Bridge included:

- Expanding the Rail Corridor to a freeway from Highway 401 to the area of College Avenue/ETR corridor, then following the ETR corridor westerly to the Ambassador Bridge.
- Various alternatives connecting Highway 401 to the area of Ojibway Parkway/Essex Terminal Railway (ETR) corridor, then following along the rail corridor to the Ambassador Bridge (often referred to as the Ring Road concept); and,
- Upgrading Huron Church Road/Talbot Road to a freeway.

The alternatives considered are identified in **Exhibit 6.14**.

For more information on the summary of assessment for the route alternatives to connect to a twinned Ambassador Bridge, the reader is referred to the *Generation and Assessment of Illustrative Alternatives Report (November 2005).*

DRTP Rail Corridor/ETR Corridor – Route Segments CB-CL-CS-CT

The use of the ETR corridor between the DRTP Rail Corridor and the Ambassador Bridge would have high community impacts, displacing an additional 175 households and 10 businesses.

The use of the ETR Corridor for a new freeway to the Ambassador Bridge is also considered to be equally inconsistent with land uses in the area, having a high impact to the central urban area of Windsor.

One advantage noted with this alternative is that a new freeway to the Ambassador Bridge using the rail corridors would improve regional mobility by having a greater ability to provide continuous/ongoing capacity in the road network for accessing the Ambassador Bridge.

Ring Road Concept – Route Segments CP-CQ-CT

The alternatives considered with the Ring Road concept included:

- Huron Church/Talbot Road and E.C. Row Expressway,
- An alignment from Huron Church Road/Talbot Road north of Todd Lane connecting to Ojibway Parkway near Windsor Raceway, and paralleling the ETR Corridor; and
- An alignment north of Todd Lane to Malden Road, along Malden Road to E.C. Row Expressway, and along E.C. Row Expressway to Ojibway Parkway/ETR.

All the alternatives were considered to have high negative impacts to community cohesion, character and function. The portion of the ring road from Prince Road to the Ambassador Bridge would sever the Sandwich neighbourhood. This was considered a highly negative effect on community structure and function. The ring road alternative was considered to have high negative impacts to land use, in that a new freeway through the established neighbourhood area of Sandwich is not consistent with existing and planed land uses in the area.

The ring road alternatives that impacted the Ojibway/Spring Garden designated natural features and the neighbourhoods adjacent to these features were the least preferred due to the higher impacts to natural environment and community features.

As with the DRTP Rail Corridor/ETR Corridor alternative, an advantage noted with the ring road alternative is that it would improve regional mobility by having a greater ability to provide continuous/ongoing capacity in the road network for accessing the Ambassador Bridge.

Upgrading Huron Church Road/Talbot Road – Route Segments CC-CI-CM-CT

Huron Church Road/Talbot Road has long served as the primary route to the Ambassador Bridge for commercial traffic, travellers and commuters. The community along the Huron Church Road north of E.C. Row Expressway has been affected by the existing transportation corridor and demonstrates a much lower degree of community cohesiveness than the areas impacted by the other alternatives connecting to the Ambassador Bridge.

Upgrading Huron Church Road north of E.C. Row Expressway to a freeway will displace approximately 30 residential units (including apartments). Another 800 residences would be disrupted (i.e. within 250 m of the centreline). Approximately 50 businesses would be displaced and another 25 businesses would be disrupted. The Huron Church corridor north of E.C. Row Expressway is highly tourism/traveller oriented, with a significant concentration of accommodation/restaurant businesses that are generally not highly valued in terms of community cohesion and function. Expanding Huron Church Road to a freeway was considered to have a moderate impact to community and neighbourhood characteristics.

Connecting to the Ambassador Bridge by expanding the Huron Church corridor north of E.C. Row Expressway to a freeway was considered to have lower impacts in terms of consistency with land use, in comparison to the other alternatives connecting to the Ambassador Bridge. The 2.2 km section of Huron Church Road between E.C. Row Expressway and Tecumseh Road is characterized as a six-lane arterial road with five signalized intersections and more than 40 commercial and private entrances. Over the past 20 years, the City has reduced the number of street entrances and unsignalized intersections along Huron Church Road. Alternate access to many properties fronting Huron Church Road is available through parallel roads such as Ambassador Drive and Daytona Avenue. The land uses north of Tecumseh Road to the Ambassador Bridge plaza include a residential area along the west side, a shopping centre, Assumption High School, a fast food restaurant and a provincial tourist information centre. Also along this corridor at College Avenue is the University of Windsor Stadium and Recreation Complex. The University has recently completed a multi-million dollar upgrade of its stadium facility to accommodate international track and field events, such as the Pan-Am Games.

Expanding Huron Church Road to a freeway connecting to Ambassador Bridge provides the capacity required to meet the long-term travel demands of the region, but would not provide a new link in the network for accessing the crossing. The ability to provide continuous/ongoing capacity in the network (i.e., redundancy) is a stated objective of the Partnership. In the context of connecting to a twinned Ambassador Bridge (as opposed to a new crossing), using Huron Church Road was considered to provide only a low benefit to regional mobility, while the other alternatives offered a moderate benefit.

In addition, construction of a new freeway on the primary access route to the busiest border crossing between Canada and the U.S. has greater constructability risks in terms of staging, traffic management and timing of construction to minimize congestion and delay, than other alternatives. These risks have greater potential of increasing the costs of this alternative relative to the others.

Summary – Connecting Route

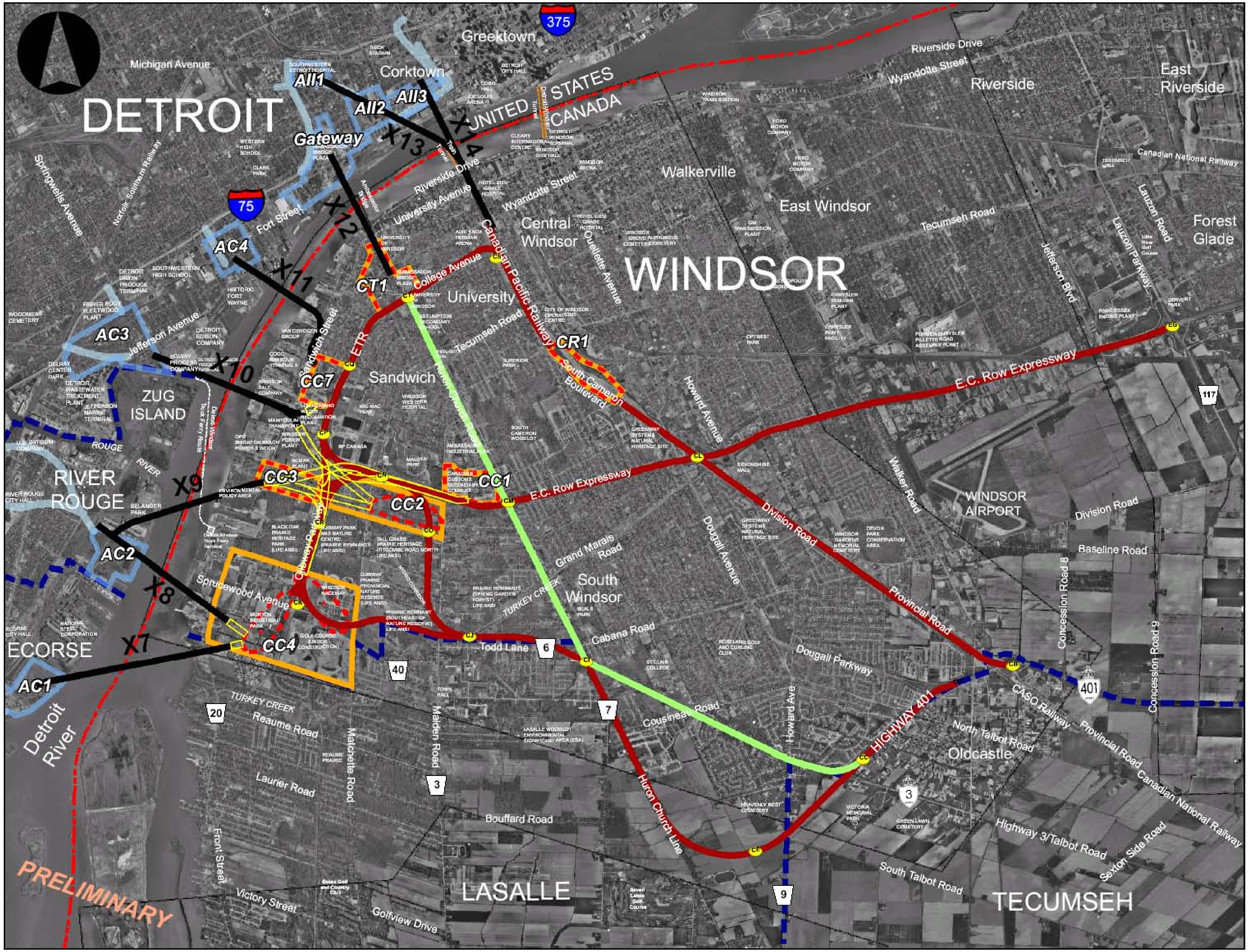
All alternatives for a new freeway connecting Highway 401 to a twinned Ambassador Bridge have a high impact to the urban area of Windsor. Expanding Huron Church Road to a freeway to the Ambassador Bridge has less overall impact than a new freeway corridor to the Ambassador Bridge. While using the Huron Church Road corridor provides a lower benefit to regional mobility and carries greater constructability concerns, the lower impacts to the community were considered of greater importance in determining which alternative to carry forward as the connecting route to the Ambassador Bridge.

The existing right-of-way of Huron Church Road is generally 36 m wide. Expansion of this corridor to a freeway will require an 80 m right-of-way, with interchanges at major crossing roads, grade separations and service roads as required to maintain access. As the primary connecting route to the Ambassador Bridge, disruptions to international trade, and maintaining safety and access for people and goods movement, as well as the high impacts to the urban area, are concerns that remain with this alternative.

In addition to the reasoned argument evaluation of the illustrative access road alternatives presented above, the study team undertook an arithmetic evaluation of the access road alternatives. These evaluations are documented in the *Generation and Assessment of Illustrative Alternatives Report (November 2005)*. In these evaluations, the results of the Canadian study team were consistent with those of the public weighting scenario in every evaluation, i.e., the highest ranking access road segment identified by the study team weighting scenario was also the highest ranking access road segment as identified by the public weighting scenario in every evaluation.

The study team considered the results of the arithmetic method as a validation of the recommendations developed through the reasoned arguments presented in this report.

EXHIBIT 6.14 – TWINNED AMBASSADOR BRIDGE ALTERNATIVE – CROSSING X12



URS
Canada
U.S. Department of Transportation Federal Highway Administration
Ontario
MDOT Michigan Department of Transportation

6.3.2 Crossing/Plaza Alternatives

As described in Section 6.2.3, the Canadian study team developed a weighting scenario for the seven major evaluation factors. The study team weights were used to establish decision rules for the reasoned argument evaluation method, as well to develop weighted scores for the arithmetic evaluation method. Both evaluations are described in more detail in the following paragraphs.

As noted in Section 6.2.3, in addition to the study team's weighting scenario, a weighting scenario was also developed by arithmetically combining the factor weights provided by individuals of the public through a rating tool exercise conducted as part of the first round of consultation in June 2005 (refer to Chapter 3 for further details). A third weighting scenario was developed by arithmetically combining the factor weights submitted by individuals of the Community Consultation Group (CCG).

REASONED ARGUMENT METHOD

On the basis of the evaluation of the access road alternatives described in Section 6.3.1, the Canadian study team combined the preferred access road alternative with each of the corresponding illustrative crossing/inspection plaza alternatives and evaluated the illustrative crossing/inspection plaza/access road alternatives to identify the candidates for a short list of practical alternatives.

A summary of the evaluation of the illustrative plaza and crossing alternatives is provided in Tables 6.10 to 6.12. In these tables, an assessment is made with regard to the degree of impact/benefit. An assessment of "Low" indicates that the impact/benefit is relatively insignificant in comparison to the impacts associated with other alternatives (including alternatives considered in other evaluation tables), whereas an assessment of "High" impact/benefit suggests that the alternative results in a significantly greater benefit/impact than the other alternatives. For further details with regard to the analysis and evaluation of the illustrative alternatives, the reader is referred to the *Generation and Assessment of Illustrative Alternatives Report (November 2005)*.

Based on the results of the evaluation of crossing/plaza/access road alternatives, the Canadian study team brought forward the following preliminary recommendations for comparison to the U.S. findings as part of an end-to-end evaluation:

- Crossing X1, X2, X3 and X4 alternatives were not carried forward. These alternatives do not meet Partnership objectives for improvement to regional mobility.
- Crossing X5, X6 and X7 alternatives were eliminated from further consideration due to issues of constructability/feasibility (refer to the *Generation and Assessment of Illustrative Alternatives Report [November 2005] for further details)*.
- Crossing X8 and X9 alternatives were subject to a review by both teams in determining whether to carry forward as practical alternatives. Crossing X8 and X9 alternatives were found to provide high benefits to regional mobility and avoid the community of Sandwich, but had higher impacts to natural features than other central alternatives on the Canadian side. In determining whether to carry these alternatives forward as practical alternatives, it was necessary to consider the impacts and benefits of these alternatives on the U.S. side.
- Crossing X10 and X11 alternatives were carried forward for further study. These alternatives were found to have the best overall balance of meeting regional mobility needs and impacts to community features.
- Crossing X12 alternative was not carried forward due to the high community impacts, high potential for disruption to international traffic during construction and the limited ability to provide continuous/ongoing river crossing capacity;
- Crossing X13 alternative was eliminated from further consideration due to inadequate capacity to meet long-term needs and high community impacts.
- Crossing X14 alternative was not carried forward due to high impacts to communities and neighbourhoods in central and south Windsor.
- Crossing X15 alternative was not carried forward. This alternative does meet Partnership objectives for improvement to regional mobility and was found to have high community impacts;

These recommendations based on the reasoned argument evaluation were reinforced by the results of the arithmetic evaluation described in the next section, and correspond to an area of continued study on the Canadian side extending from the Windsor/ LaSalle border to the north end of the Sandwich Portlands (refer to Exhibit 6.15).

ARITHMETIC METHOD

The evaluation of illustrative crossing, plaza and access road alternatives was also conducted using an arithmetic method based on numerical weighting and scoring of impacts. As noted in the previous section, crossing X5, X6 and X7 alternatives were eliminated from further study on the basis that additional investigation of plaza sites CS1 on Fighting Island and AC1 on the National Steel property determined that these sites were not feasible. As well, the DRTP two-lane truckway proposal (using crossing X13) was eliminated from further study on the basis that the capacity provided by this alternative was not sufficient to meet the long-term travel demand needs of the region. A new freeway tunnel as crossing X13 was also eliminated from further study due to issues of constructability.

The results of the arithmetic evaluation of the eleven crossing/plaza/access road alternatives are summarized in Table 6.13 and 6.14.

Unweighted Scores

The unweighted scores represent the total of the impact scores determined by the Canadian study team based on the degree of impacts or benefits of each alternative. Crossing X1 and X10 alternatives were ranked highest overall, with crossing X3, X4 and X11 alternatives also highly ranked.

The higher rankings of the crossing X10 and X11 alternatives can be attributed to the balance of benefits to regional mobility and impacts to the community that these options represent compared to the other alternatives.

The higher rankings of crossing X1, X3 and X4 alternatives can be primarily attributed to relatively low community impacts associated with these options due to the less developed rural areas these alternatives are located in. However, as noted in the previous section, these southern alternatives were not carried forward for further study on the basis that they do not meet Partnership objectives of providing for the free flow of people and goods at the border crossings through the year 2035 (the planning horizon year for this study).

The crossing X8 and X9 alternatives had the lowest unweighted scores of the central alternatives, reflecting that these alternatives have less of a balance in terms of benefits to regional mobility and impacts to the community.

Weighted Scores

The weighted scores reflect the level of importance as well as the degree of impacts and benefits of each alternative. Study team specialists with expertise in all of the environmental factors areas assessed the degree of impact and benefit and assigned a score for each alternative. The study team specialists based their assessment of impacts on field measurements, results of prediction models, secondary data sources and other means as appropriate.

The results of the arithmetic evaluation indicated that:

- The Canadian study team, public and CCG weighting scenarios identified crossing X10 as the highest ranking alternative; consistent with the unweighted scores. This result reflects the balance of high benefits to regional mobility and generally low to moderate impacts to the community associated with the options in the Windsor portlands area.
- Crossing X1, X3 and X4 alternatives were highly ranked by the Canadian study team, public and CCG weighting scenarios, which is consistent with the unweighted scoring results. This reflects the effect on regional air quality (no change) and relatively low impacts to community and natural features, which were all highly weighted by most members of the public.
- The Canadian study team weighting scenario identified crossing X11 scenario as the third highest rated alternative (after X10 and X1). This weighted score reflects that the alternative has higher community impacts than the southern alternatives, but lower impacts than other alternatives in the urban area of Windsor (i.e. crossing X12 and X14 alternatives). This balance is also reflected in the public and CCG weighted score scenarios, where crossing X11 alternative was ranked fourth, higher than the other 'urban' alternatives.
- Crossing X8 and X9 alternatives had lower weighted scores than the other central crossing alternatives.

TABLE 6.10 – SUMMARY OF ASSESSMENT OF ILLUSTRATIVE ALTERNATIVES, CANADIAN SIDE, SOUTH AREA - HIGHWAY 401 TO DETROIT RIVER

FACTOR	CROSSING X1/PLAZA CS3	CROSSING X2/PLAZA CS2	CROSSING X3/PLAZA CS2	CROSSING X4/PLAZA CS4
Changes to Air Quality	NO IMPACT Slight decrease in pollutants on a system-wide basis	LOW IMPACT Small to moderate increase in pollutants on a system-wide basis	LOW IMPACT Moderate increase in pollutants on a system-wide basis	NO IMPACT Little to increase in pollutants on a system-wide basis
Community and Neighbourhood Impacts	LOW IMPACT Displacements: 10+ Households < 5 Businesses Disruption: 90+ households within 250 m of centreline; <5 businesses	LOW IMPACT Displacements: 10+ Households <5 Businesses Disruption: 100+ households within 250 m of centreline; <5 businesses	LOW IMPACT Displacements: 10+ Households 1+ Businesses Disruption: 90+ households within 250 m of centreline; <5 businesses	LOW IMPACT Displacements: 80+ Households <5 Businesses Disruption: 380+ households within 250 m of centreline; <5 businesses
Consistency with Land Use	LOW IMPACT Access road primarily impacts rural areas of LaSalle and Amherstburg, which are somewhat consistent for a new freeway; plaza and crossing have limited impacts on planned land use	LOW IMPACT Access road primarily impacts rural areas/boundary of future urban area of LaSalle, which are somewhat consistent for a new freeway; plaza and crossing have limited impacts on current/planned land use	LOW IMPACT Access road primarily impacts rural area/boundary of future urban area of LaSalle, which is somewhat consistent for a new freeway; plaza and crossing have limited impacts on current/planned land use	MODERATE IMPACT Access road impacts primarily rural area/boundary of future urban area of LaSalle, which is somewhat consistent for a new freeway; plaza and crossing are within in the urban area boundary of LaSalle impacting current/ future residential land use – not consistent
Impacts to Cultural Resources	LOW IMPACT Impacts to 0 built feature, 3 known archaeological sites; moderate potential for impacting unknown sites	LOW IMPACT Impacts to 0 built feature, 1 known archaeological site; high potential for impacting unknown sites	LOW IMPACT Impacts to 0 built features; 1 known archaeological site; high potential for impacting unknown sites	LOW IMPACT Impacts to 0 built features; 1 known archaeological sites; high potential for impacting unknown sites
Natural Environment	MODERATE IMPACT Loss of 22+ ha of designated/ undesignated features; direct impacts to 17+ ha of ETS[1]/habitat;	HIGH IMPACT Loss of 55+ ha of designated/ undesignated features; direct impacts to 31+ ha of ETS[1] /habitat;	MODERATE IMPACT Loss of 33+ ha of designated/ undesignated features; direct impacts to 44+ ha of ETS[1] /habitat;	MODERATE IMPACT Loss of 21+ ha of designated/ undesignated features; direct impacts to 32+ ha of ETS[1]/habitat
Improve Regional Mobility	LOW BENEFITS Provides additional capacity/new crossing; inadequate benefits to existing crossings and key connecting roadways in Windsor which operate over capacity during daily peak travel periods in long term; does not meet Partnership objectives	LOW BENEFITS Provides additional capacity/new crossing; inadequate benefits to existing crossings and key connecting roadways in Windsor which operate over capacity during daily peak travel periods in long term; does not meet Partnership objectives	LOW BENEFITS Provides additional capacity/new crossing; inadequate benefits to existing crossings and key connecting roadways in Windsor which operate over capacity during daily peak travel periods in long term; does not meet Partnership objectives	LOW BENEFITS Provides additional capacity/new crossing; inadequate benefits to existing crossings and key connecting roadways in Windsor which operate over capacity during daily peak travel periods in long term; does not meet Partnership objectives
Cost	HIGH IMPACTS CDN$850 M[2]; Constructability risks include construction of 2 km crossing over Detroit River on Canadian side	HIGH IMPACTS CDN$1030 M[2]; Constructability risks include active salt mines and construction of 2+ km crossing over Detroit River on Canadian side.	HIGH IMPACTS CDN $980 M[2]; Constructability risks include active salt mines, Fighting Island soils/ contamination issues and construction of 2+ km crossing over Detroit River on Canadian side.	HIGH IMPACTS CDN$870 M[2]; Constructability risks include active salt mines, Fighting Island soils/ contamination issues, construction of 2 km crossing over Detroit River/Fighting Island on Canadian side.
CONCLUSIONS: The Southern alternatives generally have lower impacts to community features, which is a primary objective of this project, and have comparable costs and constructability risks to the other alternatives. However, these alternatives do not provide adequate improvement to regional mobility in the long term. These alternatives are therefore not recommended for continued analysis.				

[1] Endangered or Threatened Species

[2] Preliminary planning costs of access road, plaza and one-half of crossing

TABLE 6.11– SUMMARY OF ASSESSMENT OF ILLUSTRATIVE ALTERNATIVES, CANADIAN SIDE, CENTRAL AREA - HIGHWAY 401 TO DETROIT RIVER

FACTOR	CROSSING X8/PLAZA CC4	CROSSING X9/PLAZA CC3	CROSSING X10/PLAZA CC3	CROSSING X11/PLAZA CC7
Changes to Air Quality	LOW IMPACT No noticeable change in regional air shed	LOW IMPACT No noticeable change in regional airshed	LOW IMPACT No noticeable change in regional airshed	LOW IMPACT No noticeable change in regional airshed
Community and Neighbourhood Impacts	MODERATE IMPACT Displacements: 130+ Households 40+ Businesses Disruption: 1600+ households within 250 m of centreline; 10+ businesses	MODERATE IMPACT Displacements: 150+ Households 40+ Businesses Disruption: 1400+ households within 250 m of centreline; <10 businesses	MODERATE IMPACT Displacements: 140+ Households 45+ Businesses Disruption: 1450+ households within 250 m of centreline; 10+ businesses	MODERATE TO HIGH IMPACT Displacements: 180+ Households 55+ Businesses Disruption: 2080+ households within 250 m of centreline; <10 businesses
Consistency with Land Use	MODERATE IMPACT Huron Church/Talbot is somewhat consistent for a new freeway; plaza and crossing in active industrial areas considered consistent	LOW IMPACT Huron Church/Talbot is somewhat consistent for a new freeway; plaza and crossing in undeveloped industrial areas highly consistent	LOW IMPACT Huron Church/Talbot is somewhat consistent for a new freeway; plaza and crossing in undeveloped industrial areas highly consistent	LOW TO MODERATE IMPACT Huron Church/Talbot is somewhat consistent for a new freeway; plaza adjacent to residential not consistent; crossing in industrial areas consistent
Impacts to Cultural Resources	MODERATE IMPACT Impacts to 1 built features, 3 known archaeological sites; high potential for impacting unknown sites	MODERATE IMPACT Impacts to 1 built features, 6 known archaeological sites; high potential for impacting unknown sites	MODERATE IMPACT Impacts to 2 built features; 2 known archaeological sites; high potential for impacting unknown sites	MODERATE TO HIGH IMPACT Impacts to 10 built features; 2 known archaeological sites; high potential for impacting unknown sites
Natural Environment	HIGH IMPACT Severs Ojibway features from riverfront; Loss of approx. 26 ha of designated/ undesignated features; direct impacts to 25+ ha of ETS[1]/habitat;	HIGH IMPACT Potential for severing Ojibway features from riverfront; Loss of approx. 30 ha of designated/ undesignated features; direct impacts to 20+ ha of ETS[1]/habitat;	MODERATE IMPACT Loss of 20+ ha of designated/ undesignated features; direct impacts to 14+ ha of ETS[1]/habitat;	MODERATE IMPACT Loss of 25+ ha of designated/ undesignated features; direct impacts to 13+ ha of ETS[1]/habitat;
Improve Regional Mobility	HIGH BENEFITS Provides additional capacity/new crossing; existing crossings operate well; D-W tunnel approaching unstable flow in 2035	HIGH BENEFITS Provides additional capacity/new crossing; existing crossings operate well; D-W tunnel approaching unstable flow in 2035	HIGH BENEFITS Provides additional capacity/new crossing; existing crossings operate well;	HIGH BENEFITS Provides additional capacity/new crossing; existing crossings operate well;
Cost	HIGH IMPACTS CDN$1.5 B[2]; Constructability risks include traffic/utility management on HCR/Talbot corridor, active mines, brine wells	HIGH IMPACTS CDN$1.4 B[2]; Constructability risks include traffic/utility management on HCR/Talbot corridor, active mines, brine wells	HIGH IMPACTS CDN$1.4 B[2]; Constructability risks include traffic/utility management on HCR/Talbot corridor, active mines, brine wells	HIGH IMPACTS CDN$1.2 B[2]; Constructability risks include traffic/utility management on HCR/Talbot corridor, active mines, brine wells
CONCLUSIONS: The Central alternatives represent a reasonable balance between benefits to regional mobility and community impacts. These alternatives are recommended for continued analysis.				

[1] Endangered or Threatened Species

[2] Preliminary planning costs of access road, plaza and one-half of crossing

TABLE 6.12 – SUMMARY OF ASSESSMENT OF ILLUSTRATIVE ALTERNATIVES, CANADIAN SIDE, X12, X14 AND X15 - HIGHWAY 401 TO DETROIT RIVER

FACTOR	CROSSING X12/PLAZA CT1	CROSSING X14/PLAZA CR1	CROSSING X15/PLAZA CE1
Changes to Air Quality	NO IMPACT Slight increase in pollutant levels on a system-wide basis vs. do nothing	NO IMPACT Little change in pollutant levels on a system-wide basis vs. do nothing	NO IMPACT Little change in pollutant levels on a system-wide basis vs. do nothing
Community and Neighbourhood Impacts	HIGH IMPACT Displacements: 420+ households 85+ Businesses Disruption: 3490+ households within 250 m of centreline; 25+ businesses	HIGH IMPACT Displacements: 125+ households 75+ Businesses Disruption: 2180+ households within 250 m of centreline; 10+ businesses	HIGH IMPACT Displacements: 570+ households 40+ Businesses Disruption: 2600+ households within 250 m of centreline; 40+ businesses
Consistency with Land Use	MODERATE IMPACT Huron Church/Talbot is somewhat consistent for a new freeway; plaza and crossing in historic residential area are highly inconsistent	HIGH IMPACT High impacts to land use; especially regional commercial uses; crossing, plaza and freeway highly inconsistent with local land uses and city plans	HIGH IMPACT Crossing, plaza and access road north of E.C. Row highly inconsistent with current and planed land uses; access road south of E.C. Row to Highway 401 is somewhat consistent
Impacts to Cultural Resources	HIGH IMPACT Impacts to 45 built features, 3 known archaeological sites; high potential for impacting unknown sites	HIGH IMPACT Impacts to 14 built features, no known archaeological sites impacted; moderate potential for impacting unknown sites	MODERATE IMPACT Impacts to 10 built features; no known archaeological sites impacted; moderate potential for impacting unknown sites
Natural Environment	LOW IMPACT Loss of 15+ ha of designated/ undesignated features; direct impacts to 11+ ha of ETS[1]/habitat	HIGH IMPACT Loss of 21+ ha of designated/ undesignated features; direct impacts to 18+ ha of ETS[1]/habitat	LOW IMPACT Loss of 13+ ha of designated/ undesignated features; direct impacts to 9+ ha of ETS[1]/habitat
Improve Regional Mobility	HIGH BENEFITS Provides additional capacity/new crossing; existing crossings operate below capacity; D-W tunnel approaching unstable flow in 2035 during daily peak travel periods in long term	HIGH BENEFITS Provides additional capacity/new crossing; existing crossings and connecting roadways operate well during daily peak travel periods in long term	LOW BENEFITS Provides additional capacity/new crossing; inadequate benefits to existing crossings and key connecting roadways in Windsor which operate over capacity during daily peak travel periods in long term; does not meet Partnership objectives
Cost	HIGH IMPACTS CDN$1.5 B[2]; Constructability risks include traffic/utility management and access on HCR/Talbot Rd/Hwy 3; complex interchange at Huron Church and E.C. Row Expressway	HIGH IMPACTS CDN$1.9 B[2]; Constructability risks include interchange reconfiguration at Hwy 401; complex interchange at E.C. Row including reconfiguration of Howard and Dougall interchanges; traffic/utility management and access in Provincial Road corridor; maintenance of rail traffic	HIGH IMPACTS CDN$1.6 B[2]; Constructability risks include interchange on E.C. Row/Lauzon Parkway; traffic/utility management and access on Lauzon Parkway/plaza area/new crossing
CONCLUSIONS: The Crossing X12 and X14 alternatives provide adequate improvements to regional mobility but have higher community impacts than the central alternatives. The crossing X15 alternative has high community impacts and does not provide adequate improvement to regional mobility in the long term. These alternatives are therefore not recommended for continued analysis.			

[1] Endangered or Threatened Species
[2] Preliminary planning costs of access road, plaza and one-half of crossing

EXHIBIT 6.15 – RECOMMENDED AREA OF CONTINUED STUDY, CANADIAN SIDE

Table 6.13 – Results of Arithmetic Evaluation

Crossing/Plaza/Route Evaluation - Canadian Side

ARITHMETIC EVALUATION - Project Team Weighting Scenario

Summary of Evaluation (1)	Weighting (2)	X1		X2		X3		X4		X8		X9		X10		X11		X12		X14		X15	
		Score (4)	Weight x Score	Score	Weight x Score	Score	Weight x Score	Score	Weight x Score	Score	Weight x Score	Score	Weight x Score	Score	Weight x Score	Score	Weight x Score	Score	Weight x Score	Score	Weight x Score	Score	Weight x Score
Changes in Air Quality	12.39	4	49.56	3	37.17	3	37.17	4	49.56	3	37.17	3	37.17	4	49.56	3	37.17	4	49.56	4	49.56	4	49.56
Protect Community/ Neighbourhood Characteristics	15.93	3	47.79	3	47.79	3	47.79	3	47.79	2	31.86	2	31.86	2	31.86	2	31.86	1	15.93	1	15.93	1	15.93
Maintain Consistency with Existing and Planned Land Use	12.39	3	37.17	3	37.17	3	37.17	2	24.78	2	24.78	3	37.17	3	37.17	3	37.17	2	24.78	1	12.39	1	12.39
Protect Cultural Resources	12.39	3	37.17	3	37.17	3	37.17	3	37.17	2	24.78	2	24.78	2	24.78	2	24.78	1	12.39	1	12.39	2	24.78
Protect the Natural Environment	15.93	2	31.86	1	15.93	2	31.86	2	31.86	1	15.93	1	15.93	2	31.86	2	31.86	3	47.79	3	47.79	3	47.79
Improve Regional Mobility	17.70	5	88.50	5	88.50	5	88.50	5	88.50	7	123.90	7	123.90	7	123.90	7	123.90	7	123.90	7	123.90	5	88.50
Minimize Cost	13.27	1	13.27	1	13.27	1	13.27	1	13.27	1	13.27	1	13.27	1	13.27	1	13.27	1	13.27	1	13.27	1	13.27
Unweighted Score		21		19		20		20		18		19		21		20		19		18		17	
Ranking		*1*		*6*		*3*		*3*		*9*		*6*		*1*		*3*		*6*		*9*		*11*	
Project Team Weighted Score	100.00	305.32		277.00		292.93		292.93		271.69		284.08		312.40		300.01		287.62		275.23		252.22	
Ranking		*2*		*8*		*4*		*4*		*10*		*7*		*1*		*3*		*6*		*9*		*11*	

ARITHMETIC EVALUATION - Public Weighting Scenario

Summary of Evaluation	Weighting (3)	X1		X2		X3		X4		X8		X9		X10		X11		X12		X14		X15	
		Score (4)	Weight x Score	Score	Weight x Score	Score	Weight x Score	Score	Weight x Score	Score	Weight x Score	Score	Weight x Score	Score	Weight x Score	Score	Weight x Score	Score	Weight x Score	Score	Weight x Score	Score	Weight x Score
Changes in Air Quality	17.32	4	69.28	3	51.96	3	51.96	4	69.28	3	51.96	3	51.96	4	69.28	3	51.96	4	69.28	4	69.28	4	69.28
Protect Community/ Neighbourhood Characteristics	15.49	3	46.47	3	46.47	3	46.47	3	46.47	2	30.98	2	30.98	2	30.98	2	30.98	1	15.49	1	15.49	1	15.49
Maintain Consistency with Existing and Planned Land Use	12.89	3	38.67	3	38.67	3	38.67	2	25.78	2	25.78	3	38.67	3	38.67	3	38.67	2	25.78	1	12.89	1	12.89
Protect Cultural Resources	13.14	3	39.42	3	39.42	3	39.42	3	39.42	2	26.28	2	26.28	2	26.28	2	26.28	1	13.14	1	13.14	2	26.28
Protect the Natural Environment	16.34	2	32.68	1	16.34	2	32.68	2	32.68	1	16.34	1	16.34	2	32.68	2	32.68	3	49.02	3	49.02	3	49.02
Improve Regional Mobility	15.28	5	76.40	5	76.40	5	76.40	5	76.40	7	106.96	7	106.96	7	106.96	7	106.96	7	106.96	7	106.96	5	76.40
Minimize Cost	9.54	1	9.54	1	9.54	1	9.54	1	9.54	1	9.54	1	9.54	1	9.54	1	9.54	1	9.54	1	9.54	1	9.54
Public Weighted Score	100.00	312.48		278.80		295.14		299.57		267.84		280.73		314.39		297.07		289.21		276.32		258.90	
Ranking		*2*		*8*		*5*		*3*		*10*		*7*		*1*		*4*		*6*		*9*		*11*	

ARITHMETIC EVALUATION - Community Consultation Group Weighting Scenario

Summary of Evaluation	Weighting (3)	X1		X2		X3		X4		X8		X9		X10		X11		X12		X13/14		X15	
		Score (4)	Weight x Score	Score	Weight x Score	Score	Weight x Score	Score	Weight x Score	Score	Weight x Score	Score	Weight x Score	Score	Weight x Score	Score	Weight x Score	Score	Weight x Score	Score	Weight x Score	Score	Weight x Score
Changes in Air Quality	17.30	4	69.20	3	51.90	3	51.90	4	69.20	3	51.90	3	51.90	4	69.20	3	51.90	4	69.20	4	69.20	4	69.20
Protect Community/ Neighbourhood Characteristics	13.88	3	41.64	3	41.64	3	41.64	3	41.64	2	27.76	2	27.76	2	27.76	2	27.76	1	13.88	1	13.88	1	13.88
Maintain Consistency with Existing and Planned Land Use	13.69	3	41.07	3	41.07	3	41.07	2	27.38	2	27.38	3	41.07	3	41.07	3	41.07	2	27.38	1	13.69	1	13.69
Protect Cultural Resources	13.12	3	39.36	3	39.36	3	39.36	3	39.36	2	26.24	2	26.24	2	26.24	2	26.24	1	13.12	1	13.12	2	26.24
Protect the Natural Environment	17.11	2	34.22	1	17.11	2	34.22	2	34.22	1	17.11	1	17.11	2	34.22	2	34.22	3	51.33	3	51.33	3	51.33
Improve Regional Mobility	14.83	5	74.15	5	74.15	5	74.15	5	74.15	7	103.81	7	103.81	7	103.81	7	103.81	7	103.81	7	103.81	5	74.15
Minimize Cost	10.07	1	10.07	1	10.07	1	10.07	1	10.07	1	10.07	1	10.07	1	10.07	1	10.07	1	10.07	1	10.07	1	10.07
Public Weighted Score	100.00	309.71		275.30		292.41		296.02		264.27		277.96		312.37		295.07		288.79		275.10		258.56	
Ranking		*2*		*8*		*5*		*3*		*10*		*7*		*1*		*4*		*6*		*9*		*11*	

NOTES:
(1) - Crossing X5, X6, X7 and X13 alternatives were eliminated from further study and therefore were not ranked
(2) - Members of the Canadian Project Team collaboratively developed one set of weightings.
(3) - Public and Canadian Consultation Group weighting scenarios were developed by arithmetically combining individual submissions on factor weightings
(4) - Scores were assigned to each alternative by Project Team specialists and are the same for all weighting scenarios

TABLE 6.14 – SUMMARY OF RESULTS OF ARITHMETIC EVALUATION

			CANADIAN PROJECT TEAM**		CANADIAN PUBLIC***		CONSULTATION GROUP***	
ALTERNATIVE	UNWEIGHTED SCORE	RANK	WEIGHTED SCORE	RANK	WEIGHTED SCORE	RANK	WEIGHTED SCORE	RANK
X1	21	1	305.32	2	312.46	2	309.71	2
X2	19	6	277.00	8	278.80	8	275.30	8
X3	20	3	292.93	4	295.14	5	292.41	5
X4	20	3	292.93	4	299.57	3	296.02	3
X5	*Eliminated - not feasible**							
X6	*Eliminated - not feasible**							
X7	*Eliminated - not feasible**							
X8	18	9	271.69	10	267.84	10	264.27	10
X9	19	6	284.08	7	280.73	7	277.96	7
X10	21	1	312.40	1	314.39	1	312.37	1
X11	20	3	300.01	3	297.07	4	295.07	4
X12	19	6	287.62	6	289.21	6	288.79	6
X13 TRUCKWAY	*Eliminated - not feasible**							
X14	18	9	275.23	9	276.32	9	275.10	9
X15	17	11	252.22	11	258.90	11	258.56	11

* - Crossing X5, X6, X7 and X13 alternatives were eliminated from further study and therefore were not ranked

**- Members of the Canadian Project Team collaboratively developed one set of weightings.

*** - Public and Canadian Consultation Group weitghtings were developed by arithmetically combining individual submissions on factor weightings

6.4 Analysis and Evaluation of Illustrative Alternatives – United States Side

The U.S. study team analyzed 37 combinations (or systems) of illustrative crossing, plaza and access road alternatives connecting the 15 crossing locations at the Detroit River to the interstate freeway system in the U.S.

These alternatives were assessed using the same seven performance factors used by the Canadian evaluation, however with certain unique criteria and measures that reflect the requirements and conditions on the U.S. side of the Detroit River.

The U.S. study team assessed the performance based on level of benefit or impact associated with each crossing/plaza/access road alternative. The performance of each system was compared to the others to identify the top performing systems, which were recommended to be carried forward for comparison to the results of the Canadian evaluation as part of an end-to-end process.

For further details with regard to the analysis and evaluation of the illustrative alternatives on the U.S. side, the reader is referred to the *Evaluation of Illustrative Alternatives on the United States Side of the Border, August 2005*.

A summary discussion of the findings of the U.S. study team brought forward for an end-to-end evaluation is provided in this section of the report.

6.4.1 Downriver Alternatives – Crossings X1, X2, X3, X4, X5 and X6

Further investigation by the U.S. study team into the feasibility of constructing an inspection plaza on lands currently used for slag processing and disposal related to the National Steel operation identified significant community impacts and unacceptable disruption to the steel mill operation. The U.S. Team eliminated the AC1 plaza site from further consideration.

Crossing X5 and X6 alternatives were therefore eliminated from further consideration by the Canadian and U.S. teams.

The U.S. study team analyzed 21 crossing/plaza/access road alternatives in this area of the river. None were recommended to be carried forward on the basis that from the U.S. perspective, they were not effective in meeting the needs of the project while reducing associated impacts, and were not cost-effective.

The findings of the U.S. analysis of improvement to regional mobility supported the Canadian team's assessment that the downriver alternatives would not adequately meet the long-term needs of the regional transportation network. The U.S. analysis found that a new downriver crossing would have limited improvement to traffic operations on the U.S. freeway system in the region. The downriver alternatives had poorer performance than most of the alternatives in terms of improvements to regional mobility, and none were among the top performers overall.

In terms of protecting community/neighbourhood characteristics, four of the five crossing X4/Plaza AS5 alternatives were the top performers among the 37 alternatives analyzed; these alternatives feature a crossing in the Fighting Island area connected to a plaza site in Ecorse, which is an abandoned industrial site. Of these, one alternative (X4/S5/Moran/I-75) was also among the top performers in constructability. The other downriver alternatives had poorer performance than the other alternatives in terms of community impacts.

The southern alternatives (downriver) also generally resulted in higher impacts to natural features than other alternatives considered; most of the southern alternatives had poorer performance than the other alternatives and none were among the top performers.

Five downriver alternatives were the top performers in terms of maintaining air quality. By virtue of their more direct end-to-end alignment between the interstate freeway system and Highway 401, the alternatives reduce total vehicle-miles and vehicle-hours on the U.S. network, resulting in a slightly higher reduction in emissions than other alternatives.

6.4.2 North Alternatives – Crossing X15

The U.S. study team analyzed two crossing/plaza/access road alternatives in the Belle Isle/East Detroit area of the river. Neither was recommended to be carried forward on the basis that, from the U.S. perspective, they were not effective in meeting the needs of the project while reducing associated impacts, and were not cost-effective.

The findings of the U.S. analysis of improvement to regional mobility supported the Canadian team's assessment that a new crossing in the Belle Isle area would not adequately meet the long-term needs of the regional transportation network. The U.S. analysis found that a new crossing in the

Belle Isle area would have only limited improvement to traffic operations on the US freeway system in the region. Both alternatives had a poorer performance in improving regional mobility than most of the other alternatives.

The alternatives in the Belle Isle area were found to have poorer performance than most other alternatives in terms of impacts to community and neighbourhood characteristics, consistency with land use plans, impacts to cultural resources, and impacts to air quality.

While the north alternatives were found to perform better than most alternatives on the U.S. side in terms of impacts to natural features and constructability, they were not among the best performers in these factor areas in comparison to other alternatives.

6.4.3 I-75/I-96 Area – Crossings X13 and X14

The U.S. study team analyzed four crossing/plaza/access road alternatives in the 'Interstates' area, which includes the rail corridor proposed for the DRTP truckway (crossing X13 alternative).

The findings of the U.S. assessment of the truckway proposal supported the Canadian analysis that the capacity provided by the truckway proposal is not sufficient to meet the long-term needs of the region. The U.S. assessment found that the truckway had little benefit to mobility in terms of reducing congestion at the existing crossings in 2035. Further, the U.S. analysis identified that with additional border capacity in place through another new or expanded road crossing on the Detroit River in addition to the DRTP proposal, the truckway will carry virtually no truck traffic during the 2035 peak travel periods.

In addition, on the U.S. side, the truckway proposal connecting to I-75 was found to have negative community impacts and impacts to cultural features associated with the plaza and the crossing. In addition, the access road was determined to be incompatible with local land use, conflicting with plans for residential/commercial revitalization in this area of the City.

The U.S. assessment of the truckway proposal concluded that the truckway proposal does not meet the needs of the Partnership and is not recommended to be carried forward for further analysis as a practical alternative. The DRTP could continue to seek U.S. and Canadian permits/approvals for a truckway and new high clearance rail tunnel as part of a separate process. As a new freeway tunnel, the X13 crossing was determined not to be practically feasible and was eliminated from further study.

Two crossing X14 alternatives connecting the rail corridor in Canada to a new plaza and road connection to the freeway system in downtown Detroit were considered on the U.S. side. Overall, the crossing X14 alternatives performed better than most other alternatives, although neither was a top performer.

The X14/Plaza II2/Connection to M-10 alternative performed better than most alternatives in terms of community/neighbourhood impacts, consistency with local planning, protecting natural features and improving regional mobility. This alternative was also among the top performers in terms of constructability. The U.S. analysis noted that a crossing and inspection plaza in this area of Detroit would negatively affect the local community including impacts to businesses, schools and residences.

The X14/Plaza II3/Connection to M-10 alternative performed better than most alternatives in terms of improving regional mobility. This alternative was also among the top performers in terms of protecting natural features and constructability.

Both alternatives had a poorer performance than most other alternatives in terms of the protection of cultural features and maintaining air quality. The Corktown Historic District, several sites eligible for registration as nationally significant cultural sites and the City's Riverwalk were identified as important features potentially impacted by a new crossing/plaza/access road alternative in this area of the city.

The U.S. analysis determined that neither of these alternatives was among the top overall performers on the U.S. side. However, the X14 alternatives performed better than most alternatives overall. The U.S. team carried both X14 alternatives forward to the end-to-end evaluation for consideration on the short list of practical alternatives.

6.4.4 I-75/I-96 Area – Crossing X12 Alternative

The crossing X12 alternative (twin Ambassador Bridge) was identified as one of the top overall performers on the U.S. side in terms of effectiveness and cost-effectiveness.

The Ambassador Bridge is connected to three interstate freeways in Michigan. Construction is underway on the *Ambassador Bridge Gateway Project* in Detroit, Michigan. This project, by the Michigan Department of Transportation is expected to be completed by December 2009. It will connect the Ambassador Bridge plaza and the interstate freeway system.

Expansion of the existing bridge was the top performer on the U.S. side in terms of community/neighbourhood impacts, consistency with local planning and protecting natural features and among the top performers in terms of constructability. This alternative also had a better performance than most alternatives in terms of improvement to regional mobility.

The notable impacts associated with the expansion of the Ambassador Bridge plaza include impacts to the local community: the plaza expansion will displace 26 homes and seven businesses, disrupt 150 homes and negatively impact community cohesion and character in a disadvantaged area of the city.

The crossing X12 alternative was found to exhibit poorer performance than most other alternatives in terms of maintaining air quality and protecting cultural features. The expansion of the plaza and construction of a new span at this location would have a high impact to cultural resources, impacting eight candidate sites eligible for designation as nationally significant and 18 known archaeological sites; there is a high potential for more as yet undiscovered sites being disturbed by construction activity.

In comparison to other crossing alternatives, the impacts and costs associated with the crossing, inspection plaza and access road are less with the crossing X12 alternative than most other alternatives considered. The U.S. study team recommended the crossing X12 alternative for consideration on the short list of practical alternatives.

6.4.5 Central Alternatives – Crossings X7, X8, X9, X10 and X11

Further investigation by the U.S. study team into the feasibility of constructing an inspection plaza on lands currently used for slag processing related to the National Steel operation identified significant community impacts and unacceptable disruption to the steel mill operation. The U.S. Team eliminated the AC1 plaza site and crossing X7 from further consideration. Both the U.S. and Canadian Teams therefore eliminated crossing X7 from further consideration.

The U.S. study team analyzed eleven crossing/plaza/access road alternatives in the central area of the river. The findings of the U.S. analysis supported the Canadian team's assessment that a new crossing in the central area would meet the long-term needs of the regional transportation network and provide high benefits to regional mobility. All eleven alternatives performed better than most of the other alternatives considered in terms of improvement to regional mobility; further, the eleven central alternatives were the top performers on this factor.

The U.S. analysis of cost-effectiveness, which considered the benefits and impacts as well as cost of the crossing, plaza and access road on the U.S. side, identified three central alternatives as being among the top overall performers:

- Crossing X11/Plaza AC4/Access Road Dragoon/I-75
- Crossing X10/Plaza AC3/Access Road Dearborn/I-75
- Crossing X10/Plaza AC3/Access Road Springwells/I-75.

These alternatives, located between Zug Island and the Ambassador Bridge, are located in an area of southwest Detroit that is a mix of industrial, residential, institutional and cultural land uses. Plazas AC3 and AC4 were identified as having negative impacts to community cohesion and character, as well as environmental justice impacts. Plaza AC3 would likely result in the displacement of approximately 300 residential units, while plaza AC4 would displace more than 60 residences. The AC4 plaza and access road to I-75 was found to be somewhat consistent with local plans, while plaza AC3 was not consistent with plans for residential redevelopment.

Other central alternatives that had overall better performance than most other alternatives included alternatives connected to Plaza AC2 (i.e. crossings X8 and X9). Plaza AC2 is sited on the grounds of the National Steel plant. The plaza site is currently used for storage of raw materials for the rolling mill adjacent to the site. The crossings X8 and X9 would directly impact this rolling mill. A new crossing and plaza in this area would require relocating the rolling mill without disrupting the mill's production. Unlike the slag pile issue identified with plaza AC1, relocating the rolling mill could likely be accomplished within other parts of the National Steel property without adversely affecting the mill's operations or the surrounding community. However, the relocation of the rolling mill would increase the constructability risks associated with the new crossing in terms of time and cost.

The U.S. study team recommended these alternatives for consideration on the short list of practical alternatives as part of an end-to-end evaluation.

6.4.6 Conclusions – United States Side Evaluation

Following the assessment of 37 crossing/plaza/access road alternatives connecting the 15 crossings in the Detroit River to the interstate freeway system, the U.S. study team identified an area of focus for a new border crossing system within which a short list of practical alternatives could be identified that would meet the needs of the border transportation network while having acceptable impacts on the U.S. side (refer to Exhibit 6.14). This area extended from the River Rouge/Melvindale area in the south to the downtown Detroit/M-10 area.

6.5 End-to-End Evaluation of Illustrative Alternatives

The Canadian study team recommendations for alternatives to be carried forward as practical alternatives corresponded to an area of continued study on the Canadian side of the Detroit River extending from the Windsor/ LaSalle border to the north end of the Sandwich Portlands (Exhibit 6.15).

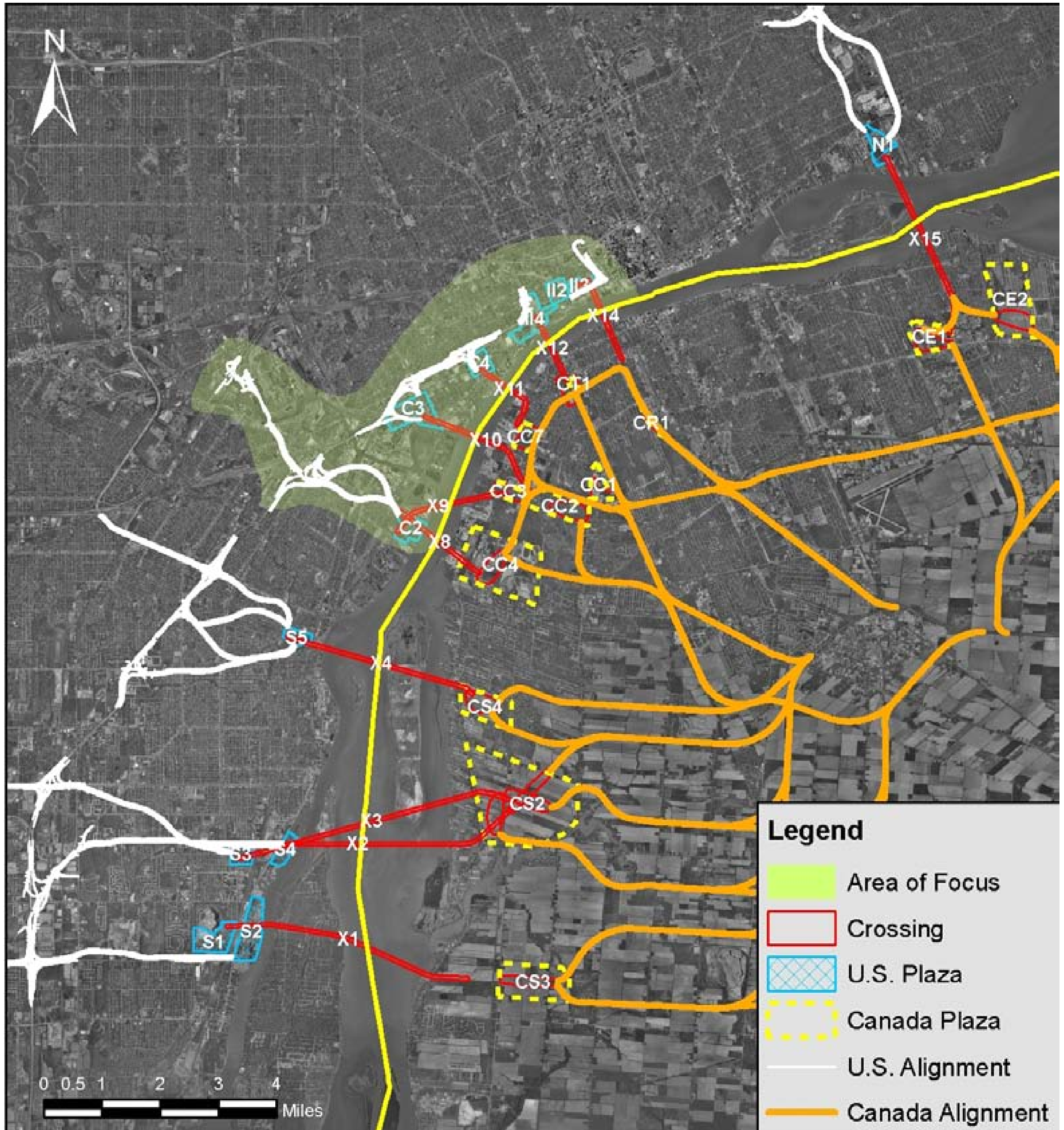
The U.S. study team also identified an area of focus for a new border crossing system within which a short list of practical alternatives could be identified that would meet the needs of the border transportation network while having acceptable impacts on the U.S. side (Exhibit 6.16). This area extended from the River Rouge/Melvindale area in the south to the downtown Detroit/M-10 area.

Based on the separate evaluations conducted by both study teams, the following conclusions were identified:

- Crossings X1, X2, X3, X4, X5, X6, X7, X13 and X15 should be eliminated from further study. This was jointly supported by the analysis of both study teams.
- Crossings X10 and X11 should be carried forward for further study. This was jointly supported by the analysis of both study teams.
- Crossings X8 and X9 to be reviewed in determining whether to carry forward as practical alternatives. Both teams recommended carrying forward Crossings X8 and X9 for consideration as practical alternatives. However, the analysis of both teams suggested these alternatives do not perform as well on either side of the river as other recommended crossing alternatives.
- Crossings X12 and X14 to be reviewed in determining whether to carry forward as practical alternatives. The U.S. study team recommended both of these alternatives be carried forward for consideration as practical alternatives while the Canadian study team did not.

The Partnership, together with the Canadian and U.S. study teams jointly reviewed the Crossing X8, X9, X12 and X14 evaluation results on an end-to-end basis in determining the final recommendations for alternatives to be carried forward for continued analysis.

EXHIBIT 6.16 – U.S. AREA OF FOCUS FOR FURTHER ANALYSIS



6.5.1 Crossings X8 and X9

The Canadian evaluation identified that crossing X8 and X9 alternatives offer high regional mobility benefits. The Canadian study team also identified that, in terms of improvements to regional mobility, the crossing X8 and X9 alternatives offers slightly lower benefits to regional mobility than the other central alternatives (X10 and X11).

On the Canadian side, the crossing X8 and X9 alternatives have high impacts to the significant natural features in the Ojibway area of west Windsor. The access road alternative for crossing X8 follows the Ojibway Parkway; this alternative impacts the Black Oak Prairie Heritage Park and Ojibway Prairie complex. This alternative would result in the loss of more than 25 ha of designated and undesignated natural features and a similar area of endangered or threatened species habitat. More significantly, a new freeway in the Ojibway Prairie corridor would likely sever the linkage between the Black Oak Prairie area and the Ojibway Prairie Complex, resulting in a landscape scale impact.

The crossing X9 alternative directly impacts the Black Oak Prairie Heritage Park and an Environmental Policy Area along the riverfront. This alternative would result in the loss of approximately 30 ha of natural features, including direct impacts to more than 20 ha of endangered or threatened species habitat. The crossing X9 alternative would also threaten connectivity between the Ojibway Prairie complex and the riverfront.

The U.S. study team identified constructability risks associated with Plaza AC2 (i.e. crossings X8 and X9). Plaza AC2 is sited on the grounds of the National Steel plant. The plaza site is currently used for storage of raw materials for the rolling mill adjacent to the site. The crossings X8 and X9 would directly impact this rolling mill. A new crossing and plaza in this area would require relocating the rolling mill without disrupting the mill's production. The relocation of the rolling mill would increase constructability risks associated with the new crossing in terms of cost and time, possibly impacting upon the Partnership's ability to meet the stated objective of completing the crossing by 2013.

On the basis that the X8 and X9 alternatives are not the top performers in either country and that both alternatives have unique high impacts and risks, on an end-to-end basis, the disadvantages of these options outweighed the advantages.

Crossing X8 and X9 alternatives were eliminated from further study.

6.5.2 Crossing X12

In the evaluation of illustrative alternatives, the crossing X12 alternative was unique in that this alternative had relatively high negative impacts on the Canadian side in comparison to other Canadian alternatives, but relatively low negative impacts on the U.S. side compared to other U.S. alternatives. In terms of benefits provided to regional mobility, the alternative provides improved regional mobility for the border transportation network on both sides of the river, but was considered by the Canadian study team to have limited ability to provide continuous/ongoing capacity.

In consideration of the high community impacts to the residential area impacted by the expansion of the Canadian bridge plaza and the expansion of Huron Church Road to a freeway facility on the Canadian side, and the potential for disruption to border traffic during construction of the plaza and freeway, on an end-to-end basis, the disadvantages of this alternative outweighed the advantages.

Crossing X12 was eliminated from further study. The expanded U.S. plaza of the Ambassador Bridge, with the improved connections to the interstate freeway system was carried forward within the Area for Continued Analysis as a possible U.S. plaza site for a new crossing connecting to a new inspection plaza and connecting roadway on the Canadian side located downriver of the Ambassador Bridge.

6.5.3 Crossing X14

The Canadian Team determined that as a six-lane freeway with a new bridge or tunnel, the Rail Corridor alternative has a high benefit to regional mobility. However, a new freeway through central and south Windsor is not consistent with current and future land use plans for the City. This alternative would have high community impacts associated with a new freeway corridor through central and south Windsor in terms of impacts to regional commercial/retail areas and employment areas south of E.C. Row Expressway and negative impacts to community character and cohesion both in south Windsor and for the older neighbourhoods near the riverfront.

The Canadian study team also noted concerns with constructability of this alternative and concerns with the security/monitoring of the remote plaza approximately 2500 m (1.5 mi.) inland from the border.

On the basis that other alternatives provided comparable transportation benefits with lower community impacts, the Canadian study team did not recommend the rail corridor alternatives be carried forward for further study.

Two crossing X14 alternatives connecting the rail corridor in Canada to a new plaza and road connection to the freeway system in downtown Detroit were considered on the U.S. side.

The X14/Plaza II2/Connection to M-10 alternative performed better than most alternatives in terms of community/neighbourhood impacts, consistency with local planning, protecting natural features and improving regional mobility; this alternative was also among the top performers in terms of constructability. The U.S. analysis noted that a crossing and inspection plaza in this area of Detroit would negatively affect the local community including impacts to businesses, schools and residences.

The X14/Plaza II3/Connection to M-10 alternative performed better than most alternatives in terms of improving regional mobility. This alternative was also among the top performers in terms of protecting natural features and constructability.

Both alternatives had a poorer performance than most other alternatives in terms of protection of cultural features and maintaining air quality. The Corktown Historic District, several sites eligible for registration as nationally significant cultural sites and the city's Riverwalk were identified as important features potentially impacted by a new crossing/plaza/access road alternative in this area of the city.

The U.S. team further noted that that neither of the X14 alternatives was among the top overall performers on the U.S. side. In addition, other alternatives provided comparable transportation benefits with lower community impacts on the Canadian side, and other alternatives were more effective and cost-effective in terms of meeting the needs of the project and having acceptable impacts on the U.S. side. On an end-to-end basis, the disadvantages of the rail corridor option outweighed the advantages.

Crossing X14 alternative was eliminated from further study.

6.6 Area of Continued Analysis

The results of the end-to-end evaluation of illustrative alternatives led to the identification of an Area of Continued Analysis (ACA) for possible practical crossing, plaza and access road alternatives (refer to **Exhibit 6.17**). These practical alternatives represent refinements of crossing alternatives X10 and X11, as well as possible alternatives connecting to the Ambassador Bridge Gateway and expanded plaza area on the U.S. side. This area extends from Zug Island to the vicinity of the Ambassador Bridge on the U.S. side, and from Broadway Avenue to Brock Street in Sandwich Towne on the Canadian side.

On the Canadian side, this area would encompass plazas CC2, CC3 and CC7 and be defined to provide sufficient area to enable a range of access road alignments and crossing alignments to be developed for continued analysis. The area would also accommodate refinement to the locations and alignments of crossing, plaza and access road alignments in the Ojibway Industrial Park area.

The residential community of Sandwich and Black Oak/Ojibway protected natural areas would limit the extent of the Area of Continued Analysis on the Canadian side. The area also includes the Huron Church Road/Talbot Road corridor and the Highway 401 corridor from Highway 3 to Dougall Parkway.

As discussed in **Chapter 8**, these corridors were examined for freeway design alternatives, including interchange locations and configurations, crossing road treatments (closure or grade separation) and service roads for access.

On the U.S. side, the area would encompass the area of southwest Detroit between the I-75 corridor and the riverfront between Zug Island and the Ambassador Bridge.

Possible improvements to connections to I-94 along Schaefer Road or Outer Drive were further examined by the U.S. study team. A complete description of the U.S. Team's evaluation of illustrative alternatives is documented in *Evaluation of Illustrative Alternatives on the United States Side of the Border, October 2007*.

EXHIBIT 6.17 – AREA OF CONTINUED ANALYSIS

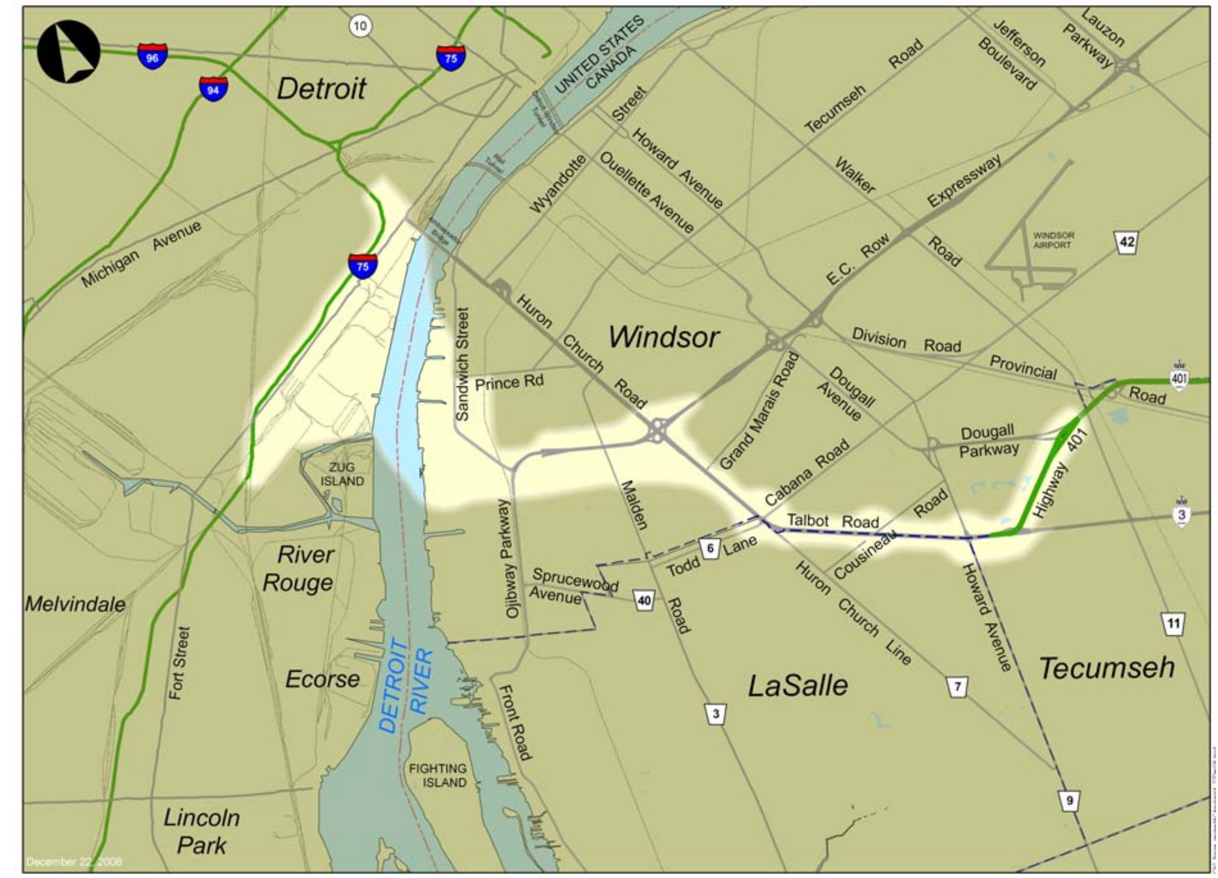
7 DESCRIPTION OF THE AREA OF CONTINUED ANALYSIS

As described in more detail in Chapter 6, the assessment and evaluation of the illustrative crossing, plaza and access road alternatives led to the development of an Area of Continued Analysis (ACA), which is illustrated in Exhibit 7.1.

Within the Area of Continued Analysis, the study team generated, assessed and evaluated a number of practical crossing, plaza, and access road alternatives, which are described in Chapter 8. The following sections of this chapter are intended to provide the reader with an overview of the existing conditions within the ACA. For each section, the description of existing conditions corresponds to an Area of Investigation, which is generally consistent with an area encompassing the Practical Alternatives in the ACA. For more detailed information, the reader is referred to the following reports:

- *Draft Practical Alternatives Evaluation Working Paper – Air Quality Impact Assessment (May 2008);*
- *Draft Practical Alternatives Evaluation Working Paper – Noise and Vibration Assessment (May 2008);*
- *Draft Practical Alternatives Evaluation Working Paper – Social Impact Assessment (April 2008);*
- *Draft Practical Alternatives Evaluation Working Paper – Economic Impact (May 2008);*
- *Draft Practical Alternatives Evaluation Assessment Report – Existing and Planned Land Use (May 2008);*
- *Draft Practical Alternatives Evaluation Working Paper – Archaeology (April 2008);*
- *Draft Practical Alternatives Evaluation Working Paper – Cultural Heritage (April 2008);*
- *Draft Practical Alternatives Evaluation Working Paper – Natural Heritage (April 2008);*
- *Draft Practical Alternatives Evaluation Assessment Report – Stormwater Management Plan (March 2008);*
- *Draft Practical Alternatives Evaluation Working Paper – Waste and Waste Management (May 2008);*
- *Draft Practical Alternatives Evaluation – Constructability Report for Plaza & Crossing Alternatives (May 2008);*
- *Draft Level 2 Traffic Operations Analysis of Practical Alternatives (December 2008);*

EXHIBIT 7.1 – AREA OF CONTINUED ANALYSIS



7.1 Air Quality

This section provides an overview of existing air quality conditions within the Area of Continued Analysis. For further details, the reader is referred to *the Draft Practical Alternatives Evaluation Working Paper – Air Quality Impact Assessment*.

AREA OF INVESTIGATION

Since air quality is not limited by local political boundaries, a relatively broad area was included in the Air Quality Assessment. This comprised an approximate 10 km x 10 km area in West Windsor, from just south of the present Highway 401 terminus at Highway 3, 10 km north and 10 km west to the Detroit River.

CLIMATE AND METEOROLIGICAL DATA

Characterization of the existing climate and meteorological conditions in the vicinity of the Highway 3/ Huron Church Road corridor is important because these are the main forces driving contaminant transport (dispersion) in the atmosphere. The direction and speed of the wind dictates the location and distance from the source that the pollutants may travel. The factors that influence contaminant mixing in the atmosphere are described below.

The Windsor-Essex area has a middle latitude humid continental climate affected by Lake Erie and Lake St. Clair. The region is characterized by pronounced seasonal differences of weather and by a highly variable day-to-day weather pattern. Some periods in summer are essentially humid tropical (high temperatures, high humidity, afternoon thunderstorms, etc.). Some periods in winter are effectively polar (very cold, clear, dry). Precipitation occurs throughout the year.

The surface meteorological data used in the air dispersion modelling was obtained from the Windsor Airport meteorological station (2000 – 2004), which is approximately 5 to 7 km east of the Huron Church Road / Highway 3 corridor. It is well exposed and represents the general wind flow pattern in the vicinity of the corridor since the area is generally flat. The upper air measurements used were from the closest upper air station which is located in Pontiac, Michigan, approximately 30 km northwest of the ACA. In order to be considered representative, the wind and temperature data should be obtained from within 100 km of the study area, and the upper air data (which is a regional parameter) should be within 300 km. The stations used for this study were well within these parameters.

Near-surface Temperature

Temperature and precipitation normals for the Windsor Airport (1971-2000) are presented in Table 7.1. "Normals" is the term commonly used for values of climatic elements averaged over a fixed standard period of years (usually 30 years).

Temperature near the surface of the earth controls the buoyant component of turbulence (vertical motion). Heat from the earth's surface heats the air near the ground causing it to rise. This mechanism reaches a maximum in early afternoon and is at a minimum near sunrise. This affects the dispersion of air pollutants through the influence of thermal mixing as the air mass rises.

Table 7.1 indicates that the mean (averaged over 30 years) daily minimum temperature is –8.1°C in January and the mean daily maximum temperature is 28°C in July at the Windsor Airport site. The annual mean temperature is 9.4°C.

Precipitation

Precipitation acts as an atmospheric cleansing mechanism, as contaminants in the air are generally washed out by precipitation. More precipitation produces more washout. For this study, the role of precipitation in the removal of pollutants from the air was not considered; generally providing conservatively high ground level concentrations.

As shown in Table 7.1, the Windsor area normally receives a total of 918.3 mm of precipitation per year; 805.2 mm of rainfall and 126.6 cm (49.8 in) of snowfall. The maximum mean monthly rainfall is 96.2 mm, which occurs in September.

TABLE 7.1 - WINDSOR AIRPORT CLIMATE NORMALS (1971-2000)[1]

Temperature	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Year**
Daily Average (°C)	-4.5	-3.2	2	8.2	14.9	20	23	21.6	17	11	4.6	-1.5	9.4
Standard Deviation	2.9	2.7	2.1	1.6	2.1	1.3	1.1	1.2	1.3	1.7	1.7	2.7	0.8
Daily Maximum (°C)	-0.9	0.6	6.4	13	20.5	25	28	26.6	23	16	8.3	1.9	14
Daily Minimum (°C)	-8.1	-7	-2.4	3	9.3	15	17	16.6	12	6.2	0.9	-4.8	4.9
Precipitation													
Rainfall (mm)	29	33	55.6	81	80.7	90	82	79.7	96	64	67	47	805.2
Snowfall (cm)	35	28	20.6	4.3	0	0	0	0	0	0.7	8.3	30	126.6
Precipitation (mm)	58	57	75	85	80.8	90	82	79.7	96	65	76	75	918.3
Days with Rainfall													
>= 0.2 mm	5.7	5.6	9.4	12	11.8	11	10	10	11	11	11	7.9	115.7
Days With Snowfall													
>= 0.2 cm	13	9.1	6.7	2.3	0.03	0	0	0	0	0.3	3.8	10	45
Days with Precipitation													
>= 0.2 mm	15	12	13.9	13	11.8	11	10	10	11	11	13	15	146.7
Wind													
Days with Winds >= 52 km/hr	1.9	1.4	2.5	1.8	1.1	0.9	0.7	0.3	0.4	0.5	1.2	1.2	14
Days with Winds >= 63 km/hr	0.6	0.4	0.7	0.7	0.5	0.3	0.4	0.2	0.1	0.2	0.3	0.3	4.7

The meteorological file used in the air dispersion modelling for this study utilizes hourly temperatures for each day in the year.

Atmospheric Stability

Normally, temperature decreases with increasing height above sea level. The relationship of the actual vertical temperature to the near-surface temperature determines the atmosphere's ability to resist or enhance vertical motion. The amount of vertical motion is a measure of the stability of the atmosphere.

The atmosphere can have three general stability states - unstable, neutral and stable. The stability scale normally used for air quality simulations varies from very unstable (A) through neutral (D) to very stable (F). The stability class distribution for the Windsor Airport station for the period 2000 - 2004 is presented in Table 7.2. At this station, neutral stability conditions {D (neutral) + C (near neutral)} occur approximately 67 per cent of the time and stable conditions (E, F) about 28 per cent of the time. Stable conditions can produce higher concentrations of contaminants because of reduced turbulent mixing.

TABLE 7.2 - STABILITY CLASS DISTRIBUTION - WINDSOR AIRPORT (2000-2004)

Stability Class	**% Frequency**						**Descriptor**
	2000-2004	**2000**	**2001**	**2002**	**2003**	**2004**	
A	0.5	0.4	0.8	0.6	0.4	0.4	Unstable
B	4.2	3.6	4.6	4.4	4.4	3.9	
C	10.1	10.6	10.3	9.8	9.9	9.9	Neutral
D	57.0	56.0	56.2	57.1	57.0	58.6	
E	13.3	13.6	14.0	13.2	12.8	13.1	Stable
F	14.9	15.8	14.2	15.0	15.5	14.1	

The meteorological file used in the air dispersion modelling for this study requires hourly stability classes for each day in the year.

[1] Environment Canada website, http://www.climate.weatheroffice.ec.gc.ca/climate_normals/index_e.html

Wind Direction

Wind direction is reported as the direction from which the wind blows and is based on surface (10 m) observations. In general terms, if the wind does not blow toward a receptor, there will be no impact from an upwind emission source. The wind blows in all directions with varying frequencies. Certain directions occur more frequently than others. These are known as the prevailing wind directions.

Exhibit 7.1 presents a wind rose for the Windsor Airport for the years 2000 - 2004. The prevailing wind is from the southwest, primarily during the summer months, with winds blowing from the west through southwest directions (i.e., from Southeast Michigan) approximately 32 per cent of the time.

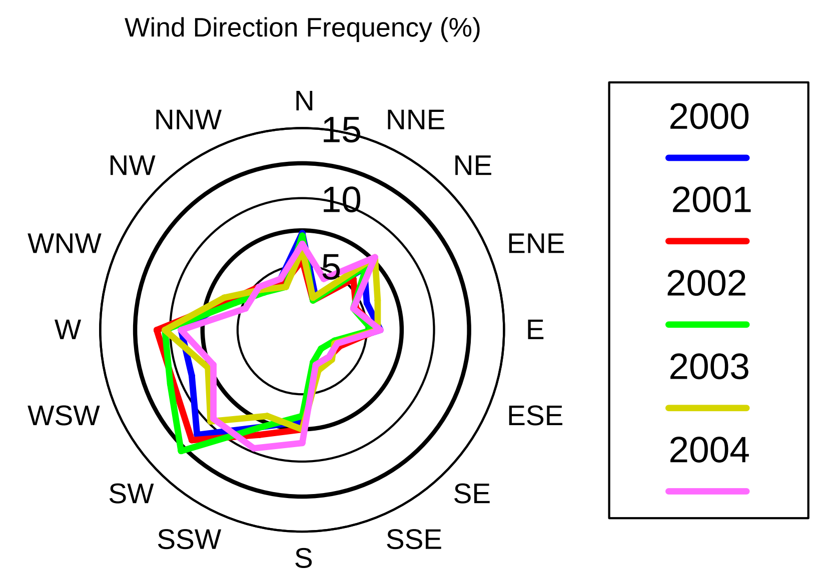
The dispersion modelling for this study uses the hourly wind directions of each day in the year.

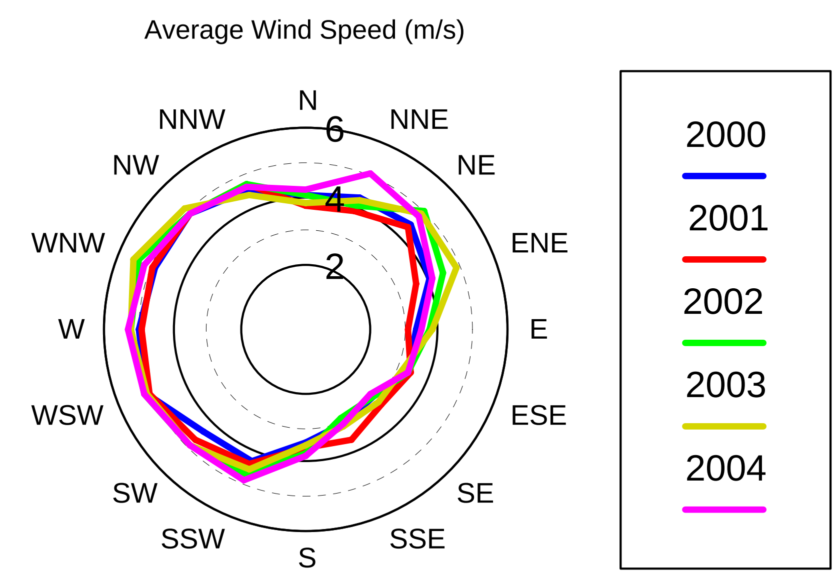
Wind Speed

Contaminant concentrations decrease with increasing wind speed as a result of atmospheric mixing. The wind speed used in the air quality modelling was based on surface observations from the Windsor Airport. Wind speed increases with height as surface friction is reduced. The variation of wind speed with height was built into the dispersion model used in this assessment. When wind speeds are high, there is good dispersion of gases and particles, but more potential for re-suspension of surface dust. When wind speeds are near zero, the primary mechanism of pollutant transport away from a source is via diffusion, which can lead to very high pollutant concentrations near the ground. Calms were recorded 4.3 per cent of the time at the Windsor Airport meteorological station (Exhibit 7.2) during 2003 compared with 3.6 per cent for the 2000 – 2004 period.

The meteorological file used in the air dispersion modelling for this study utilized hourly wind speed and directions for each day in the year.

EXHIBIT 7.2 - WIND ROSE - WINDSOR AIRPORT (2000 - 2004)





Mixing Height

Another very important parameter in the dispersion of contaminants from a source is the mixing height. This is the vertical extent through which the plume can be mixed. With a higher mixing height, there is a larger volume of air available within which the pollutants can mix, which results in lower concentrations. With a lower mixing height, the plume may become trapped resulting in higher concentrations.

The concept of mixing height is founded on the principle that heat transferred to the atmosphere at the earth's surface results in convection, vigorous vertical mixing and the establishment of a dry-adiabatic lapse rate[2]. For annual and 24-hour average concentrations, the mixing height does not have much effect on the modelled ground level concentrations[3]. For one-hour average concentrations, however, mixing height is very important. The use of variable mixing heights, that are as close to the actual conditions as possible, improves the ability of the model to accurately predict downwind concentrations. For the sources that are close to the ground, the mixing heights do not play a major role.

The closest station having the upper air data necessary for this study is in Pontiac, Michigan. The mixing height data for each day in the five-year meteorological period (2000 - 2004) was developed using the Holzworth methodology. The surface values and the mean monthly minimum (morning) and maximum (afternoon) mixing heights were then pre-processed through the US EPA meteorological pre-processor (PCRAMMET)[4], which combines surface and upper air measurements to create the hourly mixing heights that are required by the dispersion model. Missing data was filled in by interpolation. There were no significant blocks of data missing from this meteorological data set.

ASSESSMENT CRITERIA

Environment Canada and the Ontario Ministry of the Environment (MOE) have set air quality objectives, and air quality standards and criteria, respectively for various air pollutants.

The Ontario MOE as a component of the MOE standard setting process has developed a list of the Ambient Air Quality Criteria (AAQCs). The AAQCs are effect-based levels in air, with variable averaging time (e.g., 24-hour, 1-hour and 10 minutes) appropriate for the effect that it is intended to protect against. The AAQCs, which represent desirable levels in ambient air, are used for assessing general air quality and the potential for causing an adverse effect. The Standards Development Branch of the MOE publishes a set of guideline limits in *Ontario's Ambient Air Quality Criteria* [MOE 2008]. These criteria are not enforceable and with certain contaminants such as acrolein, the AAQCs are set below ambient background concentrations. Federal Air Quality Objectives encompass three levels of air quality objectives: maximum desirable level (MDL), maximum acceptable level (MAL) and maximum tolerable level (MTL). The MAL is intended to provide adequate protection against effects on soil, water, vegetation, materials, visibility, personal comfort and well-being. The MAL is considered to be a realistic objective. When the MAL is exceeded, the need for control action by a regulatory agency is indicated. Table 7.3 summarizes the applicable available criteria from the MOE and Environment Canada.

TABLE 7.3 - AIR QUALITY CRITERIA FOR $PM_{2.5}$ AND NO_X

Contaminant	Averaging Time	MOE AAQC µg/m³ (ppb)	Federal AQ Objective or Maximum Acceptable Level (MAL) (µg/m³)
NO_x (as NO_2)	1 h	400 (200)	-
	24 h	200 (100)	-
	Annual	-	100[1]
$PM_{2.5}$	24 h	-	30 *

Notes
NO_x – nitrogen oxides – sum of nitrogen dioxide (NO_2) and nitric oxide (NO)
$PM_{2.5}$ includes all particulate matter with an aerodynamic diameter less than 2.5 µm – considered respirable
[1] MAL is for NO_2
- Indicates no criterion available
* comes into force in 2010

Emissions of NO_x and $PM_{2.5}$ from the vehicles traveling on the freeway and the local service roads, other local arterial roadways, local industry and transboundary pollution from the southeastern United States have the greatest potential to impact local air quality. NO_x is the sum of nitrogen dioxide (NO_2) plus nitric oxide (NO). At present, there is no annual provincial AAQC for NO_x, but there is a federal MAL for NO_2. The assessment was conservatively completed assuming that 100 per cent of the NO_x is NO_2. Typically, NO_2 comprises approximately 60 per cent of total NO_x. With respect to $PM_{2.5}$, the MOE does not currently have an AAQC for $PM_{2.5}$. Instead, MOE has adopted the Canada Wide Standard (CWS) for $PM_{2.5}$, which is a federal air quality objective that comes into force in 2010 The CWS objective is not enforceable but non-attainment of the CWS may indicate that regional action is required to reduce emissions.

The MOE measures air contaminants at various locations throughout Ontario, and reports on the state of Ontario's air quality on an annual basis. These reports are known as "Air Quality in Ontario" reports.

The existing air quality 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 these contaminants from the heavily industrialized areas of Detroit, nearby communities and beyond. Air quality impacts in the area are dominated by the substances that combine to produce smog or acid rain. This includes both NO_x and $PM_{2.5}$.

Exhibit 7.3 presents a breakdown of $PM_{2.5}$ emissions in Southwestern Ontario in 2000[5].

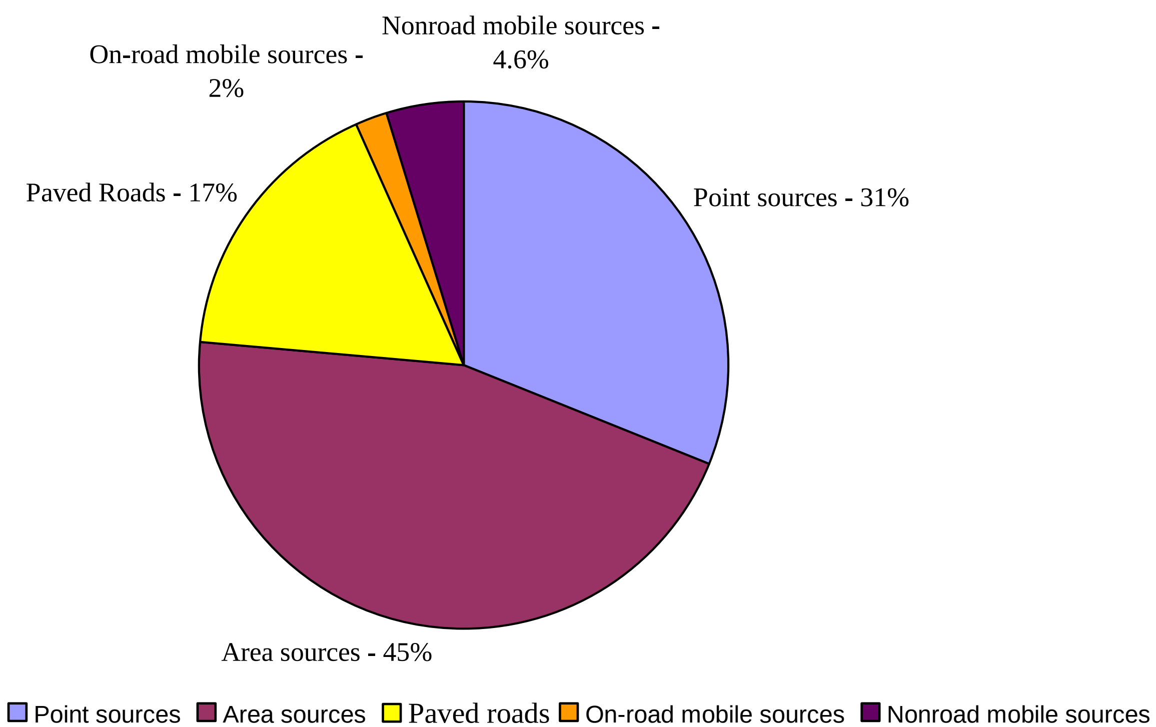
[2] Holzworth, G.C., 1967. Mixing Depths, Wind Speeds and Air Pollution Potential for Selected Locations in the United States. Journal of Applied Meteorology.

[3] Young, J.W.S. and Z. Radonjic 1993. Air Quality Simulations – *How Much Bias and Error Can Climate Introduce?* Paper presented at the 27th CMOS Congress, Fredericton N.B., June.

[4] United States Environmental Protection Agency 1995 (U.S.EPA). *User's Guide to CAL3QHC Version 2.0: A Modelling Methodology for Predicting Pollutant Concentrations Near Roadway Intersections.* September.

[5] Environment Canada Great Lakes Basin Airshed Management Framework Pilot Project

EXHIBIT 7.3 - $PM_{2.5}$ EMISSIONS IN SOUTHWESTERN ONTARIO (2000)



Ambient Monitoring Data

The MOE has historically operated a number of ambient air monitoring stations in Windsor. Information is routinely published for two stations at:

- MOE Windsor Downtown – 467 University Ave. (Station #060204 C); and
- MOE Windsor West – College / South St. (Station #060211R).

As part of this EA study, the study team established two ambient air monitoring stations in the Area of Continued Analysis, along the existing Huron Church/Talbot Rd. corridor. The stations were located approximately 45 m from the road at:

- DRIC OPHL Station – The Ontario Public Health Laboratory; and
- DRIC SCC Station – South of St. Clair College.

The locations of the ambient air monitoring stations are presented in Exhibit 7.4.

Detailed results from the DRIC monitoring program are provided in the *Draft Practical Alternatives Evaluation Working Paper – Air Quality Impact Assessment (May2008).*

The main purpose of the monitoring program was to collect data on the total pollutant concentrations of various pollutants that are routinely observed in the corridor. The monitoring program commenced in September 2006 and continued to October 2007.

The data was used to:

- Establish current conditions within the corridor;
- Assist in determining background air concentrations of the pollutants being measured; and,
- Benchmark the air dispersion modelling.

In addition to $PM_{2.5}$ and NO_2 which are discussed in this assessment, additional contaminants were included in the monitoring program and considered in the analysis of the Recommended Plan (the reader is referred to Chapter 10 for further detail on the assessment of the Recommended Plan).

EXHIBIT 7.4 - MOE MONITORING STATION LOCATIONS AND DRIC MONITORING STATION LOCATIONS

To assess the existing air pollutant concentrations in the area, monitoring data from these two stations were obtained from the MOE[6]. The MOE AAQCs are based on Nitrogen Dioxide (NO_2) measurements rather than total NO_x, thus the NO_2 data has been presented. Tables 7.4 and 7.5 present a summary of the measurements for NO_2 and $PM_{2.5}$ respectively.

Table 7.6 presents a summary of the $PM_{2.5}$ and NO_2 measurements collected from the two DRIC stations from October 2006 to December 2006. These first quarter results were used to assist in establishing background concentrations for the modelling of the alternatives. While data is currently available for additional periods, the initial model runs were performed when only limited data was

[6] Ontario Ministry of the Environment (MOE). *Air Quality in Ontario, 2000* – 2005 (Reports & Appendices), Queen's Printer for Ontario

available. To keep the comparisons consistent between alternatives, the first quarter results were used for all alternatives. The reader is referred to Chapter 8 for more details on evaluation of alternatives.

Table 7.7 presents a summary of the $PM_{2.5}$ and NO_2 measurements collected from the two DRIC stations from November 2006 through October 2007. After being fully evaluated, these data were used as part of the final analysis of the Recommeded Plan. The reader is referred to Chapter 10 for more details on the assessment of the Recommended Plan.

Table 7.4 - Five Year Summary of MOE Monitoring Results – NO_2

Station ID	Station Location	Averaging Period	Nitrogen Dioxide (μg/m³)						
			Canada Wide Standard	Year					Ave
				2001	2002	2003	2004	2005	
#060211-R	College / South St.	Annual Average	-	39	37	INS[+]	33	32	35
		1-hr 90th Percentile	-	66	62	69	62	62	64
		1-Hour Maximum	400	130	175	182	176	133	159
		24-Hour Maximum	200	83	116	92	79	109	96
#060204-C	467 University Ave.	Annual Average	-	36	36	INS	34	32	35
		1-hr 90th Percentile	-	62	60	73	68	62	65
		1-Hour Maximum	400	163	130	150	182	124	150
		24-Hour Maximum	200	77	86	94	90	100	89

[+] INS = Insufficient data available to compute a representative average

Table 7.5 - Five Year Summary of MOE Monitoring Results – $PM_{2.5}$

Station ID	Station Location	Averaging Period	$PM_{2.5}$ (μg/m³)						
			Canada Wide Standard	Year					Ave
				2001	2002	2003	2004	2005	
#060211-R	College / South St.	Annual Average	-	-	11.8	9.6	9.5	10.5	10
		24- hr 90th Percentile	-	-	26	20	21	24	23
		1-Hour Maximum	-	-	74	64	56	74	67
		24-Hour Maximum	30[**]	-	56	41	38	52	47
		No. of Times above Benchmark	-	-	18	7	9	9	11
#060204-C	467 University Ave.	Annual Average	-	9.4	9.8	8.5	8.6	10.4	9
		24-hr 90th Percentile	-	20	21	19	19	24	21
		1-Hour Maximum	-	72	75	64	54	72	67
		24-Hour Maximum	30[**]	40	56	43	39	48	45
		No. of Times above Benchmark (30 μg/m³)	-	7	10	5	8	12	8

Table 7.6 - Summary of DRIC 1st Quarter Monitoring Results (Oct 06 – Dec 06)

Pollutant	Averaging Time	OPHL	SCC	Average of 2 Stations
NO_2 (1-hr), μg/m³	Max	85	85	85
	Min	0	0	0
	Average	27	21	24
	90th Percentile	47	39	43
NO_2 (24-hr), μg/m³	Max	52	50	51
	Min	2	2	2
	Average	26	21	24
	90th Percentile	43	32	38
$PM_{2.5}$ (24-hr), μg/m³	Max	48	46	47
	Min	8	8	8
	Average	21	20	21
	90th Percentile	32	29	31

Table 7.7 - Summary of DRIC Monitoring Results (November 2006 – October 2007)

Pollutant	Averaging Time	OPHL	SCC	Average of 2 Stations
NO_2 (1-hr), μg/m³	Max	104	110	107
	Min	0	0	0
	Average	27	23	25
	90th Percentile	50	44	47
NO_2 (24-hr), μg/m³	Max	68	52	60
	Min	3	3	3
	Average	27	23	25
	90th Percentile	43	36	40
$PM_{2.5}$ (24-hr), μg/m³	Max	48	46	47
	Min	8	7	8
	Average	20	21	21
	90th Percentile	32	33	33

It should be noted that the results collected at the DRIC monitoring stations are somewhat higher than those collected at the MOE monitoring stations. This was expected since the DRIC monitoring stations are located closer to a high traffic corridor (Huron Church/Highway 3), whereas the MOE stations are not subject to the same traffic influences. Thus, the MOE stations are not influenced by the same volumes of traffic.

Contribution from Upwind / Background Sources

Air dispersion models provide an estimate of the air pollutant concentrations resulting from emission sources that are specifically included in the model set-up and inputs. However, concentrations resulting from other, upwind (areas to the south and west of Windsor) sources are not included, but must be considered when assessing total expected air pollutant concentrations against relevant standards and guidelines. This is typically done by adding a background component to all model-predicted results. MOE generally advocates the use of 90th percentile air pollutant concentrations obtained from ambient air monitoring stations for this purpose (i.e., background concentrations are lower 90 per cent of the time). This approach is considered to provide a conservative estimate of background concentrations.

Data on the existing air pollutant concentrations in the Windsor area were obtained from the two MOE air monitoring stations. Given their locations in an urban setting, data from the MOE stations reflect local traffic. The MOE data therefore provided somewhat higher background concentrations of pollutants such as $PM_{2.5}$ and NO_2 than might otherwise be observed at stations further from traffic but upwind (i.e. south and west) of the study area. However, the two MOE stations were considered to be far enough away from the Highway 3/Huron Church Road corridor as not to be impacted by existing traffic conditions from this corridor would not be impacting the MOE monitors to any notable degree.

Tables 7.4 and 7.5 indicate that the average 90th percentile measured concentrations at each of the MOE stations are 23 and 21 ug/m^3 for 1-hour $PM_{2.5}$ and 64 and 65 ug/m^3 for 1- hour NO_2. The first quarter data from the two DRIC air monitoring stations were used in conjunction with the MOE monitoring data in determining the appropriate background concentrations.

As shown in **Table** 7.6, the average measured concentration at the DRIC stations for the first quarter of monitoring data (Oct 1 – Dec 31st, 2006) was 21 µg/m^3 for $PM_{2.5}$. This corresponds to the 22 ug/m^3 of the 90th percentile for the MOE monitoring stations. Therefore, for the purposes of background, a rounded value of 20 µg/m^3 was chosen. This value allows for a conservative approach to determining the possible combined effects of the roadway and other contributions to $PM_{2.5}$.

For NO_2, the average value from the DRIC monitoring stations is 24 µg/m^3. The 90th percentile value for the MOE monitoring stations is 65 µg/m^3. Because of the large discrepancy between the MOE and DRIC monitoring stations and the general acceptance by the MOE of 90th percentile values, a conservative rounded value of 70 µg/m^3 was chosen for background for NO_X.

Established background levels were re-evaluated in greater detail to reflect the full year of monitoring in the Highway 3/Huron Church Road corridor.

Table 7.8 presents the selected background concentrations used in the DRIC AQ assessment.

TABLE 7.8 - SUMMARY OF BACKGROUND CONCENTRATIONS USED IN DRIC AIR QUALITY ASSESSMENT

Pollutant	Averaging Time		
	1-hour	24-hour	Annual
NO_x	70 µg/m^3	70 µg/m^3	-
$PM_{2.5}$	-	20 µg/m^3	9 µg/m^3

7.2 Socio-Economic Environment

7.2.1 Noise and Vibration

This section provides an overview of noise and vibration conditions within the Area of Continued Analysis. For further details, the reader is referred to the *Draft Practical Alternatives Evaluation Working Paper – Noise and Vibration Assessment*.

The receptors selected for noise impact assessment were those determined to be potentially most likely to be impacted (i.e., subject to frontline exposure) by the various alternatives, but not anticipated to be displaced. Multiple receptors were selected to capture the anticipated variations in exposure to noise from traffic based on the alignment of existing roads, the alignment of the proposed alternatives, and variations in traffic volumes.

Within the ACA, the results of the study team's noise modeling indicate that existing sound levels are generally high (> 55 dBA) during both daytime and nighttime hours. Daytime sound levels of 55 dBA, or higher, were identified at most of the 33 receptors modeled. The daytime sound levels are predicted to range from a low of approximately 56 dBA to a high of approximately 79 dBA. The nighttime sound levels are predicted to range from a low of approximately 52 dBA to a high of approximately 72 dBA. These sound levels reflect the predicted high traffic volume on the major roads within the study area and the relatively high percentage of truck traffic on a number of these roads.

The vibration assessment includes both field measurements to establish baseline vibration levels and an assessment of vibration impacts associated with the proposed practical routes.

The methodology for estimating vibration impacts consisted of the following key steps:

- Through consultations with other disciplines, locations potentially vulnerable to ground borne vibration were identified.
- Receptors within the potentially vulnerable areas were identified for vibration monitoring.
- Ground vibration levels were measured at two locations (side by side) at each of eight representative receptors. The traffic at each location was monitored over a period of 30 minutes. About 15 minutes were recorded by the chart recorder. Two twelve minute periods were measured by the analyzer to produce two spectrum plots. The monitoring was conducted over two different days to identify any differences in the vibration patterns. (Note: Under busy traffic conditions, truck speeds are reduced considerably, thereby reducing vibration levels).

Receptor Locations

Eight receptor locations were chosen to measure pre-modification vibration levels. The eight locations are:

1. The grassy area adjacent to the roadway at the house, between 1140 and 1202 Talbot Street.
2. Adjacent to the West sidewalk opposite to the church (at the foundation block of the Ambassador Bridge – the 5th Block south of Riverside Avenue).
3. Adjacent to the sidewalk of the cul-de-sac at the end of Mill Street.
4. The grassy area adjacent to the roadway (east side of Huron Church Road) outside the Heritage Park Alliance Church.
5. In the park near the cul-de-sac at the end of Northway Avenue.
6. Just south of the Railway tracks at the intersection of Ojibway Parkway and Broadway).
7. Just north of the EC Row Expressway (west side) at 4340 Malden Road.
8. Near the sidewalk of the turn-around-loop on Huron Church Road – opposite to 3495 Huron Church Road.

7.2.2 Neighbourhood and Community Characteristics

This section provides an overview of neighbourhood and community characteristics within the Area of Continued Analysis. For further details, the reader is referred to *the Draft Practical Alternatives Evaluation Working Paper – Social Impact Assessment*.

It is important to understand the demographics of the study area in order to understand the degree of impact from project activities that may be experienced by residents. As part of the consultation carried out for this study, data collection as part of the Social Impact Assessment involved household questionnaires, social feature questionnaires, focus group sessions, input received as part of the public consultation efforts, stakeholder interviews, site visits, and review of various published secondary sources (e.g. Census Canada, City of Windsor).The demographic baseline for the ACA is presented in Table 7.9. For comparison purposes, this table provides data for the City of Windsor, Essex County, and the Province of Ontario. A higher percentage of residents within the ACA own their homes compared to the City of Windsor as a whole. The percentage of the population who are immigrants or visible minorities is lower in the ACA comparatively to the City of Windsor; however, it is similar to that of the Province. The largest percentage of residents within the ACA identified English as their first language.

TABLE 7.9 – DEMOGRAPHIC BASELINE[7]

GEOGRAPHIC BOUNDARIES	TOTAL DWELLINGS	TOTAL POPULATION	HOME OWNERSHIP		IMMIGRANT POPULATION 1996-2001 (%)	VISIBLE MINORITIES (%)	LANGUAGES		
			Own (%)	Rent (%)			English (%)	French (%)	Non-official languages (%)
Ontario*	4,219,41	11,410,046	68	32	18	19	71	4	24
Essex County*	141,300	374,975	73	27	20	11	73	4	22
City of Windsor*	88,533	208,402	65	35	27	17	68	4	28
Area of Continued Analysis	479	1,327	91	10	18	13	71	2	26

Project effects will impact people differently depending on their characteristics. Those members of society whose quality of life is vulnerable to changes within their community are referred to in Social Impact Assessments (SIA) as special populations. For this study, such populations include children, the disabled, ethnic minorities and adults over the age of 65. Estimates on the number of affected residents belonging to special populations were collected from the questionnaire data. Of those that completed the questionnaire, 21 per cent are under the age of 18 years, 13 per cent are over the age of 65 years, and 9 per cent were identified as having special needs. Comparatively, based on Statistics Canada data, the City of Windsor is similar with 25 per cent of the population under the age of 18 years, and 14 per cent over the age of 65 years. There is no data that specifically identifies the percentage of the population with special needs.

In order to predict and evaluate the effects of the project on the community, an understanding of the characteristics of the community is required. The term "community" can mean different things to different people; however, it generally refers to the qualitative attributes relating to how people feel or identify with their surrounding environment. This project will impact the broader communities of South Windsor and LaSalle; however, within these broader communities are unique neighbourhood communities that will experience more specific impacts. It is for this reason that greater emphasis is placed on identifying the characteristics of these unique neighbourhood communities in this section.

The "community characteristics" described include community character, the level of satisfaction residents feel toward living in their community, changes that have been observed in the last five to ten years, and the level of cohesion within the community. The business community within the ACA that provides services to the neighbourhood communities is also briefly described. Sources of information include questionnaires, focus group discussions, public information open houses, and stakeholder meetings and input from the Economic Impact Assessment (Hemson 2008).

"Community character" is defined by the physical attributes and features of the neighbourhood such as the age of the development, the surrounding environment (e.g. natural, urban), or demographics (e.g., family, seniors). This data was collected through site visits, questionnaires, and focus group workbooks and discussion.

Community cohesion is generally described as a measure of how tied together the community is. It can be a very difficult concept to get an understanding of and data to support; however, it is essential in understanding the community and the residents within it. Some of the information collected through various consultations gives an understanding of the cohesiveness of the community. Other sources of data include questionnaires, and focus group workbooks and discussion.

The use and enjoyment of property contributes to residents' feelings of satisfaction with the community. The presence of nuisance impacts, or physical disturbances such as excessive noise, dust, traffic and aesthetics, is also related to how residents use and enjoy their property. The presence of such nuisance features often defines the attributes residents dislike about their community.

SOUTH WINDSOR, LASALLE AND TECUMSEH COMMUNITY CHARACTERISTICS

The ACA crosses through the communities of South Windsor, LaSalle, and Tecumseh. Within these broader communities are unique neighbourhood communities that share common characteristics.

The character of the broader community is a mixture of established and new residential development. The Highway 3/Huron Church Road transportation corridor defines the political boundary of Windsor and LaSalle between Howard Avenue and Todd Lane. The corridor is a mixture of urban land uses including pockets of residential development, highway commercial development and natural areas. The Highway 3/Huron Church Road transportation corridor experiences high volumes of traffic from both local and international traffic. The corridor serves as the main access to the Ambassador Bridge and is subject to traffic congestion during delays and peak volumes at the border crossing. The width of the right-of-way and volume of traffic presents a barrier to the movement of pedestrians across the corridor. The underpass at the Grand Marais Drain is the only location that offers safe off-road passage for pedestrians and cyclists across the corridor. Common property uses in the residential neighbourhoods within the broader communities include gardening, relaxing, barbecuing, entertaining,

[7] Statistics Canada. 2002. 2001 Community Profiles.

children's activities, swimming (for those households with a pool), an appreciation for nature and bird watching, and yard work, done on a daily and/or weekly basis. The frequency of these activities increases with favourable weather in the non-winter months.

NEIGHBOURHOOD COMMUNITY CHARACTERISTICS

Within the ACA, 17 unique neighbourhood communities were identified based on input from the focus group meetings. Focus group participants discussed what the terms “community” and “neighbourhood” meant to them and concluded by drawing the boundary of their community on a map. The delineation of community boundaries varied; for some the boundary was their immediate street, and for others the boundary included a large part of South Windsor and LaSalle. Although focus group residents identified with being part of a broader community such as South Windsor or LaSalle, they, generally, identified more closely with their local neighbourhood community (e.g., Sandwich Towne, Huron Estates or Southwood Lakes).

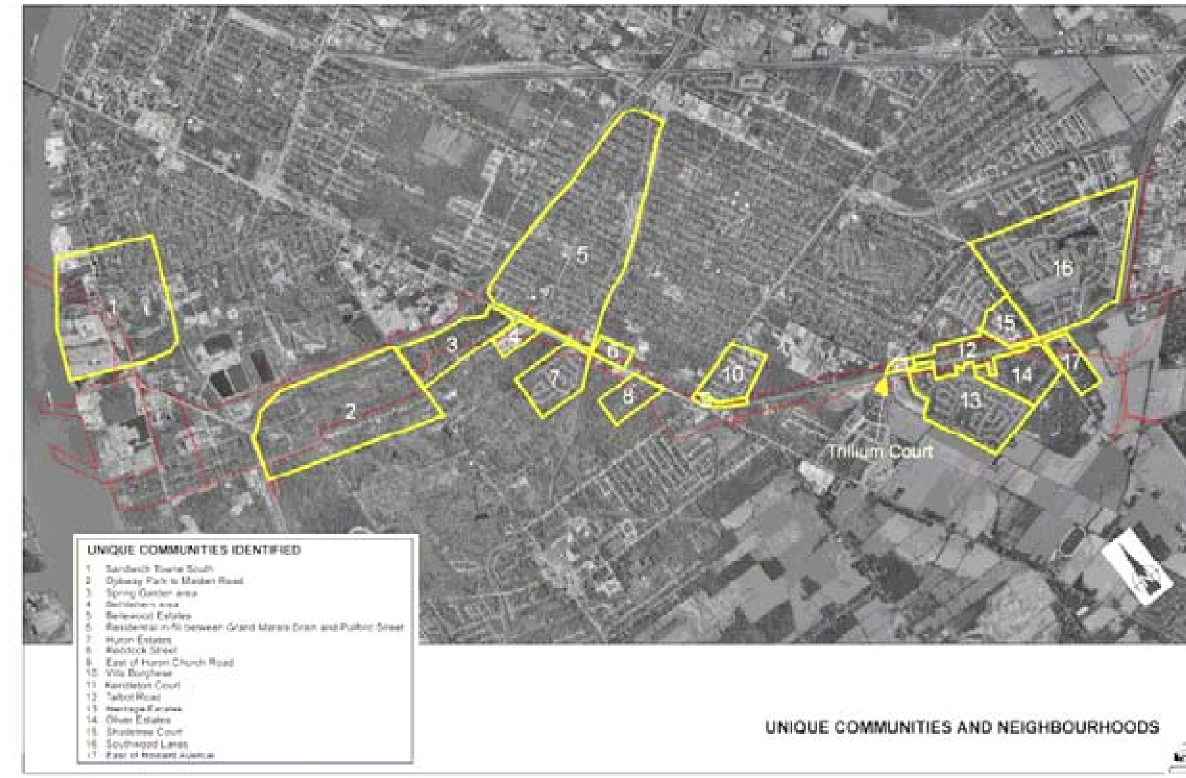
Other sources of information used to help define the community boundaries included geographic features, municipal planning documents, and input received from PIOHs and stakeholder meetings. There are some areas within the ACA that are not obviously part of a distinct neighbourhood or community. These areas consist of residential in-fill and strip development adjacent to the existing transportation corridors.

Unique neighbourhood communities identified within the ACA are listed below and illustrated in Exhibit 7.5. The neighbourhood communities are discussed west to east starting from the Detroit River and ending at Highway 401.

1. Sandwich Towne South;
2. Ojibway Park to Malden Road;
3. Spring Garden Area;
4. Bethlehem Area;
5. Bellewood Estates;
6. Residential in-fill between Grand Marais Drain and Pulford Street;
7. Huron Estates;
8. Reddock Street;
9. East of Huron Church Road;
10. Villa Borghese;
11. Kendleton Court;
12. Talbot Road;
13. Heritage Estates;
14. Oliver Estates;
15. Shadetree Court;
16. Southwood Lakes; and
17. East of Howard Avenue.

Although similar due to their proximity to each other in South Windsor, LaSalle and Tecumseh, characteristics of each one are identified and discussed in the sections below.

EXHIBIT 7.5 – UNIQUE COMMUNITIES AND NEIGHBOURHOODS WITHIN THE ACA



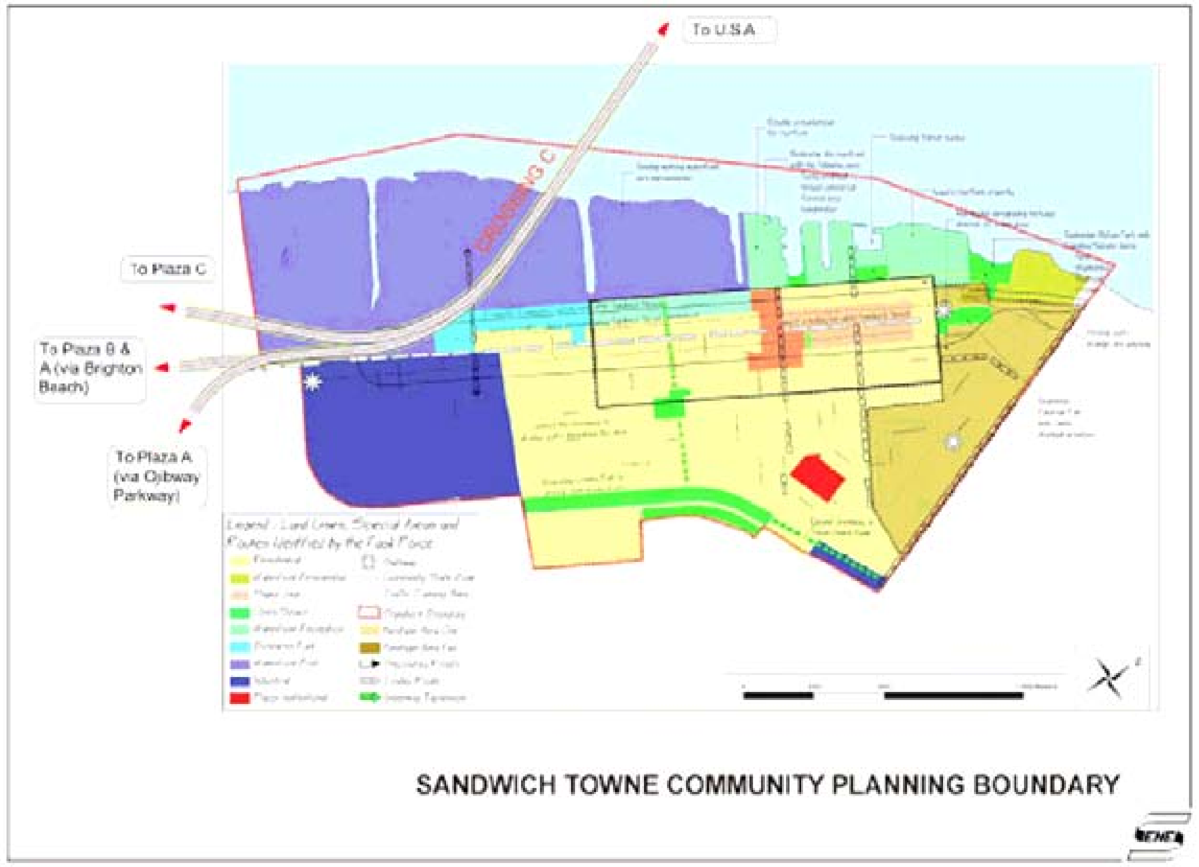
Sandwich Towne South

A portion of the ACA is within the southern portion of Sandwich Towne. The Sandwich Towne South neighbourhood is characterized by a mix of residential and industrial development, as illustrated in Exhibit 7.6.

Community Character

Sandwich Towne is located west of the Ambassador Bridge adjacent to the Detroit River. *The Olde Sandwich Towne Community Planning Study (October 2006)* defines the boundaries of Sandwich Towne as Huron Church Road, College Avenue on the east, Prospect Avenue on the south, and the Detroit River. The community has a rich history with Aboriginal settlement dating back several hundred years prior to European settlement in the 1700’s. Exhibit 7.6 illustrates the boundary of the Community Planning Study boundary.

Exhibit 7.6 – Sandwich Towne Community Planning Boundary



Over the course of this study, residents and other participants from Sandwich Towne made it known that the south boundary of the community of Sandwich was Prospect Avenue. In January 2007, during the DRIC study focus group mental mapping exercise, residents were asked to identify how they would physically define their community. The focus group mental mapping exercise yielded a community map with boundaries which were very similar to the study area identified within the *Old Sandwich Towne Community Planning Study*.

Sandwich Towne is characterized as a community with a rich heritage evidenced by many significant historical buildings and landmarks. The picture of the community that emerged through PIOHs and focus groups was a community that still offers a friendly small-town feeling. Despite its multicultural and socially and economically diverse population, anecdotal evidence provided from focus group participants suggested that residents are caring, respectful of one another, and close-knit.

Sandwich Towne struggles with the high proportion of properties owned by absentee landowners and left either vacant or rented.

In Sandwich Towne, there are a number of family-owned and run businesses which focus group participants indicated as part of the unique character of the community. The community's rich history is reflected in many unique features including the eclectic mix of architecture, the wall murals depicting historic events, ornamental lighting and streetscape, and the presence of the river. Many focus group participants also mentioned the parkettes and parks within Sandwich Towne as a unique feature contributing to the quality of life. Sandwich Towne was founded around the four pillars of society: the freedom to worship, to assembly, to justice and to education. The intersection at Sandwich Street and Brock Street continues to emanate these founding values with a historic church, apartment building, historic MacKenzie Hall and jail, neighbourhood police station, and school, . As one participant stated, and echoed by many others, "Sandwich Towne is the oldest European settlement in Ontario and holds historical significance that needs to be preserved." Others stated, "It [Sandwich Towne] is the very beginning of Windsor."

Community Satisfaction

Focus group results showed that most people in general are very satisfied with Sandwich Towne as a place to live. When asked to comment on what they liked best about the community, the residents listed the best things about their community as being:

- People (friendly, proud of their heritage and community, respectful, caring);
- Heritage of community;
- Ethnic diversity;
- Small town feel;
- Convenience of having a business hub that provides essential services;
- Parks;
- Ability to walk to most destinations due to proximity, and
- Access to children's programming and activities.

The presence of nuisance impacts, or physical disturbances such as excessive noise, dust, traffic and aesthetics, is also related to how residents use and enjoy their property. The presence of such nuisance elements often defines the attributes residents dislike about their community. Focus group participants where also asked to identify what they liked the least about the community. Respondents indicated the following:

- Noise and vibration from trucks on the Ambassador Bridge;
- Large corporations buying up multiple homes without communicating what the future use of the property may be;
- Students at the University and other neighbours not cleaning up their yards;
- Businesses closing, houses for sale and/or demolished;
- Air and noise pollution;
- Perception that the west end of Windsor (Sandwich Towne) is a "dumping" ground for undesirable services, facilities or businesses;
- Resistance to invest in Sandwich Towne;
- Possibility of two international bridges;
- Disruption to the historical area of Sandwich Towne; and
- Lack of services and business.

Community Change

Both positive and negative changes were identified in the community within the last five to ten years. Positive changes include:

- Growing awareness of historical aspects and their significance to Sandwich Towne;
- Improved attitude from City of Windsor administration, e.g., new or enhanced park development in Sandwich, new sidewalks, decorative street lights, plantings;
- Revitalization of Sandwich Street;
- Implementation of Sandwich Towne Festival;
- Improved attitude and self-respect of residents, e.g., increased community involvement, increased caring and pride in community;
- Residents choosing to stay and additional people moving in to the community; and
- Safer community.

Negative changes seen by residents in the last five to ten years include:

- Increase of absentee landlords and rental properties, often used for student housing or left abandoned;
- Selling of residential and business properties to big corporations;
- Decreased enrolment at Forster High School;
- Development of pockets of illegal rooming houses;
- Increased volume of trucks;
- Significant and mature tree species being cut down;
- Changes in the built form e.g., fires destroying buildings, and new development;
- Increased industry in the community; and
- New and younger families moving to Sandwich Towne that don't appear to take pride in the neighbourhood.

Some of these changes are the result of community based action or initiatives to improve the community, while other changes infringe on future development goals. Change will continue in the future as the community strives to implement the recommendations of *The Olde Sandwich Towne Community Planning Study (October 2006)*, and in so doing create a vibrant community where residents are proud to live, work and play.

Community Cohesion

Some of the information collected through various consultations gives an understanding of the cohesiveness of the community. Other sources of data include questionnaires delivered to potentially displaced residents and focus group workbooks and discussion.

Through public consultation and the focus groups, Sandwich Towne was portrayed by many as a close-knit community measured by close relations with neighbours.

Ojibway Park to Malden Road

This area is located between Ojibway Parkway and Malden Road south of the E.C. Row Expressway (as illustrated in Exhibit 7.5).

Community Character

The area is primarily a natural environment with trails and mature trees. Residential development, some of which dates back to the 1930s, occurs in a strip format along the road network, that is, Matchette, Beech, Chappus and Armanda Streets. Participants in the focus groups were asked to describe the current character of the community. Residents listed the natural environment and the feeling of living "in the country" with the amenities of the city.

Community Satisfaction

When asked to comment on what they liked best and least about the community, residents listed the best things about their community as being:

- Friendly neighbours in a well established community;
- Nature and wildlife;
- Easy access to E.C. Row, the City (downtown), and the University of Windsor;
- A country-in-the-city atmosphere;
- Close to work, family, schools; and
- Enjoyment of home and property with family and friends.

Some residents indicated that they did not have any dislikes concerning their community. However, those residents that did list the things they like the least, listed:

- Air quality;
- Noise;
- Truck traffic;
- Pollution;
- Volume of traffic on Armanda and Matchette; and
- No sidewalks and open ditches.

Community Change

When asked what changes they have seen in their community in the last five to ten years, focus group participants identified:

- Increased noise levels;
- Increased volume of truck traffic;
- Decrease air quality;
- Increased awareness and concern with health issues related to changes in the environment;
- Increased development (i.e. housing development) and growth in neighbourhood.

Community Cohesion

Focus group results indicated that people feel very close-knit, getting together with neighbours several times a week.

Spring Garden Area

The Spring Garden area is bounded by Malden Road, E.C. Row and the Huron Church interchange, and Spring Garden Road. This community is delineated in Exhibit 7.5. Residential development occurs in a strip along the road network, that is, Spring Garden and Malden. Future residential land use development is planned for the area between E.C. Row Expressway and Spring Garden Road.

Community Character

Spring Garden Road is a mix of older and newly built homes. When asked to describe the current character of the community, residents identified it as a private and older established area in a park-like setting, with easy access to all transportation arteries and areas of the city.

The natural setting in which Spring Garden is situated, and its related offerings (e.g. wildlife, trails, mature trees) is valued by residents as a unique feature that defines the character of their community. Being close to all conveniences yet still able to watch wildlife in the yard is a unique characteristic of the community. Residents are able to enjoy the conveniences of an urban lifestyle without living on a main transportation artery.

Community Satisfaction

Focus group results showed that people are very satisfied with their community. When asked to comment on what they liked best about the community, the residents listed the best things about their community as being:

- Hiking trails;
- Watching the wildlife in their habitat; and
- The open green space, and private lots.

Focus group results showed that the use of residential property for a variety of purposes such as social and recreational was important. Outdoor activities include children's activities, entertaining friends and relatives, gardening, nature appreciation, birdwatching, and relaxing. These outdoor activities were enjoyed during all seasons of the year, due in part to large property size and rural/natural character of the properties. When asked what they disliked about the community, none of the focus group participants indicated anything they disliked.

Community Change

Changes in the community in the last five to ten years included the addition of new houses, heavier truck traffic and expanded shopping malls in the broader community.

Community Cohesion

Residents that participated in the focus groups were asked to identify how close-knit they felt towards their community. The results showed most people felt close knit and that they had developed close relations with their neighbours.

Bethlehem Area

Adjacent to Spring Garden Road and located on the edge of the Spring Garden Road Prairie is an in-fill residential settlement that is characterized by new homes surrounded by a forested area. The north end of Bethlehem connects to Huron Church Road and Spring Garden Road. As seen in Exhibit 7.5, the ACA encroaches into this community. The alignment for the access road passes through this area.

Community Character

The homes along Bethlehem, 6th Street and Lamont Avenue were built within the last 10 years. Residents enjoy a quiet setting, as both Bethlehem and Lamont dead-end at the forested area. The forested area offers wildlife viewing and recreation trails. Residents value the natural setting and low traffic volumes due to the dead-end streets. The character of the community is new, friendly and quiet, and consists predominantly of retirees. The neighbourhood is central to shopping and medical services.

Residents that participated in the focus groups were asked to identify features that they felt were unique to their community. Many of the same features, that is the tranquility of living adjacent to a natural area and the low traffic volume as a result of living on a dead end street, were identified that also define the character of the community. Residents also value the convenient access to the major transportation arteries, such as E.C. Row for cross town travel and Huron Line to Highway 3.

Community Satisfaction

Residents experience a range of satisfaction with their community from very satisfied to somewhat satisfied. Generally, however, residents are satisfied with their community. When asked to comment on what they liked best about the community, residents listed the:

- Friendly, tolerant of people (all ethnic peoples);
- Proximity of nature and wildlife;
- Quiet and tranquil neighbourhood; and
- Easy access to services.

The use and enjoyment of their property also contributes to their feelings of satisfaction. Residents use their property for a variety of purposes including social and recreational. Outdoor activities include children's activities, entertaining friends and relatives, gardening, nature appreciation, birdwatching, relaxing, yard work, and casual maintenance. Participants indicated they enjoy outdoor activities during all seasons of the year and do so due to the location of their property adjacent to a natural area, and for personal enjoyment and satisfaction.

The presence of nuisance impacts, or physical disturbances such as excessive noise, dust, traffic and aesthetics, is also related to how residents use and enjoy their property. The presence of such nuisance elements often defines what attributes residents dislike about their community. Those residents that listed the things they like the least, listed:

- Increase in traffic, especially truck traffic, on Huron Church Road;
- Noise; and
- Pollution.

Community Change

Community change was not as relevant to focus group participants, as this is a new area; however, residents did identify the efforts of the Ministry of Transportation in purchasing properties from developers in order to protect the natural lands in the vicinity.

Community Cohesion

Residents that participated in the focus groups were asked to identify how close-knit they felt towards their community. Responses varied from not very close knit to very close knit. Some of the participants have close relations with a few neighbours and visit almost daily with neighbours, while others enjoy their privacy and rarely socialize with neighbours other than in casual greetings and conversations. The range in cohesion can be attributed, in part, to the length of time residents have lived in this relatively new development.

Anecdotal evidence from public meetings suggested that several residents relocated to Bethlehem Street for their retirement due to its proximity to the natural area.

Bellewood Estates

Bellewood Estates is an established subdivision development located north of Huron Church Road, between E.C. Row and Pulford Street (see Exhibit 7.5). Bellewood Estates extends from E.C.Row to Grand Marais Road, and from Huron Church Road to the Randolph Avenue area. Well over 1,000 homes, several schools and parks are located within Bellewood Estates.

Community Character

Much of Bellewood Estates is an established residential community. When asked to describe the character of their community, residents that participated in the focus groups identified individual homes and well maintained properties. Residents felt that home improvements evident within their community reflect pride in ownership and the expectation that property values will increase.

Other unique features identified in Bellewood Estates include the variety of elementary and secondary schools (Catholic, French, public) available in the area, the variety of churches, recreation areas (park, ice rink, gyms), and the availability of medical service. The location of Bellewood Estates provides convenient and easy access to Highway 401, the U.S. border crossing, and downtown Windsor for work.

Community Satisfaction

Generally, residents are satisfied with their community. When asked to comment on what they liked best about their community, residents listed:

- Unique architecture of homes in Bellewood Estates, i.e., individual structures/appearance. There is not a uniform look to the homes as is common with builder projects or more recently built subdivisions;
- Pride in ownership is evident on each property through landscaping and the upkeep of homes; and
- Mature trees.

The focus group results showed people use their property for a variety of purposes including social and recreational. Outdoor activities include children's activities, entertaining friends and relatives, swimming, gardening, nature appreciation, birdwatching, relaxing, etc. These outdoor activities are enjoyed during all seasons of the year due in part to the property location or characteristics. On responding to what people liked least about their community, many indicated the increasing traffic on Huron Church Road and decreasing property values in their neighbourhood.

Community Change

When asked what changes they have seen in their community in the last five to ten years, the residents identified an increase in larger, more expensive housing. Residents also felt that the public parks and green spaces adjacent to Huron Church Road have been well maintained. A more recent change residents identified is that they feel their property values are threatened and that homeowners morale has decreased.

Community Cohesion

Focus group showed that many people felt their community was somewhat close-knit or very close-knit. Some residents indicated that they enjoy their privacy, and rarely socialize with neighbours, while others indicated that they have close relations with a few neighbours.

Residential In-fill Between Grand Marais Drain and Pulford Street

The residential in-fill between Pulford Street Grand Marais Drain is shown on Exhibit 7.5 and is within the ACA. The access road alignments may potentially affect this residential area.

Community Character

The area east of Bellewood Estates and the Grand Marais Drain is characterized as a relatively new in-fill residential development with the oldest home dating back to 1997. The area is quiet, and residents display their pride in home ownership through well maintained and well landscaped properties.

The well kept houses were identified as a unique feature by focus group participants. The home owners association was also identified as a unique feature. Due to the home owner association, residents have been able to meet and socialize with their neighbours. Other unique features include the proximity of the neighbourhood to the South Windsor recreation complex, walking paths in a naturalized area, and the proximity of local business within walking distance.

Community Satisfaction

Generally, residents are very satisfied with their community. When asked to comment on what they liked best about their community, residents listed:

- Nice area, close to everything;
- Easy accessibility to the surrounding environs, e.g., walking trails along Grand Marais drain and Oakwood area.

Property uses include a variety of purposes involving social and recreational uses. Outdoor activities include entertaining friends and relatives, gardening, nature appreciation, birdwatching, and relaxing. Residents engage in outdoor activities during all seasons for the pure enjoyment of it and the resulting beautifying effects. When asked to comment on what they like least about their community, those that responded identified their close proximity to Huron Church Road and the resulting truck traffic noise and pollution.

Community Change

When asked what changes they have seen in their community in the last five to ten years, the focus group results identified growth in terms of new subdivisions and businesses, and an increase in truck traffic on Huron Church.

Community Cohesion

Residents that participated in the focus groups felt that the community ranged from being somewhat close knit to very close-knit. Several participants identified that relatives live in the community that they visit often or almost daily. When asked how frequently they socialize with their neighbours, most people provided a variety of responses from rarely, as they enjoy their privacy, to occasionally, as they enjoy close relations with a few neighbours.

Huron Estates

The community of Huron Estates is located south of Huron Church Road between Lambton Road and the Grand Marias Drain/Turkey Creek. As depicted on Exhibit 7.5, Huron Estates is located on the periphery of the ACA. Huron Estates backs onto the parkland adjacent to the drain and Spring Garden Road.

Community Character

Huron Estates is characterized as a friendly community, convenient to shopping and all major amenities with lots of mature trees and opportunities for wildlife viewing. Due to the limited access into Huron Estates, traffic is localized, thus creating a low volume of traffic, semi-quiet, peaceful and safe environment for raising families.

When asked to identify unique features of their community, the focus group identified the mature trees, wildlife, and proximity to Turkey Creek and the Grand Marais ditch. Some participants also identified very light local traffic within Huron Estates and the privacy of not having neighbours in their backyards.

Community Satisfaction

Generally, residents of Huron Estates are satisfied with their community. When asked to comment on what they liked best about their community, residents listed:

- Convenient to shopping and work;
- Low volume of traffic;
- Safe neighbourhood to raise children;
- Beautiful and quiet; and
- Great neighbours.

Residents use their property for a variety of purposes including social and recreational. Outdoor activities include children's activities, entertaining friends and relatives, gardening, nature appreciation, birdwatching, and relaxing. Residents indicated they enjoyed outdoor activities during all seasons of the year. This sense of enjoyment was reportedly due to convenience, and the importance families placed on outdoor and family activities.

Residents were also asked to comment on what they liked the least about the community. Those residents that listed the things they like the least, listed:

- Huron Estates adjacent to heavy traffic on Huron Church Road;
- Property taxes increasing every year; and
- Pollution coming from Huron Church.

Community Change

When asked what changes they have seen in their community in the last five to ten years, residents identified the addition of the Windsor Crossing Outlet shopping mall; generally, increasing traffic volumes on Huron Church and, specifically, an increasing number of trucks.

Community Cohesion

Although Huron Estates is an established neighbourhood, the focus group responses varied in terms of how close knit they were and how involved with their neighbours they are. Some residents felt the community was very close knit, they know most of their neighbours and have close relations with many of their neighbours, while other felt the community was only somewhat close knit and enjoy their privacy, thus rarely socializing with their neighbours.

Reddock Street

Reddock Street is located on the periphery of Spring Garden Road between the Grand Marais Drain and Todd Lane. Reddock Street was part of a larger planned development at one time; however, due to the natural significance of the Spring Garden Prairie, additional residential development was stopped. Reddock Street consists of a cluster of 16 households and approximately 44 residents; it is located partly within the ACA as shown in Exhibit 7.5.

All residents on Reddock Street are long term residents and have been enjoying this parklike setting for many years. Trails are integrated into the neighbourhood from the Spring Garden Prairie.

Community Character

Reddock Street is characterized as an isolated and tranquil neighbourhood in a forested area. Unique features of their community include the natural features and the limited number of homes on the street.

Community Satisfaction

Residents are generally satisfied with their community. When asked to comment on what they liked best about their community, residents listed the peaceful surroundings and its natural attributes.

Residents use their property for a variety of purposes including social and recreational. Outdoor activities include children's activities, entertaining friends and relatives, gardening, nature appreciation, birdwatching, and relaxing. Residents indicated they enjoyed outdoor activities during all seasons of the year.

Residents were also asked to comment on what they liked the least about the community. Residents identified that noise from Huron Church Road is what they like the least.

Community Change

Little has changed on Reddock Street in the last five to ten years. The same families have lived on the street for more than 16 years. The exception is the construction of one new home in the mid 1990s.

Community Cohesion

Due to the length of tenure of the residents and the isolation of the community, residents feel close knit.

East of Huron Church Road

Between Pulford Street and Lennon Drain is a mixture of land uses within the ACA, including open green space and highway commercial. From Lennon Drain to Cabana Road West is a strip of residential properties between the Villa Borghese neighbourhood and Huron Church Road. These residential properties adjacent to Huron Church Road are located within the ACA as shown in **Exhibit** 7.5.

Community Character

Residents living along Huron Church Road characterized their community as being severely impacted by the volume of truck traffic. Due to the close proximity of the heavily traveled road way to their property, residents feel increased levels of stress and extremely unsafe in accessing their property, due to the volume of trucks traffic.

Community Satisfaction

Focus group results indicated residents were very dissatisfied with their community as a place to live. When asked to comment on what they liked best about their community, residents were not able to identify one attribute; rather, they offered that it is unsafe for children or pets to be outside. Residents that participated in the focus groups identified truck traffic as the thing they like the least about their community.

Community Change

Participating residents had not lived in the neighbourhood long enough to comment on changes in the community over the past five to ten years.

Community Cohesion

Residents that participated in the focus groups were asked to identify how close-knit they felt towards their community. The results showed they were not very close knit, as they enjoy their privacy and do not get together with neighbours.

Villa Borghese

The Villa Borghese neighbourhood is located between Cabana Road West and the Lennon Drain on the east side of Huron Church Road. **Exhibit** 7.5 illustrates its location in relation to the ACA.

Community Character

Villa Borghese is characterized as a well established quiet and family oriented community. Neighbours are close and enjoy the convenience of easy access to services. A unique feature to Villa Borghese is that although the volume of traffic along Huron Church is high and unsafe, the volume of traffic within Villa Borghese is low.

Community Satisfaction

Generally, residents in Villa Borghese are either somewhat or very satisfied with their community. When asked to comment on what they liked best about their community, residents listed:

- The people;
- Multiple opportunities for outdoor activities (e.g. walking, bike riding); and
- Strong sense of community.

One focus group participant felt their strong sense of community was being destroyed by the proposed project (DRIC).

The use and enjoyment of their property also contributes to their feelings of satisfaction. Residents use their property for a variety of purposes, including social and recreational. Outdoor activities include children's activities, entertaining friends and relatives, gardening, nature appreciation, bird watching, and relaxing. Residents indicated they enjoy outdoor activities during all seasons of the year and do so due to the convenience, and their property characteristics.

Residents listed things they least liked in their community:

- Excessive traffic on Huron Church Road;
- Noise from truck traffic on Huron Church Road; and
- Pollution from truck traffic on Huron Church Road.

Community Change

When asked what changes they have seen in their community in the last five to ten years, residents identified increased noise and pollution from truck traffic on Huron Church, and Residents also expressed concern with regard to the DRIC planning process.

Community Cohesion

Residents that participated in the focus groups were asked to identify how close knit they felt towards their community. Most people identified that they felt close knit and that they had developed close relations with a few of their neighbours.

Kendleton Court

Kendleton Court is a new residential pocket north of Talbot Road, east of Cousineau Road. The development is shown on **Exhibit 7.5** and is located within the ACA.

Community Character

The Kendleton Court development was built within the last five years. The area is very convenient to access services in the area.

Community Satisfaction

Generally, residents are satisfied with their new neighbourhood. When asked to comment on what they liked best about their community, residents listed the convenience to airports, sports venues, and the milder climate in Windsor.

Residents were also asked to comment on what they liked the least about the community. Those residents that listed the things they like the least, listed:

- Air pollution, and
- Smog and noise from trucks.

Community Change

Residents have not lived on Kendleton Court long enough to comment on changes other than the obvious in-filling of development.

Community Cohesion

Residents felt that their community is not very close knit. They were divided in terms of the relationship they experience with neighbours, some rarely visit with neighbours, however, others have close relations with a few neighbours and visit one or two times a week.

Talbot Road

The Talbot Road community is split by both political boundaries and the physical barrier presented by the existing transportation corridor. Talbot Road serves as the municipal boundary between the City of Windsor, located north of the transportation corridor, and the City of LaSalle, located to the south. **Exhibit** 7.5 illustrates the location of the Talbot Road community within the ACA.

Anecdotal evidence provided at the focus groups indicated that although residents would like to be able to cross the road and visit with neighbours, they don't due to the barrier imposed by the traffic along Talbot Road.

Talbot Road residents live on unique properties that were originally built in a ribbon strip along the Talbot Road transportation corridor. Many of the homes are set back from the road on large wooded and very deep lots 30.5 x 122 m (100 x 400ft +) thus creating an almost rural or pastoral atmosphere despite the fact that they are adjacent to a busy transportation corridor.

Community Character

Focus group participants described their community as caring and friendly, where neighbours help each other out. Concerns were expressed about declining property values, the inconvenience and "trauma" of road work, and the loss of character and beauty of the Talbot Road properties due to road developments.

When asked what they thought was unique about their community, in addition to the large deep lots, residents identified a number of natural features such as mature trees, and the presence of wildlife such as deer, fox, ducks and geese. Residents also felt that the relationship with their neighbours was unique in that they interact on a daily basis, enjoy neighbourhood BBQs and picnics in summer, and celebrate family life events (e.g. weddings) and other special or annual holiday events together. Residents also listed the proximity to shopping (Windsor Crossing Outlet Mall), church, parks, schools, and the international crossing as a unique feature of their community.

Community Satisfaction

Generally, residents are very satisfied with their community; however, some residents indicated that they are not satisfied due to the volume of traffic on Talbot Road/Highway 3, and specifically the volume of truck traffic and associated noise. The level of satisfaction did not seem to differ from the north (Windsor) side of Talbot Road to the south (LaSalle) side. When asked to comment on what they liked best about their community, residents listed:

- Neighbours/friends,
- Individual property – large lots, privacy, forest/trees, well maintained house and yard,
- Attractiveness of neighbourhood with large lots, many trees and walking areas,
- Similarity of education and background of neighbours; and
- Feeling like living in the country, in a forest glade, while living in the city.

One focus group participant offered, "Not one thing but the sum of the total makes it all work - accessibility to the Windsor Crossing Outlet mall and church across the street, access to the border and St. Clair College and access to the forest behind our house".

Property use varies and includes social and recreational uses. Outdoor activities include children's activities, entertaining friends and relatives, gardening, nature appreciation, bird watching, and relaxing. Residents indicated they enjoy outdoor activities in their backyards during all seasons of the year and do so due to their unique property characteristics. When discussing how residents use and enjoy their property, one resident offered, " …we have a huge yard which we have (over the last 20 years) transformed into a hub of activity for ourselves, our kids and our grandkids – including gardens, pond, potting shed/green house, pool and games area."

Residents were also asked to comment on what they liked the least about the community. Those residents that listed the things they like the least, listed:

- Heavy truck traffic making it difficult to get out of the driveway;
- Perception that personal safety is compromised by heavy traffic;
- Noise, pollution and delays caused by trucks;
- Lack of city services; and
- Increasing volume of traffic on Talbot/Highway 3.

Community Change

When asked what changes they have seen in their community in the last five to ten years, the following were identified:

- Increased volume of traffic on Talbot Road/Highway 3;
- Increased difficulty (i.e. longer wait times) and danger in getting in/out of the driveway;
- A new shopping mall, and new school;
- A busier seniors living complex;
- Traffic noise all day every day, with a noticeable increase since the stoplights installed at St. Clair College; and
- Growing anxiety due to Talbot Road/Highway 3 proposals (including DRIC) and the consequential impact on property values.

Community Cohesion

Talbot Road/Highway 3 residents believe that they are a somewhat close-knit group measured by their close relations with neighbours. Generally, the ties seem to be restricted to one side of the highway. The neighbours that socialize together live adjacent to each other on either the north or south side of Talbot Road/Highway 3.

For those that do have relatives in the community, they visit several times a week. One focus group participant stated, "we have created an environment where our grown children and their children meet at least once a week."

Heritage Estates

Heritage Estates is a large residential development located east of the Windsor Crossing Outlet Mall, north of Heritage Drive and west of Montgomery Drive. As Exhibit 7.5 illustrates, only a small portion of Heritage Estates is located within the ACA.

Community Character

Focus group participants had different attitudes about their community depending to some extent on where they were located; while some residents spoke of enjoying quiet areas outside in the Heritage Estates area, some residents along Homestead Lane felt less connected with their neighbours because their use of their outdoor space is curtailed due to existing noise levels from traffic on Highway 3.

Due to the diversity of land uses, some residents at the focus groups identified that they walk to work, recreational facilities, shopping, and to other amenities, thus reducing their dependency on the automobile and the need for a second car. Some residents also identified their proximity to St. Clair College as a unique feature.

Community Satisfaction

Focus group results indicated that residents had a range of satisfaction with their community from somewhat dissatisfied to very satisfied. When asked to comment on what they liked best about their community, residents listed:

- Walking distance to many amenities;
- Close proximity to church;
- Close proximity to major roadways, including Highway 401; and
- Safe neighbourhood.

The use and enjoyment of their property also contributes to their feelings of satisfaction. Residents use their property for a variety of purposes including social and recreational. Outdoor activities include children's activities, entertaining friends and relatives, gardening, nature appreciation, birdwatching, and relaxing. People indicated they enjoy outdoor activities during all seasons of the year and do so due to the convenience, and their property characteristics.

Residents were also asked to comment on what they liked the least about the community. Those residents that listed the things they like the least, listed:

- Truck traffic;
- Noise from traffic; and
- The mess and noise associated with the construction of new homes and shopping plazas.

Community Change

When asked what changes they have seen in their community in the last five to ten years, some the residents did not identify anything, while others indicated that they have lived in the community less than five years. Those that did respond indicated they have observed an increase in traffic along Huron Church, an increase in traffic with the expansion of Windsor Crossing Outlet Mall, the building of Heritage Plaza, a new school and many new homes in the area.

Community Cohesion

Some residents felt their community was very close-knit and enjoyed close relationships with neighbours, while others felt it was not very close knit and that they rarely (that is, once or twice a year) socialized with neighbours.

Oliver Estates

This community is located from Montgomery Drive to Howard Avenue. Several of the residential streets within the area provide access directly onto Talbot Road. As identified in Exhibit 7.5, the ACA encroaches into the periphery of a portion of the neighbourhood.

Community Character

This section of the ACA is located in LaSalle and is part of an older community with many long-term residents. The community is presently characterized by residents as a mixed demographic with young families and retired seniors. The area, bound by Montgomery, 6th Concession Road and Howard Avenue was described by residents as quiet, conservative, and peaceful. Several participants identified the community as a family oriented residential area, others described the area as busy and complained of truck traffic noise from Highway 3.

Unique features valued by residents include mature trees, little traffic on neighbourhood streets, the architectural mix of old and new homes, and large lot sizes. Focus group participants also identified the multi-generational aspect of their community as a unique feature contributing to the character of the Oliver Estates area.

None of the streets in the community have sidewalks; however, with the exception of Montgomery Street, low volumes of traffic utilize the local road network and consequently, residents feel safe walking and cycling on the road. Montgomery serves as a connecting route between Highway 3/Talbot Road and other LaSalle neighbourhoods. As such, is used by commuter traffic in the morning and afternoon. Residents living on Montgomery complain of heavy traffic and excessive speed during these times.

Community Satisfaction

Generally, the residents living in this area are very satisfied with their community. When asked to comment on what they liked best about their community, residents listed:

- Safe community;
- Convenient to shopping, entertainment, church, and schools;
- Mature trees and wildlife;
- Time spent outdoors (walking, enjoying nature);
- Quiet residential streets; and
- Wide lots (i.e. houses are not too close in proximity to one another).

Residents use their property for a variety of purposes including social and recreational. Outdoor activities include children's activities, entertaining friends and relatives, gardening, nature appreciation, bird watching, and relaxing. Participants indicated they enjoy outdoor activities during all seasons of the year and do so due to the convenience, and properties characteristics.

Residents, asked to comment on what they disliked about the community, identified noise and pollution from truck traffic on Highway 401 and Howard Avenue.

Community Change

When asked what changes they have seen in their community in the last five to ten years, residents identified increased noise level from trucks, increased traffic on both Highway 3/Talbot Road and Howard Avenue, and increased difficulty in accessing Huron Church Road. Residents also observed an in-fill of new homes on vacant lots and the demolition of older homes that are replaced with modern homes. Other changes include the development of a trail system and parks throughout the area.

Community Cohesion

Generally, people felt their community was close knit. Some enjoyed close relations with a few neighbours, while others enjoyed their privacy and rarely socialized with their neighbours. Some residents also enjoyed having relatives living in the community that they visit often, in some cases, daily.

Shadetree Court

The Shadetree Court is a new residential in-fill located north of Talbot Road immediately west of Howard Avenue. This new residential development is shown on Exhibit 7.5 and is located at the periphery of the ACA.

Community Character

Shadetree Court is part of a larger neighbourhood that is still being developed. Undeveloped lots are still available on Shadetree Court. Residents defined the character of this residential community as friendly, safe, and a beautiful place to live with churches, parks and shopping amenities in close proximity. Unique features identified include Mathew Rodzick Park, and Windsor Crossing Mall shopping and restaurants. The proximity to shopping and daily activities made the new subdivision attractive for retirement living for some residents.

Community Satisfaction

Generally, residents are very satisfied with their new community; however, some indicated that since the announcement of the proposed Practical Alternatives, they have become very dissatisfied. When asked to comment on what they liked best about their community, residents listed that they are close to the elementary school.

Residents were also asked to comment on what they liked the least about the community. Residents identified noise from truck traffic as a feature they liked least about the area.

Community Change

When asked what changes they have seen in their community in the last five to ten years, some focus group participants identified:

- The increase in truck traffic on Highway 3 and the associated increase in noise and pollution;
- A large number of homes for sale in last 12 months.

Some residents feel that the noise level from trucks has increased to the point where they feel they can no longer open the windows, or sit outside. Residents complained that the peace and relaxation they expect to enjoy in their home is disturbed by the increasing noise levels.

Community Cohesion

Some residents feel that their community is very close-knit. They enjoy visiting almost daily with relatives that live in the community and get together almost daily with neighbours as well. Those that felt the community was close-knit indicated that they know most of their neighbours, and they go out of their way to have close relationships with many of them. In contrast, other residents indicated that the community is not very close-knit and provided anecdotal evidence that since it is a new subdivision, it will take another ten years to establish itself.

Southwood Lakes

Southwood Lakes, located north of the existing Highway 401 right-of-way, includes a mix of housing, lakes and parkland. The community is located on the periphery of the ACA, as illustrated in Exhibit 7.5.

Community Character

Unique to this community, several residents identified the larger City of Windsor as their community, and as such characterized their community as a border community with Detroit, Michigan. The City of Windsor is a close knit small neighbourhood in a larger city setting (Detroit).

Unique features of the Southwood community include its friendliness, close proximity to the U.S.A, access to cultural and sporting events and restaurants on both sides of the border, and, their local neighbourhood social committee. Other features include the organized home ownership group, the similar lifestyles neighbours enjoy and the close proximity to all amenities.

Community Satisfaction

With the exception of the truck noise, generally, residents are very satisfied with their community. When asked to comment on what they liked best about their community, residents listed:

- Quiet, safe, comfortable and peaceful;
- Small community (Windsor) that has access to the larger community (Detroit);
- Friendly neighbours, beautiful surroundings; and
- Privacy.

Residents use their property for a variety of purposes including social and recreational. Outdoor activities include entertaining friends and relatives, gardening, nature appreciation, birdwatching, and relaxing. Residents indicated they engage in outdoor activities during all seasons for the pure enjoyment of it and the resulting beautifying effects. When asked to comment on what they like least about their community, very few had any; however, those that had dislikes identified noise and pollution from truck traffic.

Community Change

When asked what changes they have seen in their community in the last five to ten years, people identified increased traffic volume and noise levels, neighbourhood growth (new homes built), and the presence of “For Sale” signs. Focus group participants who addressed the broader City of Windsor community identified the loss of employment in the automobile industry, the emergence of high technology industry, significant changes in multicultural attitudes, and a general feeling that community activism related to social, environmental, political and economic issues has increased.

Community Cohesion

When asked about community cohesion, residents felt a range from 'somewhat close knit' to 'very close knit'. Several had relatives in the community that they visit either daily or several times a week. In terms of their relationship with neighbours, residents indicated that they have close relations with a few or in some cases, many of their neighbours. It appears that at a minimum, they know most of their neighbours and go out of their way to develop close relationships with many of them. Getting together with neighbours also varies, between daily visits to two or three times per month.

East of Howard Avenue

The neighbourhood south of the Highway 401/3 corridor and east of Howard Avenue within the Town of Tecumseh consists of strip residential development along Howard and a cluster of residential lots on Mero Avenue (see Exhibit 7.5). The remainder of the area is predominantly active agricultural land. There are few homes in this section of the ACA and even fewer people attended the focus group meeting, consequently, data collected in this area is limited.

Community Character

Residents from the Mero Avenue area described their neighbourhood as quiet, with limited traffic, but with easy access to the major transportation routes (Howard Ave, Highway 401 and Highway 3).

Community Satisfaction

Mero Avenue residents are very satisfied with their community as a place to live. When asked what they like best about the community as a place to live, people identified the area, and their specific property and all it offers.

Residents use their property for a variety of purposes including social and recreational. Outdoor activities include entertaining, gardening, nature appreciation, birdwatching, children's activities, and relaxing. People engage in outdoor activities during all seasons due to the property characteristics. When asked to comment on what they like least about their community, none were identified.

Community Change

Focus group participants identified an increase in the traffic volume as a change they have seen in their community in the last five to ten years.

Community Cohesion

People generally felt they were a close-knit with their neighbours, getting together often with neighbours, that is, at least one or two times a week.

BUSINESSES IN THE AREA OF CONTINUED ANALYSIS

Businesses in the Area of Continued Analysis provide a wide variety of services (e.g., accommodations, food, clothing, equipment, vehicular garage repair and gas facilities). The businesses serve both the local neighbourhood and the travelling public. The social impact assessment considered the displacement of businesses that serve the local community in terms of how such displacement may affect social patterns and community functions. Such businesses include:

- Golden Griddle Family Restaurant;
- King Kone Ice Cream (seasonal);
- Petro Canada;
- Daytona Car Wash Ltd.;
- Lambton Plaza (10 businesses);
- Tim Hortons;
- Fred's Farm Fresh Ltd.;
- Alibis Sports Bar and Music;
- Mac's Convenience Stores;
- XTR Gas and Convenience;
- Vachon Bakery Outlet; and,
- Wide array of stores in the Windsor Crossing Outlet Mall.

The *Economic Impact Assessment (May 2008)* addressed the economic impacts to the City and the region resulting from the displacement of businesses within the ACA.

Brighton Beach Industrial Park Area

Although not a "community", the Brighton Beach Industrial Park area is located between the Detroit River shoreline to Ojibway Parkway.

Community Character

Only a handful of homes still exist in this area as a result of the City land use designation to industrial uses and subsequent land purchase. Broadway Street is maintained with access off Ojibway Parkway, thus access to Broadway Park and Ojibway Black Oak Woods is maintained. Residents utilizing both parks drive to them via Broadway Street.

The community character of the neighbourhood is described as largely an industrial park area with few private dwellings in the south end near Ojibway Parkway and other private dwellings on the fringe of Sandwich Towne to the north. Industries present in the area include Hydro One, the Brighton Beach Power Station, the Windsor Power Plant, and the Nemak Plant among others.

Community Satisfaction

There is little community to speak of with respect to community satisfaction within the industrial park area.

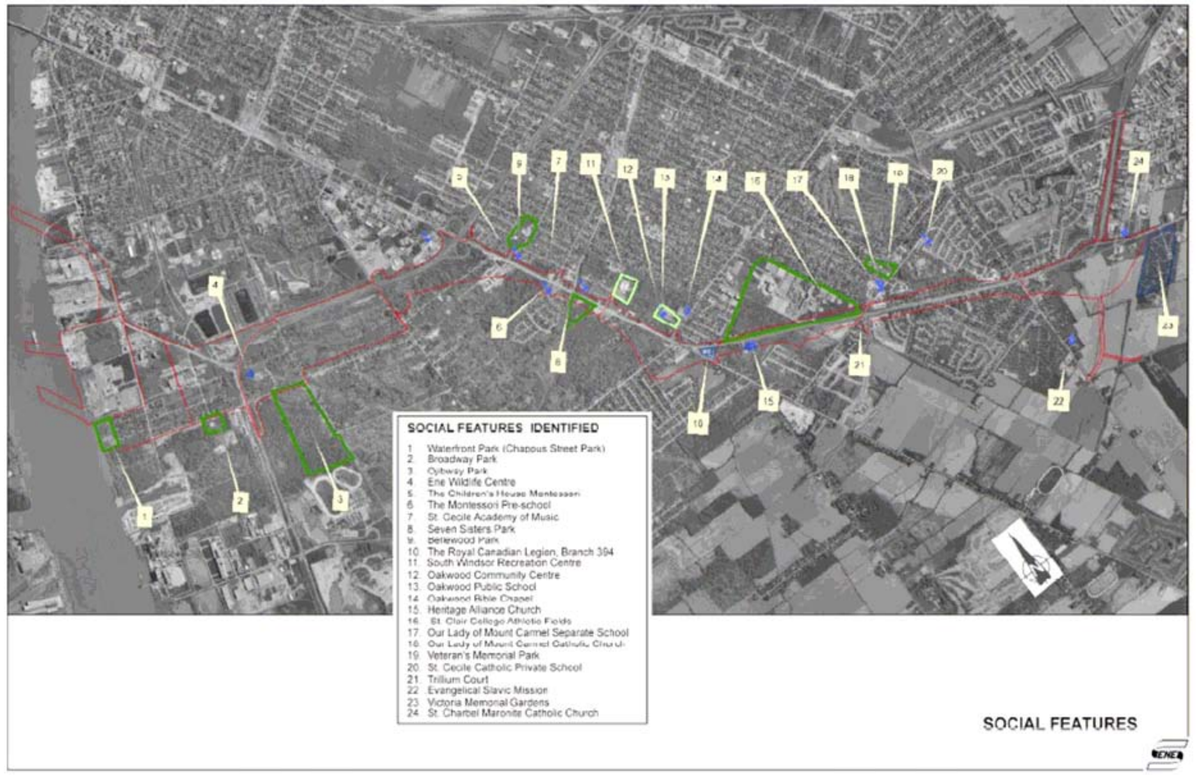
Community Change

With respect to community change, function and community cohesion, there is little to speak of within this area of the ACA as the neighbourhood is characterized by industrial use. Although, ancillary effects to Sandwich Towne would be more appropriate to describe, displacement as a result of the plazas and crossings only affects two houses within this community and is not representative of the surrounding community at large. The potentially displaced dwellings are located in a land use transitional area where industrial land uses predominate.

SOCIAL FEATURES WITHIN THE AREA OF CONTINUED ANALYSIS

Social features identified within the Area of Continued Analysis, fall into either recreational (e.g., parks, community centres) or institutional (e.g., Churches, schools). Some of the features serve the neighbourhood community while others serve the broader community. The social features described below are identified in **Exhibit** 7.7 which illustrates the location of each social feature. For discussion purposes, the social features are grouped and presented from west to east (i.e., from the Detroit River to Highway 401).

EXHIBIT 7.7 – SOCIAL FEATURES ASSOCIATED WITH THE ACA



Institutional Social Features

The Erie Wildlife Rescue (EWR) is located within the Area of Continued Analysis. It is a registered charitable organization dedicated to the treatment and temporary care of injured, diseased, or orphaned wildlife, and their subsequent release into appropriate habitats in the wild. The organization is based out of an old school building located on a cul-de-sac east of Ojibway Parkway on Chappus Street. The organization is situated on approximately 1ha of land surrounded by a natural bush-like setting. Although the organization has been around since 1979, it has occupied this present location for the last 10 years.

Membership is on a volunteer basis. Current membership is 80 people, with the addition of approximately 20 student volunteer staff. Core members, numbering 15 people, have been with the organization for more than 10 years. Many of the volunteers use the City of Windsor public transit to access the facility. At any one time six staff would be on hand providing services seven days a week during the months of May to August. During this period office hours run from 8 a.m. to 8 p.m. weekdays, and 12 p.m. to 4 p.m. on weekends. Operation from September to April is on an as-needed basis.

Current facilities on the property include a large school building, which houses an administrative office, scrub area, exam area, food preparation area, media rooms/education rooms, animal care rooms and a nursery area. Approximately half the building is dedicated to animal care. There is one portable building on the premises which is used for fund-raising purposes. At least a quarter of an acre is occupied by an outdoor caging area that is used for pre-releasing conditions for animals.

Erie Wildlife Rescue provides two main services: a telephone advisory service for dealing with nuisance animals; and, wildlife rescue and rehabilitation of injured, diseased or orphaned wildlife. The service catchment area is all of Essex County. In 2006, the telephone advisory service received 4,000 calls, and during the same year, 700 animals were treated and rehabilitated. Activities or programs include: wildlife rehabilitation; education/orientation; fund-raising; and, volunteer development. Wildlife rehabilitation is year-round; however, the majority of the activity occurs from May to August. The education/orientation function consists of monthly meetings held for volunteers. As a non-profit organization, fund-raising is critical to their continued success; consequently, five fundraisers are held annually, three in the spring and two in the fall. Fund-raising activities include yard sales and bake sales, bingo, a walkathon in the spring, and frozen cookie dough sales in the Spring and Fall. Grant applications to funding organizations, such as the Ontario Trillium Foundation, also contribute to their revenue.

The **Children's House Montessori**, located adjacent to the ACA on LaBelle Street in Bellewood Estates, is a member of the American Montessori Academy. It has been in its current location for 20 years. The Children's House Montessori provides education and daycare services for children from infancy through to senior kindergarten (age five). This is the only facility that provides Montessori programming to infant children in Essex County. Enrolment is at capacity at 396 students, and the school manages roughly 210 students per day during its regular hours (6:30 a.m. to 6:00 p.m.) from Monday to Friday. Families utilizing this facility come from LaSalle and South Windsor. Approximately 400 vehicles access the facility during the morning drop-off period.

The school facilities include a cafeteria, resource room, staff room, parent room, a number of class rooms and administration offices. Outside, three fenced and segregated play areas provide jungle gyms with slides and other equipment for infants, toddlers and preschool children. Bellewood Park, a community park located across the street is also used for stroller walks on a regular basis.

In addition to the academic and structured activities that include music, dance, and art, special education programs are offered to learning and physically impaired children. Approximately 30 physically impaired students from seven different local schools attend the Children's House Montessori for care before and after their regular school hours. The school also provides internship opportunities for early childhood educators. Approximately 20 volunteers assist the full-time staff in this capacity.

The Montessori school has a unique relationship with nearby Bellewood Public School as it serves as a feeder school to Bellewood's kindergarten.

The **Montessori Pre-school** is located within the ACA in Lambton Plaza on the corner of Lambton and Huron Church Road. The Pre-school has been operating for nine years in the Lambton Plaza. Open to children ages three to five years, the Pre-school operates Monday to Friday from 8:45 am until 3:15 p.m. The Pre-school is closed for the month of August. The majority of students come from a catchment area defined by South Cameron Boulevard to the north, Howard Avenue to the east, Malden Road to the south-west, and the University of Windsor to the west.

Children attend the preschool either for the morning or afternoon session only. There are no full-day students permitted as there is not an outdoor play space associated with the school. Combined, there are approximately 25 students and two full-time staff at the preschool. Enrolment has been steady over the past five years and is expected to remain steady over the next three years.

St. Cecile Academy of Music located outside the ACA on Grand Marais Road West, has been in its present location for 22 years. In addition to being a private music school, it also offers a year-round nursery school Monday to Friday from 7:30 a.m. to 5:30 p.m. for children aged 2.5 to 5 years of age. The nursery school serves a wide area including South Windsor, LaSalle and as far away as Bell River and Amherstburg. The proximity of the school to E.C.Row Expressway, Huron Church Road and Highways 3 and 401, provides convenient access to the facility regardless of the direction clients are traveling from.

The private music school offers a variety of music and dance programming for children starting at age 3 up to adults. The music program is run from 3:30 p.m to 9:00 p.m. weekdays and from 8:00 a.m. to 6:00 p.m. on Saturdays. During the summer, music programs are also offered weekdays from 7:30 a.m. to 7:00 p.m. Enrolment for the 2006- 2007 school year was between 600 and 700 students (including the Nursery School). Projections for the next three years indicate that enrolment is anticipated to increase to facility capacity (900 students) in 2008.

The Royal Canadian Legion, Branch 394, is located within the ACA between Highway 3 and Huron Church Line. The Legion has been at this location since 1965. The Legion's membership of 700 comes from the City of Windsor, LaSalle, Tecumseh and parts of Essex County. With the exception of Christmas day, the Legion is open every day of the year from noon until 11 p.m. in the summer and 1 a.m. the rest of the year.

The facility includes a banquet hall with a capacity of 300 that is used for weddings, anniversaries, and dances; a sports room and bar; and, an all-purpose meeting room (with a capacity of 200). The lobby and hallway also serve as a memorial/museum with regiment displays and artifacts from the world wars. A cenotaph is located outside the entranceway. Annual Remembrance Day services are held at the Legion cenotaph.

Programming at the Legion includes themed meals and events, that draw approximately 150 members, daily summer time BBQs, All-you-can-eat Sunday Breakfast, dart leagues (ladies, men and mixed), pool leagues, euchre and cribbage nights, seniors day events where typically between 100 and 125 seniors attend, and senior dinner and dancing. A large screen television in the sports room and bar provides coverage of televised sporting events, typically drawing approximately 100 members to these events. In addition, the banquet hall and/or meeting room is rented on Friday and Saturday nights for weddings, showers, and the like. The membership general meeting and executive meet once a month on-site.

Oakwood Public School is located outside the ACA on Cabana Road West, north of Huron Church Road. The school has been operating out of its present location for 40 years. The enrolment for the 2005-2006 school year for classes ranging from junior kindergarten to Grade 8 is 317 students. School enrolment has been increasing; however, the school boundaries for Oakwood Public School were re-defined to accommodate a new public school opening; consequently, enrolment was down by approximately 100 students for the 2006-2007 school year. Enrolment is anticipated to increase, with the School Board projecting enrolment to reach 282 by 2010. The catchment area for Oakwood Public School includes areas both north and south of Huron Church Road. The area south of Huron Church Road includes the Spring Garden neighbourhood, and the area bound by Malden Road to Todd Lane. North of Huron Church Road the catchment area is bound by the Grand Marais Drain to the west, Talbot Road to the east, Askin Avenue and Geraedts Drive to the north. Students from the neighbourhoods south of Huron Church Road are bused to the school, accounting for less than one-third of the student population.

Outdoor recreation facilities at the school include a baseball diamond, open playgrounds, playground equipment (swings, climbers, etc), and a soccer field. Adjacent to the school is the City of Windsor's Oakwood Bush that includes trails and a wildlife sanctuary. Learning opportunities provided by the bush are incorporated into the school curriculum by the teaching staff. The school adjoins the Oakwood Community Centre run by the City of Windsor. The Community Centre and School share facilities for programming purposes and have done so for many years. The school runs after school sport programs (soccer, track and field and cross country) in the spring and fall each year. Between 30 and 115 students participate in these programs. Community groups also use the school facilities (indoor and outdoor) on a regular basis throughout the year.

Oakwood Public School offers special education to 14 learning disabled students in the primary, junior and intermediate levels.

Oakwood Bible Chapel is located outside the ACA on Cabana Road West at Betts Avenue. The Bible Chapel has been in its present location since 1967 and draws parishioners from LaSalle and many parts of South Windsor. Membership is estimated at 350, with almost half of those consisting of youth and children. Hours vary throughout the week and are dependent on scheduled programming. The Bible Chapel does not have full-time office hours. The building itself includes a sanctuary, kitchen, eleven classrooms and finished basement. The Manse associated with the Oakwood Bible Chapel provides accommodation for a family in need in the community. Although outdoor facilities are not provided at the Chapel, the parking lot is used by local youth as a skateboarding facility.

Oakwood Bible Chapel maintains an active junior and senior church school during both worship services on Sunday. Prayer meetings and bible studies are held on Tuesday mornings and evenings. Other functions that occur at the facility include weddings, funerals, conferences and daily bible school for one week in August. For weddings, conferences, and the daily bible school in August the facility has a capacity of 300, and it is often filled during these events.

Other community groups regularly use the property, such as the Girls and Boys clubs, Revenue Canada outreach for Seniors, Gideons annual meeting and dinner, and IMPACT youth conference, all of which combined account for another 350 to 410 users.

The Heritage Park Alliance Church is located within the ACA on Highway 3, and was built at its present location in 1985. The Heritage Park Alliance Church consists of approximately 1300 families, accounting for the 1700 plus members and anticipates its membership to continue growing. The church members originate primarily in the City of Windsor and LaSalle; however, members come from throughout Essex County including Amhurstburg, Tecumseh, and Kingsville. Given the diverse geographic origin of its membership it is important to the Heritage Park Alliance Church that it maintain the existing access to Talbot Road/Highway 3.

The facility is open seven days a week and offers various programming most evenings. Three worship services are held each week: Saturday night and two Sunday morning. In addition, the facility also hosts an Indonesian worship service on Saturday that draws people from throughout Essex County. Other programs offered include an active nursery and children's program during worship services, a morning pre-school program for mothers and children during the week, various evening youth groups, adult electives, various meetings and functions related to church business, and weddings and funerals. Special productions/services are held at Christmas and Easter that draw more than 2,500 people.

The Chartwell Classic Oak Park LaSalle retirement community facility is located on Thirteenth Street outside the ACA south of the Huron Church Road/Highway 3 corridor. The facility has been at this location since September 2005. It houses 125 residents that come from West Windsor, South Windsor, LaSalle, Amherstburg and Michigan State.

The facilities include 113 suite residences with three interior courtyards, a raised gardening bed (to allow residents to garden while standing), 5.5 acres of open grounds surrounding the facility perimeter, a hall/theatre, and a small library. Facility access is controlled during designated visitor hours, and the facility doors are locked at nightfall.

Programming includes meals preparation (three times daily), laundry and housekeeping services, hairstyling and foot care services, physical fitness classes and a variety of social activities and planned excursions for residents. A physician is available on a weekly basis and operates on-call and with a staff of nurses who are available 24 hours a day. The facility has programming to accommodate co-op students and nurses training programs from local institutions and organizations. They also provide an opportunity for high school students to attain their requisite community hours through volunteer work at the facility.

Our Lady of Mount Carmel Separate School is located along the ACA north of Huron Church Road off Cousineau Road and has been in this location, since 1949. School enrollment for 2005/2006 school year for junior kindergarten through grade 8 is 575 students. Enrolment has been increasing over the past five years and is projected to continue to increase over the next three years to 650 in the 2008/2009 school year. The catchment area for the school is bound by Talbot Road, Highway 401, Dougall Parkway and Villa Maria Blvd. Approximately 90 per cent of the students are bused, with the remaining walking via Cousineau Road and Mount Royal Drive.

In addition to the classrooms and administration office, facilities at the school include a library, and gymnasium inside the school. Outside facilities include an open playground, playground equipment, soccer field, and basketball area. The school does not offer any extra-curricular programmes after regular school hours; however, the school is used several times a week for community programs. Our Lady of Mount Carmel offers special education programming for students integrated in the regular classrooms. Approximately 10 volunteers assist at the school on a daily basis.

Our Lady of Mount Carmel Catholic Church is located along the edge of the ACA on Mount Royal Drive at Cousineau. The Church has been at this location for 52 years. Church parishioners come from between Spring Garden and Bouffard Road and Malden Road and Huron Church and Talbot Road. North of Talbot Road, Church parishioners come from between Cabana Road West and Highway 401, Provincial Road to Talbot Road. The Church is open 9 a.m. to 4:30 p.m. on weekdays, and 8:30 a.m. to 6:30 p.m. on Sunday.

Facilities at the Church include a meeting hall, church office and sanctuary. The Church does not have any outside facilities. Current membership for Our Lady of Mount Carmel Catholic Church is 5665 people, or 1872 families, 583 originating below Talbot Road and 1289 originating above Talbot Road. In addition to the weekday and Sunday masses, the Church is also used for weddings and funerals. Several community groups, primarily consisting of adults or seniors use the facility for meetings throughout the week.

St. Cecile Catholic Private School. A part of the school ground south of the school buildings lies within the ACA and as such was included in the initial data collection for the practical stage. Also at this site, Académie Ste. Cécile International School (ASCIS) is a coeducational, elementary and secondary school founded in 1993. Located on 27 acres of property off Cousineau Road for the last 10 years, the facilities include two main buildings with the larger building facility for secondary students and the smaller one for elementary school students. Aside from numerous classrooms and laboratories, the larger facility houses a cafeteria, hall, dance studio, chapel, and game room. The property also includes a number of sports and recreation facilities such as a baseball diamond, soccer fields, tennis courts, outdoor pools and open playground areas.

The school's facilities also serve as a boarding school for approximately 80 international students (from as far as Hong Kong, India and Korea). Locally, approximately 180 students come from as far as Belle River to Amherstburg.

Trillium Court is a Rent Geared to Income Housing community located partially within the ACA on the southwest corner of Highway 3 and Sandwich Parkway, across from the Windsor Crossing Outlet Mall. It is managed by River Park Non-Profit Housing and falls under the jurisdiction of the City of Windsor Housing Services. The City of Windsor is the designated Municipal Service Manager responsible for the administration of social housing in the City and within County of Essex.

The housing at Trillium Court has some geared-to-income units consisting of duplexes and row houses. Three units are wheelchair accessible, 22 units are rented at market value, and all units adjacent to the Highway 3 have central air conditioning. The co-operative was built in 1989-1990. Units are predominantly occupied by families. Trillium Court is located close to schools and a city bus route.

Residents of Trillium Court can typically wait up to five years for a house after applying on the Centre Housing Registry. Currently, the waiting list on this registry totals 2000 families for all of Essex County, while the total number of geared-to-income units in the City of Windsor is 8,700. Trillium Court has a variable turnover rate of 12 to 25 units per year. While the demand for geared-to-income housing in the area has been stable recently, it is expected to increase over the next three years.

The Evangelical Slavic Mission is located outside the ACA on Howard Avenue was identified as a social facility potentially disrupted by the project activities. It has been at its current location since 2001. The property includes a hall, church office, sanctuary, kitchen and dining areas, and two classrooms.

With a membership of roughly 50 people, the Mission provides services in funeral reception, marriage preparation counselling, and is a venue location for a variety of meetings (of religious and non-religious nature).

Victoria Memorial Gardens, a cemetery, is within the ACA along Highway 3. Recognizing that the junction where Highways 3 and 401 join Talbot Road will undergo some sort of re-alignment based on the access road alternatives, during the early data collection stage this Victoria Memorial Gardens was identified as a facility that may potentially become disrupted by project activities. The grounds hold approximately 8,000 funeral plots with some plots extending close to the property line boundaries. The Chapel and office area comprise the main building area. A funeral home is planned for the property lot abutting east of the Victoria Memorial Garden as permits for construction are forthcoming.

The St. Charbel Maronite Catholic Church is located adjacent to the ACA off Outer Drive in the Del Duca Industrial Park. The Church has been at this location for 16 years, a second property, 32 acres, located across Highway 3, is presently used for agriculture. Parishioners come from within a 15 km radius that includes Old Castle, LaSalle and Windsor. The Church is open 24 hours a day, seven days a week, with a pastor always on call, the administration office; however, is open from 8:30 a.m. until 2:00 p.m. on Mondays and as needed throughout the rest of the week. Regular masses are held every Saturday evening drawing between 100 and 500 parishioners, and mid-day Sunday drawing between 500 and 2,000 people depending on the occasion. Special services held at Christmas and Easter typically draw additional people. In July the festival of St. Charbel is held, which draws between 3,000 and 8,000 people from the community over three days. Weddings typically occur on Saturdays and baptisms on Sunday mornings. Presently there are approximately 1,000 members registered at the church.

The facility consists of the sanctuary, administration offices, and meeting rooms. A house manse for the pastors is located on-site. There are no outdoor recreation facilities.

Recreational Social Features

The Waterfront Park, also known as Chappus Street Park is located on Chappus Street and Water Avenue near the waterfront. The park is located within the ACA, and it is not known how long this 1 ha park has been at its current location. The park is accessible daily from 5:00 a.m. to midnight, throughout the year, including holidays. Activities/programs that take place at the park include photography, non-motorized boat launches, hiking and walking, and birdwatching. This park is a significant public right-of-way access to the water on the west side of the City of Windsor. Patrons include the local community, and people from throughout the City of Windsor and Essex County.

Broadway Park is located adjacent to the ACA, south of Broadway Street between Linsell and Scotten Streets. Broadway was once a neighbourhood park with a baseball diamond prior to the area being re-developed as an industrial park. This 9.51 ha park has been at its current location since 1987. There are plans to expand the park by acquiring three lots on the south side of Page Street between Reed and Dupont Avenues.

The park also serves as an entrance to Black Oak Heritage Park. The Black Oak Heritage Park is discussed in the Natural Environment Assessment (April 2007) and is not carried forward in the social impact assessment. The park is accessible daily from 5:00 a.m. to midnight, throughout the year, including holidays. Activities/programs that take place at this park include an enclosed dog park, hiking and walking, parking centre and birdwatching.

Ojibway Park is located predominantly outside the ACA between Ojibway Parkway and Matchette Road south of Broadway Street. Designated as a community/regional park, Ojibway Park is the hub of activity at the 350 ha Ojibway Prairie Complex as most visitors initially visit here before exploring other regions of the Complex.

Ojibway Park features a Nature Centre and several well kept, self-guided nature trails. The Nature Centre provides educational programming to school groups, service clubs and the public. Ojibway Park is connected to the West Windsor Recreationway. The park is accessible throughout the year, including holidays. It is closed midnight to 5:00 a.m. and is open otherwise to the public. The park facilities include a baseball diamond, hiking trails, open play grounds, reception area with patio, ponds, dogpark, picnic areas, wildlife viewing areas, bike trails, and cross country ski paths. Activities/programs are extensive, ranging from fall and winter festivals, school field trips, nature guides, children camps, wildlife research to weddings, birthday parties and special functions. There are also activities for special needs groups such as the elderly and the handicapped. Patrons include the residents and non-residents of the City of Windsor and beyond.

Windsor Recreationway is a trail network that crosses through the ACA at several locations. The trail leads under Huron Church Road adjacent to the Grand Marais Drain and runs through the Spring Garden ANSI and Ojibway Park to connect with Malden and Mic Mac Parks north of E.C. Row Expressway via Malden Road. The trail permits cycling and walking. It is unknown how many use the trail system.

The Seven Sisters Park is a neighbourhood park located within the ACA west of Huron Church Road, parallel to the Grand Marais drain within the Spring Garden Natural Area. This greenbelt area was created over an eight-year period to capitalize on improvements made to the Grand Marais Drain. The park's name comes from the seven hills which were sculpted on the site using the excess fill from the widening of the drain. It was since left to naturalize and now covers 4.68 ha of land.

The park is connected to the West Windsor Recreationway and a bike path from California Street that leads through Spring Garden. There is a playground unit to serve the needs of the neighbourhood at Fazio Drive. The park has been at its location since 1970 and is accessible daily from 5:00 a.m. to midnight, throughout the year, including holidays. Activities/programs that take place at this park include walking, cycling, recreational play and jogging. Patrons include neighbourhood community residents and others from within Windsor.

Bellewood Park has been a neighbourhood park since 1985 and is located outside the ACA adjacent to Bellewood Public School on Labelle Street. Park development throughout the 1980s and early 1990s resulted in 6.39 ha of park facilities offering two double tennis courts, a basketball court, playground equipment, bike path, and a baseball diamond.

The park is accessible daily from 5:00 a.m. to mid-night, throughout the year, including holidays; however, access to the baseball diamonds and tennis courts are on a seasonal basis. Activities/programs that take place at this location are seasonal sports such as baseball, basketball and tennis, and year-round activities such as walking and open play. Park users originate predominantly from within Bellewood Estates neighbourhood; however, users do originate from throughout the City Windsor.

South Windsor Recreation Complex is located outside the ACA east of Huron Church Road, at Pulford Street. The Recreation Complex has been at its present location since 1970.

With the exception of June, when the centre is closed for annual maintenance, the core hours of operation are 8:00 a.m. to 11:00 p.m seven days a week. The complex includes two fully enclosed ice pads and associated change rooms, a reception area, canteen, central common area, an all purpose meeting room and auditorium. Based on bookings and regular program schedules provided by the City of Windsor Recreation Department, the South Windsor Recreation Complex is actively used throughout the year.

The majority of users come from Windsor; however, tournaments (e.g., hockey) and competitions (exhibit skating) would draw competitors from Essex County, the Province, and the United States. Regular programming includes minor hockey, exhibit skating, sledge hockey, college/university hockey, public skating and ice rentals. The auditorium is rented for various types of parties (e.g., wedding or baby showers, anniversaries etc.). During the summer hockey camps utilize the auditorium, and martial art lessons are offered twice a week in the evenings throughout the year.

Oakwood Community Centre, located outside the ACA off Cabana Road West has been in this location for 33 years. It is physically linked to Oakwood Public School. The majority of users of this facility come from the local South Windsor neighbourhood, Heritage Estates, LaSalle and some sections of southwest Windsor. The Community centre is open daily including statutory holidays. Summer hours of operation are Monday to Friday 8:00 a.m. to 8:00 p.m.

The Centre consists of a gymnasium, various meeting rooms, kitchen, a common area or foyer and offices. The facility is wheelchair accessible and can accommodate up to 310 people. Numerous programs are provided seasonally by the City of Windsor Recreation department and include such activities as 'before and after' school programs, sports (e.g. indoor soccer, badminton, martial arts, floor hockey), dance, gymnastics, fitness classes, day camps, arts and crafts, preschool nursery, and educational programs. Numerous programs for seniors are also offered including wellness and fitness programs, and sedentary activities (e.g. cards, sewing etc). Facility room rentals are available for birthday parties, baby showers, workshops and church activities. More than 7,000 users frequent the community centre over the course of a year.

The facility includes, a large multi-purpose room with a stage and audio visual equipment that serves as both the worship centre and gymnasium, various classrooms and meeting rooms on two levels, administration area, a small chapel, three kitchens, washrooms on both levels, a library, supply/resource rooms and lobby. Due to the significant growth they have experienced in recent years, and the projection of continued growth into the future, plans have been developed to add an additional 100,000 square feet onto the existing facility. To support these expansion plans, adjacent property has recently been acquired.

St. Clair College Athletic Fields are adjacent to Huron Church Road between the College entrance and Cousineau Road and are partially located within the ACA. The Athletic Fields include soccer fields, football, baseball, and cricket fields. The Athletic fields are utilized by the City of Windsor Recreation Department to run some of their league games for soccer and baseball.

Veteran's Memorial Park is located along the edge of the ACA north of Huron Church Road, west of Cousineau Road. Veteran's Memorial Park is bound by Mitchell Avenue, Mount Royal and Casgrain Drives. Its official designation by the City of Windsor is a neighbourhood park, thus its catchment area is predominantly the local neighbourhood. The park facilities include three fenced baseball diamonds, two fenced tennis courts, a batting cage, open green space, a children's play area and equipment, and a building that serves as a clubhouse, canteen and washroom facility. Limited parking is available in a lot off of Cousineau, street parking is available on the neighbourhood streets around the park.

Delivery of Emergency Services

The ACA is served, in part, by the LaSalle fire, ambulance and police services. Further coverage within the ACA is provided by the City of Windsor fire and police services. The Ontario Provincial Police (OPP) jurisdiction includes Highway 401 and Highway 3 to the Todd Lane/Cabana Road West intersection, and the northbound side of Howard Avenue ending at the Highway 3 intersection. They also provide police services for the Town of Tecumeseh. The OPP will also have jurisdiction to respond to motor vehicle collisions on the proposed new freeway. Hospitals with emergency services are the Windsor Regional Hospital located at 1995 Lens Avenue, Windsor; the Windsor Hotel-Dieu Grace Hospital, located at 1030 Quellette Avenue. These two hospitals provide emergency services to the residents within the ACA.

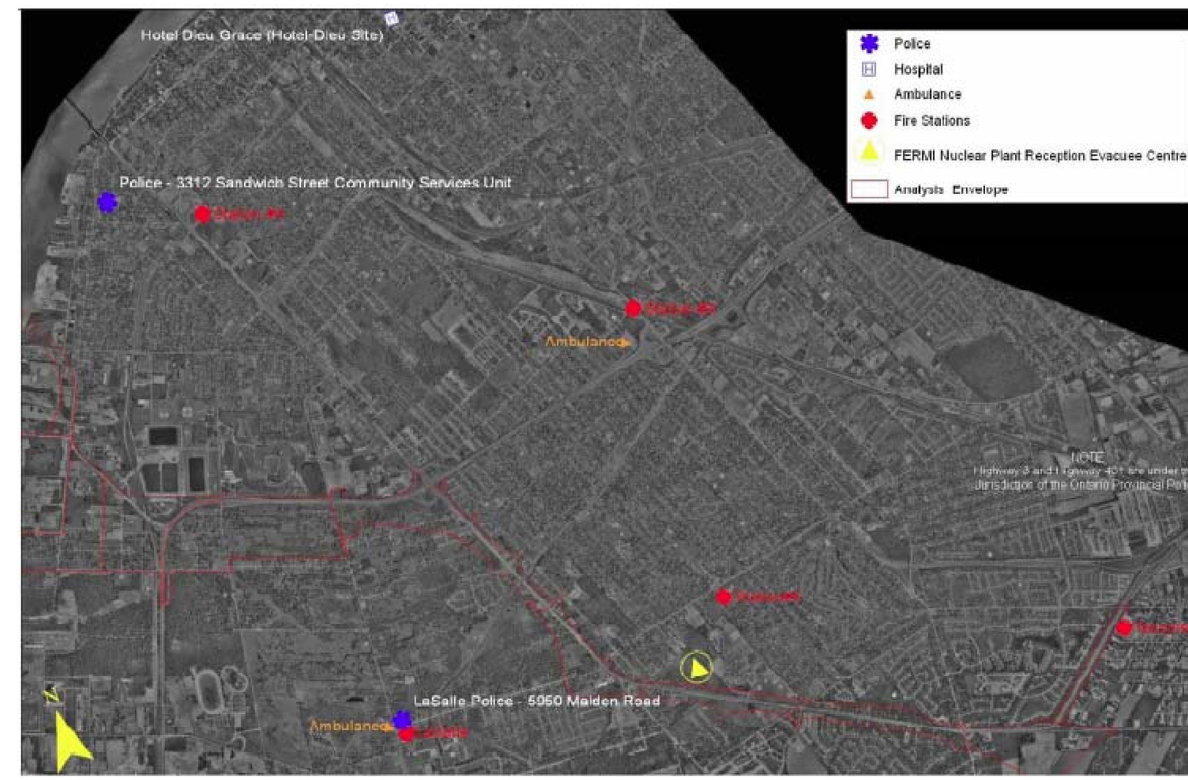
Exhibit 7.8 illustrates the location of the various municipal emergency services. As noted in the exhibit, St. Clair College is a designated Evacuee Centre in the case of emergency resulting from the FERMI Nuclear Plant. The primary evacuation route is Regional Road 20 out of Amherstburg to E.C.Row Expressway and along Huron Church Road. The secondary evacuation route is up Howard Avenue to Huron Church Road.

All communities within the ACA are serviced by the City of Windsor Police and Fire or LaSalle Police and Fire. Ambulance services are provided by the County of Essex. Windsor Fire District 5 station is located on Cabana Road West, east of the Huron Church/Talbot Road transportation corridor. Huron Church Road is used to access the service area in these communities in the ACA. Windsor Police are dispatched from their downtown headquarters on Goyeau Street. Windsor Police also rely on Huron Church Road to access adjacent neighbourhoods.

LaSalle Police and Fire are both dispatched from Malden Road complex. An ambulance dispatch is also located in the complex. Todd Lane or Sandwich Parkway are used by Emergency Services to access the LaSalle service area on Highway 3/Talbot Road.

The Windsor & Essex County Student Transportation Services provides school bus services to the area boards of education, the Greater Essex District School Board, the Windsor-Essex County Catholic District School Board, and Conseil Scolair de District des Ecoles Catholiques du Sud-Ouest.

EXHIBIT 7.8 – LOCATION OF EMERGENCY SERVICES WITHIN THE ACA



7.2.3 Economic Conditions

For the purposes of this study, a business is defined as any privately owned, for profit, entity that occupies a built space. Public utilities, such as the Windsor wastewater plant and the Ontario Power Generation (OPG) facility, and public institutions, such as schools and hospitals, were not considered businesses for the purpose of the economic impact assessment. However, it should be recognized that all possess attributes, such as employment and monetary revenues, like businesses. They are unique facilities that need to be addressed in terms of their own attributes and the essential public services they provide.

A list of 119 businesses identified within the ACA is provided in **Table 7.10**. Businesses located within the Ambassador Industrial Park (principally located at the north-west intersection of Huron Church Road and the E.C. Row Expressway) and Del Duca Industrial Park (located south of Highway 401 between Talbot Road and Provincial Road), while partially located within the ACA, are not specifically included in the impact assessment as there are no significant economic impacts on any businesses within these business parks.

For further detail on the Economic Impact Assessment conducted within the ACA, the reader is referred to the *Draft Practical Alternatives Evaluation Working Paper – Economic Impact Assessment*.

TABLE 7.10 – BUSINESSES ASSESSED WITHIN THE ACA

Businesses Located Along Access Road Huron Church Road – Highway 3	Businesses Located Within Plaza-Crossing Combinations West Windsor
Century Fire Equipment Ltd	CTX
Garry St. John 1996	Lafarge Canada Inc.
Blue Bell Motel	CBM - St. Mary's Cement
Comfort Inn	Sterling Marine Fuels
Golden Griddle Family Restaurants	Windsor Window Imaging Inc.
Feelgood's Billiard's Sports Pub Rhythm & Grill	K-Scrap Resources Ltd.
King Kone Ice Cream	Van De Hogen Investments Inc.
Petro Canada	Vollmer & Associates Ltd.
Lambton Plaza	The Auto Shop (Vollmer)
A.C. Soccer & Sports	Essex Aggregates
First Choice Chinese Restaurant	Canadian Salt Company Ltd.
Gino's Pizza	Sure Seal Roofing & Siding
Lily's Nail	Agency Fuels Ltd.
Montessori Preschool	Air-O-Systems
C.K. Havana Shop	Judrick's Enterprises Ltd.
Scholar's Choice Retail Store	Standard Induction Castings Inc.
Second Edition	Xcel Manufacturing Group
Worldsource Financial Management	Andlauer Transportation Services Inc.
Outbreak Sportz	Harwood
Aqua Turf Lawn Sprinkler Systems	Windsor Auto Parts
Euro Tech Auto Service	Shur Lok Products
Best Western Continental Inn	Globaltex 2000 Ltd.
Tim Hortons	The Narmco Group
Fred's Farm Fresh Ltd.	Novelletto Rosati Complex
L.A. Collision South Windsor Ltd.	Southwestern Sales Corporation Ltd.
Sandcastle Recreation	Karter Carriers Inc.
Joe's Woodcraft Of Windsor Ltd.	Prism-Berlie Ltd.
Mac's Convenience Stores	West Windsor Power – Suez Energy Generation NA
Town & Country Animal Clinic	Nemak of Canada Corp.
Windsor Crossing Outlet Mall (45 stores)	A&P Metals
Alibis Sports Bar & Music	Mayson Machining Ltd.
Autobon Car Wash	Globe Manufacturing
XTR Gas & Convenience	Kenwil Services Limited
Vachon Bakery Outlet	Howards Backhoe & Trucking & Bobcat Service
Nature's Health Consulting Co.	
The Sleep Factory	
Dualflex Company Ltd.	
Weston Bakeries Ltd. Ontario	
Phillips Tool & Mould Ltd.	
Tyler Hard Chrome Inc.	
Hellenic Banquet Halls	
Daytona Car Wash Ltd.	

There are a number of distinct clusters of businesses in the ACA, following from Highway 401 through to the E.C. Row Expressway. As shown in **Exhibit 7.9**, these clusters, starting from the east, are:

1. Located at the current intersection of Highway 401 and Highway 3, west of Highway 3 along Outer Drive, is the primary concentration of industrial businesses.
2. Immediately north on Highway 3 there is a small concentration of commercial businesses at the intersection of Howard Avenue.
3. Further along Highway 3, after a largely residential section, at the intersection of Sandwich Parkway is the Windsor Crossing Outlet Mall, the single largest concentration of commercial businesses along the entire access road. There is one other commercial shopping plaza at this intersection.
4. Along Highway 3 from the Huron Church Line intersection area to Todd Lane / Cabana Road West is a node of industrial, commercial and travel-tourism businesses.
5. Further along Huron Church is a mix of commercial and travel-tourism businesses, including a major chain hotel and a coffee shop.
6. At Huron Church Road and Lambton Road is another large concentration of commercial businesses, including the Lambton Plaza.
7. Finally, along Huron Church Road, between Lambton Road and the E.C. Row Expressway is a concentration of commercial and travel-tourism businesses including two hotel/motels.

Because of the scale and detail of information required for this study and its reliance on information voluntarily provided data gaps do exist. In terms of the survey, a number of businesses within the ACA chose not to participate. The response rate, as illustrated in **Table 7.5**, was more than 60 per cent of the 75 businesses surveyed. While not complete, this is a reasonably high level of participation. The response rate was much higher for businesses along the access road in comparison to those businesses within the West Windsor industrial area. This is due primarily to the fact that most businesses within the ACA are smaller locally-owned establishments, whereas the majority of businesses within the West Windsor industrial area are large national and multinational companies that typically have more restrictions on providing business information.

EXHIBIT 7.9 – BUSINESS CLUSTERS ALONG PROPOSED ACCESS ROAD

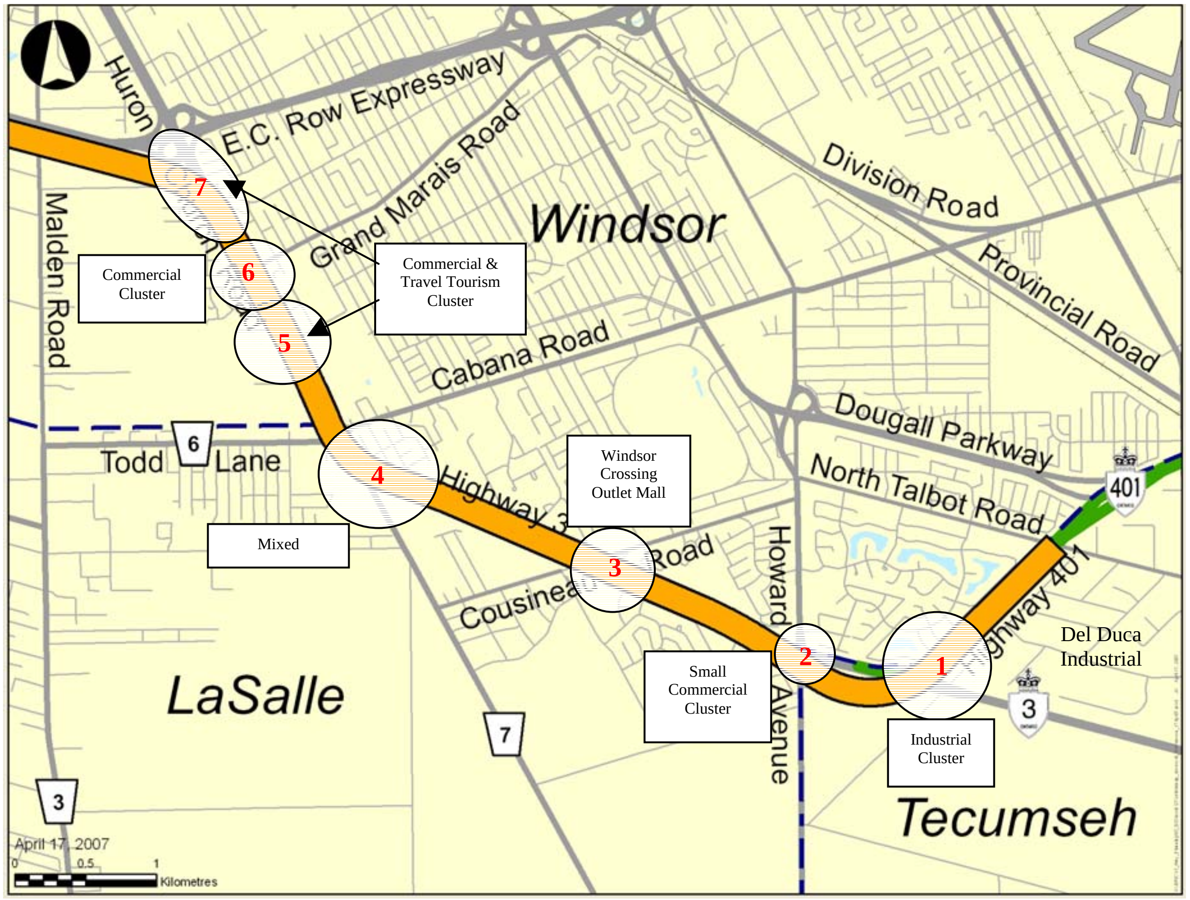


TABLE 7.11 – BUSINESSES SURVEY RESPONSE RATE WITHIN THE ACA

Section	Number of Businesses Contacted	Number of Businesses that Responded	Response Rate
Access Route	41	30	73%
West Windsor Industrial Area	34	17	50%
Total ACA	75	47	63%

Note: Windsor Crossing Outlet Mall is counted as one business within this table, as only one survey was administered on the basis that the mall is owned by a trust and reports as a collective business.

Furthermore, of the businesses that did respond, not all were willing to disclose certain pieces of information, such as gross revenues and employment. Where other sources of information were not available, estimates were made for employment and gross revenues in order to provide complete economic impact assessments for the entire ACA. Estimates of employment and revenues were arrived at through a variety of methods, which included comparisons to similar businesses for which that data was available; for publicly traded companies, estimations were based on information provided in public documents, such as annual reports; and, through a variety of sources specific to some of the business sectors represented by the individual firms in the ACA.

7.3 Existing and Planned Land Use

PROVINCIAL POLICY STATEMENT

The assessment of impacts to land use for the practical alternatives required consideration of provincial and local municipal policies and objectives pertaining to land use, as well as types of land uses impacted directly by the project.

This study has considered a broad range of legislative policies, including those that relate to the *Provincial Policy Statement* (PPS). The *PPS* was consulted throughout the illustrative alternatives and practical alternatives phase of the DRIC study, to ensure that alternatives being considered were in agreement with the policies developed in the PPS.

The PPS provides policy direction on matters of provincial interest related to land use planning and development. The PPS is issued under the authority of Section 3 of the *Planning Act*. The most recent PPS came into effect March 1, 2005. The PPS focuses growth within settlement areas and away from significant or sensitive resources and areas which may pose a risk to public health and safety.

Several policies within the Provincial Policy Statement are applicable to this study, and were taken into consideration during the development of the illustrative and practical alternatives. These include, policies related to healthy, liveable and safe communities; public space, park and open space; infrastructure and public service facilities; transportation systems; transportation, infrastructure corridors; natural heritage and cultural heritage and archaeology. These policies were taken into account in several other reports prepared by the study team, including the *Draft Practical Alternatives Evaluation Working Paper – Natural Heritage,* the *Draft Practical Alternatives Evaluation Working Paper – Archaeology,* and the *Assessment of Practical Access Road Alternatives- Improve Regional Mobility Memorandum*.

The policies of the Provincial Policy Statement are intended to be used in conjunction with locally-generated policies regarding matters of municipal interest. Provincial plans and municipal official plans provide a framework for comprehensive, integrated and long-term planning that supports and integrates the principles of strong communities, a clean and healthy environment and economic growth, for the long term. Listed below are the various municipal plans and policies of the City of Windsor, the Town of LaSalle, and the Town of Tecumseh that pertain to this study.

7.3.1 City of Windsor Official Plan

The *City of Windsor Official Plan*[8] was adopted on October 25, 1999 by By-law 350-1999. The OP was approved by the Ontario Ministry of Municipal Affairs and Housing, in part, on March 28, 2000. The remainder of the Plan was approved by an Ontario Municipal Board decision on November 1, 2002. Currently, the City of Windsor is reviewing the goals, objectives and polices stated in the official plan and undergoing a public consultation process to update the various sections of the plan.

In considering the *City of Windsor Official Plan* during the development of the illustrative and practical alternatives, a number of policy areas outlined in the Official Plan were considered. Each policy area is discussed separately.

[8] www.citywindsor.ca

DEVELOPMENT STRATEGY

Pertains to the vision and growth concept envisioned for the next 10 to 20 years for the city. Recognizing that a new border crossing and access road could significantly influence future growth in the Windsor and Essex County region, the study team considered the vision and principles during the development of the illustrative and practical alternatives for the access road, plaza and crossing alternatives.

SUSTAINABLE, HEALTHY ENVIRONMENT

The sustainable, healthy environment policies pertain to achieving a sustainable transportation system where all modes of transportation play more of a balanced role. Providing greater opportunities to walk, cycle and take public transit are part of the goals for the sustainable, healthy environment policy section. Continuing to enhance the waterfront area, along with providing a Greenway System aimed at connecting Windsor's neighbourhoods and creating a greater harmony between human activities and natural systems.

HEALTHY COMMUNITY

The Healthy Community section of the *City of Windsor Official Plan* centres on policies related to Healthy Communities. As stated in the Official Plan, the healthy community philosophy is rooted in the belief that people's social, economic, cultural and psychological well being is influenced by the physical environment in which they live, work and play. Land use planning actions should provide for activities and facilities which will foster lifestyle habits that improve community health.

ENVIRONMENT

Some of the objectives of the Environmental policies of the *City of Windsor Official Plan* include protecting, conserving and improving the quality and quantity of Windsor's natural features and functions; to establish recreational and natural linkages between open space areas and natural areas, and to improve atmospheric air quality.

LAND USE

Land use policies outlined in the Official Plan promote an environmentally sustainable urban development, a variety of open spaces, protection and conservation of environmentally significant and sensitive heritage features, and polices pertaining to the development of residential, industrial, business park, commercial, major institutional, open space, natural heritage, mixed use, waterfront residential, waterfront recreational, and waterfront port.

INFRASTRUCTURE

Transportation policies outlined in the Official Plan call for a sustainable, effective, and efficient transportation system that meets the needs of all users in a manner consistent with a healthy environment and vibrant economy. Objectives outlined in this area of the Official Plan relevant to this study include:

- Protect long term transportation corridors
- Safe and efficient truck routes within and through Windsor
- Maintain a city-wide walking and cycling network
- Windsor's role as Canada's foremost international gateway.

In addition, the *City of Windsor Official Plan* speaks to "recreationways" which are defined as a network of multi-use pedestrian and cycling trails designed to serve recreational movements.

URBAN DESIGN

Urban Design policies are outlined in Section 8 of the Official Plan, and include policies and objectives aimed to:

- Achieve comfortable conditions along roads and in public spaces
- Achieve an attractive network of public spaces
- Encourage infrastructure undertakings to retain and incorporate natural features and functions

HERITAGE CONSERVATION

Heritage conservation policies outlined in the *City of Windsor Official Plan* centre on identifying, recognizing, protecting, enhancing and managing the existing heritage resources that exist within the city.

These policies were reviewed during throughout the development of the illustrative and practical alternatives.

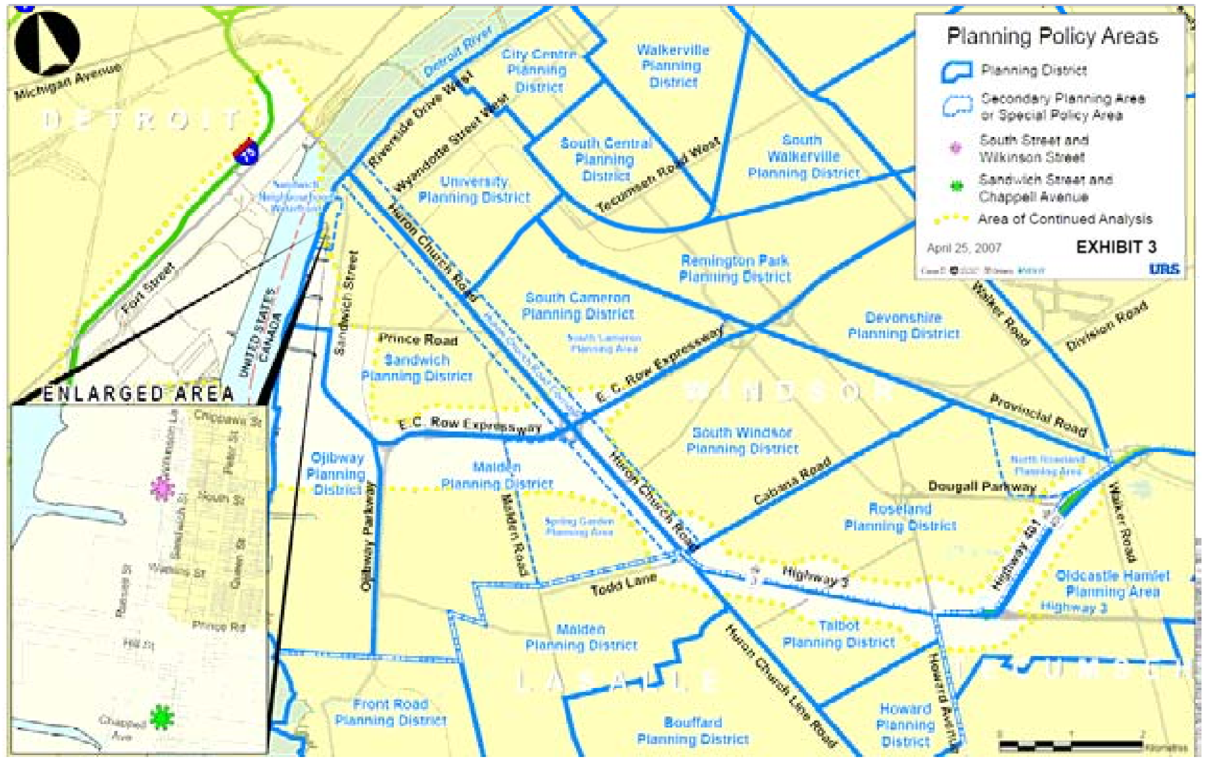
Exhibit 7.10 shows the planning policy areas and districts that are defined within the *City of Windsor Official Plan*. The City of Windsor is currently divided into a total of 19 planning districts, which are used to help facilitate future planning within the city. The 19 planning districts range in size from slightly more than 200 ha to almost 1135 ha in size. These planning districts are established to provide a basis for developing more detailed planning policies. Only those planning districts that contain special policy areas relevant to the practical alternatives developed for this study area are discussed in this section.

CITY OF WINDSOR SPECIAL POLICY AREAS

District Special Policy Areas are defined as areas where detailed policies are created for land use, infrastructure, transportation, environment, urban design or other areas are required beyond those that are provided within the Official Plan. In certain instances, where there is a conflict between a Special Policy Area provision and the Official Plan, the Special Policy Area will take precedence over the policies of an Official Plan.

The ACA includes all or a portion of four Special Policy Areas as defined in the Windsor Official Plan: Sandwich Neighbourhood Waterfront District, Sandwich Street and Chappell Avenue, South Street and Wilkinson Avenue, and the Huron Church Road Corridor. One Secondary Plan is affected by the ACA, the Spring Garden Planning Area. These Special Policy Areas and Secondary Plan areas are shown in Exhibit 7.10.

Exhibit 7.10 – Planning Policy Areas



Sandwich Neighbourhood Waterfront

The Sandwich Neighbourhood Waterfront is comprised of the area bounded by Chewitt Street on the north, Russell Street on the east, Brock Street on the south and the Detroit River on the west depicted in Exhibit 7.10. This special policy area allows for the development of Waterfront Recreation land uses, as well as residential development no greater than 15 storeys in height, on lands located at the south west corner of Mill Street and Russell Street. In addition, residential development is permitted no greater than three storeys in height on the southwest corner of Chewitt Street and Russell Street. As a condition of planning approval, lands will be required to be conveyed to the City for public open space purposes, where preference will be made for lands extending along the Detroit River for the continuation of the waterfront linear park system.

Sandwich Street and Chappell Avenue

The Sandwich Street and Chappell Avenue Special Policy Area is comprised of a property known as Lot 28, on the south side of Sandwich Street and part of Lot 28 on the north side of Peter Street, located on the southeast corner of Sandwich Street and Chappell Avenue, as depicted in Exhibit 7.10. This Special Policy Area allows for the development of Adult Entertainment Parlours, in particular the building located at 3885 Sandwich Street. The building located at 3885 Sandwich Street was destroyed by fire in the fall of 2006, and the site is presently vacant.

South Street and Wilkinson Street

The South Street and Wilkinson Street Special Policy Area is located on the northeast corner of South Street and Wilkinson Street. This area is designated as a business park, however the only business park use that is permitted on these lands is a warehouse.

Huron Church Road Corridor

The Huron Church Road Corridor includes an area along the east and west sides of Huron Church Road from the Ambassador Bridge to Highway 3, as depicted in Exhibit 7.10. The Huron Church Road Corridor Special Policy states that development along Huron Church Road must have specific landscaping setbacks for new residential uses, and it guides the location of new commercial uses along the corridor. The landscaping setback requirements are as follows:

- Where non-residential development fronts Huron Church Road there shall be a minimum landscaped setback of 10 m parallel to the road;
- Where residential development is proposed adjacent to Huron Church Road an open space corridor having a minimum width of 30 m shall be provided;
- Where lands are proposed for redesignation to commercial centre or commercial corridor, the lands shall be located at a signalized intersection or be contiguous to lands already designated commercial centre or commercial corridor with access to a signalized intersection by means of a service road.

This Corridor Special Policy Area allows for development on the Huron Church Road Corridor to be uniform in appearance and in keeping with its status as an international gateway route, through the use of a landscaped setback abutting the road. The City of Windsor Official Plan has designated Huron Church Road as a Class I Arterial, and it is identified as a connecting link by the Ministry of Transportation.

The Official Plan states that a Class I Arterial Road:

- Shall be designed to carry high volumes of both passenger and commercial traffic for intra-city travel at moderate speeds;
- Usually consist of four or more divided or undivided travel lanes, with right-of-way widths no more than 36 m;
- Intersections with major roads are permitted but local roads are discouraged;
- Direct access to abutting properties along Class I Arterial Roads is not permitted where other alternatives exist; and
- Commuter cycling lanes or bikeways are not permitted along the paved travel lanes, but may be permitted within the right-of-way.

Recently, an urban design master plan was developed for Huron Church Road. The *Huron Church Road Urban Design Master Plan and Development Guidelines* (February 2006) was developed to provide a design vision and framework for implementing design concepts on Huron Church Road between Cabana Road West and College Avenue. The scope and analysis of the report focuses on the Primary Study Area, between College Avenue and Tecumseh Road. Design elements, streetscape installations and guidelines developed within this report are also meant to be implemented in the Secondary Study Area which is between Tecumseh Road and Cabana Road West. This report presents design guidelines for lighting, planting, walkways, signage, public art, street furniture and property development.

As part of the current EA study, the study team incorporated some of the design guidelines and features suggested in this report into the Context Sensitive Solutions (CSS) concepts for this study. In addition, the setback and landscaping policies put forth for the Huron Church Road Corridor will be taken into consideration during future design stages.

Spring Garden Planning Area

The Spring Garden Planning Area (Official Plan Area #5) is bounded by E.C. Row Expressway on the north, Malden Road to the west, Todd Lane to the south, and Huron Church Road on the east (Exhibit 7.10). It is approximately 283 ha in size, and is largely a residential community integrating an expansive natural area feature. The natural area was designated as an Area of Natural and Scientific Interest (ANSI) by the Ministry of Natural Resources (MNR) in 1984. As a result, the Spring Garden Planning Area has development restrictions placed upon it. The Secondary Plan allows for residential development only along the periphery of the natural area. The plan provides primarily for future residential development that complements the development that has already occurred within this planning area. Other land uses are permitted, in a limited capacity, as discussed below.

Permitted land uses in the Spring Garden Planning Area as defined by the Spring Garden Secondary Plan are as follows:

a) Low profile residential development in designated areas; comprised of single detached, semi-detached, duplex and multiple units up to eight units; maximum density permitted is 30 units per gross hectare;

b) Single detached residences are the primary residential type allowed;

c) Low profile multiple use residences (e.g., semi-detached, row housing) are encouraged near E.C. Row Expressway and Huron Church Road;

d) Neighbourhood commercial uses are permitted in residential areas;

e) Minor institutional uses are permitted within residential areas; and

f) Light industrial uses; restricted to the Grand Marais Drain area.

The Secondary Plan requires that a buffer be placed between the right-of-way on Huron Church Road, Malden Road, and E.C. Row Expressway and future permitted land uses in order to mitigate for potential noise impacts. In addition, any future roadway network would have to follow the grid patterns prescribed within the Secondary Plan in order to prevent any impacts to the adjacent ANSI areas.

CITY OF WINDSOR ZONING BYLAWS

A municipality regulates the use and development of land, buildings and other structures through the provisions of zoning bylaws under the *Ontario Planning Act*. The purpose of a zoning bylaw is to regulate different land uses and development standards, to ensure that development takes place in conformity with policies set forth in the *City of Windsor Official Plan*.

The City of Windsor has developed a comprehensive listing of zoning bylaws that apply to the entire City. Within the ACA, the zoning bylaw designations vary from low, medium, and high residential districts, commercial and industrial districts, and institutional and green districts. A cross section of all types of zoning is represented within the ACA. Each zoning bylaw dictates what type of land use is permitted within a particular area of the City, the units allowed to be developed, the setback requirements, and it prescribes the infrastructure requirements needed to develop the land uses.

It is important to note the current zoning for various parcels found within the ACA that are currently vacant or open. Often parcels that are vacant or open and that are zoned for either residential, commercial, or industrial land uses will be developed once favourable market conditions exist. Within the ACA, lands that are currently vacant in the Brighton Beach Industrial Area are zoned for industrial land uses. These lands could be occupied by industrial uses if the economic market in Windsor requires such a use. Also, lands that are currently open or vacant in the Spring Garden Planning Area, are zoned for residential land use, with a hold provision which places a hold on the issuance of a building permit until specific development preconditions have been satisfied. Future residential demands would potentially require that residential development occur in this part of pending the stipulation as dictated in the zoning.

OLDE SANDWICH TOWNE COMMUNITY PLANNING STUDY REPORT

The *Olde Sandwich Towne Community Planning Study Report* was completed and adopted by Windsor City Council in the fall of 2006. The Report was developed with cooperation and input from Sandwich Towne residents along with business, government and other civic leaders. Participants formed task force subcommittees, which focused on six areas:

- Appearance and community image;
- Commercial development;
- Health care, education and community needs;
- Parks and open space and neighbourhood land use;
- Safety and crime; and
- Communications.

The *Olde Sandwich Towne Community Planning Study Report* was designed to provide direction for residents and business owners to actively participate in the plan making and priority setting process for the community. The Planning Study Report was adopted as the municipality's guide for future planning, capital budgeting and community improvement efforts in Sandwich. The Report was the result of an 18-month process and contains 29 recommendations to the community. Task Force members identified geographic realities, such as barriers, vacant lots, anchors of activity, connectors etc., that later were used to identify target areas within the study area to concentrate resources.

The plan outlines which organization should take the lead on each recommendation to develop an achievable timeframe and identify what resources are needed to achieve each recommendation. The plan outlines the continuation of industrial land uses in the waterfront area south of Watkins Road, as shown in Exhibit 7.10. The plan identified that the area south of Prince Road be changed to industrial from its current mix of residential and industrial land uses. It also suggests waterfront port improvements be made to existing industrial land uses to help facilitate and foster continued industrial viability within this area. Placing a new crossing within the waterfront port/industrial area of Sandwich is consistent with the prescribed land use of that area of Sandwich Towne, which is comprised of mostly industrial land uses.

7.3.2 Town of LaSalle Official Plan

The *Town of LaSalle Official Plan –LaSalle 2016- Healthy, Vibrant and Caring*[9] was adopted on October 14, 1997. The Plan was approved by the Ontario Ministry of Municipal Affairs and Housing (MMAH) on May 18, 1998. The document used for this report is the November 4, 2003 Office Consolidation, which incorporates Official Plan Amendment No. 1, provincially approved on November 4, 2003.

Within the ACA, the *Town of LaSalle Official Plan* has designated the Highway 3 area as one of five planning districts developed for the town, called the Talbot Planning District. The planning districts are designed to provide a framework for the implementation and administration of the Official Plan. The Talbot Planning District consists of mostly residential land uses, with two distinct areas of commercial land use along Talbot Road southeast and northwest of Sandwich Parkway. There are recreational land uses located throughout this district, along with a community facility.

As growth continues within the Town of LaSalle, plans for future roadway expansions are included in the Official Plan. In particular, the Official Plan includes a proposed expansion of Laurier Drive from Malden Road to Howard Avenue.

As stated in the *Town of LaSalle Official Plan*, the 'greenway system' is a cornerstone of the Official Plan, and represents a major new land use planning and resource management approach for the Town of LaSalle, to be implemented over a 10 to 20 year planning horizon. The essence of the Town of LaSalle 'greenway system' approach is providing linkages, areas to connect wildlife habitat areas to each other, human settlements to other human settlements, urban and rural areas, waterfront to non-waterfront lands, and people to nature. All new developments within the Town of LaSalle will be required to incorporate the 'greenway system' elements within their respective development plans to the greatest degree possible.

The *Town of LaSalle Official Plan* acknowledges that a Bi-National Transportation Study has been underway since 2003, and that in the event that a route will be located in the Town of LaSalle, it is approved in accordance with all applicable Environmental Assessment legislation. Additional transportation policies may be required to amend the Town's Official Plan. Highway 3 is classified as a Provincial highway in the *Town of LaSalle Official Plan*.

TOWN OF LASALLE ZONING BYLAWS

The Town of LaSalle has developed a comprehensive zoning bylaw for the entire town. The Talbot Planning District area of LaSalle is zoned residential, with a few parcels zoned commercial.

7.3.3 Town of Tecumseh Official Plan

The Town of Tecumseh is governed by three separate Official Plans[10]. The three Official Plans represent the three former municipalities, which include Tecumseh, St. Clair Beach, and Sandwich South. These three municipalities existed separately prior to the January 1st, 1999 amalgamation of the three areas into the current Town of Tecumseh municipality.

At present, the three official plans have not yet been consolidated into a single official plan and still govern their respective lands prior to amalgamation. The purpose of the Official Plan is to set forth the general policies concerned with the shaping and guiding of the physical growth and arrangement of the Tecumseh Planning Areas. The general policies are developed being mindful of the social and economic needs of the community in order to obtain the most desirable physical environment for the present and future inhabitants of the Town of Tecumseh.

The southeastern portion of the ACA is located within the Town of Tecumseh. Land uses found within this area of Tecumseh include several manufacturing and business parks, including the Del Duca Industrial Park, located adjacent to Highway 401. This industrial park contains businesses that manufacture a variety of goods, including automotive stampings, plastic injection molding, dies, fixtures, automation systems, custom machining, custom fabrication, automotive seating systems, capsule machines and capsules, vinyl doors and windows, commercial printing, canned vegetables and frozen foods, breads and rolls.

TOWN OF TECUMSEH ZONING BYLAWS

The Town of Tecumseh is governed by three separate zoning bylaws, in addition to the three separate Official Plans, representing the three municipalities that existed separately prior to the January 1st, 1999 amalgamation of the three areas. Currently, the three bylaws have not yet been consolidated into a single bylaw for the town and still govern their respective lands prior to amalgamation. The zoning for the lands located within the ACA in Tecumseh is industrial.

7.3.4 Existing Land Use

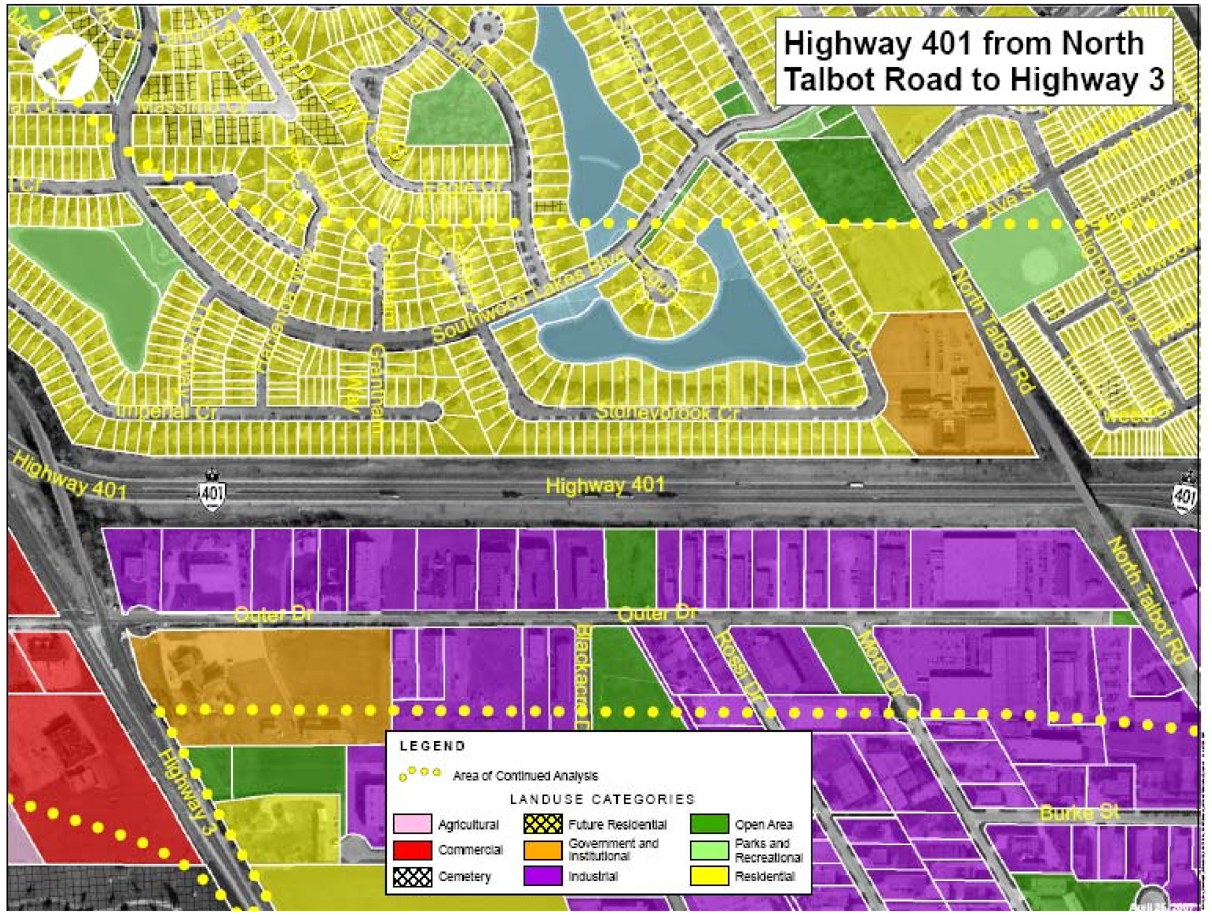
The Highway 3/Huron Church Road corridor has served as an access road to the Ambassador Bridge for over 75 years. The land uses along this corridor vary, ranging from commercial and industrial to residential and recreational. Commercial uses include fast food restaurants, speciality stores, hotels and motels, shopping centres and convenience stores. Residential land uses include single-family residences and multi-family residences. In order to facilitate an accurate description of the land uses throughout the ACA, it has been divided into six sections. A description of each follows.

Highway 401 from North Talbot Road to Highway 3

Land uses located along the north portion of this segment includes a portion of residential subdivision, called Southwood Lakes, which was constructed in 1997 as a single family residential community that surrounds four small lakes and features several parks. There is one institutional land use, the Extendicare Southwood Lakes Long Term Care Facility, located at the northwest corner of North Talbot Road and Highway 401. There are a number of parcels that are proposed for future residential development, located north of North Talbot Road along Highway 401. Land uses along the south side of Highway 401 include the Del Duca Industrial Park area in the Town of Tecumseh, where several automotive manufacturing related businesses operate (see Exhibit 7.11).

[9] www.town.lasalle.on.ca
[10] www.town.tecumseh.on.ca

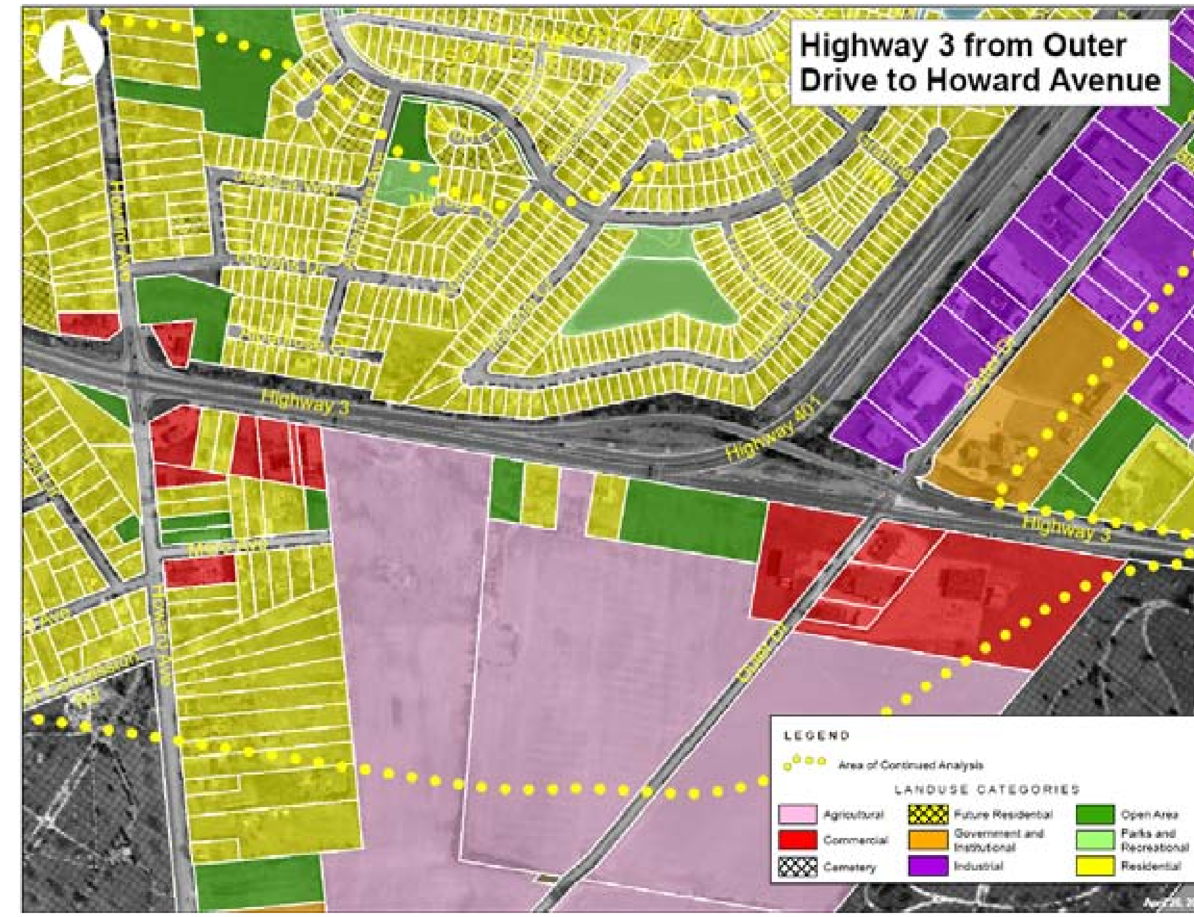
EXHIBIT 7.11 – HIGHWAY 401 FROM NORTH TALBOT ROAD TO HIGHWAY 3



Highway 3 from Outer Drive to Howard Avenue

This segment contains a mixture of residential, industrial, vacant institutional and commercial land uses. On the north side of Highway 3, the majority of land uses are single-family residential units, with the exception of a vacant and commercial land use located on the northeast corner of Highway 3 and Howard Avenue. On the south side of Highway 3, land uses consist of vacant lands, commercial land uses, and some single-family residential land uses. South of Highway 3 is a large vacant area owned by the Ontario government (see Exhibit 7.12).

EXHIBIT 7.12 – HIGHWAY 3 FROM OUTER DRIVE TO HOWARD AVENUE

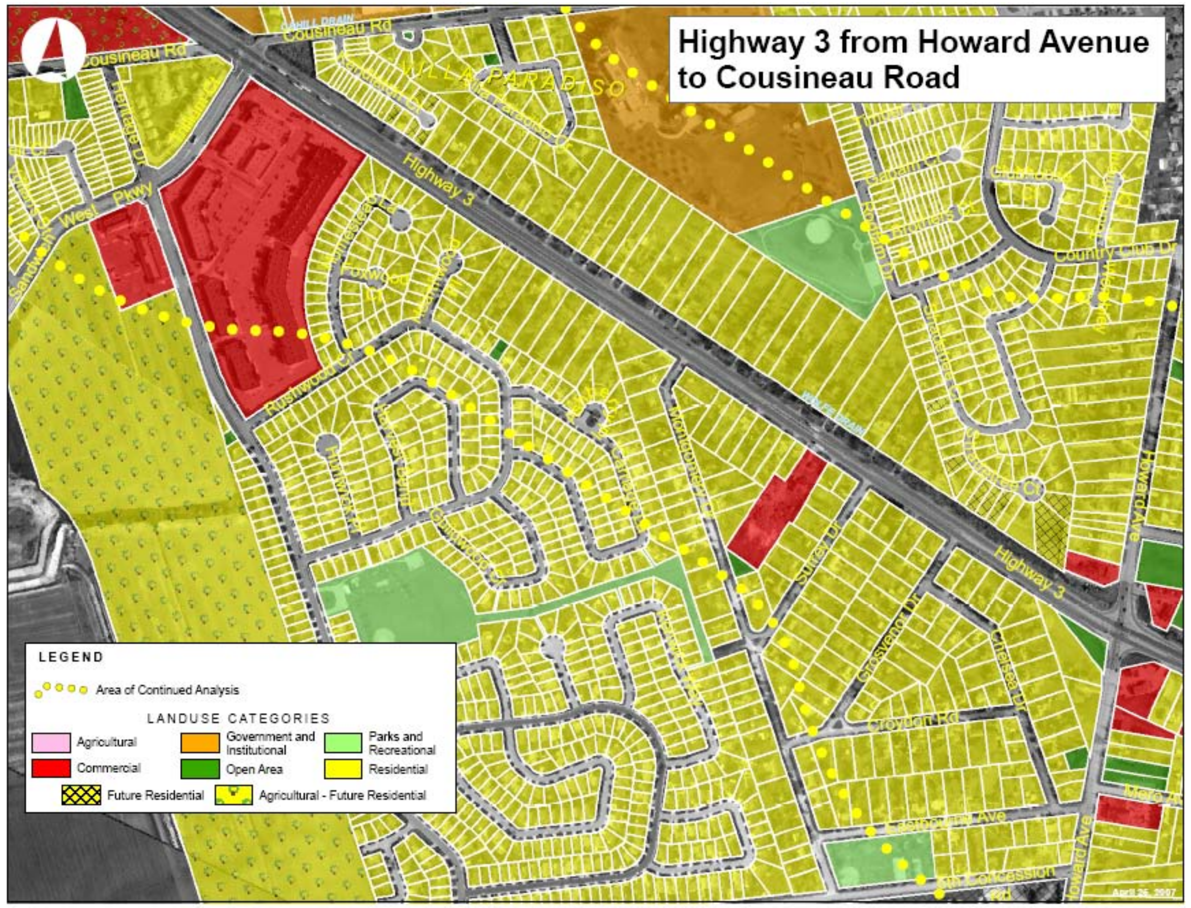


Highway 3 from Howard Avenue to Cousineau Road

This segment contains a mixture of residential and commercial land uses. Land uses found along the north side consist mostly of single-family residential units either fronting onto Highway 3 with direct highway access or backing onto Highway 3 without direct highway access. Land uses on the south side of Highway 3 between Howard Avenue and Cousineau Road consist mostly of single-family residential uses, with a few multi-family units, with driveways that connect directly to Highway 3.

There is no buffer between the residential land uses that exists in this section and Highway 3. This segment also contains the Windsor Crossing Outlet Mall, situated in the southeast corner of Sandwich West Parkway in the Town of LaSalle. The Windsor Crossing Outlet Mall is a 255,000 square foot open air mall that opened in 1999. It is a highway oriented commercial destination, catering to both local shoppers, and the traveling public. There is no buffer between the residential land uses that exist in this section and Highway 3. Included in this section are the Villa Paradiso residential subdivisions, consisting of mature and recently developed neighbourhoods surrounding the campuses of Acadamie Ste. Cecile Private School and Our Lady of Mount Carmel Separate School (see Exhibit 7.13).

EXHIBIT 7.13 – HIGHWAY 3 FROM HOWARD AVENUE TO COUSINEAU ROAD



Highway 3 from Cousineau Road to Lennon Drain

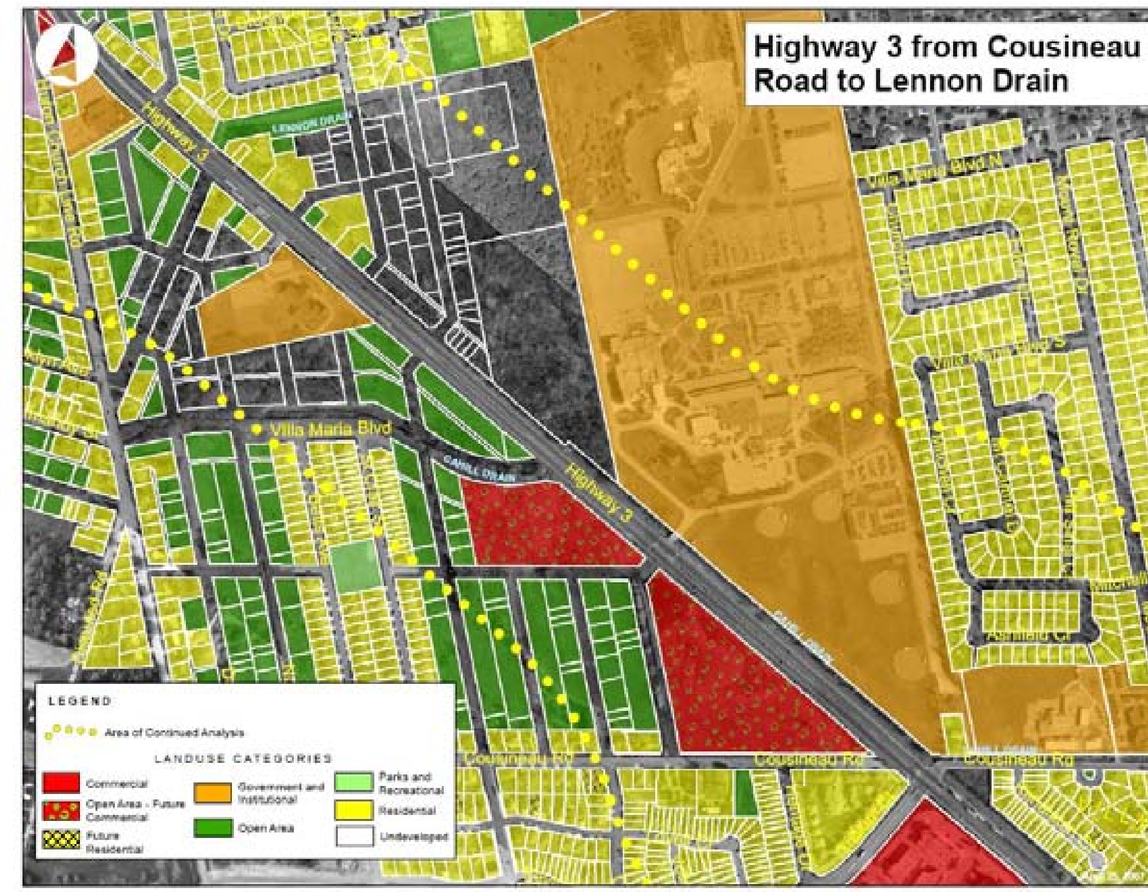
This segment contains residential, institutional, vacant and undeveloped land uses. St. Clair College opened in 1967 with 300 full-time students enrolled in applied arts and technology courses. Over the past 40 years, the college has grown and is an important community resource. Today, more than 20,000 students are enrolled in programs ranging from business programs, early childhood education, journalism, manufacturing engineering technology, and veterinary technologist. In 2004 the college completed construction on a 408 bed student residence.

St. Clair College features numerous athletic facilities such as sports fields (soccer, baseball, football) and fitness trails for joggers in the area of Cousineau Road and Highway 3. These athletic facilities are offered for rent the general public and community organizations.

Immediately to the west of St. Clair College are undeveloped parcels that are designated as an environmentally significant area (ESA). Land uses found on the south side of Highway 3 consist of mostly vacant, undeveloped areas, with a few single-family residences with direct access to Highway 3 east of the Lennon Drain. There is one parcel located within this segment that is undeveloped and currently for sale; it is zoned for commercial land uses. The Heritage Park Alliance Church is an institutional use located on the south side of Highway 3. The church has approximately 1,000 worshippers that attend from LaSalle, Windsor, and the surrounding region. The Heritage Park Alliance Church is also surrounded by undeveloped lands.

Lands south of Highway 3 are located in the Town of LaSalle. A portion of these lands are currently undergoing development to residential subdivisions. In the *Town of LaSalle's Official Plan*, Highway 3 is identified as the major transportation corridor serving this area of the Town. In addition, the Town's plan is to connect Normandy Street to Highway 3 at the St. Clair College main entrance, as outlined in the *Town of LaSalle Official Plan Transportation Plan* (see Exhibit 7.14).

EXHIBIT 7.14 – HIGHWAY 3 FROM COUSINEAU ROAD TO LENNON DRAIN



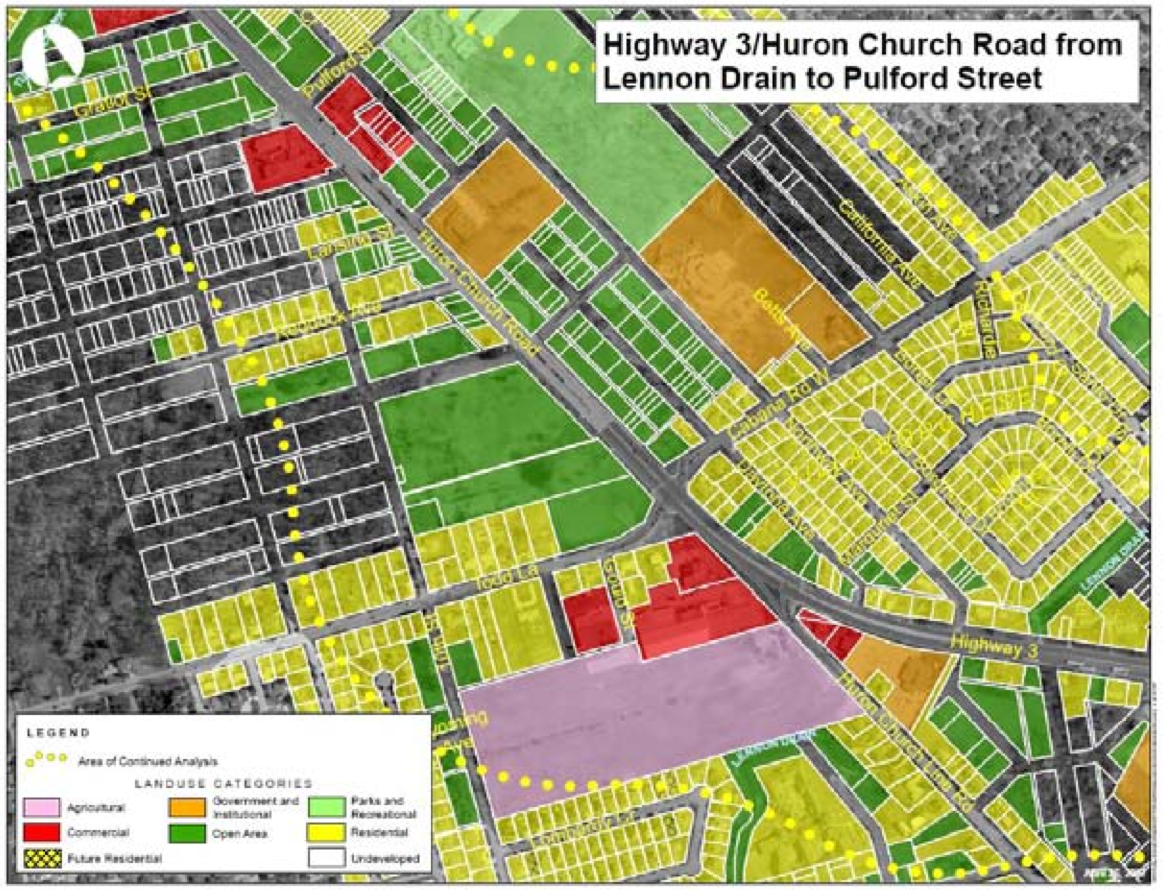
Highway 3/Huron Church Road from Lennon Drain to Pulford Street

This segment contain a mixture of single-family residential, open areas, commercial and governmental land uses. Land uses that dominate the northeast side of Highway 3/Huron Church Road include residential land uses, including the Villa Borghese residential subdivision, which consists of single-family residential homes constructed in the early 1990's. The primary intersection in this area is the Todd Lane- Cabana Road West intersection, which provides an important connection between LaSalle and southwest Windsor.

This segment also contains open, undeveloped parcels, an institutional land use (Ministry of Healthy and Long Term Care's Windsor Public Health Laboratory), and some commercial land uses. Located east of Huron Church Road and north of Cabana Road West is the Oakwood Public Elementary School, Oakwood Community Centre, and Oakwood Woods, a natural area that is used by the students and community to observe nature.

Land uses on the south side of the Highway 3/Huron Church Road corridor included an institutional use (Royal Canadian Legion), commercial uses, open lands, and a hotel. North of Todd Lane on the west side of Huron Church Road is the Spring Garden Planning Area. Reddock Street, Lansing Street and Gratiot Street are all predominantly residential streets that are located adjacent to Huron Church Road as part of the Spring Garden Planning Area (see Exhibit 7.15).

EXHIBIT 7.15 – HIGHWAY 3/HURON CHURCH ROAD FROM LENNON DRAIN TO PULFORD STREET

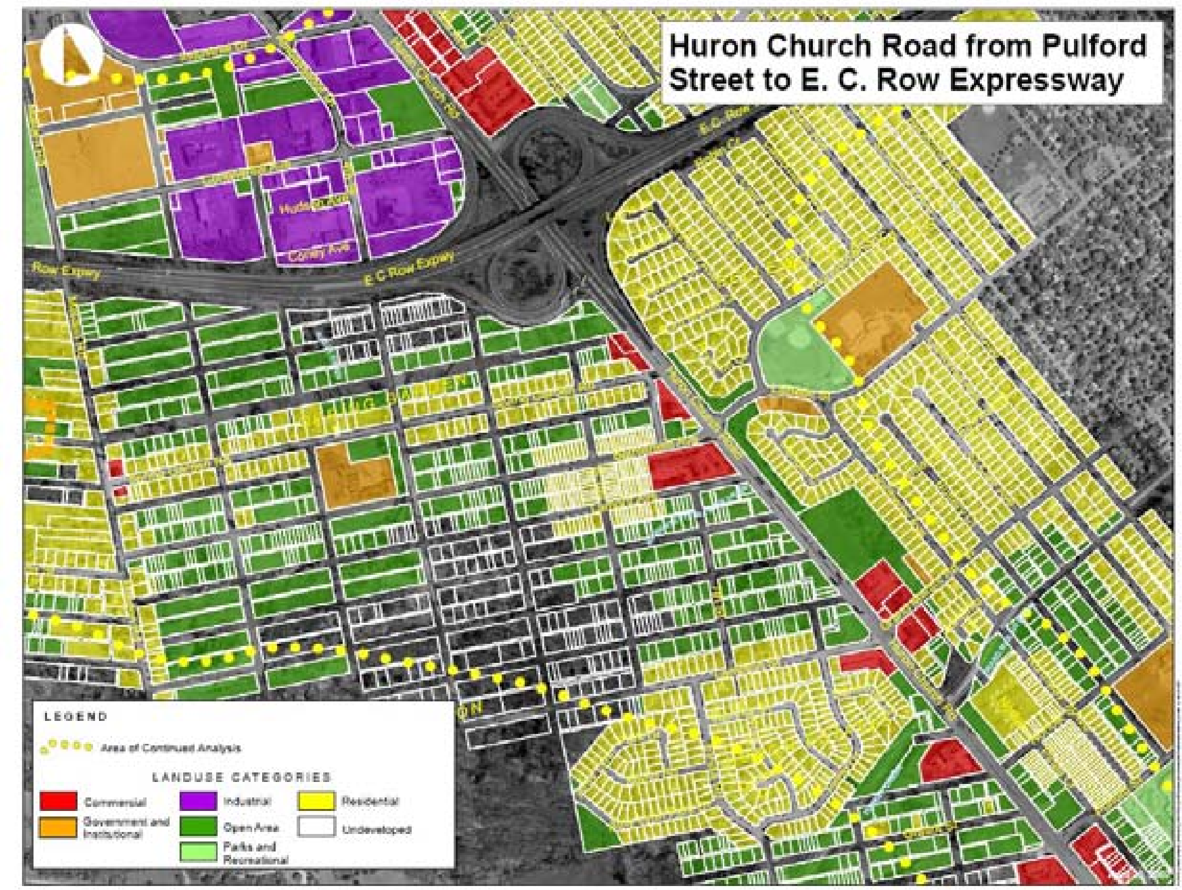


Huron Church Road from Pulford Street to E.C. Row Expressway

Land uses that exist on the east side of Huron Church Road consist of vacant areas between Pulford Street and Grand Marais Drain. On the east side of Huron Church Road, from north of the Grand Marais Drain to E.C. Row Expressway, there is a large residential subdivision constructed in the 1990's called Bellewood Estates, which consists of single family homes. Also located in the Bellewood Estates subdivision is the Bellewood Elementary School. In addition, the Children's House Montessori Pre-School is located in this area. Other land uses located between Grand Marais Drain and E.C. Row Expressway include open space and some commercial uses. Land uses on the west side of Huron Church Road between Pulford Street and Grand Marais Drain include vacant areas and commercial land uses. From south of Grand Marais Drain to E.C. Row Expressway, land uses include vacant areas, commercial land uses, including a hotel, and the Huron Estates residential subdivision, a single family residential subdivision constructed in the 1990s (see Exhibit 7.16).

North of the Huron Estates residential subdivision is a recently constructed new residential neighbourhood in the Lamont Avenue and Bethlehem Avenue neighbourhood. The majority of these homes are semi-detached and are constructed on approved lots in the Spring Garden Planning Area. Other single and multi-family homes are located on Spring Garden Road, between Huron Church Road and Malden Road. This area contains homes that were constructed over several decades, with some that were built in the 1930's and 1940's.

EXHIBIT 7.16 –HURON CHURCH ROAD FROM PULFORD STREET TO E.C. ROW EXPRESSWAY

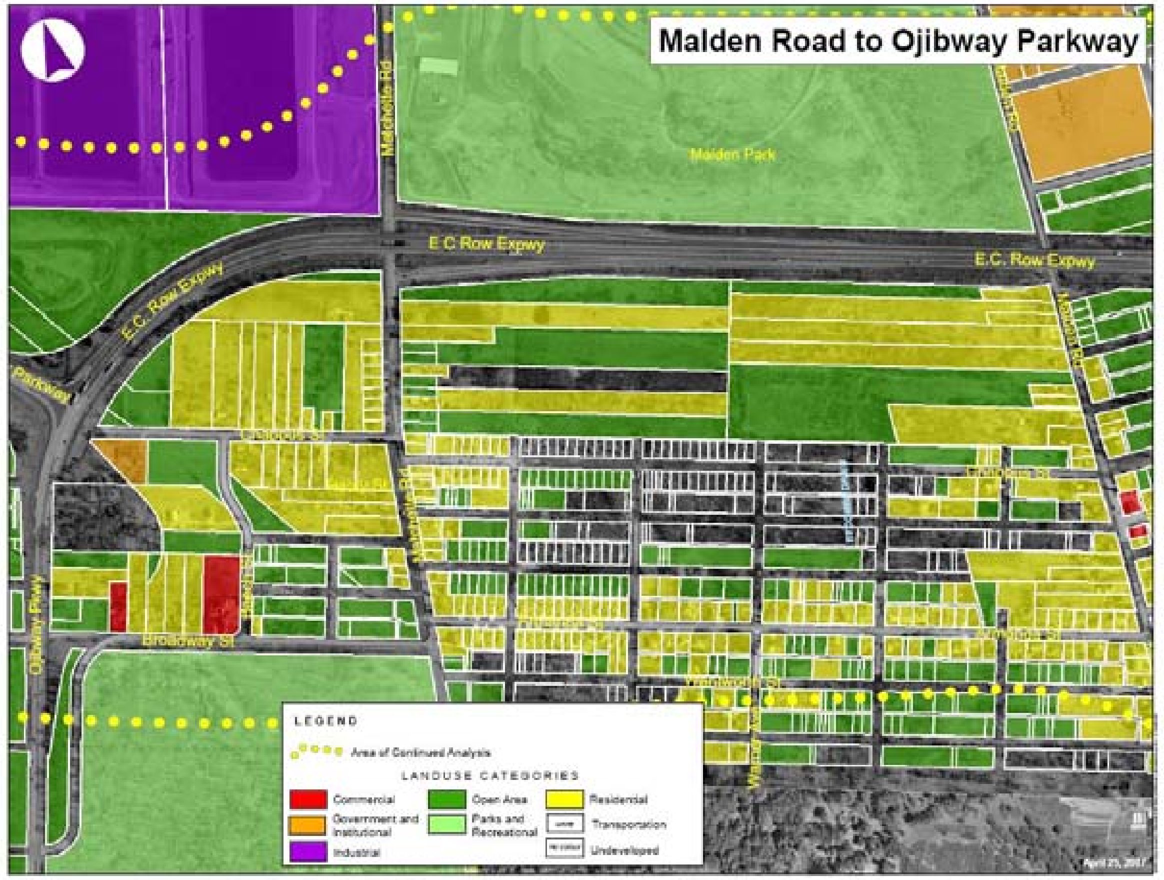


Malden Road to Ojibway Parkway

Land uses in this area include natural areas and single-family residential units. Armanda Street is an established residential neighbourhood that consists of mostly older, single family homes. In recent years, additional single family residences have been constructed at the east end of Armanda Street towards Matchette Road. Approximately 20 homes have been constructed between 2004 and 2006. A bed and breakfast business is located on Chappus Street.

North of E.C. Row Expressway is Malden Park, a 70-hectare park, originally a former city landfill consisting of a 90 metre hill that contains paved and wood chipped hiking and bicycle trails. The park also features a reception centre with enclosed patio, naturalized concert centre, additional hiking and walking trails and ponds and a toboggan hill. There are also picnic areas with tables and barbeques. The park features the highest elevation in Essex County (see Exhibit 7-17).

EXHIBIT 7.17 – MALDEN ROAD TO OJIBWAY PARKWAY

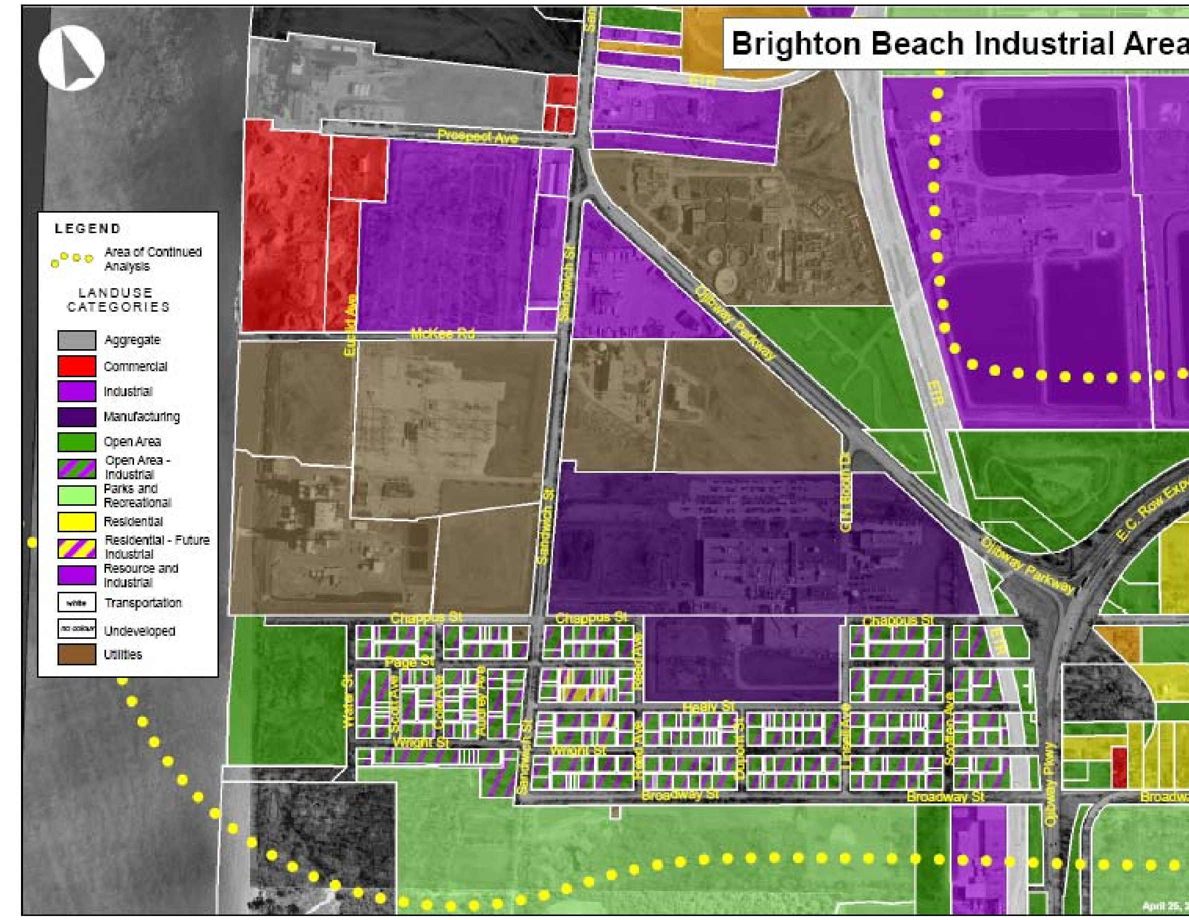


Brighton Beach Industrial Area

The Brighton Beach Industrial area is generally defined as the area bounded by Ojibway Parkway to the east, Broadway Street to the south, the Detroit River to the west, and Chappus Street to the north. The Brighton Beach area was a former residential neighbourhood, comprised of approximately 100 single-family homes surrounded by various industrial land uses. Beginning in the 1970's, the City of Windsor began purchasing the homes in the Brighton Beach area to assemble the land for a future industrial park. The Brighton Beach area is mostly vacant; however approximately half a dozen occupied homes and the original residential street network remains. The Brighton Beach area has been rezoned to allow for industrial uses.

North of the Brighton Beach area is the Nemak Plant, an automotive parts manufacturing facility, and the Windsor Power Plant. Northwest of Brighton Beach is the Ontario Power Generation Brighton Beach Power Station and Hydro One Keith Transformer Station. To the south is the Ojibway Black Oak Prairie, an Area of Natural or Scientific Interest (ANSI) that is protected from development (see Exhibit 7.18).

EXHIBIT 7.18 – BRIGHTON BEACH INDUSTRIAL AREA

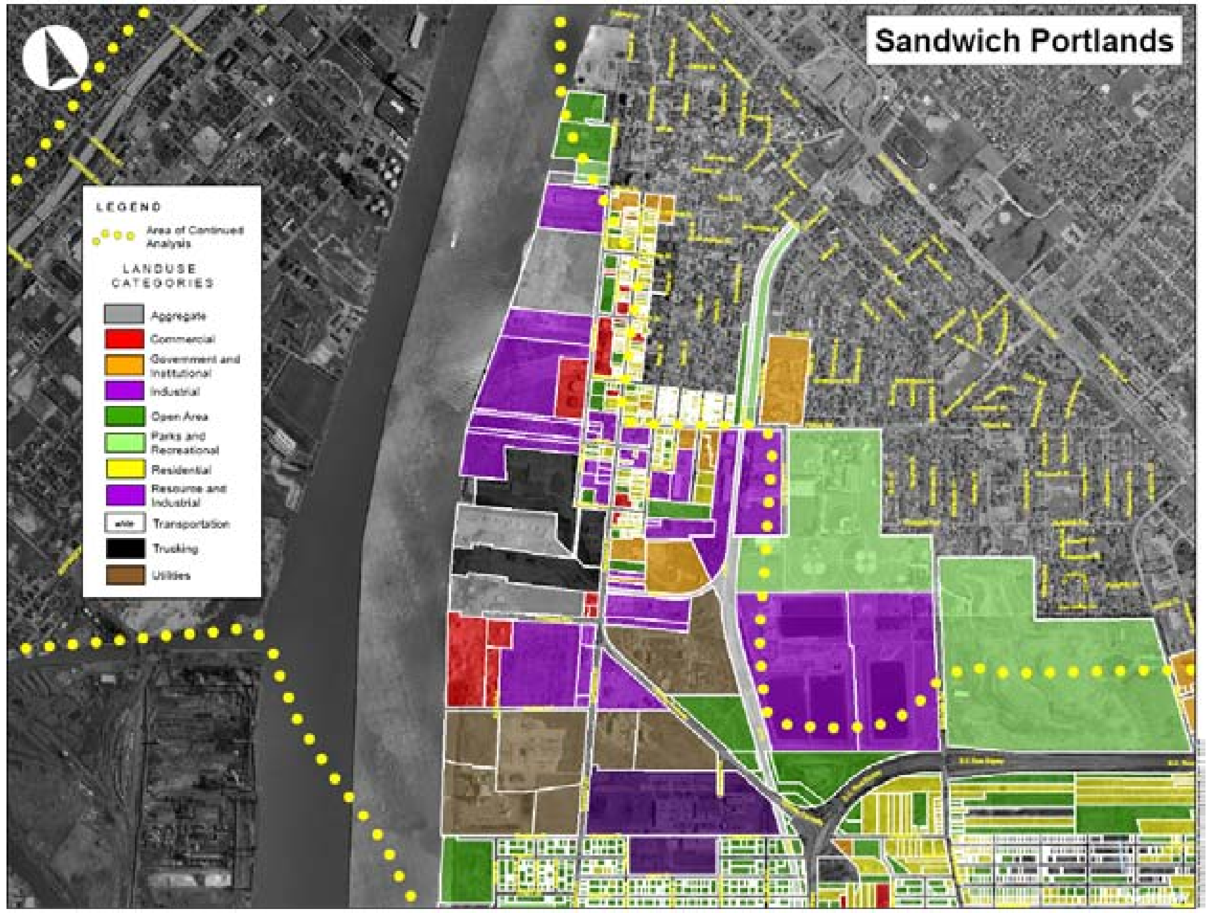


Sandwich Portlands

The Sandwich Portlands are located west of Sandwich Street, south of Brock Street, north of Prospect Avenue and adjacent to the Detroit River. The Portlands are adjacent to Sandwich Towne, a largely residential and historic area in the City of Windsor that was originally established in the early 1700s. The historic centre of Sandwich Towne is the intersection of Bedford and Brock Streets, where St. John's Church and Cemetery and Mackenzie Hall, built in 1796, are still located. The retail core area of Sandwich Towne (Mill Street and Sandwich Street) is an area identified within the Olde Sandwich Towne Community Planning Study as a priority area for heritage-compatible infill development. It is seen as an area where historic design guidelines could be developed to protect views and vistas, facades, streetscapes, and other features that area unique to Sandwich Towne.

Sandwich Towne is also surrounded by industrial land uses including the Nemak Plant, the Windsor Power Plant, Ontario Power Generation Brighton Beach Power Station, and Southwestern Sales, an aggregate storage company. Located along the waterfront is the Sandwich Portlands, an industrial area that contains several water-dependent businesses. The Sandwich Portlands are designated an industrial area that allows for industrial and business uses that require direct water access, multi-modal transportation facilities, docking facilities or dry docks (see Exhibit 7.19).

EXHIBIT 7.19 –BRIGHTON BEACH INDUSTRIAL AREA



7.4 Cultural Heritage (Built Heritage and Cultutral Landscapes) and Archaeology

This section provides an overview of archaeological and heritage resources that are existing within the Area of Continued Analysis. For further details, the reader is referred to the following reports:

- *Draft Practical Alternatives Evaluation Working Paper – Archaeology (April 2008);*
- *Stage 2 Archaeological Assessment of the Detroit River International Crossing (October 2008); and*
- *Draft Practical Alternatives Evaluation Working Paper – Cultural Heritage (April 2008).*

7.4.1 Archaeological Resources

The process of assessing cultural heritage value is based on a number of overlapping considerations that are applied on a case-by-case basis. These considerations fall into three basic categories: information value, value as a public resource, and community value.

"Information value" refers to the likelihood that investigation of a site will contribute to an increased understanding of the past. Such an assessment must be carried out thorugh consideration of several major criteria: the degree to which a site will contribute to our understanding of the past (its cultural, historical or scientific value); the relative rarity or commonness of similar sites locally or regionally; its productivity or richness in terms of the artifacts it contains; and the degree to which it has been disturbed by more recent land uses or natural processes.

"Value as a public resource" refers to the degree that a site has intrinsic value to an enhanced understanding and appreciation of Ontario's past on the part of the general public.

"Value to a community" refers to whether the site has intrinsic value to a particular community, First Nation or other group.

Stage 1 and preliminary Stage 2 archaeological assessments of the Area of Investigation were undertaken from 2006 to 2008. The Area of Investigation is located within the Area of Continued Analysis, but is focused on the practical crossing, plaza and access road alternatives discussed in Chapter 8 of this report.

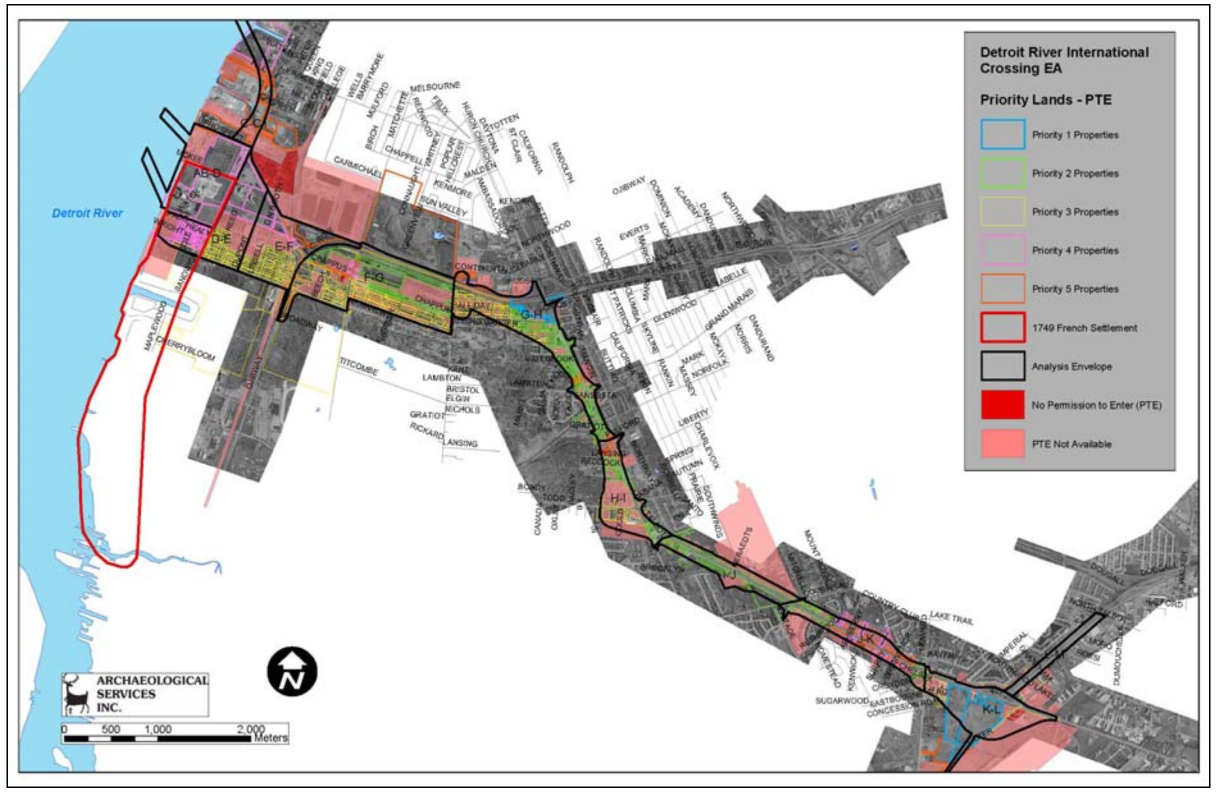
The Stage 1 assessment documented the archaeological and land use history of the area and its current geography and topography, in order to assess the potential for archaeological resources. The Stage 2 systematic field assessment investigated all areas with archaeological potential within the Area of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

The lands that were subject to archaeological assessment were assigned survey priorities (Priorities 1 to 5, with 1 being the highest), as summarized below:

- Priority 1 lands were those lands in close proximity to the E.C. Row and Lucier sites at the intersection of Huron Church and E.C. Row, as well as two large ploughed properties at Highway 401 which, during the summer of 2006, were at optimum surface condition (minimal crop growth) for pedestrian survey.
- Priority 2 lands were lands with potential for the presence of pre-contact archaeological sites in core areas common to all alternatives.
- Priority 3 lands were those lands which could be surveyed without further prior research and which would enable archaeology to be considered meaningfully during the comparative evaluation of practical alternatives (i.e., areas that represent the real choice between practical alternatives).
- Priority 4 lands were generally located in the western portion of the Area of Investigation, plaza and crossing areas which required additional background historical/map research prior to the start of field survey, due to the long history and intensive land use of the properties. In the eastern portion of the area of investigation, Priority 4 lands were identified that have a potentially higher likelihood of site integrity (relative to Priority 5) that were not assigned to Priority 1, 2, or 3.
- Priority 5 lands were, for the most part, those with a lower potential for archaeological site integrity, together with some additional marginal lands in the eastern portion of the area of investigation.

The survey priorities were based on expert judgment with respect to potential for the presence of archaeological sites, the need to identify significant sites as soon as possible in areas common to all of the practical alternatives, and the need to gather sufficient information to contribute meaningfully to the evaluation of practical alternatives with respect to potential impact to archaeological sites and areas of archaeological potential. See Exhibit 7.20 for Priority 1 through 5 lands originally indentified for Stage 2 archaeological assessment.

EXHIBIT 7.20 – PRIORITY 1 THROUGH 5 LANDS IDENTIFIED FOR STAGE 2 ARCHAEOLOGICAL ASSESSMENT



METHODOLOGY

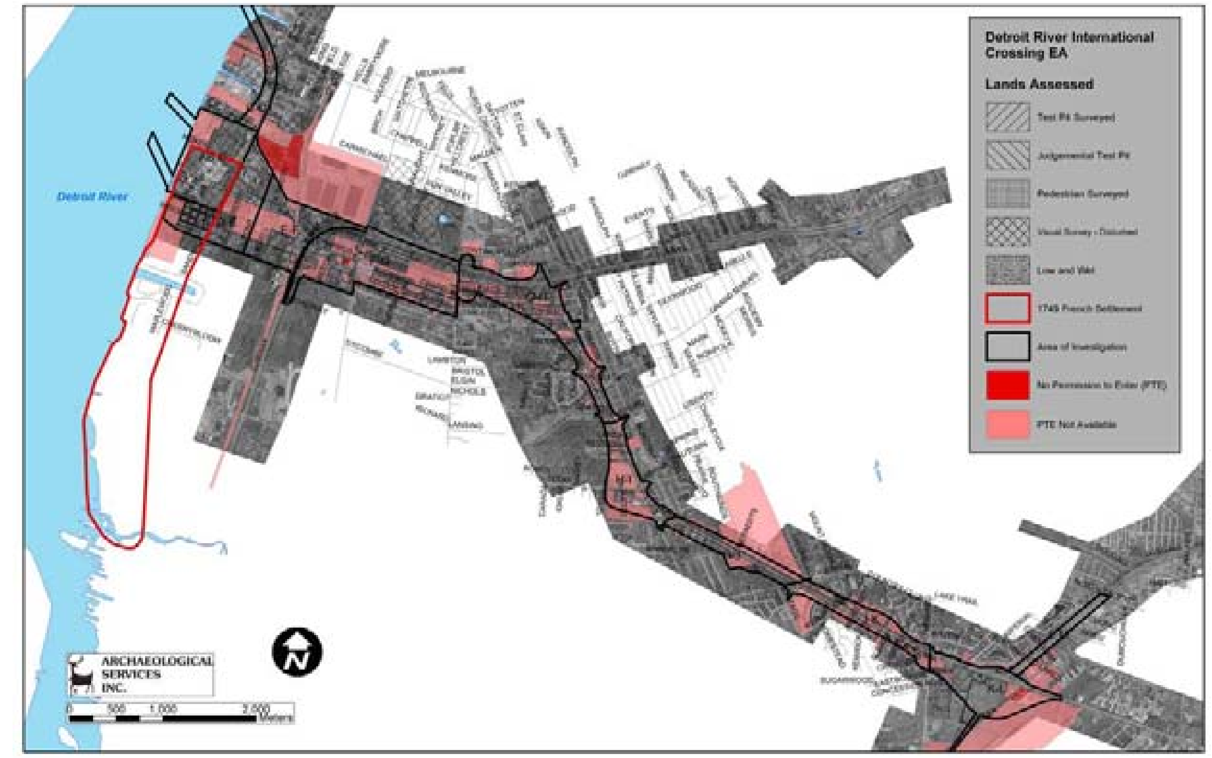
The Stage 2 archaeological assessment involved the documentation and inventory of archaeological resources within the Area of Investigation, and utilized two types of survey techniques: pedestrian and test pit. The lands assessed are mapped by survey method in **Exhibit** 7.21.

Pedestrian survey, employing a five metre transect interval, was conducted on lands with open surface visibility (e.g. lands that were ploughed, or with open, immature crops, and well-weathered), and it involved the location, mapping and collecting of artifacts observed on the surface. When artifacts were encountered, a 20 m radius was intensively surveyed at 1 metre intervals.

Test pit survey, employing a mixture of 5 m transect intervals and judgemental sampling, was conducted on lands with closed surface visibility (e.g. scrub farmland, windrows, lands within forest or valley floor, or with dense, mature crop), and it involved the location, mapping and collection of artifacts by shovel test pitting. Soil fills of all test pits were screened through 6-millimetre mesh to facilitate the recovery of artifacts and all test pits were back filled. When artifacts were encountered, the positive test pit was surrounded by additional test pits within 2.5 m in the eight cardinal directions.

The Universal Transverse Mercator (UTM) grid coordinates of all sites and findspots were recorded using a hand-held GPS unit tied to the 1927 North American Datum (NAD27).

EXHIBIT 7.21 – PRIORITY 1 THROUGH 5 LANDS ASSESSED BY METHOD OF SURVEY



SURVEY COVERAGE

Permission to Enter (PTE) was originally obtained for this EA study in May 2006. During 2006 and 2007, 100 per cent of all Priority 1 lands in the Area of Investigation were assessed. There were no outstanding properties that required permission to enter for Priority 1. One hundred percent of all Priority 2 lands with PTE were surveyed. Of the remaining Priority 2 lands identified, PTE was either not granted or the PTE form was not returned. Ninety-eight percent of all Priority 3 lands with PTE were surveyed. Of the remaining Priority 3 lands identified, PTE was either not granted or the PTE form was not returned. Ninety-nine percent of all Priority 4 lands with PTE were surveyed. Of the remaining Priority 4 lands identified, PTE was either not been granted or the PTE form was not returned. Ninety-nine percent of all Priority 5 lands with PTE were surveyed. Of the remaining Priority 5 lands identified, PTE was either not granted or the PTE form was not returned. In 2006 and 2007, there were a total of 496 properties surveyed.

In 2008, PTE was requested from properties that required further investigation based on previous testing and / or that were within the refined region of Technically and Environmentally Preferred Alternative. From this, there were 146 properties surveyed. There are 260 outstanding properties (29 per cent) that await permissions to enter or have other issues that require resolution prior to finalizing the assessment.

Table 7.12 summarizes the properties that were assessed from 2006 to 2008, as well as those that have not been surveyed.

TABLE 7.12: SUMMARY OF PROPERTY ASSESSMENTS TO SEPTEMBER 30, 2008

	2006/2007		2008		Total	
	#	%	#	%	#	%
Assessed Properties	496	55	146	16	642	71
Outstanding	0	0	260	29	260	29
Total Properties	496	55	406	45	902	100

HISTORICAL CONTEXT

Stage 1 archaeological assessment of Priority 4 and 5 lands in the western portion of the Area of Investigation included a review of the historical information available and a further review of the City of Windsor Archaeological Master Plan (CRMGL 2005). Historical information revealed that the shore of the Detroit River has a long history of human occupation. Euro-Canadian occupational history is well documented from the mid-eighteenth century to present times.

The first detailed French map of the south (Ontario) shore was not produced until the mid-eighteenth century. Entitled "Carte de la Riviere Du Detroit", this map was published by Chaussegros De Lery in Paris in 1749. It showed the first "nouvelle habitation française de 1749" with the land divided along the river into the long, narrow "seigneurial" allotments characteristic of the French ancien regime. A few farms were somewhat larger, such as a tract of approximately 700 metres in width occupied by Mr. Le Chevalier de Longueuil. The main area of the "nouvelle habitation" was situated along the Detroit River south of the area that would later become the old town of Sandwich. This area was known as Petite Côte.

According to the City of Windsor Archaeological Master Plan (CRMGL 2005:2-16), "European settlement on the south shore of the Detroit River began in 1749 when the governor at Quebec sponsored the movement of farming families to the area in order to promote Detroit as a granary for more distant outposts." The settlers initially took up lots fronted onto the river in the Petite Côte area between the communities of Sandwich and Turkey Creek. Within a few years, this settlement had extended south well past Turkey Creek.

After the British Conquest of 1760 and after the American Revolutionary War, British names began to appear on landowners lists of the circa 1800 survey. Not until the nineteenth century were the inland areas of the township surveyed, using the standard British grid system where possible.

According to the City of Windsor Archaeological Master Plan (CRMGL 2005:2-17), although most of the French farmstead sites lie within areas that have undergone extensive nineteenth century development, none of them have ever been properly examined as archaeological sites. Furthermore, communities such as Brighton Beach, Ojibway and LaSalle may retain the most potential. As Windsor's French settlement is the earliest of its kind in Ontario, the search for intact eighteenth century French sites, which may include the remains of building footings, foundations and the remnants of palisades, is of potentially significant heritage value and interest.

Exhibit 7.22 illustrates the location of the eighteenth century French Settlement in relation to the Area of Investigation, the identified Priority 2, 3, 4 and 5 lands, lands that have been assessed in relation to the general location of the plaza and crossing alternatives, and areas identified as having no potential due to disturbance. In addition, a series of later historical maps (1877 Walling Historical Atlas; the 1905 McPhillips City of Windsor Map; and the 1967 Pathfinder, Metropolitan Windsor Map) are used to illustrate the changing landscape from the 1870s to 1960s within Priority 4 and 5 lands in the western portion of the Area of Investigation (Exhibits 7.23 to 7.25).

EXHIBIT 7.22 – LOCATION OF 1749 PETITE CÔTE FRENCH SETTLEMENT IN RELATION TO AREAS DEFINED AS HAVING NO POTENTIAL IN THE PLAZA AND CROSSING ALTERNATIVE LOCATIONS

Further investigation of the eighteenth century French settlement area, where it intersects with the Priority 3 and 4 lands, has narrowed the area of interest by confirming additional areas lacking archaeological integrity and subjecting residual areas to Stage 2 test-pit survey. The Area of Investigation is bounded in the north by McKee Avenue (now the northern limit of the Brighton Beach Generating Station), in the west by the Detroit River, in the south by the limits of the Area of Continued Analysis (essentially the westerly extension of Broadway Boulevard), and in the east by Sandwich Street. The land immediately to the south of this area has been designated as the Ojibway Industrial Park by the City of Windsor[11].

The northern half of this area, north of Chappus Street, is the Brighton Beach generating station. Opened in 2004, this facility was a joint project by ATCO Power Canada Ltd. and Ontario Power Generation Inc. to re-develop the former J. Clark Keith power plant site[12]. The J. Clark Keith power plant was originally a coal-fired plant that began production in 1951[13]. Eventually refitted to burn

[11] Dillon Consulting Limited, Next Ideas Inc., EDP Consulting, and Lapointe Consulting. 2007 City of Windsor Official Plan Update: Looking Back Summary Report – Economic Conditions. http://howardcorridoresr.city.windsor.on.ca/
[12] ATCO Power Canada Ltd. 2004 Brighton Beach Power Ltd. Official Opening – October 22, 2004 – Backgrounder. http://www.atcopower.com/Media_Centre/News_Releases/2004/ATCOPower-BrightonBeach-Backgrounder.pdf.
[13] Ontario Power Generation Inc. 2007 Historical Timeline. http://www.opg.com/education/whatwedo/HistoricalInfo% 20- %20for%20merge.pdf

natural gas, the plant was closed in 1984 and demolished in 1997[14]. In 1990, Hugh Daechsel, then with the Cataraqui Archaeological Research Foundation, carried out a "Phase 1 Evaluation of Heritage and Archaeological Resources" of the J. Clark Keith power plant site, concluding that the property was very disturbed and did not warrant any further archaeological investigation. A 1955 aerial photograph of the site (Exhibit 7.23) illustrates the original extent of disturbance on the property. When compared with the current extent of disturbance, associated with the Brighton Beach generating station (Exhibit 7.24), it becomes clear that only two small areas may have retained any archaeological integrity, and these were subjected to test pit survey, as illustrated in Exhibit 7.24. No archaeological remains were encountered in these areas.

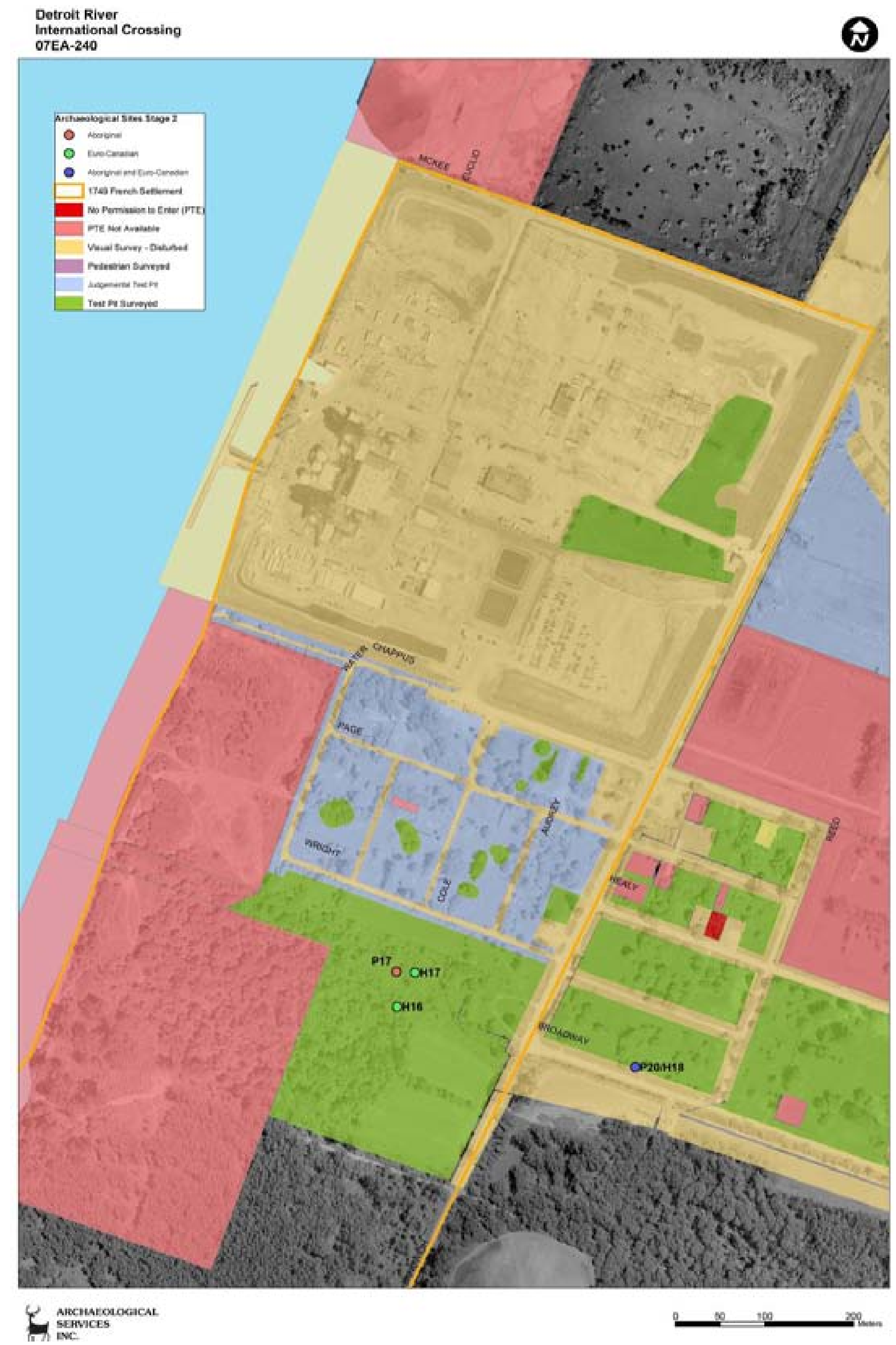
South of Chappus Street, a combination of judgmental and systematic test pit survey has been carried out within the precincts of a former residential subdivision that also appears in the 1955 aerial photograph of the area (Exhibit 7.23). No archaeological remains were encountered therein. However, systematic test pit survey to the south of this subdivision has yielded archaeological remains. Designated sites H16 and H17, together with nearby site H18, yielded mid-nineteenth century artifacts that have been tentatively attributed to farmsteads established in that area circa 1861.

The remainder of the French settlement area, located south of Chappus Street and west of Water Street, comprises an area where there had also once been some modern residential occupation, as illustrated in Exhibit 7.23. Situated along the waterfront, this area exhibits the highest potential for both eighteenth and nineteenth century occupation, as suggested by early maps (see Exhibit 7.24).

[14] ATCO Power Canada Ltd. 2004 Brighton Beach Power Ltd. Official Opening – October 22, 2004 – Backgrounder. http://www.atcopower.com/Media_Centre/News_Releases/2004/ATCOPower-BrightonBeach-Backgrounder.pdf.

EXHIBIT 7.23 – J. CLARK KEITH POWER STATION AND ENVIRONS, 1955 (ONTARIO DEPT. LANDS & FORESTS 1955)

EXHIBIT 7.24 – FRENCH SETTLEMENT AREA SHOWING BRIGHTON BEACH GENERATING STATION (FORMER J. CLARK KEITH POWER PLANT)



SURVEY RESULTS

During the 2006 and 2007 surveys, there were 43 archaeological components located within the Area of Investigation, including 23 Euro-Canadian and 20 Aboriginal assemblages. Summary details on these sites are provided in Table 7.13. Appendix C of the *Draft Practical Alternatives Evaluation Working Paper – Archaeology (April 2008)* contains a summary description of each site identified during the 2006 and 2007 field seasons.

All artifacts recovered from these sites were processed. Data analysis includes the evaluation of each site with respect to those that require further investigation through additional surface or sub-surface testing in order to assess the cultural heritage value of the individual archaeological site. Included in the data analysis is the registration of archaeological sites within the *Ontario Archaeological Sites Database (OASD)* by assigning numbers within the Borden system.

Under the Borden system, Canada has been divided into grid blocks based on latitude and longitude. A Borden block is approximately 13 kilometres east to west, and approximately 18.5 km north to south. A four-letter designator references each Borden block, and sites within a block are numbered sequentially as they are found. The study area under review is located within the AbHr and AbHs Borden blocks.

During the recent 2008 surveys, there were 23 archaeological components located within the Area of Investigation (more specifically, within the location of the Recommended Plan), including nine Euro-Canadian and 14 Aboriginal assemblages. Summary details on these sites are provided in Table 7.14. *Stage 2 Archaeological Assessment of the Detroit River International Crossing (October 2008)* contains a summary description of each site identified during the 2008 field seasons.

Archaeological components identified throughout the fieldwork from 2006 to 2008 are of two principal types: indeterminate aboriginal sites with few diagnostic artifacts and Euro-Canadian domestic sites. The aboriginal sites consist almost exclusively of small amounts of lithic debitage. Indeed, to date only one diagnostic artifact has been recovered. This is a Middle Iroquoian period (*ca* 1350 A.D.) projectile point recovered in association with a small lithic scatter. The Euro-Canadian sites consist primarily of scatters of domestic refuse. Artifact analysis and archival research for these sites indicate that almost all are associated with the locations of 19th century British farming settlement.

TABLE 7.13: SUMMARY OF ARCHAEOLOGICAL SITES FOUND TO SEPTEMBER 30, 2008

	2006/2007		2008		Total	
	Aboriginal	Euro-Can	Aboriginal	Euro-Can	Aboriginal	Euro-Can
Recommended for Clearance	2	12	10	6	12	18
Stage 3 Recommended	18	11	4	3	22	14
Total Sites	20	23	14	9	34	32

7.4.2 Built Heritage and Cultural Landscapes

FIELD REVIEW RESULTS

The majority of the land adjacent to the Detroit River is currently being used for industrial purposes, with the exception of Black Oak Heritage Park and the land to the north and northwest of the park, in the Brighton Beach area. This land, extending to the west from Ojibway Parkway south of Chappus Street, north and west of Black Oak Heritage Park, is generally overgrown or wooded, and, in the northern part of it, between Chappus Street and Broadway Street and between Chappus Street and Wright Street, there is a subdivision-like arrangement of dirt streets surrounded by regenerated vegetation. This area, known locally as Brighton Beach (CLU 2), is an abandoned residential area that still contains a small concentration of nineteenth and early twentieth century heritage resources (BHF 15-17).

Within the industrial-use area north of Brighton Beach and south of Sandwich Towne, a cairn has been erected at the junction of Prospect Avenue and Sandwich Street / Ojibway Parkway by the *Historic Sites and Monuments Board of Canada* to commemorate a National Historic Event (BHF 12).

North of Ojibway Parkway, between Sandwich Street and the Essex Terminal Railway, and south of Sandwich Towne lies the Lou Romano Water Reclamation Plant. North of this industrial area, the landscape is a mix of industrial properties; relatively open areas of lawn, park, or less-intensive commercial/institutional/residential land use; and dense residential development. The southernmost part of Sandwich Towne is within the ACA, including two residential structures (BHF 13 and BHF 14) close to the shoreline.

Adjacent to the ACA is the core of Sandwich Towne (CLU 3) including the Sandwich First Baptist Church, a National Historic Site, at 3652 Peter Street, between Watkins Street and Prince Street. Two plaques have been placed at this site, one placed by the *Historic Sites and Monuments Board of Canada* and the other by the *Ontario Heritage Foundation*. The former Lido Venice Tavern at 3885 Sandwich Street was destroyed by fire in the summer of 2006. East of the Essex Terminal Railway and west of Huron Church Road north of Ojibway Parkway and E.C. Row Expressway the field review area features a variety of land uses.

The majority of the land immediately north of Ojibway Parkway and E.C. Row Expressway is currently used for industrial purposes and Malden Park, between Matchette Road and Malden Road south of Chappell Avenue is a former landfill site. East of Huron Church Road, south of E.C. Row Expressway, the land subject to field review is almost entirely an intensively-developed post 1960 residential area, with the exception of a number of small parks and institutional properties.

Huron Church Road itself is, for the most part, flanked by small industrial and commercial properties. There are a small number of heritage resources along the corridor including a 1961 Royal Canadian Legion Branch (BHF 2) and an early farmhouse perched on a rise above the convergence of Talbot Road and Huron Church Line (BHF 1). The land south of E.C. Row Expressway and west of Huron Church Road is predominantly open space, although residential development is evident on Spring Garden Road, Malden Road and Armanda Street. Two of the Malden Road properties are dated to the nineteenth century settlement of the area (BHF 10 and BHF 11) and one of them is on the Windsor Heritage Inventory. Within the relatively undeveloped area west of Huron Church Road and south of

E.C. Row Expressway, and in many places remnant tree lines indicate the boundaries of long, narrow agricultural fields laid out according to the French seigneurial system.

IDENTIFIED HERITAGE RESOUCES

The ACA is largely free of significant cultural heritage resources, with the exception of Sandwich Towne (CLU 3). The remaining features are considered to be low in significance.

Within the ACA there are twenty (20) built heritage features and three (3) cultural landscapes. **Tables 7.14A and 7.14B** provide a summary of identified heritage features while **Exhibits 7-25A** and **7-25B** show their location. Of these, one property (BHF 11) is listed on the City of Windsor's Heritage inventory and one monument (BHF 12) was erected by the *Historic Sites and Monuments Board of Canad*a to commemorate the Capture of Detroit. Eight BHFs pre-date 1900 (BHF 1, BHF 10, BHF 11, BHF 14, BHF 17, BHF 18, BHF 19 and BHF 20) and are related to agricultural settlement. Eight field-identified built heritage features were constructed in the first third of the twentieth century and are residences of the same general building type and era (BHF 3, BHF 4, BHF 5, BHF 6, BHF 7, BHF 8, BHF 9 and BHF 13). These houses represent the first suburban infill of rural agricultural lands in the early twentieth century. Also of interest is Branch 594 of the Royal Canadian Legion (BHF 2) which was constructed in the early 1960s.

The three cultural landscapes identified within the ACA comprise an unconfirmed tunnel associated with the underground railway in Sandwich Towne (CLU 1), the abandoned Brighton Beach subdivision (CLU 2) and the historic Sandwich Towne (CLU 3). Although no significant portion of the historic Sandwich Towne is within the ACA, Sandwich as a whole is heritage sensitive area. Therefore potential impacts such as the introduction of physical, visual, audible or atmospheric elements that are not in keeping with the resources and/or their setting are an important consideration for this area.

TABLE 7.14A – IDENTIFIED CULTURAL HERITAGE RESOURCES IN THE AREA OF CONTINUED ANALYSIS – CULTURAL LANDSCAPE UNITS (CLU)

FEATURE	ADDRESS	FEATURE TYPE	STATUS	APPROX. AGE
CLU 1	Chappel Street and Russel Street	Tunnels – unconfirmed oral report	Local lore	Pre-1900
CLU 2	Water Street to the west, Chappus to the north, Scotten to the east, and Broadway/Wright to the south	Brighton Beach housing subdivision	Field	Abandoned
CLU 3	Sandwich Towne	Historic settlement	Field	Pre-1900

TABLE 7.14B - IDENTIFIED CULTURAL HERITAGE RESOURCES IN THE AREA OF CONTINUED ANALYSIS – BUILT HERITAGE FEATURES (BHF)

FEATURE	ADDRESS	FEATURE TYPE	STATUS	APPROX. AGE
BHF 1	2746 Talbot Road	Farmhouse	Field	1860-1880
BHF 2	3920 Huron Church Line	Legion	Field	1961
BHF 3	3905 Huron Church Line	House	Field	1901-1939
BHF 4	3495 Huron Church Line	House	Field	1901-1939
BHF 5	2765 Reddock Avenue	House	Field	1901-1939
BHF 6	2261 Spring Garden Road	House	Field	1901-1939
BHF 7	2310 Spring Garden Road	House	Field	1901-1939
BHF 8	2290 Spring Garden Road	House	Field	1901-1939
BHF 9	2284 Spring Garden Road	House	Field	1901-1939
BHF 10	4784 Malden Road	House	Field	Pre-1900
BHF 11	4688 Malden Road	House	Windsor Inventory	Pre-1900
BHF 12	Ojibway Parkway at Sandwich Street	Monument	Federal	Plaqued in 1927
BHF 13	261Hill Street	House	Field	1901-1939
BHF 14	3769 Russell Street	House	Field	Pre-1900
BHF 15	325 Page Street	House	Field	1901-1939
BHF 16	332 Healy Street	House	Field	Pre-1900
BHF 17	354 Healy Street	House	Field	Likely Pre-1900
BHF 18	2090 Spring Garden Road (moved from another location)	House	Field	Pre-1900
BHF 19	2369 Spring Garden Road	House	Field	Likely Pre-1900
BHF 20	1649 Chappus Road (original house integrated)	House	Field	Pre-1900

EXHIBIT 7.25A – CULTURAL HERITAGE FEATURES IN THE ACA

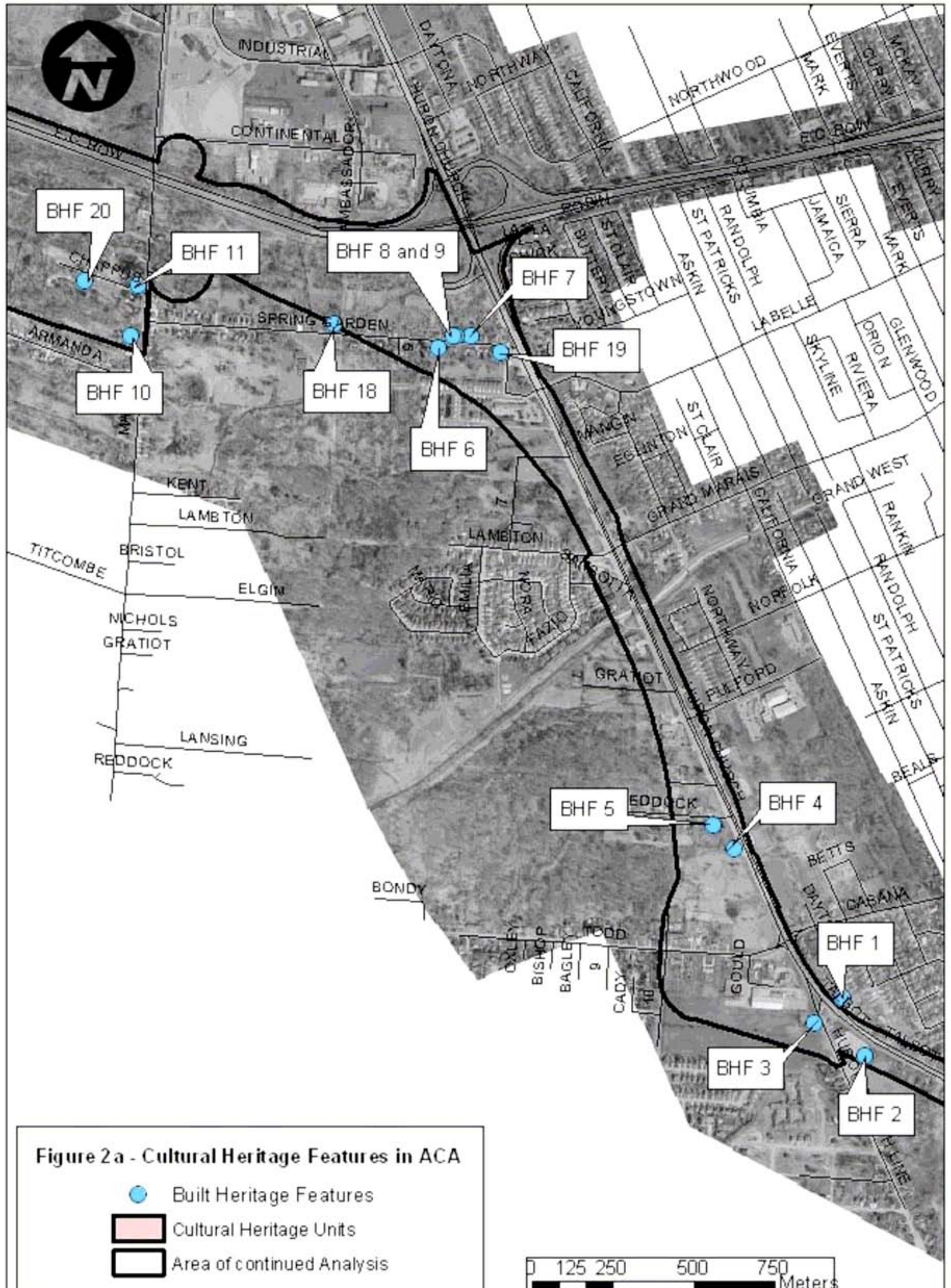
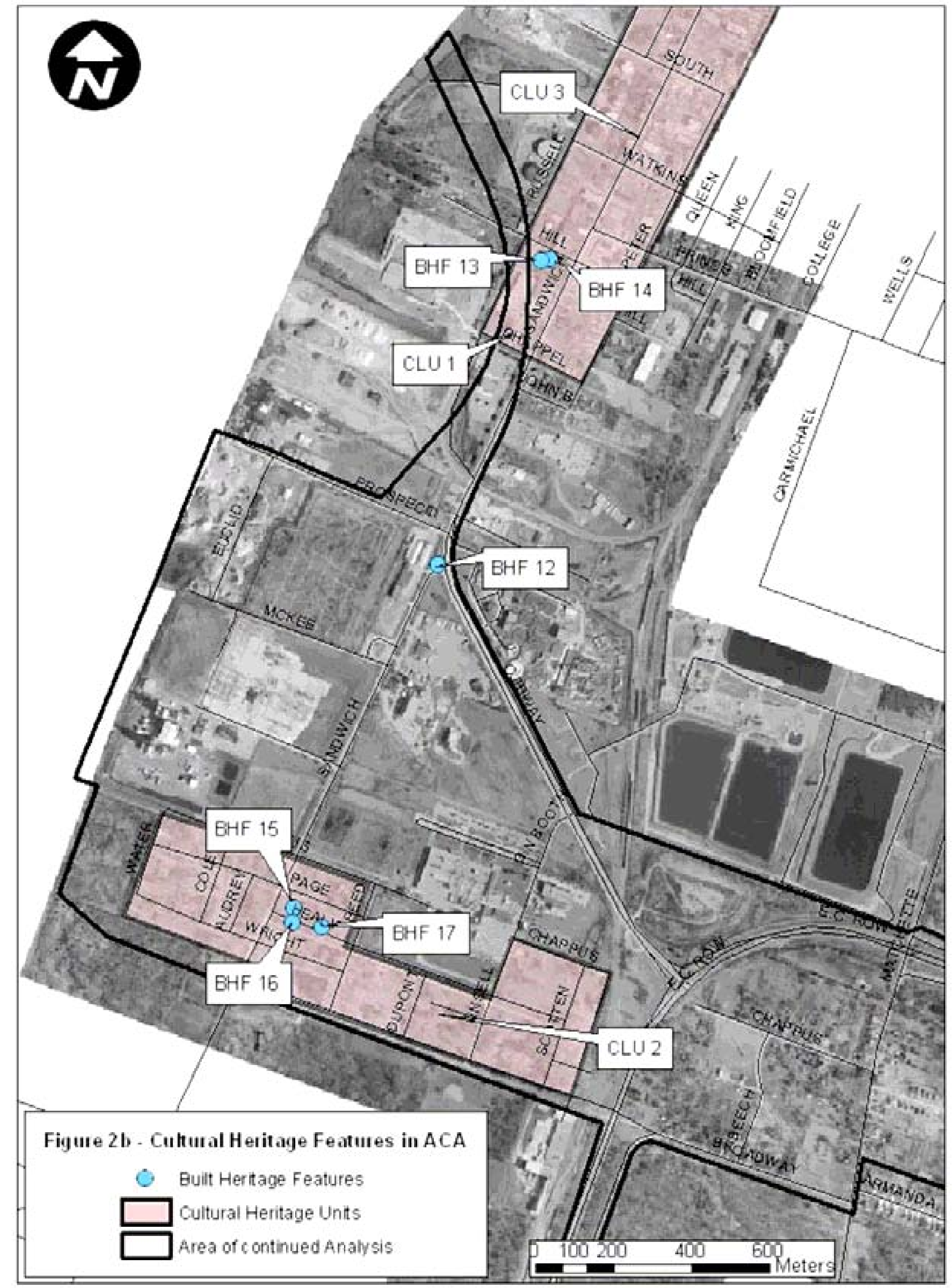


EXHIBIT 7.25B – CULTURAL HERITAGE FEATURES IN THE ACA



7.5 Natural Environment

Identification of natural heritage features such as fisheries, vegetation, wildlife, insects and designated natural areas was an important part of this study. The analysis of natural heritage features entailed collection and review of existing information, personal communications with local experts and detailed and multi-season field investigations. An Area of Investigation (AOI) located within the Area of Continued Analysis (ACA) was defined for each biological discipline based the level of detail of secondary source information, the area of influence of the project and the level of effort required for field investigations.

This section provides an overview of existing conditions of the natural environment within the Area of Continued Analysis. For further details, the reader is referred to *the Draft Practical Alternatives Evaluation Working Paper – Natural Heritage*.

7.5.1 Vegetation and Vegetation Communities

DATA COLLECTION

The AOI for vegetation and vegetation communities includes all lands located within the maximum footprint area of the combined practical alternatives and adjacent lands located within 120 m of the right-of-way. This area corresponds approximately with the ACA. The study team investigated all vegetation communities located within the AOI to classify vegetation communities, inventory plants and confirm the presence or absence of species at risk.

The geographical extent, composition, structure and function of vegetation communities were identified through air photo interpretation and field investigations. Air photos were interpreted to determine the limits and characteristics of vegetation communities. In the office, a coding system was used to identify each polygon according to its general location. These polygons were confirmed, refined and classified through field investigations. Data collection sheets, including a checklist of vascular plants likely to occur in the AOI and vegetation community forms, were prepared in the office for completion in the field. Botanical inventories prepared previously for Areas of Natural and Scientific Interest (ANSIs), Environmentally Sensitive Areas (ESAs), Evaluated Wetlands and Candidate Natural Heritage Sites (CNHSs) were reviewed to familiarize the botanists with floral composition of the AOI and to assist with field identification. Information collected in the field was transcribed and verified in the office.

Field investigations of natural/semi-natural vegetation were conducted by LGL Limited on: April 17-21, 2006; May 15-19, 2006; June 12-16, 2006; July 24-28, 2006; August 21-24, 2006; and, October 2-6, 2006. Field crews typically consisted of two to four botanists working in tandem. Vegetation communities were surveyed several times throughout the year to capture the optimal growing season for the flora present.

Vegetation communities were classified according to the *Ecological Land Classification (ELC) for Southern Ontario: First Approximation and Its Application*[15]. The vegetation communities were sampled using a plotless method for the purpose of determining the general composition and structure of the vegetation. Plant species status was reviewed for Canada (Committee on the Status of Endangered Wildlife in Canada (COSEWIC 2006), Ontario (Committee on the Status of Species at Risk in Ontario [COSSARO 2006] and for Essex County[16]. Vascular plant nomenclature follows Newmaster et al.[17], with a few exceptions.

Every attempt was made to identify vascular plants in the field. Where a conclusive identification could not be made in the field, plant material was collected for examination in the laboratory. A GPS unit was used to record the location of species at risk whose identity could be confirmed in the field. Many species at risk and representative vegetation communities were also photographed for verification purposes.

DATA ANALYSIS

Vegetation Species

A total of 618 vascular plant taxa were recorded in the AOI. One-hundred and eighty-six taxa or 30 per cent of the recorded flora are considered introduced and non-native to Ontario. Sixty-three species are considered Extremely Rare, Very Rare or Rare within the province (S1-S3) and eight are regulated under the federal *Species At Risk Act* (SARA) and the new *Ontario Endangered Species Act* (OESA), *2007*. A list of vascular plants identified in the AOI is presented in Appendix B of the *Draft Practical Alternatives Evaluation Working Paper – Natural Heritage*.

Vegetation Communities

Vegetation communities located in the AOI consist primarily of recently disturbed communities, including Cultural Woodlands (CUW1), Cultural Meadows (CUM1-1), Cultural Thickets (CUT1) and Cultural Savannahs (CUS1). 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. Non-prairie herbaceous plant species have invaded and now dominate the meadows and ground cover. Woody species have increased due to the lack of fire and now dominate in the form of CUW1, CUT1 and CUS1 communities. Despite the influence that humans have had on the composition and structure of the vegetation communities located within the AOI, remnant patches of Tallgrass Prairie (TPO2-1) exist on the periphery of the Ojibway Prairie Complex. The location of vegetation communities is presented in Exhibit 7-26. A detailed description of community types and their corresponding polygon codes is presented is presented in Appendix C of the *Draft Practical Alternatives Evaluation Working Paper – Natural Heritage*. The general structure and composition of the predominant vegetation community types are described.

Wooded Cultural Communities

CUW1 communities are dominated by a mixture of adventive woody species such as eastern cottonwood (Populus deltoides ssp. deltoides), Freeman's maple (Acer X freemanii) and Manitoba maple (Acer negundo) and they have less than 60 percent tree cover. CUS1 communities have a lower per cent tree cover at less than 35 percent and are made up of Manitoba maple, black walnut (Juglans nigra) and eastern cottonwood. CUT1 communities are clusters of shrubs, including gray dogwood (Cornus foemina ssp. racemosa), staghorn sumac (Rhus typhina) and common buckthorn

[15] Lee, H.T., W.D. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig and S. McMurray. 1998. Ecological Land Classification for Southern Ontario: First Approximation and Its Application. OMNR, Southcentral Sciences Section, Science Development and Transfer Branch. SCSS Field Guide FG-02.

[16] Oldham, M.J. 1993. Distribution and Status of the Vascular Plants of Southwestern Ontario. OMNR. Aylmer District Office, Aylmer Ontario.

[17] Newmaster, S.G., A. Lehela, P.W.C. Uhlig, S. McMurray and M.J. Oldham. 1998. Ontario. Plant List. OMNR, Ontario Forest Research Institute, Sault Ste. Marie, Ontario, Forest Research Information Paper No. 123.

(Rhamnus cathartica). All three community types have a high percentage of species that are considered introduced and non-native to Ontario. Three Cultural Plantations (CUPs) are present in the AOI including planted red oak (Quercus rubra), eastern white cedar (Thuja occidentalis) and Scots pine (Pinus sylvestris).

Cultural Meadow

CUM1-1 communities consist of species that are typical of disturbed sites. Based on the species composition of these sites, it is likely that they are regularly mown (manicured) or ploughed. Grasses and invasive forbs, such as wild carrot (Daucus carota), common reed (Phragmites australis), tall goldenrod (Solidago altissima var. altissima), orchard grass (Dactylis glomerata), Canada goldenrod (Solidago canadensis) and Kentucky bluegrass (Poa pratensis ssp. pratensis) are dominant. Colonization of these areas by woody species is limited. Some of the cultural meadow communities were cultivated in the past.

Deciduous Forests

There was a wide range of successional stages in the deciduous forest communities in the AOI. Communities ranged from young through mid-aged to mature. Many of the forests contained a high percentage of native species, while others were dominated by non-native species. Deciduous forests occurred in both upland and lowland areas. Forests with dry to fresh soil conditions were dominated by black oak, white oak, shagbark hickory (Carya ovata), Manitoba maple and black locust (Robinia pseudo-acacia). Forests with fresh to moist soil conditions were dominated by American elm (Ulmus americana), red ash (Fraxinus pennsylvanica), black willow (Salix nigra), black walnut, eastern cottonwood, sassafras (Sassafras albidum), pin oak, swamp white oak (Quercus bicolor) and Freeman's maple. Natural succession and anthropogenic disturbances have resulted in high forest diversity with a total of 12 ELC forest community types.

Tallgrass Prairie

A proportion of the meadow communities contains a greater abundance of early successional tallgrass prairie species. These meadows have the potential to be classified as either meadow or forb prairie, but there is no classification within the ELC manual for early successional forb prairie communities. Thus, a criterion was used to classify forb prairies as either CUM1-1 or TPO2-1 communities. This criterion was the amount of anthropogenic disturbance and the ratio of introduced to tallgrass species. The forb prairies in the AOI contain wild bergamot (Monarda fistulosa), ironweed (Vernonia gigantea), Canadian tick-trefoil (Desmodium canadense), gray-headed coneflower (Ratibida pinnata), rough-headed bush-clover (Lespedeza capitata), tall tickseed (Coreopsis tripteris), tall wild sunflower (Helianthus giganteus) and spiked blazing star (Liatris spicata). Conversely, the forb prairies contained a lesser proportion of tallgrass than in the tallgrass prairie communities. TPO2-1 communities have experienced the least amount of anthropogenic disturbance of the open communities found in the AOI. They contain a mixture of native tall grasses and prairie forbs, including Indian grass (Sorghastrum nutans), big bluestem (Andropogon gerardii), little bluestem (Schizachyrium scoparium), Virginia culver's root (Veronicastrum virginicum), colic-root (Aletris farinosa), ironweed and tall cord grass (Spartina pectinata). Past fire occurrence is evident in many of the healthy TPO2-1 communities.

Groundwater is known to play an important role in sustaining the tallgrass prairie communities. Hydrogeological conditions in the AOI consist generally of shallow surficial sand, silt and fill over unsaturated clayey silt over saturated silty clay over bedrock. The tallgrass prairie communities are sustained by the surficial sand, silt and fill layer (surface aquifer) that is saturated by rainfall. Percolation downwards from the surface aquifer through the unsaturated clayey silt (aquatard) to the deep aquifer (saturated clayey silt and bedrock) is very slow. The groundwater table in the surficial aquifer is located approximately 2 to 3 m below ground surface, depending on site-specific conditions and the amount of rainfall.

Oak Savannah and Woodland

One oak savannah community was found in the AOI and it was dominated by pin oak (Quercus palustris) and bur oak (Quercus macrocarpa). Two types of oak woodlands were encountered and they consist of black oak, white oak and pin oak. These communities contain many native drought resistant grasses and sedges, plus numerous tallgrass prairie forb species.

Wetlands

The wetlands in the AOI include swamps, marshes and open aquatic communities. The deciduous swamps are dominated by pin oak, Freeman's maple and eastern cottonwood. The meadow marshes are composed of common reed, European beggar-ticks (Bidens tripartita) and devil's beggar-ticks (Bidens frondosa), while the shallow marshes are made up of narrow-leaved cattail (Typha angustifolia). There was one small Open Aquatic (OAO) community that had an algal bloom in the mid-summer, which cleared up by the late summer.

Species at Risk

Eight species listed as Special Concern, Threatened or Endangered by COSEWIC or COSSARO and regulated under the SARA and the new 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). Two species, summer snowflake, considered Globally Very Rare (G2) and butternut, considered Globally Rare to Uncommon (G3), were also recorded during field investigations. Sixty-three species considered Extremely Rare (S1), Very Rare (S2) and Rare to Uncommon (S3) according to the NHIC were observed during field investigations. S-ranks are a ranking system for a species status in Ontario and are also applied by the NHIC. Species with an S-rank of S1 to S3 are considered extremely rare, very rare or rare within the province and were used to limit the scope of the investigation.

A list of provincially rare plant species located in the AOI is presented in Section 2.3.1.3 of the *Draft Practical Alternatives Evaluation Working Paper – Natural Heritage*.

Many of the vegetation communities identified in the AOI are considered Provincially Extremely Rare (S1), Provincially Very Rare (S2) or Provincially Rare to Uncommon (S3), while others and/or the same communities are considered Globally Extremely Rare (G1) or Globally Very Rare (G2) (NHIC 1997). Notable communities include:

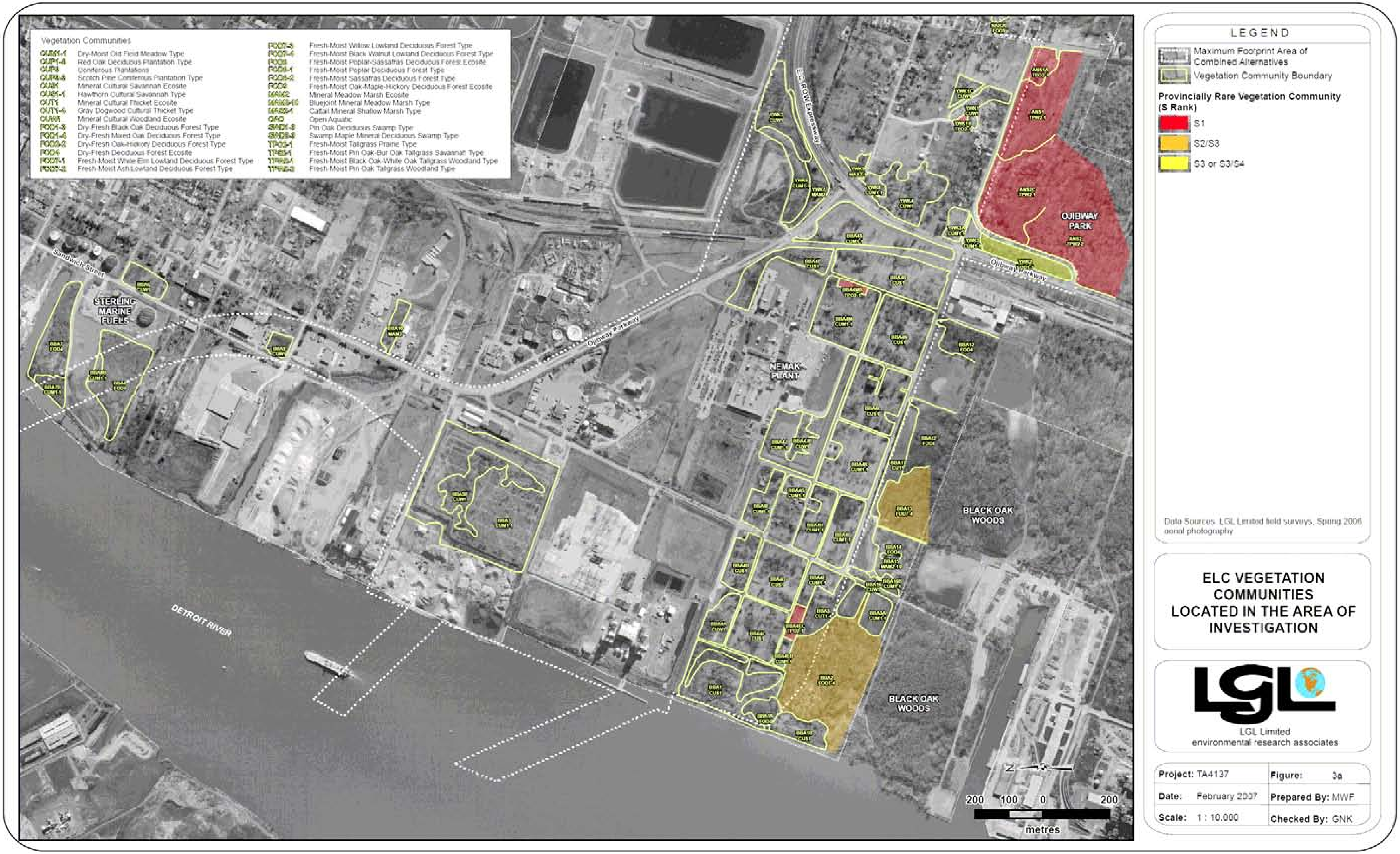
- 24 Fresh-Moist Tallgrass Prairies (TPO2-1) (G2 and S1);
- Four Pin Oak Mineral Deciduous Swamps (SWD1-3) (G2 and S2S3);
- Three Dry-Fresh Black Oak Deciduous Forests (FOD1-3) (S3);
- Two Dry-Fresh Mixed Oak Deciduous Forests (FOD1-4) (S3S4);
- Two Fresh-Moist Black Walnut Lowland Deciduous Forests (FOD7-4) (S2S3);
- Two Fresh-Moist Black Oak-White Oak Tallgrass Woodlands (TPW2-1) (G2 and S1);

- One Dry-Fresh Oak-Hickory Deciduous Forest (FOD2-2) (S3S4);
- One Fresh-Moist Pin Oak-Bur Oak Tallgrass Savannah (TPS2-1) (G1 and S1); and
- One Fresh-Moist Pin Oak Tallgrass Woodland (TPW2-2) (G1 and S1).

A list of provincially significant vegetation communities located in the AOI ordered by S-rank is presented in Section 2.3.1.3 of the *Draft Practical Alternatives Evaluation Working Paper – Natural Heritage*. Based on a review of secondary source information, it is likely that most of these rare vegetation communities and species are represented in the designated Ojibway Prairie Complex ANSI, although further field investigations in areas located outside of the AOI would be required to substantiate this opinion.

There were numerous vegetation communities that contain a high diversity of provincially rare (S1 to S3) species. Twenty-one vegetation communities contained 10 to 18 S1 to S3 species. Forty-three vegetation communities contained one to four S1 to S3 species. A complete list of vegetation communities and the species of rare plants identified in these communities is presented in the *Draft Practical Alternatives Evaluation Working Paper – Natural Heritage*.

EXHIBIT 7.26 – VEGETATIVE COMMUNITIES WITHIN THE ACA



7.5.2 Molluscs and Insects

DATA COLLECTION

The Area of Investigation for molluscs and insects included the ACA and its vicinity. The study team screened the AOI and its vicinity for the presence or absence of rare molluscs and insects.

The mollusc and insect investigation was based on secondary source information collected in 2006 through literature searches, review of databases and personal communications with local experts. Data was requested and obtained via email, fax, letter, personal communications, and from published and unpublished literature. The following organizations were contacted directly for data:

- Department of Fisheries and Oceans Canada – Sarnia District Office and Burlington District Office (Great Lakes Laboratory for Fisheries and Aquatic Sciences);
- Environment Canada – Karner Blue Recovery Team;
- Ontario Ministry of Natural Resources – Natural Heritage Information Centre (NHIC), Peterborough and Chatham Area Office;
- Essex Region Conservation Authority;
- Ojibway Nature Centre;
- Toronto Entomology Association (Ontario Insects);
- Toronto Zoo;
- University of Guelph – insect collection, and entomology and mollusc researchers; and
- University of Windsor – fisheries and mollusc researchers.

Background data collected was reviewed and compiled into two databases (molluscs and insects), since all of the data received related to these two invertebrate groups. Nomenclature and taxonomy follows the *University of Guelph Insect Collection Ojibway Prairie Species List*, recent journal articles and the *Natural Heritage Information Centre (NHIC)*.

Federal and provincial rankings administered by COSEWIC and COSSARO were considered during the species review. Due to the lack of evaluations of invertebrate species by COSEWIC and COSSARO, "S-ranks" were also considered during the investigation as many more invertebrates have received an S-rank.

DATA ANALYSIS

Molluscs are among the most conspicuous and familiar invertebrate animals and include such forms as clams, squids, octopods and snails. Data was reviewed and obtained on two classes of Mollusc phyla, the Bivalves (clams) and the Gastropods (snails).

Freshwater mussels (Unionids) are a type of Bivalve and are benthic sedentary animals with a life expectancy of 10 to 80 years depending on the species. Unionids spend the bulk of their life residing in the sediment of watercourses. However, as part of the larvae (glochidia) development, the offspring must attach to the gills of a host fish (or salamander for one species) and parasitize the host until they are sufficiently mature to drop off as juveniles. Many species of Unionids require specific host fish species for development. Unionids are among the most endangered organisms in North America[18], and considerable research has been done in Ontario to investigate our native species. In Ontario, 28 of 41 native species are showing signs of decline[19], and 10 species are ranked federally and/or provincially as Endangered or Threatened. For further detail, the reader is referred to the *Draft Practical Alternatives Evaluation Working Paper – Natural Heritage*.

Much less is known of the terrestrial and aquatic Gastropods of Ontario. Gastropods are divided into three groups: the Prosobranchs, Opisthobrachs and the Pulmonates. The Prosobranchs and Opisthobrachs posses gills and are purely aquatic, but only the Prosobranchs are a freshwater species. Pulmonates have lungs that enable them to respire oxygen from freshwater and/or the air. There are approximately 485 species of Gastropods in North America, none of which are ranked federally or provincially in Ontario.

Screening for Mollusc Species of Significance

Mollusc investigations in the Windsor area have been largely limited to the Detroit River, and very little data is available on the terrestrial Gastropods or the Unionids and Gastropods inhabiting the inland watercourses. Historically, numerous native species of Unionids were known to inhabit the Detroit River, however recent studies indicate that no native Unionids remain in the Detroit River due to pollution, habitat loss and competition with zebra mussels (Dreissena polymorha)[20, 21, 22, 23]. Screenings for the presence of native Unionids within the watercourses in the AOI and its vicinity were unable to confirm the presence of any federally or provincially ranked species. No known recent mollusc investigations have been conducted in the AOI and its vicinity (aside from the Detroit River). However, Snuffbox (Epioblasma triquetra) is known to occur within the County of Essex according to the NHIC.

Currently, nine species are listed as Endangered and one species is listed as Threatened by COSEWIC, and eight species are listed as Endangered by COSSARO with two species pending a Threatened listing. For further detail the reader is referred to the *Draft Practical Alternatives Evaluation Working Paper – Natural Heritage*. All Unionids are regulated under the Fisheries Act and eight of the ten listed species are regulated under the SARA and the new OESA, with two species pending regulation under SARA. There is the potential that these species may occur in the AOI and its vicinity as no comprehensive field investigations have been conducted of the Windsor area, and several of these species likely occurred in the Detroit River historically.

Data obtained from the MNR also indicates that two significant species of Gastropod occur in the AOI and its vicinity. For further detail the reader is referred to the *Draft Practical Alternatives Evaluation Working Paper – Natural Heritage*. These two species (Mesodon pennsylvanicus and Mesodon zaletus) are ranked S1 and S1S2 respectively, meaning that they are Extremely Rare to Very Rare in Ontario. An additional eight provincially rare species are known to occur in the County of Essex and may occur in the AOI and its vicinity. There is the potential that these species and other rare

[18] Metcalfe-Smith. J, A. MacKenzie, I. Carmichael, D. McGoldrick. 2005. Photo Field Guide to the Freshwater Mussels of Ontario. St. Thomas Field Naturalist Club Incorporated. St Thomas. Ontario.
[19] Ibid.
[20] Morris, T. Species at Risk Research Biologist. Department of Fisheries and Oceans Canada, Great Lakes Laboratory for Fisheries and Aquatic Sciences. Personal communications, May to August 2006.
[21] Ciborowski, J. Researcher, Department of Biological Sciences, University of Windsor. Personal communication, April 2006.
[22] Corkum, L. Researcher, Department of Biological Sciences, University of Windsor. Personal communication, April 2006.
[23] Mackie, G.L. Mollusc Biologist. Zoology Department, University of Guelph. Personal communication, May to December 2006.

Gastropods may occur in the AOI and its vicinity as no comprehensive field investigations have been conducted of the Windsor area. All aquatic Gastropods are regulated under the *Fisheries Act.*

Insects

There are an estimated 30,000 known species of insects in Canada and more than 2,055 species of insects have been reported in the Ojibway Prairie Complex alone. Insects are the most abundant fauna in the world, and there are more than 26 Orders of insects, including mayflies, damselflies and dragonflies, grasshoppers, cockroaches, termites, earwigs, stoneflies, lice, true bugs, thrips, beetles, fleas, true flies, caddisflies, moths and butterflies, and wasps and ants. Insects are present in all habitats and have a wide variety of forms and life cycles. Insects are generally under-investigated and under-protected; however, some research has been conducted in the Ojibway Prairie Complex area by researchers from the University of Guelph and other institutions. Considerable data has been gathered on the insects of the Ojibway Prairie but a lot of research still remains to be done. This area is known for its high species diversity and many rare species due to its geographic location and significant habitats.

Screening for Insect Species of Significance

The Ojibway Prairie Complex area has recently been relatively intensively investigated by entomologists, and there are several recent publications documenting researchers' findings. Given the sheer number of species present, most of the research efforts and publications have focused on select groups of insects. Records of insect species captured are maintained by the Ojibway Nature Centre and a database of insects of the Ojibway Prairie is maintained by the University of Guelph. In addition, there are several regular entomological activities organized at the Ojibway Prairie including an annual butterfly count organized by the North American Butterfly Association and a dragonfly count organized by the Toronto Entomology Association, in conjunction with the Ojibway Nature Center.

The *Draft Practical Alternatives Evaluation Working Paper – Natural Heritage* presents the insects listed by COSEWIC and COSSARO and regulated under the SARA, the new OESA and the FWCA that were reviewed to determine if they were potentially present in the AOI and its vicinity. Of these species, the Monarch is known to occur in the AOI and its vicinity; however, it is highly unlikely that the remainder of the above mentioned species occur in proximity to the AOI and its vicinity given their current distributions and habitat requirements.

Much of the data recently published on the insects in the vicinity of the AOI is documentation of new species for Canada, Ontario or the region. Compilation of this data and other records indicates that there are at least 113 species of conservation concern known in this area. This includes one species of Diptera (true flies), 22 species of Auchenorrhyncha Hemiptera (hoppers), 13 species of Heteroptera Hemiptera (true bugs), 41 species of Hymenoptera (bees and wasps), 17 species of Lepidopera (moths and butterflies), 13 species of Odonata (damselflies and dragonflies), and six species of Orthoptera (grasshoppers, crickets and katydids). Seven other species of Odonata may also be present based on data from the NHIC Odonata Database indicating that they occur in the County of Essex, Town of Tecumseh and/or extreme southern Ontario.

Of the 120 species present (or potentially present), 69 species have been assigned an S-rank of S1 to S3 indicating that they are Extremely Rare, Very Rare or Rare to Uncommon within the province and five species have a rank of S4 or S5. A further 46 species are ranked SNR as there is insufficient data to rank the species. Since many of these species are new records for Ontario or Canada and are under-documented, there is a strong likelihood that many of these species ranked SNR are also provincially rare.

The Monarch is listed as of Special Concern by COSEWIC and COSSARO and regulated under the SARA and the new OESA. The Monarch and five other species of butterflies are also regulated under the FWCA, due to their interest to collectors. Monarchs are known to inhabit and migrate through the Windsor area; however, there are no known Monarch staging (stopover) areas in the vicinity of the AOI.

The *Draft Practical Alternatives Evaluation Working Paper – Natural Heritage* provides a summary of significant insect species potentially present in the AOI and its vicinity.

The Entomological Importance of the Ojibway Prairie Complex and its Vicinity

The Ojibway Prairie Complex and its vicinity is a unique area composed of tallgrass prairies, savannahs, Carolinian zone vegetation, wetlands and forests. The diversity of rare habitats and plant species contributes to the high diversity and rarity of insect species present.

Since the Ojibway Prairie is located partially in the AOI and similar habitats exist outside of the Ojibway Prairie Complex, efforts should be made to determine what further insect species of significance occur in the area. Sensitive species and locations should be identified through field investigations, further research and correspondence. Areas falling within the AOI should also be further investigated to determine if significant populations or habitat exist. Members of the entomology community should be further consulted to ascertain additional sensitivities. Impacts to Monarchs should also be further evaluated and efforts should also be taken to identify the main areas used by Monarchs for protection and/or mitigation.

The Ojibway Prairie Complex is truly one of the most entomologically unique and important areas in Canada. A review of recent publications on new records for Ontario and Canada indicates that there are many species which can only be found in the Ojibway Prairie, or at a few other locations that are provided in the *Draft Practical Alternatives Evaluation Working Paper*.

New records include 16 new species for Canada and six new species for Ontario, which have only been found at the Ojibway Prairie. A further 37 new records for Canada and 29 for Ontario have only been found at the Ojibway Prairie and a few other sites. Amazingly, a new species to science was recently discovered at the Ojibway Prairie[24]. This insect, Loxocera ojibwayensis, is a small Psilidae fly (Diptera) that has been named after the Ojibway Prairie, which is the only known site in the world for this species.

Refer to the *Draft Practical Alternatives Evaluation Working Paper – Natural Heritage* for a summary of recent significant records from Ojibway Prairie Complex vicinity, which includes four new local records of significant Orthoptera (grasshoppers).

7.5.3 Fish and Fish Habitat

DATA COLLECTION

Fish and fish habitat were surveyed at several stations located within the ACA and its vicinity. All watercourses and waterbodies located within the AOI were investigated to determine the presence or

[24] Buck, M. and S.A. Marshall. 2006. Revision of New World Loxocera (Diptera: Psilidae), with Phylogenetic Redefinition of Holarctic Subgenera and Species Groups. European Journal of Entomology. 103: 193-219.

absence of fish habitat and the characteristics of the fish community present. Field investigations were conducted on May 3-5, 2006; September 18-21, 2006; and October 5, 2006.

The fish community was surveyed by visual observation or by fish collections using a backpack electrofishing unit, dip net or minnow trap at a total of 58 stations. The location of sampling stations is presented in Exhibit 7.27 and described in Table 7.15. Prior to field investigations, a Permit to Collect Fish for Scientific Purposes was obtained from the MNR Area Office in Chatham and the Department of Fisheries and Oceans was contacted to determine if a Species at Risk Permit was required. All fish captured were identified in the field or preserved in alcohol for laboratory identification.

Fish habitat was characterized along each stream reach located within the AOI. Stream reaches were delineated using the boundary of the ACA, road or highway crossings or the confluence with another watercourse. The habitat survey was carried out following the *MTO Environmental Manual - Fisheries (MTO 1994)*, the *Draft Environmental Reference for Highway Design (MTO 2002)* and in accordance with the *MTO/MNR Fisheries Protocol*[25]. Physical features were surveyed in sufficient detail to enable mapping and identification of key habitat types. The physical habitat attributes assessed included:

- Stream dimensions and flow conditions;
- Water quality, including conductivity, pH, temperature and water colour;
- Stream morphology;
- Groundwater discharge areas;
- Substrate characteristics;
- Stream bank stability;
- In-stream cover;
- Riparian vegetation;
- Stream canopy cover;
- Stream gradient;
- Macrophytic (aquatic) vegetation;
- In-stream barriers to fish movement;
- Critical habitats; and
- Potential fish habitat compensation measures.

TABLE 7.15 – FISH SAMPLING STATIONS

Station No.	GPS Coordinates	Drains	Habitat
1	0328333 4684598	Large Bay	Fish habitat
2	0328042 4683627	McKee Creek	Fish Habitat
3	0327835 4683101	Ditch	Not Fish Habitat
4	0327675 4682830	Healy Drain	Not Fish Habitat
5	0327582 4682648	Healy Drain	Seasonal Fish Habitat
6	0327120 4682805	Healy Drain	Seasonal Fish Habitat
7	0327060 4682524	Broadway Drain	Seasonal Fish Habitat
8	0327564 4682464	Healy Drain	Not Fish Habitat
9	0327433 4682299	Broadway Drain	Not Fish Habitat
10	0327491 4682145	Pond	Not Fish Habitat
11	0328028 4682098	Broadway Drain	Not Fish Habitat
12	0328099 4682253	Healy Drain	Not Fish Habitat
13	0328421 4681784	Susan Drain	Not Fish Habitat
14	0328591 4681910	NoName Drain	Not Fish Habitat
15	0328976 4681555	Susan and NoName	Not Fish Habitat
16	0328467 4682497	McKee Creek	Fish Habitat
17	0328823 4682421	McKee Drain	Fish Habitat
18	0329205 4682444	McKee Drain	Fish Habitat
19	0329110 4682267	McKee Drain	Fish Habitat Downstream Only
20	0329305 4682215	McKee Drain	Not Fish Habitat
21	0329696 4681545	Titcombe Drain	Seasonal Fish Habitat
22	0330185 4682207	Vernal pool	Not Fish Habitat
23	0329759 4681811	Titcombe Drain	Seasonal Fish Habitat
24	0330594 4681942	Basin Drain	Not Fish Habitat
25	0330569 4681911	Basin Drain	Not Fish Habitat
26	0330562 4681875	Basin Drain	Fish Habitat
27	0331273 4681458	Youngstown Drain	Seasonal Fish Habitat
28	0330924 4681537	Youngstown Drain	Seasonal Fish Habitat
29	0330822 4681556	Youngstown Drain	Seasonal Fish Habitat
30	0330700 4681553	Basin Drain	Fish Habitat
31	0330714 4681496	Basin and Youngstown	Fish Habitat
32	0330778 4681487	Youngstown Drain	Seasonal Fish Habitat
33	0330352 4681030	Basin Drain	Fish Habitat
34	0331391 4681255	Marentette Drain	Not Fish Habitat
35	0331082 4680897	Marentette Drain	Not Fish Habitat
36	0331256 4680379	Marentette and Turkey	Not Fish Habitat
37	0330880 4680589	Wetland	Not Fish Habitat
38	0331652 4680693	Turkey Creek	Fish Habitat
39	0331543 4680078	Standing water	Not Fish Habitat
40	0332332 4679259	Lennon Drain	Fish Habitat
41	0332477 4678862	Cahill Drain	Fish Habitat
42	0332915 4678928	Cahill and Talbot	Fish Habitat
43	0333348 4678533	Talbot Drain	Not Fish Habitat
44	0335132 4676696	Howard Ave, Noname, Dickson	Not Fish Habitat
45	0335166 4676667	Burke, NoName	Not Fish Habitat
46	0335467 4676542	Dickson, Benson	Fish Habitat
47	0335900 4677241	Burke Drain	Fish Habitat
48	0336718 4677364	Collins Drain	Seasonal Fish Habitat
49	0336309 4677566	Collins and Wolfe	Fish Habitat (Wolfe)
50	0336072 4677640	NoName	Not Fish Habitat
51	0335714 4677723	Wolfe Drain	Fish Habitat
52	0335269 4677923	NoName and Wolfe	Fish Habitat (Wolfe)
53	0334095 4678714	Cahill Drain	Fish Habitat

[25] Ministry of Transportation of Ontariio (MTO)/Ministry of Natural Resources of Ontario (MNR). 1993. Fishereis Protocol for Protecting Fisheries Resources on Provincial Highway Undertakings.

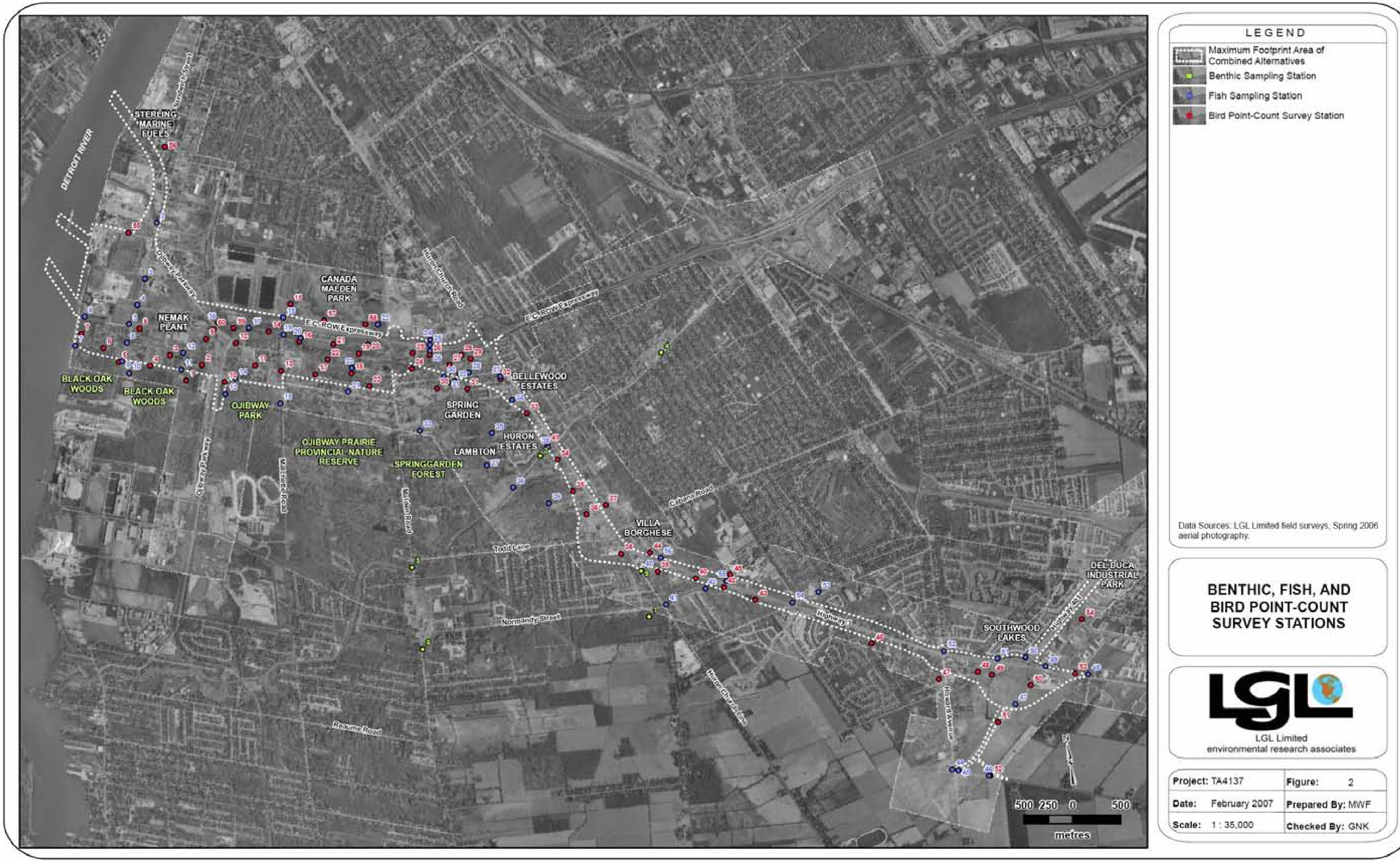
Station No.	GPS Coordinates	Drains	Habitat
54	0333789 4678642	Cahill and Wolfe	Fish Habitat
55	0333191 4678972	Cahill and Wolfe	Fish Habitat
56	0332540 4679315	Lennon Drain	Fish Habitat
57	not recorded	pond	Fish Habitat
58	not recorded	McKee Creek	Fish Habitat

Data was recorded in the field using the standard MTO Field Collection Record forms and representative photographs were taken.

In addition, benthic samples were collected from six stations in the AOI (Stations 3 and 9) and its vicinity (Stations 1, 4, 5 and 6). Stations 2, 7 and 8 are located on watercourses located outside the AOI. The location of benthic sampling stations is presented in **Exhibit** 7-27. Samples were collected on March 9, 2005 (Stations 1 and 3), and March 10, 2005 (Station 4, 5, 6, and 9) using the traveling kick and sweep transect method. Three samples were taken at each station, two from riffles and one from a pool. Benthic organisms from each transect were identified separately and then replicate samples from each station were combined to achieve sufficient populations for analysis.

A habitat and substrate survey of the Detroit River at the locations of possible bridge piers in Canadian waters was conducted on October 5, 2006 using an underwater video camera and Ekman dredge. At each possible pier location, a SeaViewer underwater camera was deployed over the side of the boat and data recorded to a hand-held video recorder. GPS coordinates along transects were recorded simultaneously through a feature on the video camera system. Once all of the video runs were completed at the sites, the substrate was investigated using an Ekman dredge.

EXHIBIT 7.27 – BENTHIC, FISH AND BIRD POINT COUNT SURVEY STATIONS



DATA ANALYSIS

Fish Species

Based on fisheries information provided by the Essex Region Conservation Authority (ERCA) and field investigations, a total of 21 species of fish inhabit streams located in the AOI, excluding the Detroit River. The fish community located in inland watercourses/waterbodies is comprised of resident warmwater sport and bait fish. Northern pike were observed spawning in several small drains located in the Chappus Road area. Table 7.16 presents the fish occurrence records for the watercourses containing fish as well as the historical fish records provided by ERCA.

Fish species in the Detroit River were recently sampled by four gear types (seine net, boat electrofishing, hoop net and Windemere trap) in the shallow offshore water of the Detroit River during July and August 2003[26]. The reach of the Detroit River sampled included Canadian waters from the confluence with Turkey Creek to the confluence with the River Canard. A total of 38 species of fish were captured. Based on this recent survey and historic fish records, a total of 69 species of fish are reported from the Detroit River. Table 7.17 presents the fish species known to inhabit the Detroit River.

Tables 9 and 10 in the *Draft Practical Alternatives Evaluation Working Paper – Natural Heritage* provide a list of fish species occurrence records for the Area of Continued Analysis excluding and including the Detroit River.

Fish Habitat

Drainage within the AOI is provided by a number of municipal agricultural drains that flow towards the Detroit River. The major drains include Cahill Drain, Lennon Drain and Grand Marais Drain (Turkey Creek) and Wolfe Drain. The following watercourses and waterbodies are located in the AOI:

- Detroit River;
- Basin Drain;
- Benson Drain;
- Broadway Drain;
- Burke Drain;
- Cahill Drain;
- Collins Drain;
- Dickson Drain;
- Grand Marais Drain (Turkey Creek);
- Healy Drain;
- Lennon Drain;
- Marentette Drain;
- McKee Creek;
- No Name Drain associated with Benson Drain;
- No Name Drain associated with Susan Drain;
- No Name Drain tributary of Wolfe Drain (at Highway 401);
- No Name Drain tributary of Wolfe Drain (at Howard Ave);
- Susan Drain;
- Talbot Drain;
- Titcombe Drain;
- Wolfe Drain;
- Youngstown Drain; and
- Unnamed pond.

All of the above listed waterbodies were surveyed for fish habitat potential. The watercourses and fish habitat located in the AOI are presented in Exhibits 7.28A to 7.28D.

[26] Lapointe, N.W.R., L.D. Corkum and N.E. Mandrak. 2005. A Comparison of Methods for Sampling Fish Diversity in Shallow Offshore Waters of Large Rivers. North American Journal of Fisheries Management 26:503-513.

Exhibit 7.28A – Watercourses and Fish Habitat Located in the Area of Investigation

EXHIBIT 7.28B – WATERCOURSES AND FISH HABITAT LOCATED IN THE AREA OF INVESTIGATION

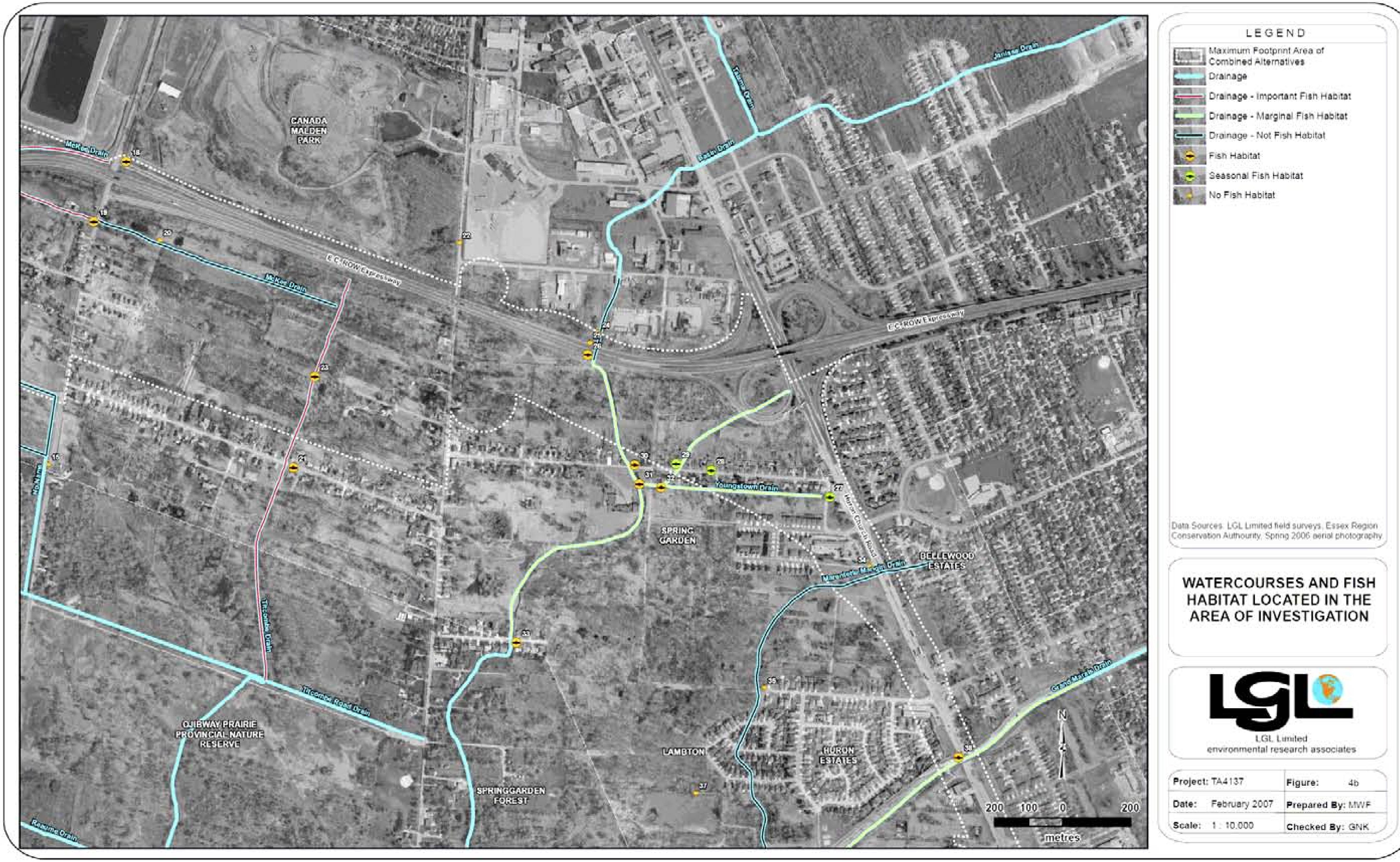


EXHIBIT 7.28C – WATERCOURSES AND FISH HABITAT LOCATED IN THE AREA OF INVESTIGATION

EXHIBIT 7.28D – WATERCOURSES AND FISH HABITAT LOCATED IN THE AREA OF INVESTIGATION

The Detroit River and the inland watersheds within the AOI fall under the jurisdiction of the Essex Region Conservation Authority (ERCA), the Ontario Ministry of Natural Resources (OMNR) Aylmer District and the Department of Fisheries and Oceans (DFO). Most of the inland watercourses located in the AOI have been classified as drains by the ERCA using the Agricultural Municipal Drains Class Authorization System[27]. A single unconnected pond is located at the eastern limits of the AOI. Water courses that were confirmed to support fish habitat are described below.

Basin Drain

This watercourse is listed as a type F municipal drain, indicating that it is intermittent, and the temperature regime and potential fish species are unknown. It was determined that this watercourse is permanent and supports a warmwater baitfish community downstream of the E.C. Row Expressway. Here the channelized watercourse flows through a muck and clay-lined channel. Riparian vegetation consists of trees, shrubs and herbaceous vegetation. This fish habitat is considered marginal. Upstream of the E.C. Row Expressway the watercourse is mostly piped underground with a pool of open water upstream of the expressway. This upstream reach of Basin Drain is not fish habitat as the buried culvert under the expressway is a barrier to fish migration.

Benson Drain

This watercourse is listed as a type F municipal drain, indicating that it is intermittent, and the temperature regime and potential fish species are unknown. It was determined that this watercourse is likely intermittent as flows were low in May and September 2006. It was determined that this watercourse likely supports a warmwater baitfish community as central mudminnow were captured downstream of South Talbot Road in Dickson Drain. This channelized watercourse flows through a clay-lined channel. Riparian vegetation consists of trees, shrubs and herbaceous vegetation. This fish habitat is considered marginal.

Broadway Drain

This watercourse is listed as a type F municipal drain, indicating that it is intermittent, and the temperature regime and potential fish species are unknown. It was determined that this watercourse is likely intermittent as there was no flow, and only standing pools of water in September 2006. It was determined that this watercourse likely supports a seasonal fish community when flows in the Detroit River are high enough to allow fish to migrate upstream over the gravel beach barrier. Only the reach downstream of Sandwich Street was determined to be fish habitat as the hot water entering the channel from a pipe at Sandwich Street likely presents a thermal barrier to fish movement. This channelized watercourse flows through a detritus-lined channel. Riparian vegetation consists of trees, shrubs and fragmites. This fish habitat is considered marginal.

Burke Drain

This watercourse is listed as a type F municipal drain, indicating that it is intermittent, and the temperature regime and potential fish species are unknown. It was determined that this watercourse is likely intermittent as there was no flow, and only standing pools of water in September 2006. It was determined that this watercourse supports a warmwater sportfish community. This channelized watercourse flows through a detritus and muck-lined channel. Riparian vegetation consists of cattails. This fish habitat is considered marginal. Downstream of South Talbot Road this watercourse was dry and is not fish habitat.

Cahill Drain

Cahill Drain is separated into two reaches, one upstream of the confluence with Wolfe Drain, the other downstream of the confluence with Wolfe Drain. The upstream reach is listed as a type F municipal drain, indicating that it is intermittent, and the temperature regime and potential fish species are unknown. The upstream reach is listed as a type E drain, indicating that it is permanent, the temperature regime is warmwater and sportfish are present. It was determined that this watercourse is permanent warmwater fish habitat. Only baitfish were captured in Wolfe Drain between the two reaches, however habitat potential exists for sportfish. Upstream of Wolfe Drain this channelized watercourse flows through a clay-lined channel with herbaceous riparian vegetation. This fish habitat is considered marginal. Downstream of Wolfe Drain the channel is much larger and flows over a muck substrate. Here there is some channel definition and habitat heterogeneity. Riparian vegetation consists of trees, shrubs, and herbaceous vegetation. This fish habitat is considered important.

Collins Drain

This watercourse is listed as a type F municipal drain, indicating that it is intermittent, and the temperature regime and potential fish species are unknown. It was determined that this watercourse is likely intermittent as flows were low in May and September 2006. It was determined that this watercourse likely supports a warmwater baitfish community as fathead minnow were captured downstream in Wolfe Drain, and no barrier to fish migration exists. This channelized watercourse flows through a clay and silt-lined channel. Riparian vegetation consists of cattails and fragmites. This fish habitat is considered marginal.

Dickson Drain

This watercourse is listed as a type F municipal drain, indicating that it is intermittent, and the temperature regime and potential fish species are unknown. It was determined that this watercourse is likely intermittent as flows were low in May and September 2006. It was determined that this watercourse supports a warmwater baitfish community. This channelized watercourse flows through a clay-lined channel. Riparian vegetation consists of trees, shrubs and herbaceous vegetation. This fish habitat is considered marginal. The reach upstream of South Talbot Road was determined to be ephemeral and not fish habitat.

Grand Marais Drain (Turkey Creek)

This watercourse is listed as a type E municipal drain downstream of Huron Church Road, indicating that it is permanent, the temperature regime is warmwater and sportfish are present. The reach upstream of Huron Church Road is unclassified. It was determined that this watercourse is permanent and supports a warmwater sportfish community. This watercourse flows through a concrete-lined channel. Even though fish habitat is homogenous, it supports a relatively diverse warmwater community. There is no riparian vegetation throughout this reach as the banks are also concrete-lined. This reach is regularly cleaned out to maintain flood control. Despite the presence of sportfish, this fish habitat is considered marginal as the habitat exists in a concrete-lined channel.

Healy Drain

This watercourse is listed as a type F municipal drain, indicating that it is intermittent, and the temperature regime and potential fish species are unknown. It was determined that this watercourse is

[27] Department of Fisheries and Oceans Canada (DFO). 1999. A Class Authorization System for Agricultural Drains in the Southern Ontario Region.

likely intermittent as there was no flow, and only standing pools of water in September 2006. It was determined that this watercourse likely supports a seasonal fish community when flows in the Detroit River are high enough to allow fish to migrate upstream over the gravel beach barrier. Only the reach downstream of Sandwich Street was determined to be fish habitat as the buried culvert under Sandwich Street is a barrier to fish movement. This channelized watercourse flows through a detritus-lined channel, which is choked with fragmites. This fish habitat is considered marginal.

Lennon Drain

This watercourse is listed as a type E municipal drain downstream of Huron Church Road, indicating that it is permanent, the temperature regime is warmwater and sportfish are present. It was determined that this watercourse is permanent and supports a warmwater sportfish community. Upstream of Talbot Road, the channelized watercourse flows through a silt, clay and geotextile substrate, with manicured grasses and a few trees as riparian vegetation. Between Talbot Road and Huron Church Line, the channelized watercourse flows through a riprap-lined channel with herbaceous vegetation and a few shrubs providing shade to the channel. Downstream of Huron Church Line the watercourse flows through a clay channel with manicured grasses and a few trees as riparian vegetation. This fish habitat is considered important.

McKee Drain

This watercourse is listed as a type F municipal drain, indicating that it is intermittent, and the temperature regime and potential fish species are unknown. It was determined that this watercourse is likely intermittent as there was no flow, and only standing pools of water in September 2006. It was determined that this watercourse likely supports a seasonal fish community as a northern pike was observed upstream of the E.C. Row Expressway in May 2006. This channelized watercourse flows through a muck and detritus-lined channel, which is choked with fragmites. Upstream of Matchette Road the watercourse is piped under a residential property. This pipe is a barrier to fish migration and the watercourse upstream of this pipe is not fish habitat. This fish habitat is considered important.

McKee Creek

This watercourse is listed as a type E municipal drain downstream of Sandwich Street, indicating that it is permanent, the temperature regime is warmwater and sportfish are present. The reach upstream of Sandwich Street is listed as a type F drain, indicating that it is intermittent, the temperature regime and potential fish species are unknown. It was determined that this watercourse is permanent and supports a warmwater sportfish community. This channelized watercourse flows through a muck-lined channel. The banks upstream of Sandwich Street are lined with sheet piling. The riparian vegetation consists of fragmites, cattails and herbaceous vegetation. Downstream of Sandwich Street, the channel flows through a series of double culverts and flows into a canal. A local fisherman indicated that in the spring walleye and perch often migrate upstream but are limited by the size of the double culverts and most cannot make it past this barrier. The removal of this barrier presents an excellent opportunity for habitat enhancement. This fish habitat is considered important.

Titcombe Drain

This watercourse is listed as a type F municipal drain, indicating that it is intermittent, and the temperature regime and potential fish species are unknown. It was determined that this watercourse is intermittent as there was no flow, and only standing pools of water in September 2006. It was determined that this watercourse likely supports a seasonal fish community as a northern pike was observed in May 2006. This channelized watercourse flows through a silt and detritus-lined channel. Riparian vegetation consists of trees, shrubs, herbaceous vegetation and manicured grasses. This fish habitat is considered important.

Wolfe Drain

Downstream of the confluence with Cahill Drain, the watercourse is listed as a type E municipal drain, indicating that it is permanent, the temperature regime is warmwater and sportfish are present. Upstream of the confluence with Cahill Drain, the watercourse is listed as a type F municipal drain, indicating that it is intermittent, and the temperature regime and potential fish species are unknown. It was determined that this watercourse supports permanent warmwater baitfish habitat as flows were moderate in May and September 2006. Only baitfish were captured upstream of Talbot Road, however habitat potential exists for sportfish. This channelized watercourse flows through a clay-lined channel. There is very little habitat heterogeneity. Riparian vegetation consists of shrubs, trees, and herbaceous vegetation. This fish habitat is considered important.

Youngstown Drain

This watercourse is listed as a type F municipal drain, indicating that it is intermittent, and the temperature regime and potential fish species are unknown. It was determined that this watercourse is likely intermittent as there was little flow in May and September 2006. It was determined that this watercourse likely supports a seasonal fish community. This channelized watercourse flows through a silt-lined channel. Riparian vegetation consists mainly of herbaceous species. This fish habitat is considered marginal.

Unnamed Pond

This waterbody is unclassified. It was determined the waterbody to be permanent and to support a warmwater sportfish community. It appears to be man-made and it is not connected to any nearby drains. Substrate in the pond appears to be clay and muck. A few riparian trees and shrubs are found around the pond. This fish habitat is considered important.

Detroit River

Previous reports indicate that at least 69 species of fish inhabit the Detroit River[28]. These species are listed in the *Draft Practical Alternatives Evaluation Working Paper – Natural Heritage*, which includes many sportfish as well as migratory species that use the river to move between Lakes Erie and St. Clair. Diverse habitat exists within the river, especially in the wetlands which are used by warmwater species for many of their life functions (spawning, nursery, foraging). Several provincially significant wetlands exist within the river or are associated with tributary river mouths. These wetlands cover an area of 462.5 ha. As reported in MDNR and MOE (1991)[29], 41 fish species have been reported to spawn within the Detroit River and an additional seven species are suspected of spawning. Manny et

[28] Manny, B. A., T. A. Edsall and E. Jawarski. 1988. The Detroit River, Michigan: An ecological profile biological report. U.S. Fish and Wildlife Service, U.S. Department of Interior. Contribution No. 683 of the National Fisheries Research Centre - Great Lakes. Ann Arbor, MI. (in MDNR and MOE 1991)

[29] Ontario Ministry of the Environment and the Michigan Department of Natural Resources. 1991. Detroit River Remedial Action Plan. Stage 1. Sarnia, Ontario and Lansing, Michigan. June 3, 1991. 504 pp.

al.[30] reported that 25 species use the river as nursery habitat, including both warm and coldwater species.

The investigation in the vicinity of possible bridge piers was compromised by turbid water conditions. Strong northeast winds stirred up sediment in Lake St. Clair; the sediment was conveyed downstream in the Detroit River. As a result, visibility was reduced to less than 20 cm. For this reason, the camera, which is equipped with strong LED lights, did not record many features of the Detroit River bottom as it requires relatively clear water to operate. The strong current also made proper deployment difficult. Despite these problems, some substrate features were recorded intermittently by the underwater camera. These included short aquatic vegetation which was rooted to the substrates and details that enabled the camera to discern clay, sand and gravel substrates. No large or distinct habitat features (i.e., boulders, logs, etc.) were observed. The Ekman dredge did not deploy correctly due to the strong current and great depth (10-15 m). As a result, no full grab samples were taken. However, some substrate was attached to the Ekman as it was on the bottom of the river and consisted of clay and a clay-sand mix. The low-lying aquatic vegetation seen on the underwater video was also attached to some of the grab samples. The fish habitat in the Detroit River in the vicinity of the potential bridge piers is considered important.

Benthic Invertebrates

The Hilsenhoff Biotic Index (HBI) was used to evaluate water quality at benthic sampling stations. HBI values provide an indication of the levels of organic pollution in the water. Other metrics were also used to interpret water quality and habitat conditions at these stations, such as species richness and percentage of intolerant species. Table 7.16 provides a summary of the metrics and HBI values for combined replicates for sampling stations. Results from individual replicates are not shown as they had too few organisms in each sample to analyze HBI values. Stations 2, 7 and 8 are located on watercourses found outside the AOI; therefore, they are not described.

The benthic surveys reveal that the habitat quality at all sampling stations is poor. All stations have been highly altered. Stations 1 and 6 in Cahill Drain have been channelized. Stations 3 and 4 in Turkey Creek have been straightened and have a concrete channel. Station 5 in Turkey Creek has had gabion reinforcement of the bank. Station 9 in Lennon Drain has been channelized and filled with rip rap material.

TABLE 7.16 - SUMMARY OF BENTHIC DATA FOR STATIONS LOCATED IN THE AOI

	Station 1 Cahill Drain	Station 3 Turkey Creek	Station 4 Turkey Creek	Station 5 Turkey Creek	Station 6 Cahill Drain	Station 9 Lennon Drain
Date sampled	9March05	9March05	10March05	10March05	10March05	10March05
Abundance	338	256	196	125	293	347
Richness	16	15	4	7	8	14
EPT abundance	5	0	0	2	0	0
EPT richness	2	0	0	1	0	0
% EPT	1.48%	0.00%	0.00%	1.60%	0.00%	0.00%
# intolerant	2	3	1	1	0	2
% tolerant	80.00%	73.73%	75.00%	80.00%	100.00%	75.00%
% oligochaetes	26.63%	50.78%	0.00%	2.40%	6.83%	6.63%
% grazers	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
HBI	6.80	6.14	5.98	7.43	6.18	7.36
Water quality	Fairly Poor	Fair	Fair	Fairly Poor	Fair	Fairly Poor

[30] Manny, B. A., T. A. Edsall and E. Jawarski. 1988. The Detroit River, Michigan: An ecological profile biological report. U.S. Fish and Wildlife Service, U.S. Department of Interior. Contribution No. 683 of the National Fisheries Research Centre - Great Lakes. Ann Arbor, MI. (in MDNR and MOE 1991)

Station 1 – Cahill Drain Downstream of Huron Church Line

Habitat conditions at this station were homogeneous. Substrate consisted of mainly silt. Riparian vegetation was composed of old field species with some shrubs and trees.

Water quality rating from the HBI value for this station was Fairly Poor. This indicates that there is significant organic pollution at this station. One species of mayfly (Ephemeroptera), and one species of caddisfly (Trichoptera) were found at this station. These organisms are usually indicators of good water quality, however the mayfly genus Caenis found at this station is tolerant of degraded habitat conditions. The percentage of tolerant organisms at this station was very high indicating that while species richness is average, the species present are tolerant of poor habitat and water quality conditions. Oligochaetes (worms) are found in habitats with fine sediments and a higher oxygen demand. The high percentage of oligochaetes at this station is an indicator of the poor habitat conditions. The lack of grazers at this station is an indicator of the lack of allochtonous material (such as leaf litter) in this system.

Station 3 - Turkey Creek Downstream of Huron Church Road

Habitat conditions at this station were homogeneous. Substrate consisted of a concrete channel with some gravel, sand, and silt. Riparian vegetation was limited to old field species along the concrete banks. Upstream of the sample station, there is no riparian vegetation as the banks are concrete.

Water quality rating from the HBI value for this station was fair. This indicates that there is fairly significant organic pollution at this station. No mayflies (Ephemeroptera), stoneflies (Plecoptera), or caddisflies (Trichoptera) were found at this station. These organisms are usually indicators of good water quality. Their absence may indicate that water quality at this station is poor. The percentage of tolerant organisms at this station was very high indicating that while species richness is average, the species present are tolerant of poor habitat and water quality conditions. The high percentage of oligochaetes at this station is an indicator of the poor habitat conditions. The lack of grazers at this station is an indicator of the lack of allochtonous material (such as leaf litter) in this system.

Station 4 - Turkey Creek Downstream of Dominion Boulevard

Habitat conditions at this station were homogeneous. Substrate consisted of a concrete channel with some sand and silt deposits. There was no riparian vegetation as the banks were concrete.

Water quality rating from the HBI value for this station was fair. This indicates that there is fairly significant organic pollution at this station. Species richness was low at this station indicating that habitat diversity is low and conditions are degraded. No mayflies, stoneflies or caddisflies were found at this station. Their absence may indicate that water quality at this station is poor. The percentage of tolerant organisms at this station was very high indicating that while species richness is average, the species present are tolerant of poor habitat and water quality conditions. Chironomids accounted for 99.5 per cent of the sample. These organisms occupy the same habitat niche as the oligochaetes indicating the poor habitat conditions at this station. The lack of grazers at this station is an indicator of the lack of allochtonous material (such as leaf litter) in this system.

Station 5 – Turkey Creek Downstream of Malden Road

Habitat conditions at this station were more diverse then the rest of the stations. Substrate consisted of mainly silt with some cobble. Riparian vegetation was composed of old field species with some shrubs. Only one replicate was taken at this station, as only one transect downstream of the bridge was shallow enough to wade. Water depth was high upstream and downstream of the bridge.

The water quality rating from the HBI value for this station was fair. This indicates that there is fairly significant organic pollution at this station. Species richness was low at this station indicating that habitat diversity is low and conditions are degraded. One species of caddisfly was found at this station that is somewhat intolerant of degraded habitat conditions. The percentage of tolerant organisms at this station was very high indicating that the species present are tolerant of poor habitat and water quality conditions. The lack of grazers at this station is an indicator of the lack of allochtonous material (such as leaf litter) in this system.

Station 6 – Cahill Drain Downstream of Malden Road

Habitat conditions at this station were homogeneous. Substrate consisted of mainly sand and silt. Riparian vegetation was composed of old field species with some shrubs.

Water quality rating from the HBI value for this station was fair. This indicates that there is fairly significant organic pollution at this station. Species richness was low at this station indicating that habitat diversity is low and conditions are degraded. No mayflies, stoneflies or caddisflies were found at this station. Their absence may indicate that water quality at this station is poor. The percentage of tolerant organisms was 100 per cent, indicating that the species present are tolerant of poor habitat and water quality conditions. The lack of grazers at this station is an indicator of the lack of allochtonous material (such as leaf litter) in this system.

Station 9 – Lennon Drain Downstream of Huron Church Line

Habitat conditions at this station were homogeneous. Substrate consisted of riprap. Riparian vegetation was composed of old field species with some shrubs.

Water quality rating from the HBI value for this station was fairly poor. This indicates that there is significant organic pollution at this station. No mayflies, stoneflies, or caddisflies were found at this station. Their absence may indicate that water quality at this station is poor. The percentage of tolerant organisms at this station was very high indicating that while species richness is average, the species present are tolerant of poor habitat and water quality conditions. The lack of grazers at this station is an indicator of the lack of allochtonous material (such as leaf litter) in this system.

Species at Risk

Six species of fish are listed as Endangered, Threatened or Special Concern by COSEWIC and COSSARO and eight are regulated under the new OESA. No species at risk are reported from inland watercourses located within the AOI. Spotted gar (Lepisosteus oculatus) is ranked S2 and is listed as Threatened by both COSEWIC and COSSARO. Its general provincial status is “at risk” likely due to its restricted range within Ontario, and it is tracked by the NHIC. Lake sturgeon (Acipenser fulvescens) is ranked as S3 and is currently listed as Not at Risk by COSEWIC and COSSARO; however, lake sturgeon is regulated under Schedule 5 of the new OESA. Longnose gar (Lepisosteus osseus) is ranked S4 and is not currently listed by COSEWIC or COSSARO, however, longnose gar is regulated under Schedule 3 of the new OESA. Two cyprinid species reported from the Detroit River are also considered to be at risk: silver chub (Macrhybopsis storeriana) and pugnose minnow (Opsopoeodus emiliae). Both are ranked S2 and are considered of Special Concern by COSEWIC and COSSARO and regulated under Schedule 5 of the new OESA. Both are currently tracked by the NHIC and have a general provincial status of “sensitive”. The last three species of concern are in the sucker family: bigmouth buffalo (Ictiobus cyprinellus), spotted sucker (Minytrema melanops) and river redhorse (Moxostoma carinatum). The bigmouth buffalo is ranked SU, meaning that it is unrankable at this time as more data is needed. The spotted sucker and river redhorse are both ranked S2. All three of these fish species are listed as Special Concern by COSEWIC and COSSARO and all three are regulated under Schedule 5 of the new OESA. The general provincial status of the bigmouth buffalo is “undetermined” and the river redhorse general provincial status is “sensitive”. The location of the possible bridge piers does not support critical habitat for any of these known species at risk.

7.5.4 Wildlife and Wildlife Habitat

DATA COLLECTION

The AOI for wildlife and wildlife habitat included all lands located within the maximum footprint area of the combined practical alternatives and adjacent lands located within 120m of the right-of-way. This area corresponds approximately with the ACA. The study team investigated all wildlife habitats located in the AOI to identify important habitat for wildlife, inventory wildlife and confirm the presence/absence of species at risk.

The purpose of the field investigations was to document wildlife habitat and wildlife occupation and to characterize the nature, extent and significance of animal usage within the AOI. Existing information on wildlife species previously found within the AOI came from various sources. The *Ontario Herpetofaunal Summary Database of the Natural Heritage Information Centre (NHIC)* provided amphibian and reptile lists, locations and status. The *Ontario Breeding Bird Atlas (OBBA)* program provided up-to-date lists of birds breeding within specific areas of Ontario while information from The *Conservation Priorities for the Birds of Southern Ontario* provided lists of migratory bird species in Essex County designated as species for habitat protection by local municipalities. It also ranks bird species highly sensitive to disturbances of their breeding habitats. The *Atlas of the Mammals of Ontario* provided locations of species found in Essex County. More specific information about wildlife previously documented in the AOI came from communications with personnel of the Ontario Ministry of Natural Resources and the Ojibway Prairie Nature Centre in Windsor.

Wildlife habitat was delineated on air photos and refined through ground-truthing. The Ecological Land Classification (ELC) system was used to describe wildlife habitat, where appropriate. In many cases, similar wildlife habitat polygons were combined into a single polygon to reduce duplication, while in others cases new wildlife habitat polygons were delineated in areas not classified according to ELC. For this reason, the wildlife habitat polygons do not correspond exactly with the vegetation community polygons. Several areas, including factories, retail outlets and residential areas with high density could not be accessed or do not support wildlife habitat; hence, these areas were not investigated. The methods described in the *Significant Wildlife Habitat Technical Guide (MNR 2000)* were used to establish the significance of wildlife habitat.

Methods used to collect in-field information were tailored to each vertebrate class (i.e., amphibians, reptiles, birds and mammals). Once the specific wildlife units within the AOI were mapped and the methods of investigation were established, diurnal and nocturnal investigations took place. Data was collected by a field crew of one or two biologists working in tandem using aerial photo maps, a GPS unit, binoculars, cameras, a headlamp, field notebooks and a laptop computer. Field investigations were conducted on: April 12-14 and 18-21, 2006; May 1-4, 2006; June 4-7, 11-16, 18-24 and 29-30, 2006; July 1, 2006; September 17-21, 2006; November 22-23, 2006; and, February 21-23, 2007.

Herpetofauna (reptiles and amphibians) were inventoried using the Visual Encounter Survey (VES) method[31]. Data was collected by simply searching for animals in a likely habitat at a likely time. Reptile investigations started in late spring and early summer after species came out of their hibernacula. Following the VES methodology, early morning searches for snakes in suitable habitats included flipping over rocks, logs, boards, shingles or any material snakes would hide under through the night. From mid to late morning, rocks, logs and asphalt pathways, used for basking areas, were also investigated. By the afternoon, searches turned to habitats considered as snake hunting and feeding areas, like cultural meadows and areas in and around wetlands. Also, sheets of wood, laid out in different habitats to attract snakes for use as cover and warmth, were checked in the morning and late afternoons for activity.

Turtles were found by investigating their potential habitats, such as creek drains or ponds, and observing them basking on logs in ponds during late mornings, swimming on the bottom of ponds in search of food or crossing over roads and pathways when moving from pond to pond during the day.

For amphibians, in the spring and early summer season when frog and toad activity was at its peak, nightly road cruises by vehicle and breeding call surveys were employed. By identifying frog and toad breeding calls during evening road cruises, locations of important breeding areas were found. Daytime searches of wetlands identified as potential amphibian breeding areas were also made. After the breeding season, wetlands were searched for amphibian egg masses and/or tadpoles to identify any frog or toad species found in these locations.

Prior to conducting bird surveys, aerial photos of the AOI and its surroundings were checked to see if there were areas of continuous forests, cultural thickets, etc. that could potentially be used as spring and fall migration corridors. These maps were also used to determine where preferred nesting habitats could exist during the breeding season. Any potential areas were then ground-truthed by simply observing and recording species in chosen habitats at the right time of year. During the spring and fall seasons, specific habitats throughout the AOI were monitored for areas of large bird movements and stopover points.

Two inventory methods were used to determine the breeding bird composition and locations of breeding activity in the AOI: the point-count method[32, 33]; and, nest surveys. Due to the large size of the AOI and the need to represent as many of the habitats as possible, non-random locations were selected for point-counts. These specific locations, selected in areas that maximized the amount of habitats covered per count, increased the number of species recorded in as short of time as possible. Each point-count station was recorded using a hand-held GPS unit. A total of 60 point-count stations were censused twice, a minimum of seven days apart, for a total of 120 point-count surveys. Point-counts were started 30 minutes before dawn and stopped by 0900 to 0930 hours. Five minutes of suitable bird observation and bird call listening times were standard per station (time increased to 10 minutes in areas of high environmental noise such as traffic or industrial activities). Station locations were at least 125 m or more apart to prevent bird identification overlap. The criteria of the *Breeding Bird Atlas (BBA)* breeding bird survey was used for identifying breeding bird behaviour (e.g., carrying food to young, territorial song, etc.) as evidence of birds breeding within a location. Evening spot checks were also made in habitats considered to have owl species. Tape recordings of owl calls were played to induce a response for species identification.

[31] Heyer, W.R., M.A. Donnelly, R.W. McDiarmid, L.C. Hayek and M.S. Foster.1994. Measuring and Monitoring Biological Diversity. Standard Methods for Amphibians.
[32] Ralph, C.J., J.R. Sauer and S. Droege. 1995. Monitoring Bird Populations by Point Counts. Pacific Southwest Research Station, Albany, California.
[33] Bibby, C.J., N.D Burgess, and D.A. Hill. 1992. Bird Census Techniques. Published for the British Trust for Ornithology and The Royal Society for the Protection of Birds.

The second method used to identify species composition consisted of a nest survey performed in the summer and fall seasons. This was undertaken as a secondary method of data collection to determine breeding bird occurrence in particular habitats. In the summer season, most nests were located by focusing on the breeding behaviour of particular bird species. Early morning observations of female returning to their nests after morning forages were used to identify their nest location. Observations of other behavioural signals (e.g., carrying nest-building materials, copulations, territorial disputes, etc.) were used to lead an observer to areas of high nest probability or directly to the nest itself. In the fall, when breeding season was over and tree foliage disappeared, clumps of structured grasses in trees or fecal deposits under tree nest holes were used to identify nests. Nest locations were recorded and habitat types noted.

Mammals were inventoried using a variety of methods, such as the identification of tracks, trails, sounds, scats, smells and individual species behavioral signs, such as plant cuttings, nest sites, lodges, etc.[34]. As many habitats as possible were searched using the VES method. The investigator simply walked through an area searching for mammals using the variety of methods mentioned above. Evening road cruises by vehicle were made to spot mammals crossing roadways. Early morning walks just before sunrise and late afternoon walks just before dark were also made to catch mammal movements to and from their daytime haunts. These investigations were repeated in the same wildlife areas more than once to increase the accuracy of the species composition recorded. Species locations and the habitats they were sighted in were recorded. Daily mammal movement corridors which showed important connections between habitats were also recorded. Bats, however, being volant mammals of the night, were difficult to identify in the field without the proper equipment. Since high frequency bat detectors were unavailable, secondary source information was relied upon to determine the bat species present in the AOI.

Any species at risk found in the field had its location recorded with a GPS unit and a photograph taken for verification, where possible. Data collected in the field from each of the vertebrate class investigations was transferred into a laptop computer on a daily basis. Field notes, GPS coordinates and photographs were downloaded into wildlife tables for future analysis. This data was analyzed and used to determine the locations of sensitive habitats in the AOI.

DATA ANALYSIS

Wildlife Species

The natural heritage features of the AOI were divided into 124 wildlife habitat units. These units formed the basic habitats around which most of the terrestrial vertebrates were recorded. SARA species were searched for and priority species of conservation concern were noted. Four continuous seasons of data collection and in-field wildlife investigations within and around these wildlife units resulted in the compilation of 139 species (11 herpetofauna, 108 birds and 20 mammals). A list of terrestrial

[34] Wilson, D.E., F.R. Cole, J.D. Nichols, R. Rudran and M.S. Foster. 1996. Measuring and Monitoring Biological Diversity. Standard Methods for Mammals.

vertebrates recorded in the AOI is presented in Appendix F of the *Draft Practical Alternatives Evaluation Working Paper – Natural Heritage*.

Four amphibian species and seven reptile species were recorded in the AOI. Amphibians include frogs and toads since no salamanders were located anywhere in the the AOI. The absence of salamanders from the AOI was expected based on discussions with local experts and review of secondary information.

The majority of the amphibians were found at specific vernal ponds and creek drains during the breeding season. As a result, these locations were identified as important amphibian breeding areas. American toad (Bufo americanus) and/or western chorus frog (Pseudacris triseriata) were found in most of the breeding areas recorded. Only one pond, located near the east limits of the AOI, had green frog (Rana clamitans) egg masses. Chorus frogs were located predominantly in or around vernal pools within woodlots, whereas American toads and green frogs preferred ponds or creek drains in open areas. No leopard frog egg masses were found in any of the ponds investigated although adults were seen around creek drains throughout the summer.

Of the reptiles observed, snakes were recorded most often. The eastern foxsnake (Elaphe gloydi) was recorded on numerous occasions in wooded areas, along creeks, under buildings or under log piles in residential backyards. The other four species were located in tallgrass prairies, cultural meadows and cultural thickets under boards, tiles, rocks, or whatever they could hide under during the evenings and early mornings. Of these, Butler's gartersnake (Thamnophis butleri) was recorded only in the open tallgrass prairie (TPO2-1) habitats. Both the eastern foxsnake and Butler's gartersnake are regulated under the Fish and Wildlife Coordination Act (FWCA), as well as Schedule 1 under SARA and Schedule 4 under the new *Ontario Endangered Species Act (ESA), 2007*. These species are discussed along with other species at risk in a later part of this chapter.

Based on discussions with local experts, Butler's gartersnake was present in Malden Park prior to the construction of the E.C. Row Expressway and conversion of Malden Park into parkland. However, this population has been extirpated from Malden Park. This species has a strong affinity to prairie communities and a very small home range; therefore, it is very sensitive to habitat loss. A migrating painted turtle (Chrysemys picta) was found along Broadway Street just north of the Black Oak Woods. A snapping turtle (Chelydra serpentina) was observed in a creek drain north of Armanda Street near the east Chappus Road extension.

Birds comprised 108 of the 139 wildlife species recorded, with representatives in every habitat. Field survey data showed that 50 of these species were breeding birds that nested in about 75 per cent of the designated wildlife habitat units. Most of the remaining 58 species, observed primarily in the spring and fall seasons, were considered non-residents or migrants. These migrants were observed moving through the western two-thirds of the AOI, 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 AOI, were being used as continuations of these major north-south migration corridors. Areas like the forests, woodlots and cultural thickets of Brighton Beach, the Malden Park forest connecting with the 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 AOI. The entire AOI is located within two continental bird migration corridors associated with the Atlantic and Mississippi Flyways. The large forest on 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. Hundreds of Broad-winged Hawks (Buteo platypterus), Red-tailed Hawks (Buteo jamaicensis), Coopers Hawk (Accipter cooperii), Goshawk (Accipter gentilis) and Turkey Vultures (Cathartes aura) stopped in this forest to roost while on their journey southward.

Two species of swallows were located on the Turkey Creek Bridge on Huron Church Road. Up to 20 nests were found on the ceiling cross beams but only 11 were considered active at the time of investigation. Eight Barn Swallow (Hirundo rustica) nests, located on the ceiling beams at the center of the bridge, and three Cliff Swallow (Petrochelidon pyrrhonota) nests, located on the outside ceiling beams, were recorded.

Two wildlife units contained a large number of migratory bird nests as compared to most of the other units. W-BBA9 and W-NSG7 contained multiple nests from species such as Brown Thrasher (Toxostoma rufum), Gray Catbird (Dumetella carolinensis), American Robin (Turdus migratorius), American Goldfinch (Carduelis tristis), Willow Flycatcher (Empidonax traillii), Yellow Warbler (Dendroica petechia) and Mourning Dove (Zenaida macroura). The diversity of migratory bird species centralized in such small areas makes these habitats highly important.

Based primarily on evidence from signs such as trails, tracks, scats, smells, sounds, etc., evidence for mammal activity was recorded in every habitat type. Incidental observations were made of red fox (Vulpes vulpes) carrying food to their pups in wildlife unit W-BBA9 and three fox pups playing in the early morning hours opposite W-BBA4. The only European hare (Lepus europaeus) recorded was spotted in the cultural meadow of W-BBA20 whereas eastern cottontails (Sylvilagus floridanus) were observed in open areas thoughout the AOI. Individuals were seen moving through the cultural meadows in W-CH12 and W-LAM6 or feeding around human habitations such as St. Clair College or the residence front lawns along Montgomery Drive just west of Talbot Road. Grey squirrel (Sciurus carolinensis) dreys were found in nearly every forest and woodlot. The abundance of raccoons (Procyon lotor) was recorded primarily from observing their trails and tracks going from habitat to habitat. White-tailed deer (Odocoileus virginianus) was also recorded in nearly every habitat type. Tracks, trails, scats, bedding areas and direct observations indicated their presence in cultural meadows, cultural thickets, marshes and forests throughout the AOI. Road kills were another method used to determine mammal presence in particular habitats. Opossums (Didelphis virginianus) were found along Broadway Street just east of Ojibway Parkway and along Talbot Road next to a meadow marsh on the south side of the Heritage Park Alliance Church.

Migration corridors for mammals were seen through every habitat and connecting each of the habitat types. Of particular note, the Cahill Drain, connecting the St. Clair College Prairie ESA on the north side of Highway 3 to the deciduous swamp located on the south side of Highway 3 was heavily traveled by mammals in both summer and winter. Tracks of small mammals, muskrat (Ondatra zibethica), red fox, coyote (Canis latrans) and raccoon were recorded along Cahill Drain and under Highway 3 going in both directions. White-tailed deer showed no evidence of travel through the culvert but used the creek drain for travel on the north side of Highway 3. The fact that corridors were so abundant indicated high mammal activity and the importance of the remaining natural heritage features found in the AOI.

Winter investigations indicated that most of the AOI had a limited amount of wildlife activity. Herpetofauna were in hibernation and most of the breeding bird species had left the area. Only a few winter bird species remained using particular habitats as winter feeding areas. Trails and tracks showed that a few mammal species used certain portions of the AOI for travelling and bedding down. Fox and coyote used frozen creek drains, open fields and human-made paths through woodlots for winter travel. Raccoons, especially during their late winter breeding season, travelled from woodlot to woodlot. Random white-tailed deer travel corridors, to and from feeding areas, existed in the forests and cultural thickets between Turkey Creek and Cabana Road West, between Spring Garden Road and E.C. Row Expressway and between Armanda Street and E.C. Row Expressway. Only a few deer bedding areas found in the AOI were located in the forested area of wildlife unit W-CH2 around Chappus Road north of Armanda Street. Most of the deer bedding areas appeared to be outside the AOI, concentrated in the Spring Garden Forest ANSI, while most of the feeding areas appeared to be in the AOI.

Wildlife Habitat

All the wildlife units contained one or more of 13 habitat types recognized in the AOI. These habitat types are described below. A detailed assessment of the significance of each wildlife habitat unit is presented in the *Draft Practical Alternatives Evaluation Working Paper – Natural Heritage*. By analyzing each of the habitat types throughout the AOI, a pattern of species composition per habitat type became evident. The location of wildlife habitat units located in the AOI is presented in **Exhibit** 7.29.

Deciduous Forests and Cultural Woodlots

Many wildlife species used the deciduous forests (FOD) and cultural woodlots (CUW) as migration corridors, living spaces and breeding areas. Besides their use for the seasonal migration of birds (noted above), mammals regularly used these habitats as corridors for daily movements to and from their feeding and resting areas in various habitats. Small mammals, red fox (Vulpes vulpes), raccoon (Procyon lotor), and white-tailed deer (Odocoileus virginianus) are a few species that used FODs and CUWs as a food source. Raccoons and other small mammals also used specific trees within the habitat for hibernation den sites while white-tailed deer used certain areas for winter deer yards protecting them from the elements. Forests and woodlots were also important breeding areas for wildlife. Chorus frogs were recorded calling and breeding at many of the vernal ponds found within some of these woodlots. Up to 23 species of migratory birds, many considered species of conservation priority, were recorded using the forests and woodlots for nest sites. Red-tailed Hawk, Eastern Wood Pewee (Contopus virens) and Baltimore Oriole (Icterus galbula) nested in the forest canopies while the understory contained nests of Indigo Bunting (Passerina cyanea), Wood Thrush (Hylocichla mustelina) and American Robin to name a few. Cavities in the trunks of dead standing trees were used by Tree Swallows (Tachycineta bicolor) and Black-capped Chickadees (Poecile atricapillus), whereas Downy Woodpecker (Picoides pubescens) and Northern Flicker (Colaptes auratus) excavated their own cavities in the trunks of live trees. Many of the woodlot trees were also used as den sites by small mammals and raccoons and dreys were constructed in them by gray squirrels (Sciurus carolinensis) for raising their young.

Cultural Thickets

Being continuations of the some of the larger fragmented FOD and CUW migration corridors, cultural thickets (CUT) were also used by migratory birds as stopover areas for feeding while on their seasonal migrations. Many CUTs surrounded creek drains and provided protection from the elements for amphibian species breeding there. Numerous garter snakes (Thomnophis sirtalis) were recorded using this habitat for hunting during the day and hiding through the night. CUTs also linked larger habitats together so mammals used them as daily movement corridors from feeding areas to resting areas. Track evidence through corridors showed heavy use of CUTs by raccoon, red fox, coyote (Canis latrans) and white-tailed deer. Of most importance, CUTs provided a large number of breeding birds with a well protected habitat for their nests. Up to 14 species of migratory birds were recorded to use CUTs in the AOI for breeding. For example, wildlife unit W-NSG7 recorded numerous Gray Catbird nests, plus nests of Yellow Warbler, American Goldfinch and American Robin. Breeding bird evidence then accounted for another three to four species added to this unit.

Cultural Meadows

Cultural meadows (CUM), found in more wildlife units in the AOI than any other habitat, were used by wildlife as migration corridors, feeding and breeding areas. American toads were recorded many times in the habitat using it as a food source while Dekay's brown snakes (Storeria decayi) were recorded migrating through it to get to a wetter forest environment. Grassland bird species were recorded using these CUMs for food sources with increased numbers recorded during the migration periods. This habitat is also a breeding area for bird species such as Field Sparrow (Spizella pusilla), Savannah Sparrow (Passerculus sandwichensis) and Eastern Kingbird (Tyrannus tyrannus). White-tailed deer bedding areas were found throughout numerous CUMs in the area of investigation as were trails and tracks of raccoon, fox and coyote, which were using these habitats as travel corridors and feeding zones.

Cultural Savannahs

Ten cultural savannahs were identified as wildlife habitat units. Breeding evidence for at least 12 species of migratory birds, such as Orchard Oriole (Icterus spurius), Gray Catbird, American Goldfinch, Willow Flycatcher and Yellow Warbler, was found. Numerous mammal corridors extended through these habitats connecting feeding areas and dwelling areas in surrounding habitats.

Tallgrass Prairies

Although represented in numerous wildlife units within the area of investigation, the area each tallgrass prairie (TPO) represents is relatively small in comparison to other habitats. However, they contain some of the most unique wildlife species. Every snake species recorded in the AOI was found in the TPO habitats. Snakes used this habitat for hunting their prey and as corridors to neighboring habitats. Bird nests and breeding bird behaviours indicated that species, such as Willow Flycatcher and Field Sparrow, nested in this habitat. Trail evidence also indicated that the TPO's were used by mammals as potential feeding areas and as movement corridors among surrounding habitats.

Meadow Marsh and Shallow Marsh

These meadows (MAM and MAS) attract wildlife species dependant on a greater amount of water during their life cycle. Many snake species, like foxsnakes, are attracted to these habitats for a food source. Up to 15 species of birds were recorded within MAMs and MASs of the AOI. Some species recorded, like American Woodcock (Scolopax minor), Yellow Warbler and Common Yellowthroat (Geothlypis trichas), prefer to breed in this type of habitat. Numerous mammal species, like cottontail (Sylvilagus floridanus), opossum (Didelphis virginianus), raccoon and deer used these habitats for feeding. Numerous trails throughout these habitats also showed their use as movement corridors among surrounding habitats.

Deciduous Swamps

Four wildlife units contained deciduous swamps (SWD). A combination of both forest and wetland species, such as Baltimore Oriole, Common Grackle (Quiscalus quiscula), Carolina Wren, Cooper's Hawk, Common Yellowthroat and Song Sparrow, were recorded. Trails and tracks from deer, coyote and raccoon were also observed.

Cultural Plantations

Not known for their biodiversity, cultural plantations (CUP) recorded a limited variety of wildlife. Foxsnakes were recorded moving through these habitats when located next to human residences. No breeding birds were recorded within these habitats but several species were observed using them as feeding areas. Mammals used them as protective migration corridors moving to and from surrounding habitats.

Open Water

The only open water (OAO) found was a pond in one of the agricultural areas. Trails leading to the pond indicated its use as a water and food source for mammals. Amphibians, such as green frog, bred there because it is a permanent water source. Birds, such as tree swallows, fed over the water and appeared to be nesting in the dead trees located on the northwest side of the pond.

Agricultural Areas

These areas are not recognized by the ecological land classification system (ELC), but were recorded as wildlife habitat units because of their uniqueness as breeding habitats to many species of birds. Found predominantly at the east end of the AOI, bird species such as Horned Larks (Eremophila alpestris), Killdeer (Charadrius vociferus), Spotted Sandpiper (Actitis macularius) and Vesper Sparrow (Pooecetes gramineus), used these tilled open fields to nest in. The edges of these agricultural fields consisted of tree rows, thickets and creek drains that provided additional nesting habitats. Kingbirds, Savannah Sparrows, Song Sparrows (Melospiza melodia), Canada Geese (Branta canadensis) and Mallard (Anas platyrhynchos) were all recorded nesting on the periphery of these agricultural fields.

Residential Areas

Also not recognized by ELC, these wildlife habitat units contained wildlife species particularly adapted to human presence. Snakes, such as the foxsnake, were recorded dwelling in backyard wood piles or under garages of individual homes. Birds, like Catbirds, Chipping Sparrows (Spizella passerina) and Mourning Doves, nested on or in close proximity to the residences themselves. Opportunistic mammals, like white-tailed deer, raccoon, striped skunk (Mephitis mephitis) and eastern chipmunk (Tamias striatus) used residential areas for foraging and den sites.

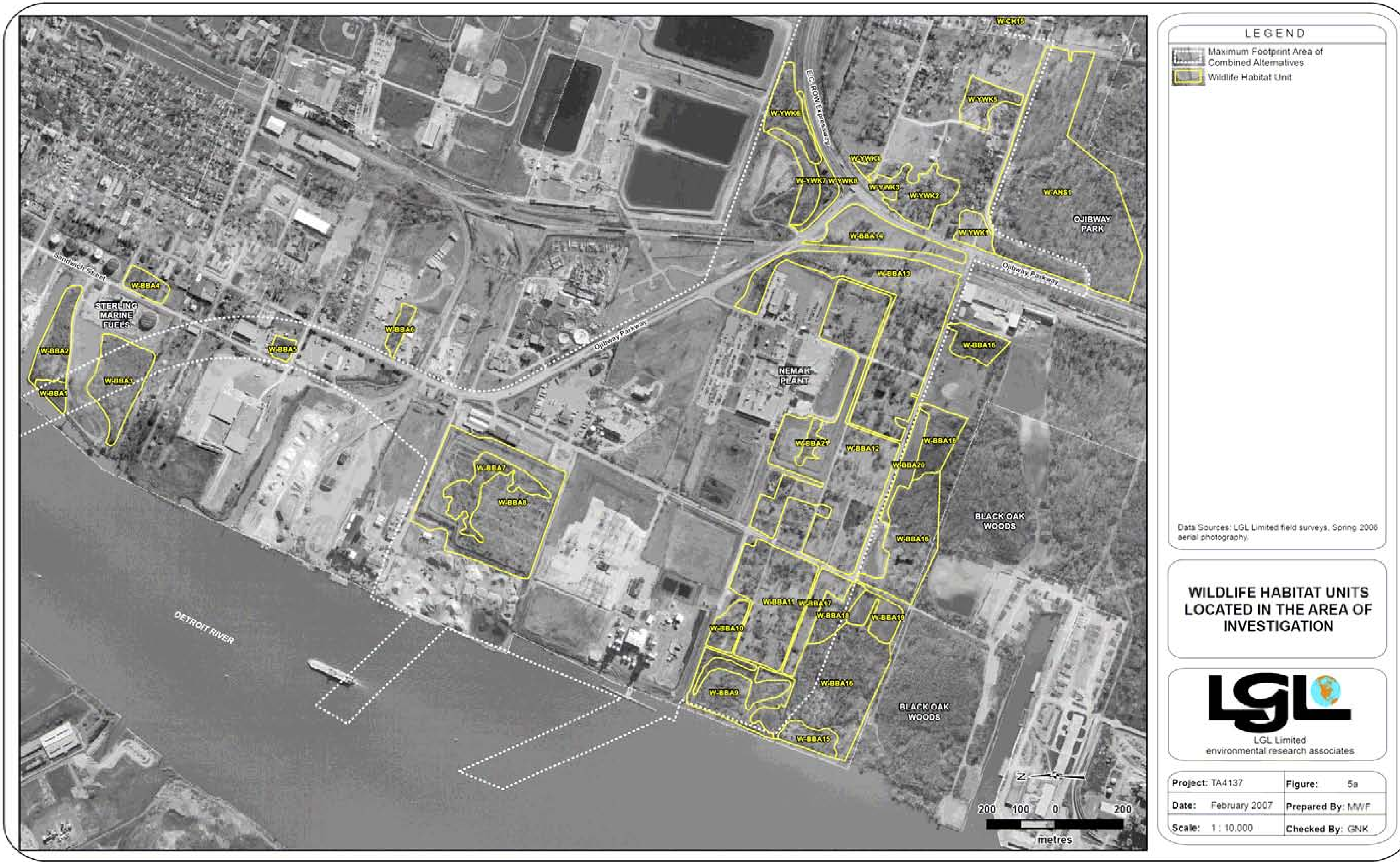
Species at Risk

None of the amphibians recorded in the AOI are listed by COSEWIC or COSSARO or regulated by legislation. Four of the reptile species are regulated under the FWCA. Two of these species, Butler's gartersnake and eastern foxsnake, are also regulated as Schedule 1 under the SARA and Schedule 4 under the new OESA. Butler's gartersnake was found in two separate locations on the south side of E.C. Row Expressway. Three foxsnakes were observed in two different field locations while another three were reported by local residents in two separate residential areas. Two of the three foxsnakes found during the investigations were located along the shoreline of Turkey Creek just west of the Huron Church Road Bridge. The other was found basking on the asphalt walkway just south of Spring Garden Road at the northwest corner of wildlife habitat unit W-LAM1. Two of the residential reports were in the woodlot and a residence backyard on the north side of Armanda Street, while the other was reported dwelling under the back corner of a garage next to a residence along the north side of Reddock Street just west of Huron Church Road. Both of these residential locations were verified by local biologists. The eastern Massasauga (Sistrurus catenatus catenatus) and the eastern hognosed snake (Heterodon platirhinos), both listed as Threatened by COSEWIC and COSSARO and regulated under the FWCA, Schedule 1 of SARA, and Schedule 4 of the new OESA, occur in the Ojibway Prairie Complex, but none were observed during field investigations.

The Migratory Birds Convention Act (MBCA) regulates 90 of the 108 bird species recorded. The FWCA regulates eleven species, primarily the birds of prey. The only avian species regulated by SARA is the Red-headed Woodpecker found in the Black Oak Woods between Ojibway Parkway and Matchette Road. The Red-headed Woodpecker is listed as Threatened by COSEWIC and Special Concern by COSSARO and regulated under Schedule 3 of SARA and Schedule 5 of the new OESA. The Red-headed Woodpecker is about to be uplisted to Schedule 1 of SARA. The Golden-winged Warbler, which was observed as a migrant in the AOI is regulated under Schedule 5 of the new OESA. Locally, 38 bird species are considered priority species of conservation concern by Bird Studies Canada for Essex County. Of these, 32 species are ranked as highly sensitive to any disturbances in or around their habitat.

Fifteen of the mammals recorded are regulated under the FWCA. No mammal species found in the AOI are regulated under SARA or the new OESA. The status of terrestrial vertebrate species recorded in the AOI is presented in the *Draft Practical Alternatives Evaluation Working Paper – Natural Heritage*.

EXHIBIT 7.29 – WILDLIFE HABITAT UNITS ASSOCIATED WITH THE AREA OF INVESTIGATION



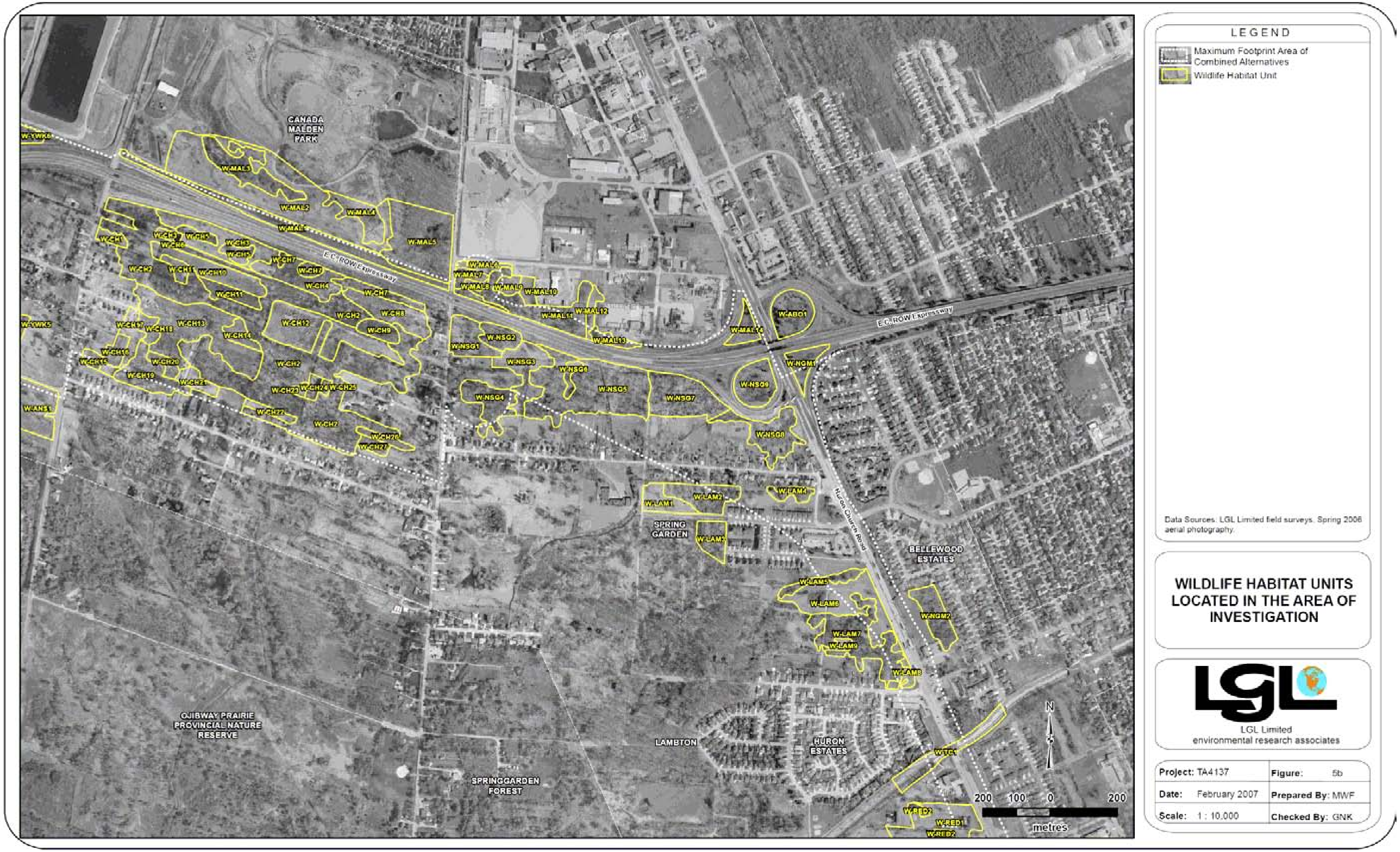
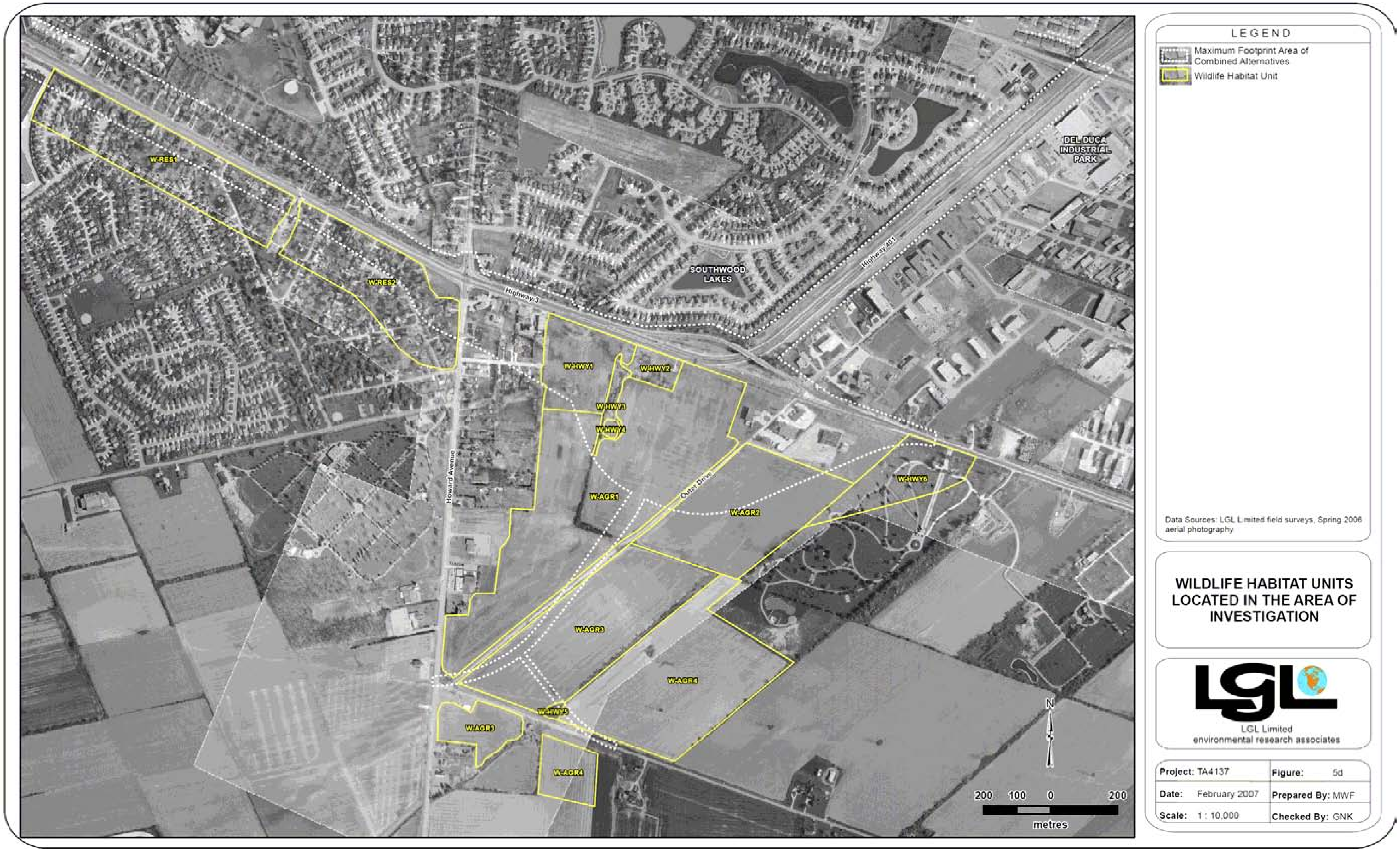

LEGEND
Maximum Footprint Area of Combined Alternatives
Wildlife Habitat Unit
Data Sources: LGL Limited field surveys, Spring 2006 aerial photography.
WILDLIFE HABITAT UNITS LOCATED IN THE AREA OF INVESTIGATION
LGL Limited
environmental research associates
Project: TA4137
Figure: 5b
Date: February 2007
Prepared By: MWF
Scale: 1 : 10,000
Checked By: GNK
CANADA MALDEN PARK
E.C. ROW Expressway
SPRING GARDEN
BELLEWOOD ESTATES
OJIBWAY PRAIRIE PROVINCIAL NATURE RESERVE
SPRINGGARDEN FOREST
LAMBTON
HURON ESTATES
Huron Church Road
200 100 0 200
metres
N

EXHIBIT 7.29 – WILDLIFE HABITAT UNITS ASSOCIATED WITH THE AREA OF INVESTIGATION (CONT'D)

EXHIBIT 7.29 – WILDLIFE HABITAT UNITS ASSOCIATED WITH THE AREA OF INVESTIGATION (CONT'D)



7.5.5 Designated Natural Areas

DATA COLLECTION

The AOI for designated natural areas includes the ACA and its vicinity. The study team investigated all designated natural areas in the AOI and its vicinity. Information on designated natural heritage areas was derived from the secondary sources consulted during the preparation of the *Environmental Overview Paper – Canadian Existing Conditions Volume 2 (Natural Sciences)*. The information contained in the *Environmental Overview Report* was reviewed, updated and augmented to reflect the revised AOI.

DATA ANALYSIS

A number of Areas of Natural and Scientific Interest (ANSIs) and Environmentally Significant Areas (ESAs) and one Provincial Nature Reserve are located within the AOI. One of these natural heritage features has also been evaluated by Carolinian Canada. In addition, the City of Windsor and the Town of LaSalle have both undertaken biological inventories of the remnant forest and prairie habitat features not already designated and afforded some form of protection in planning documents to determine if these areas should be included under an Open Space/Greenway system policy. These areas are referred to as Candidate Natural Heritage Sites (CNHSs). This section provides a summary of these designated natural areas located in the AOI and its vicinity. The location of designated natural areas is presented in Exhibit 7.30.

Provincial Nature Reserve

Provincial Nature Reserves are areas selected to represent the distinctive natural communities and landforms in Ontario. Ojibway Prairie is a 65 ha Provincial Nature Reserve that was regulated under the *Provincial Parks Act* in 1977 to protect one of the largest remnants of tallgrass prairie and oak savannah in Ontario[35]. The dominant feature of this nature reserve is the tallgrass prairie plant community. Within the Ojibway Prairie Provincial Nature Reserve, 533 flowering plant species have been documented, of which more than 60 are of prairie and western affinity. It is home to more than 60 plants that are rare in Ontario as well as a number of animal species representative of prairie habitats[36, 37]. The Ojibway Prairie Provincial Nature Reserve forms one component of the Ojibway Prairie Complex ANSI.

Vegetation communities in the Provincial Nature Reserve include Old Field (27.5 ha), Forb Prairie (17 ha), Tallgrass Prairie (11.5 ha), Thickets (3 ha), Oak Savannah (4.5 ha), and Black Oak/Red Hickory Forest (1.5 ha). While some early successional tallgrass prairie species occur in Old Field communities, the majority of species with a prairie affinity are located within the remaining vegetation communities. The Provincial Nature Reserve contains two vegetation communities that are globally and provincially rare.

Moist-Fresh Tallgrass Prairie Type (TPO2-1) and Moist-Fresh Black Oak Tallgrass Savannah Type (TPS2) both have a global rank of G1 (Extremely Rare – having less than five occurrences in the overall range) and a provincial rank of S1 (Extremely Rare in Ontario – having less than five occurrences in the province).

The Provincial Nature Reserve provides habitat for three nationally and provincially Threatened wildlife species regulated under SARA and the new OESA including eastern foxsnake (Elpahe gloydi), Butler's gartersnake (Thamnophis butleri) and eastern hognosed snake (Heterodon platirhinos). Purple twayblade (Liparis liliifolia) and eastern prairire fringed orchid (Platanthera leucophaea), both nationally and provincially Endangered and regulated under SARA and the new OESA, are present in the reserve.

Colic-root (Aletris farinosa) and willowleaf aster (Symphotrichum praealtum), both nationally and provincially Threatened and regulated under SARA and the new OESA, are present in the reserve. Several provincially, regionally and/or locally significant species are also present in the Provincial Nature Reserve.

Evaluated Wetlands

There are no evaluated wetlands located in the AOI.

Areas of Natural and Scientific Interest

ANSIs in the AOI include several provincially and regionally significant Life Science ANSIs. According to the OMNR[38, 39], the Ojibway Prairie Complex provincially significant Life Science ANSI is comprised of the following areas:

- Ojibway Prairie Provincial Nature Reserve;
- Prairie Remnants (Ojibway Park) Life ANSI;
- Prairie Remnants (Titcombe Road North) Life ANSI;
- Prairie Remnants (Spring Garden Road) Life ANSI;
- Prairie Remnants (Black Oak Woods) Life ANSI; and
- Prairie Remnants (Southeast of Nature Reserve) Life ANSI.

These areas are identified on Exhibit 7.40.

Ojibway Prairie Provincial Nature Reserve

A summary of the features of the Ojibway Prairie Provincial Nature Reserve is discussed in Chapter 4.

Ojibway Park

Ojibway Park is a 64 ha site dominated by a Swamp White Oak Mineral Deciduous Swamp (SWD1-1), which has a provincial rank of S2S3 (Very Rare to Uncommon in Ontario – having five to 100 occurrences in the province). Prairie, savannah and woodland communities are also present. At least three different prairie communities have been identified in the park based on differing herbaceous layer species assemblages.

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[35] Ontario Ministry of Natural Resources. 2002. Ojibway Prairie Park Management Plan. Ontario Ministry of Natural Resources, Chatham Area Office. 9 pp.
[36] Ibid.
[37] Pratt, P. D. 1979. A preliminary life science inventory of the Ojibway Prairie Complex and surrounding area. Unpublished report prepared for the City of Windsor and the OMNR. 163 pp.

[38] Ontario Ministry of Natural Resources. 1998. Natural Resources and Values Information System. Digital data for the City of Windsor and the Towns of LaSalle, Tecumseh and Amherstburg. Provided to LGL Limited on April 4, 2005.
[39] Ontario Ministry of Natural Resources. 2004a. Natural Resources and Values Information System. Digital data for the City of Windsor and the Towns of LaSalle, Tecumseh and Amherstburg. Provided to LGL Limited on April 4, 2005.

Woody species in savannah and woodland communities include pin oak, swamp white oak, black oak (Q. velutina), and red maple. Slender bush-clover (Lespedeza virginica), which is listed as Endangered by COSEWIC and COSARO and regulated under the SARA and the new OESA, is present in Ojibway Park. Several provincially, regionally and/or locally significant species are also present in Ojibway Park[40].

Titcombe Road North

This 40 ha site consists of tallgrass prairie and oak woodland communities. At least three different prairie communities have been identified in the Titcombe Road North ANSI based on differing herbaceous layer species assemblages. Woody species in woodland communities include black oak, white oak (Quercus alba) and red hickory (Carya ovalis).

Data collected by LGL Limited to date does not provide details as to the presence/absence of significant species in this portion of the Ojibway Prairie Complex provincially significant Life Science ANSI[41].

Spring Garden Road

This 165 ha site consists of tallgrass prairie and oak savannah communities, all of which have a provincial rank of S1 (Extremely Rare in Ontario – having less than five occurrences in the province). Other vegetation communities present in Spring Garden Road ANSI include a large wetland and old field communities. The wetland was originally an artificially constructed lagoon and is presently the largest remaining wetland in the City of Windsor[42].

Spring Garden Road ANSI is home to approximately 475 species of plants, 66 species of breeding birds, 14 species of mammals, 10 species of reptiles, four species of amphibians and 66 species of butterflies. Many of the plant species have a prairie affinity (Woodliffe 1994). Purple twayblade, listed as Endangered by COSEWIC and COSSARO and regulated under SARA and the new OESA, is present in Spring Garden Road ANSI. Two species listed as Threatened by COSEWIC and COSSARO and regulated under the SARA and the new OESA are present including colic-root and spiked blazing star (Liatris spicata). American chestnut (Castanea dentata), listed as Threatened by COSEWIC and COSSARO and regulated under SARA and the new OESA, and prairie rose (Rosa setigera) and Riddell's goldenrod (Solidago riddellii), listed as Special Concern by COSEWIC and COSSARO and regulated under the SARA and the new OESA, are also present in Spring Garden Road ANSI. Several provincially, regionally and/or locally significant species are also present in Spring Garden Road ANSI[43].

Black Oak Woods

This 46 ha site is dominated by a Moist-Fresh Black Oak-White Oak Tallgrass Woodland community (TPW2-1). This community type has a global rank of G1 (Extremely Rare – having less than five occurrences in the overall range) and a provincial rank of S1 (Extremely Rare in Ontario – having less than five occurrences in the province). Dominant tree species include black oak and white oak, with some particularly large specimen trees situated at the north end of the woodland.

[40] Ontario Ministry of Natural Resources. 2002. Ojibway Prairie Park Management Plan. Ontario Ministry of Natural Resources, Chatham Area Office. 9 pp.
[41] Ibid.
[42] Woodliffe, P. A. 1994. Spring Garden Road Prairie. OMNR, Chatham. Unpublished letter. 3 pp. + map.
[43] Oldham, M. J. 1994. Spring Garden Road Plant List. Natural Heritage Information Centre, Peterborough. Unpublished list. 7 pp.

This ANSI is home to at least 24 prairie indicator species. Purple twayblade, listed as Endangered by COSEWIC and COSSARO and regulated under the SARA and the new OESA, willowleaf aster (Symphotrichum praealtum), listed as Threatened by COSEWIC and COSSARO and regulated under SARA, and American chestnut, listed as Threatened by COSEWIC and COSSARO and regulated under SARA and the new OESA are all present in Black Oak Woods ANSI. Several provincially, regionally and/or locally significant species are also present in Black Oak Woods ANSI[44].

Southeast of Nature Reserve

This 40 ha site located to the southeast of Ojibway Prairie Provincial Nature Reserve contains species and communities with a prairie affinity[45]. Data collected by LGL Limited to date does not specify the communities located within this portion of the Ojibway Prairie Complex provincially significant Life Science ANSI, nor does it provide details as to the presence/absence of significant species.

Environmentally Significant Areas

A number of ESAs are located in the AOI and its vicinity. Sixty-three (63) potential ESAs were inventoried in 1981 and/or 1982 and summarized by Oldham[46]. These ESAs were evaluated based on several physical, ecological and social criteria, including:

- Significant Landforms;
- Linkage System;
- Migratory Stopover;
- Significant Communities;
- Hydrological Significance;
- Diversity;
- Significant Species;
- Size;
- Research/Education; and
- Aesthetic/Historical.

A location was deemed to be an ESA if at least two of the ten criteria were met. At that time, two ESAs were established within the AOI, including:

- Ojibway Black Oak Woods ESA (ESA #19); and
- Spring Garden Road Prairie ESA (ESA #29). An update of ESAs within Essex County was undertaken in 1991 to evaluate supplementary sites, including previously considered sites and newly identified candidate ESA sites. At that time, a resolution was passed that all PSWs and ANSIs in Essex County be included as ESAs (information on ESAs that are also ANSIs was provided previously). The Ojibway Prairie Complex ESA was designated as ESA #3 through this

[44] Ontario Ministry of Natural Resources. 2002. Ojibway Prairie Park Management Plan. Ontario Ministry of Natural Resources, Chatham Area Office. 9 pp.
[45] Ibid.
[46] Oldham, M. J. 1983. Environmentally Significant Areas of the Essex Region. Essex Region Conservation Authority, Essex, Ontario. 426 pp.

decision. An ESA update report was prepared by ERCA[47], which detailed the criteria met by locations not already designated as a PSW or ANSI. In addition to the above-referenced ANSIs, the following ESAs were identified in the AOI and its vicinity:

- St. Clair College Prairie ESA (ESA #49); and
- Sandwich West Woodlot/LaSalle Woods ESA (ESA #18).

A brief description of these ESAs is presented in Table 7.17.

Carolinian Canada Sites

Carolinian Canada is a coalition of groups, agencies and individuals working to halt the loss of and achieve a substantial increase in the size and quality of natural communities characteristic of Carolinian Canada. Members include Conservation Authorities, Federation of Ontario Naturalists, Ontario Stewardship, federal and provincial departments and ministries, Canadian Botanical Association, Ontario Federation of Agriculture, and other groups.

TABLE 7.17– SUMMARY OF ENVIRONMENTALLY SIGNIFICANT AREAS IN THE AOI AND ITS VICINITY

ESA Name/ Number	Significant Landforms	Linkage System	Migratory Stopover	Significant Communities	Significant Habitats/ Hydrological Significance	Diversity	Significant Species	Size	Research/ Education	Aesthetic and/or Historical Values
Ojibway Prairie Complex (#3)										
Sandwich West Woodlot / LaSalle Woods (#18)		Linkage with Turkey Creek and Ojibway		Species assemblages include species with prairie affinity	Prairie Habitat	Good	Six SARA, Schedule 1 species, one SARA, Schedule 2 species, several provincially and locally significant species	115 ha	Associated with Brunet Park. Potential for scientific research on prairie flora and fauna	
Ojibway Black Oak Woods (#19)		Linkage with Ojibway Prairie		Species assemblages include species with prairie affinity			One SARA, Schedule 2 species, several provincially and locally significant species			
Spring Garden Road Prairie (#29)		Linkage with Ojibway Prairie		Considered to be one of the best prairie remnants remaining in Essex County	Prairie Habitat		Three SARA, Schedule 1 species, one SARA, Schedule 2 species, several provincially and locally significant species			Impressive display of fallblooming prairie wildflowers
St. Clair College Prairie (#49)					Species assemblages include species with prairie and savannah affinities	Good	Three SARA, Schedule 1 species, several provincially and locally significant species		The St. Clair College of Applied Arts and Technology is adjacent to this ESA	

In 1984, 38 sites were identified as critical natural areas in a study by the identification sub-committee of Carolinian Canada. One of the 38 Carolinian Canada sites is present within the AOI, the Ojibway Prairie Remnants (Site #31). The Ojibway Prairie Remnants site is now encompassed within the Ojibway Prairie Complex ANSI.

[47] Essex Region Conservation Authority. 1994. Environmentally Significant Areas Status Update. Unpublished report. Essex Region Conservation Authority, Essex, Ontario.

Candidate Natural Heritage Sites

The City of Windsor and the Town of LaSalle have both undertaken biological inventories of the remnant forest and prairie habitat features to determine their local significance. These Candidate Natural Heritage Sites (CNHSs) are summarized in Town of LaSalle[48] for the Town of LaSalle and in City of Windsor[49] for the City of Windsor.

In the Town of LaSalle, CNHSs were evaluated based on several physical and ecological criteria, including:

- Significant Ravine, Valley, River, and Stream Corridors;
- Habitat of Endangered, Threatened, and Vulnerable Species;
- Significant Woodlands;
- Significant Wildlife;
- Significant Wetland;
- Significant Ecological Function;
- Diversity;
- Significant Species;
- Significant Communities;
- Significant Earth Feature; and
- Condition.

In the City of Windsor, CNHSs were evaluated based on several physical and ecological criteria, including:

- Significant Ecological Function;
- Diversity;
- Significant Communities;
- Significant Species;
- Size;
- Representation;
- Condition; and
- Significant Earth Science Features.

Canadian Heritage Rivers System

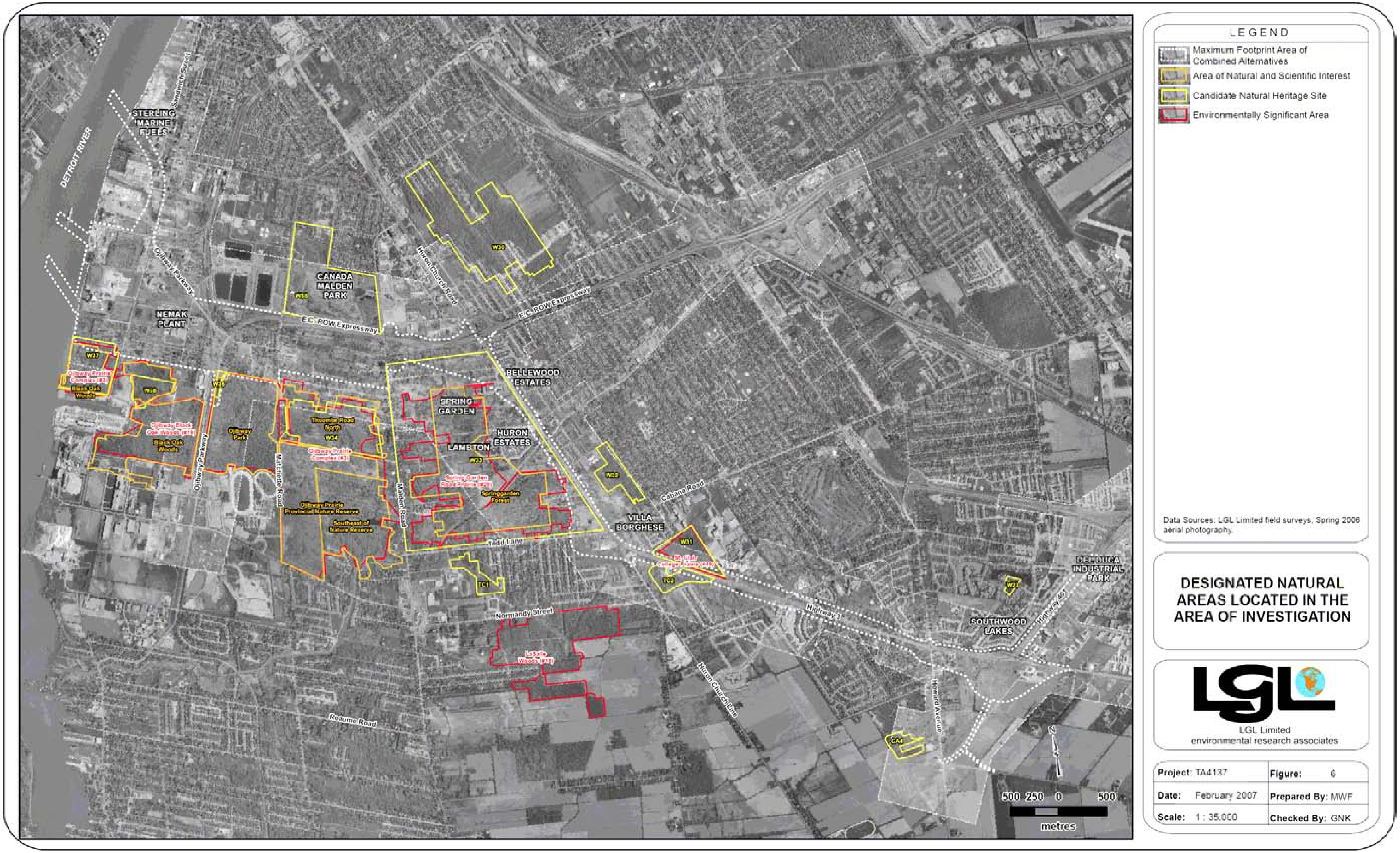
The Detroit River flows in a north-south direction connecting Lake St. Clair in the north to Lake Erie in the south. Acting as an international border, the river connects American and Canadian communities

[48] Town of LaSalle. 1996. Candidate Natural Heritage Area Biological Inventory and Land Use Planning Policy Direction Discussion Paper No. 1. Prepared by Prince, Silani and Associates Limited. April 1996. 103 pp.
[49] City of Windsor. 1992. City of Windsor Candidate Natural Heritage Site Biological Inventory Evaluation Report. Prepared by Essex Region Conservation Authority and the City of Windsor Department of Planning and Department of Parks and Recreation. December 1992. 212 pp.

culturally and economically. It also serves many ecological functions as part of the Great Lakes watershed.

The importance of the Detroit River as a natural heritage feature is only one component of its function. Parks Canada designated the Detroit River as a Canadian Heritage River, which recognizes its importance to Canadian history and culture. The Detroit River received American Heritage River designation in 1998 and Canadian Heritage River designation in 2001, making it the first river with dual designations.

EXHIBIT 7.30 – DESIGNATED NATURAL AREAS ASSOCIATED WITH THE ACA



7.5.6 Municipal Land Use Designations

TOWN OF LASALLE

Legal Status of Plan

The *Town of LaSalle Official Plan – LaSalle 2016 – Healthy, Vibrant and Caring*[50] was adopted on October 14, 1997. The Plan was approved by the Ministry of Municipal Affairs and Housing (MMAH) on May 18, 1998.

Environmental Designations

Section 2 identifies general development policies for various uses, including: woodlots; developments along inland watercourses; re-use of potentially contaminated sites; and, special policy area – species at risk.

Section 3 provides the land use designations for natural heritage sites, including permitted uses and other restrictions in the Town.

Two areas within the AOI are designated as Natural Environment: the Southeast of Nature Reserve ANSI and the Spring Garden Forest ANSI. The LaSalle Woods, located in the vicinity of the AOI, is also designated as Natural Environment. Areas designated as Natural Environment include: woodlots; wetlands; and prairie communities. These areas are recognized as playing an important role in keeping people physically, mentally and spiritually healthy. Permitted uses in these areas include: passive recreation; wildlife management; conservation uses; and, buildings/structures associated with these uses. The official plan states that utility corridors and inland watercourses should be used as linkages between natural heritage sites, and should be enhanced and maintained as wildlife habitat areas, recreational trails, bikeways and walkways. Preservation and management of areas designated Natural Heritage shall be via public purchase, private stewardship, conservation easements and management agreements.

Level of Protection

The Town of LaSalle, through its Official Plan has set a goal of creating a Greenway System, which will comprise trails, parks and woodlots for the benefit and enjoyment of wildlife and residents alike. As a municipal planning policy, this provides a reasonable level of protection for natural features within the proposed Greenway System.

Environmental land use designations within the Town of LaSalle are regulated by the Official Plan, which is approved under the *Planning Act*. The Official Plan, the Provincial Policy Statement and the *Planning Act* afford protection for provincially, regionally and locally significant designated natural areas.

CITY OF WINDSOR

Legal Status of Plan

The *City of Windsor Official Plan (2004)*[51] was adopted on October 25, 1999 by By-law 350- 1999. The Plan was approved by the Ontario Ministry of Municipal Affairs and Housing (MMAH), in part, on March 28, 2000. The remainder of the Plan was approved by an Ontario Municipal Board decision on November 1, 2002. This is an office consolidation of the Plan which incorporates the approved Plan plus subsequent Amendments.

Environmental Designations

Section 5, Volume 1 of the Official Plan identifies designations as being part of the 'Greenway System' on Schedule B of the City's Official Plan.

Section 6.8, Volume 1 of the Official Plan identifies permitted uses for each of the land use designations in the City. The Natural Heritage designation governs natural heritage areas located in the City.

Permitted uses within the Natural Heritage designation include nature reserves and wildland management. Ancillary uses may include recreation and leisure activities and facilities, provided the use is secondary and complementary to the main permitted use. If development is proposed, an *EER* is required to demonstrate that features and functions will not be adversely impacted. EERs are also required for any development on lands adjacent to those designated Natural Heritage.

Several overlays are subcategories to the land use designations and are identified as 'Development Constraint Area' on Schedule C of the City's Official Plan. These Constraint Areas, including Natural Heritage, Environmental Policy Areas and Candidate Natural Heritage Sites, afford various levels of protection to the City's natural environmental features.

Natural Heritage Policies identify areas under provincial protection (ie. Provincially Significant Wetlands and ANSIs). Environmental Policy Areas identify areas of significance that may permit development, subject to criteria, including: biological diversity; significant natural community; vulnerable, threatened or endangered species; low levels of disturbance; significant earth science features; and, visual, aesthetic or recreational importance to the City. Candidate Natural Heritage Sites contain potentially significant and/or sensitive environmental features or functions, which are subject to an *ERR* to determine if development is appropriate.

Several natural heritage land use designations are identified in the Schedules to the Official Plan. Three areas located in the AOI are designated as Natural Heritage: Ojibway Prairie Complex, Oakwood Bush and the eastern section of Malden Park. Two areas of the Titcombe Road North ANSI, a section of the Spring Garden Forest ANSI and the St. Clair College Prairie ESA are designated as Special Policy Area "A".

Secondary Planning Areas

The Official Plan – Volume 2 contains several Secondary Plans, some of which have natural feature components. The Spring Garden Planning Area is located in the AOI.

Spring Garden Planning Area

- Features in this area are recognized as significant, including Spring Garden Natural Area Complex (Schedule SG-1) and shall be conserved. Development must adhere to the Spring Garden Complex Management Plan.
- All lands within the Spring Garden Natural Area Complex shall be acquired in stages, by means of exchanges, parkland conveyance provisions (Planning Act), purchase by City based on independent appraisal, or purchase by appropriate government agencies.

[50] www.town.lasalle.on.ca
[51] www.citywindsor.ca

Level of Protection

Lands included as part of the Greenway System may be protected via: conveyance/dedication as part of the planning system; land purchase; partnership arrangements with the ERCA or other group; conservation as a condition of planning approval; leases with private property owners to protect parts/all of the identified area; land exchange; donations/gifts/bequeaths from individuals/corporations; conservation easements; stewardship agreements; and other measures.

Environmental land use designations in the City of Windsor are governed by the Official Plan, the *Provincial Policy Statement and the Planning Act*. These laws, policies and plans afford protection to provincially, regionally and locally significant natural heritage areas.

7.5.7 Drainage and Stormwater Management

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. The watercourse locations within the ACA are shown in Exhibit 7.31 A to C. All the drainage systems are part of the Turkey Creek system, which ultimately outlets to the Detroit River. All of the existing drainage systems have been impacted upon by urbanization, with Turkey Creek, Cahill Drain and Wolfe Drains being significantly altered. As an example, Turkey Creek upstream of Huron Church Road has been concrete-lined to Dougall Avenue.

A number of hydrologic and hydraulic investigations have been completed on the existing drainage systems. However, as the investigations were conducted between the 1970s and the early 1990s, updates were required in order to refine the peak flows associated with each. The updated models would incorporate stormwater management plans that have been implemented in support of development.

For further information on existing drainage conditions within the Area of Contiued Analysis, the reader is referred to the *Draft Practical Alternatives Evaluation Working Paper – Stormwater Management Plan*.

7.5.8 Groundwater

Measured groundwater levels indicate that in the eastern part of the project area, east of St. Clair College, the groundwater exhibits a downward gradient. In this general area, pressure levels within the clayey silt to silty clay overburden do not exhibit hydrostatic pressures throughout the soil and rock profile. This condition is consistent with the generally low-permeability clayey silt to silty clay soils that will inhibit downward seepage of water from the ground surface to the static groundwater level.

It is considered that the upper soils within the “crust” are fissured and likely of higher permeability than the native soils below the groundwater level. Within the weathered crust, there will be transitions in soil saturation from near-surface soils that become saturated with stormwater, down through the fissured, unsaturated soils (that exhibit mottled colouring), to the fully saturated soils below (grey in colour). Near-surface clayey silt and silty clay soils may also tend to pool stormwater in local surface depressions.

Within the overburden soil, groundwater levels were measured about 2 m to 3 m 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, opposite the trend that may be indicated for those piezometers within the overburden.

Between St. Clair College, water levels within the overburden soils drop slightly from about Elevation 180 m to about Elevation 179.5 m, while levels within the bedrock increase from about Elevation 177.5 to about Elevation 179.5 m.

Further to the west, near Ojibway Parkway, the groundwater levels within the overburden remains relatively consistent near about Elevation 179 m to 179.5 m and, in this area, close to the ground surface.

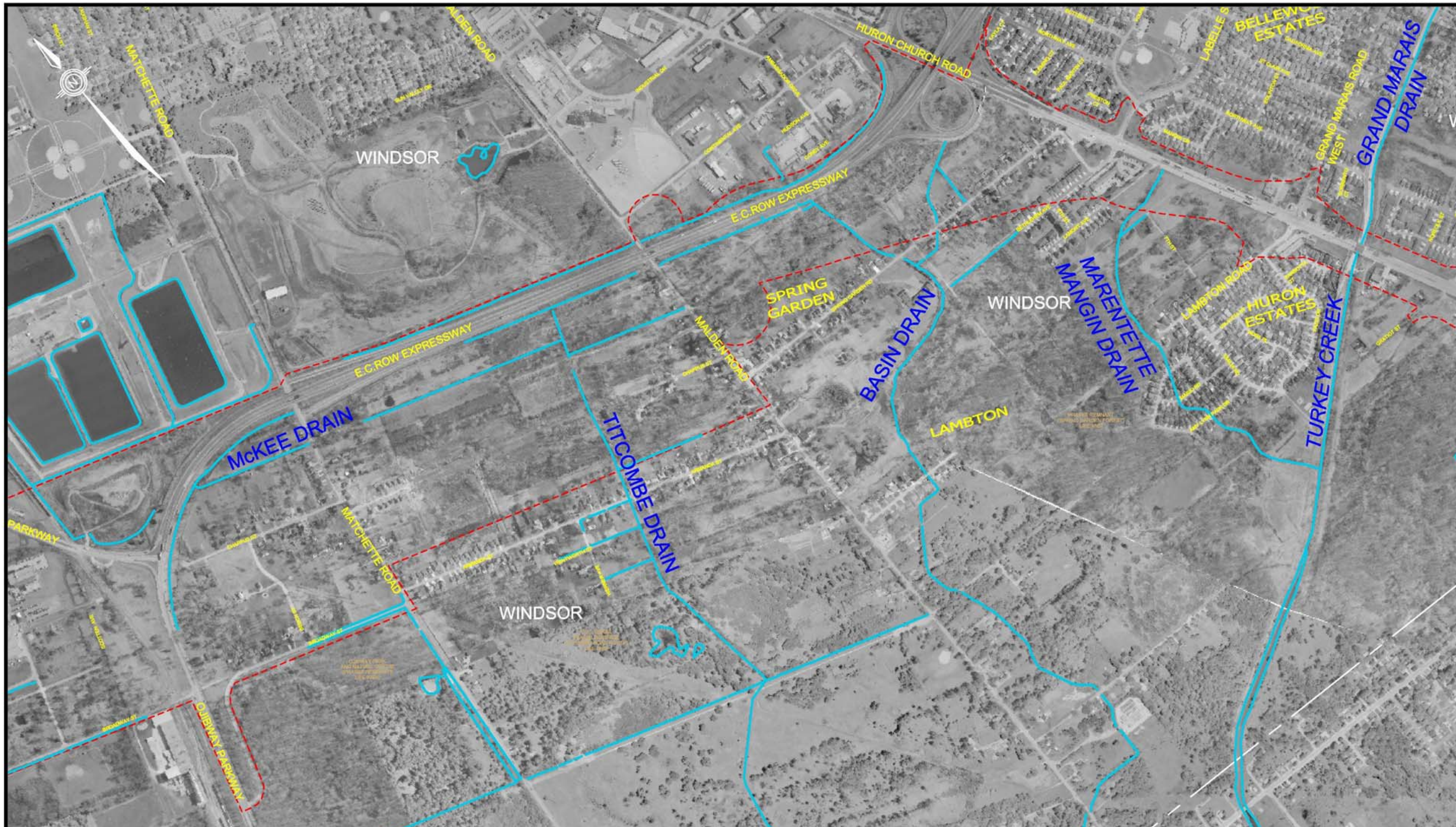
Within the bedrock, however, the groundwater level rises, such that at this location, the groundwater within and near the bedrock surface is artesian with respect to the ground surface, with a pressure head at about Elevation 180.5 (or about 1.5 m above ground surface).

The observation well data indicate, therefore, 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 is considered that the trend of decreasing groundwater levels within the overburden is generally reflective of the 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 is also considered generally consistent with groundwater flow patterns between Lake St. Clair, the Detroit River, and areas to the northwest flowing southeast, toward the Lake Erie basin.

Though there is evidence supporting these general conclusions, project-specific hydrogeological conditions within the overburden and bedrock will be dependent upon local variations in soil permeability, surface watercourses (or municipal drains such as the Lennon, Cahill and Grand Marais Drains), surface topography and bedrock topography. Additional explorations and testing will be required during future design phases to refine these general conclusions.

EXHIBIT 7.31A: EXISTING DRAINAGE CONDITIONS – OJIBWAY PARKWAY TO GRAND MARAIS ROAD WEST



LEGEND	DETROIT RIVER INTERNATIONAL CROSSING		
ANALYSIS ENVELOPE EXISTING WATER BODIES	STORMWATER MANAGEMENT STUDY OJIBWAY PARKWAY TO GRAND MARAIS ROAD WEST EXISTING DRAINAGE CONDITION	200m 0m 200m 400m	JANUARY 2008

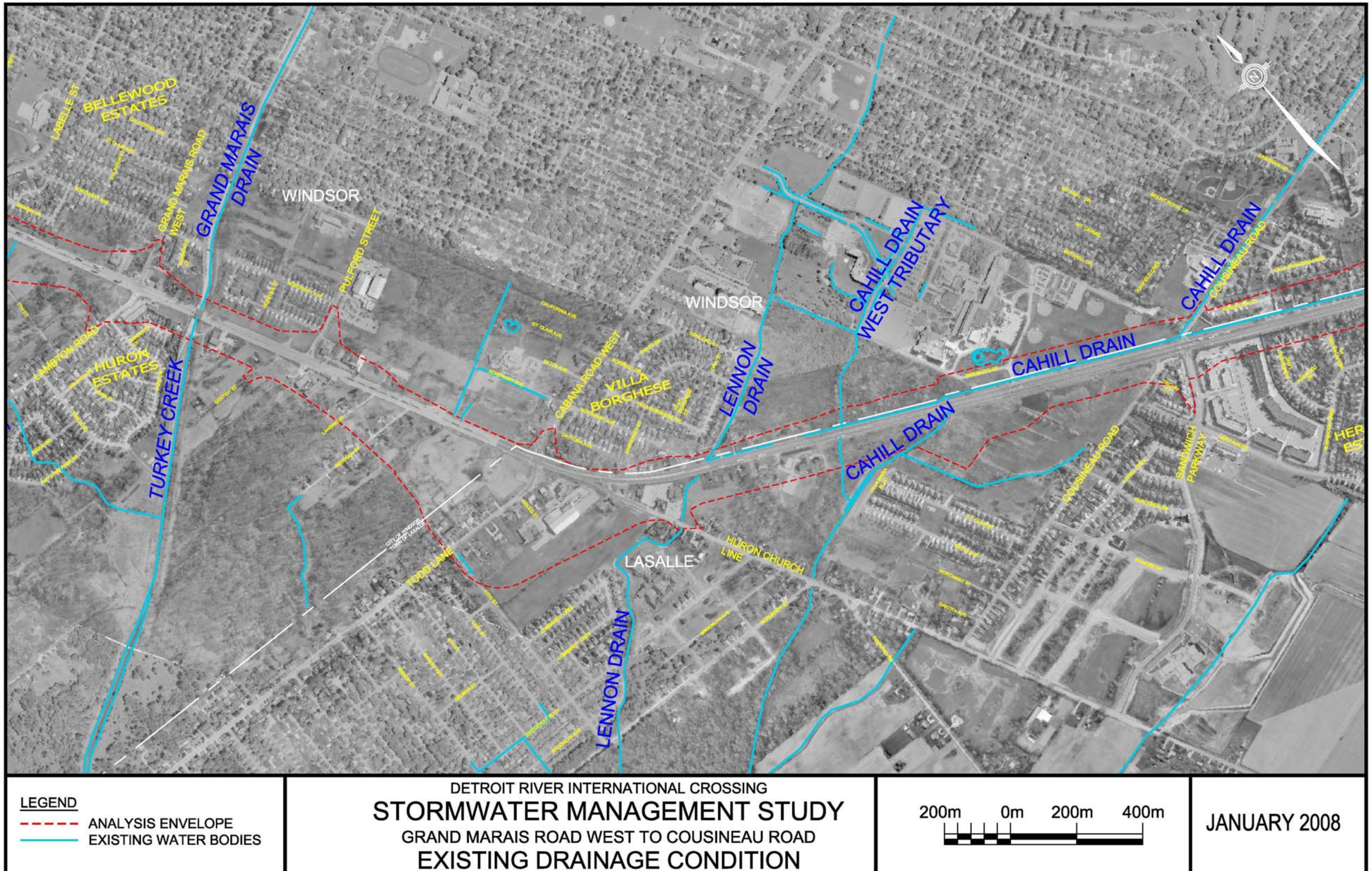
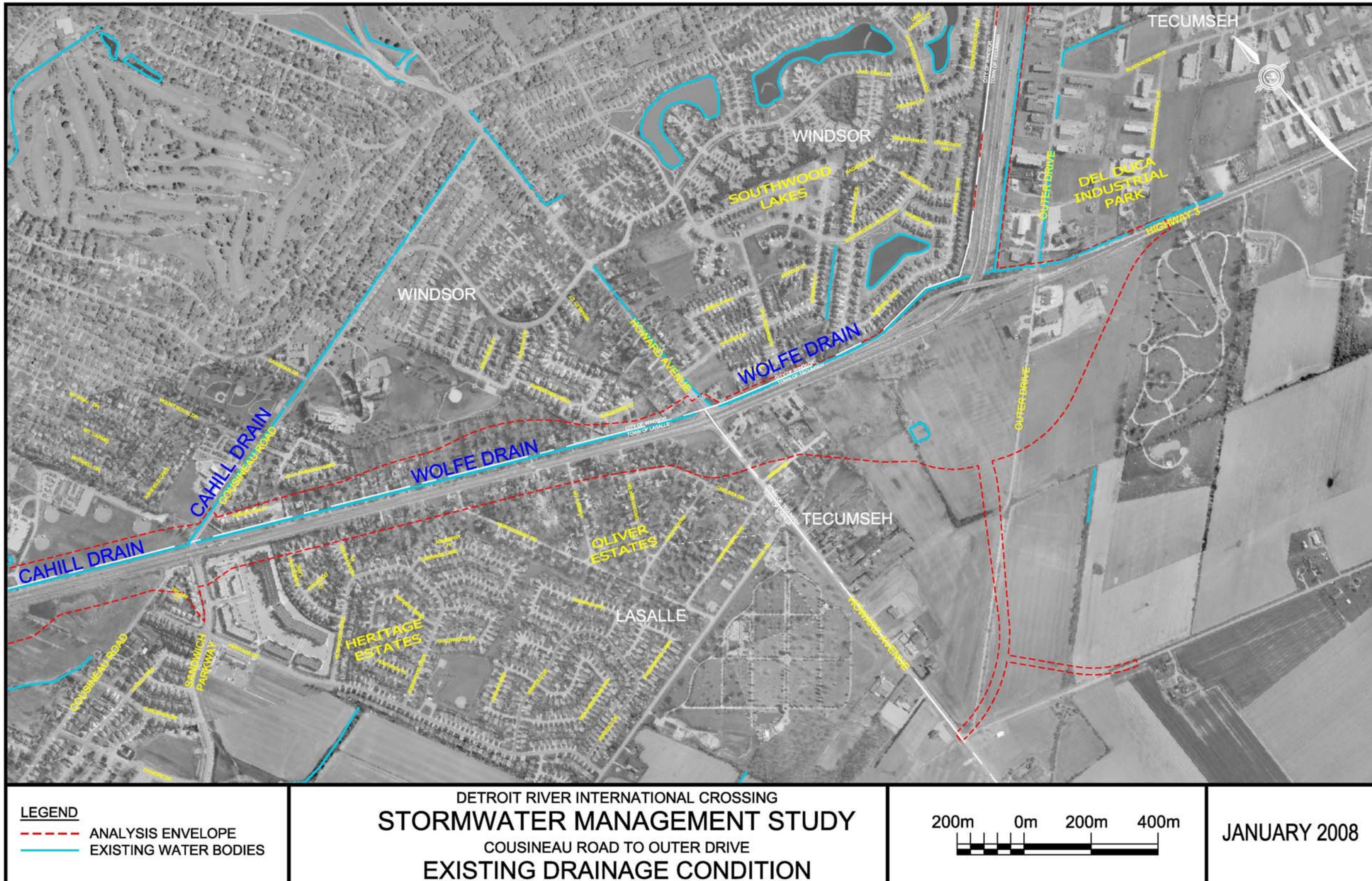

BELLEWOOD ESTATES
LABELLE ST
GRAND MARAIS ROAD WEST
GRAND MARAIS DRAIN
WINDSOR
PULFORD STREET
WINDSOR
CAHILL DRAIN WEST TRIBUTARY
CAHILL DRAIN
COUSINEAU ROAD
CAHILL DRAIN
LAMBTON ROAD
HURON ESTATES
TURKEY CREEK
CABANA ROAD WEST
VILLA BORGHESE
LENNON DRAIN
CAHILL DRAIN
COUSINEAU ROAD
SANDWICH PARKWAY
HER ES
TODD LANE
LASALLE
HURON CHURCH LINE
LENNON DRAIN
LEGEND
ANALYSIS ENVELOPE
EXISTING WATER BODIES
DETROIT RIVER INTERNATIONAL CROSSING
STORMWATER MANAGEMENT STUDY
GRAND MARAIS ROAD WEST TO COUSINEAU ROAD
EXISTING DRAINAGE CONDITION
200m
0m
200m
400m
JANUARY 2008

EXHIBIT 7.31C: EXISTING DRAINAGE CONDITIONS –COUSINEAU ROAD TO OUTER DRIVE



7.6 Transportation Network

This section provides an overview of existing traffic conditions within the Area of Continued Analysis. For further details, the reader is referred to the *Level 2 Traffic Operations Analysis of Practical Alternatives*.

7.6.1 Existing Traffic Operations

The existing traffic operations within the ACA were characterized based on operations at existing intersections as well as on operations for the various roadways within the ACA.

INTERSECTION ANALYSIS

Traffic operations at existing intersections were described in terms of level-of-service (LOS). LOS evaluation uses a six-letter grade scale (A to F) to rank the overall traffic handling ability of an intersection or a road network based on delays experienced by vehicles. LOS A indicates excellent traffic operations with minimal delays, while LOS F represents failing conditions with long delays. Levels of service E and F are generally considered undesirable. **Tables** 7.18 and 7.19 summarize the associated delays and description of each level of service for signalized and unsignalized intersections, respectively.

TABLE 7.18 – LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS

Level of Service	Control Delay per Vehicle (s/veh)	Description
A	0 – 10	Operations with very low delay
B	> 10 – 20	This LOS generally occurs with good progression.
C	> 20 – 35	These higher delays may result from fair progression.
D	> 35 – 55	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavourable progression, longer cycle lengths, or high volume-to-capacity (V/C) ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable. This level is considered by many agencies to be the limit of acceptable delay.
E	> 55 – 80	These high delay values generally indicate poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences.
F	> 80	This level, considered to be unacceptable to most drivers, often occurs with over-saturation; that is, when arrival flow rates exceed the capacity of the intersection. It may also occur at high V/C ratios below 1.0 with many individual cycle failures. Poor progression and cycle lengths may also be major contributing causes to such delay levels.

TABLE 7.19 – LEVEL OF SERVICE CRITERIA FOR TWO-WAY STOP-CONTROLLED INTERSECTIONS

Level of Service	Control Delay per Vehicle (s/veh)	Description
A	0 – 10	Little or no delay
B	> 10 – 15	Short traffic delays
C	> 15 – 25	Average delays
D	> 25 – 35	Long delays
E	> 35 – 50	Very long delays
F	> 50	Extremely long delays with significant queuing and congestion

In addition to assessing level-of-service and delays, volume-to-capacity (V/C) ratios at the studied intersections were also determined. A V/C ratio is a measure of effectiveness that measures the ability of a roadway facility (typically a link or intersection) to accommodate its associated demand. It is calculated by dividing the actual demand on the facility by its theoretical capacity. A V/C ratio less than 0.85 generally indicates that the facility has the capacity to accommodate the existing demand, and vehicles will not experience undue congestion and delay. A V/C below 0.85 also indicates that the facility likely has the excess capacity to accommodate future demand. As the V/C ratio approaches 1.0, delay and congestion may begin to occur, along with traffic instability. Finally, when the V/C ratio exceeds 1.0, it indicates that the facility is operating over capacity, with no accommodations for future growth. Motorists will typically experience undue delay and congestion, and may have to wait through multiple signal cycles before proceeding through an intersection.

Tables 7.20 and 7.21 summarize Synchro output for peak direction LOS, delay per vehicle, V/C ratio and overall intersection LOS for the AM (Northbound) and PM (Southbound) peak hour, respectively.

TABLE 7.20 – EXISTING AM PEAK HOUR & DIRECTION (WESTBOUND/NORTHBOUND) INTERSECTION LEVEL OF SERVICE, HURON CHURCH ROAD/HIGHWAY 3 CORRIDOR

Intersection	LOS, Peak Through Movement (WB/NB)	Delay per Vehicle(s), Peak Through Movement (WB/NB)	V/C Ratio, Peak Through Movement (WB/NB)	Overall Intersection LOS
College Ave.	A	2.9	0.59	B
Girardot St.	B	11.0	0.54	B
Tecumseh Rd.	C	28.7	0.75	C
Dorchester Rd.	A	2.3	0.49	A
Prince Rd / Totten St.	A	2.8	0.65	A
Malden Rd.	B	10.7	0.86	B
Northwood St. / Industrial Dr.	A	9.5	0.81	B
E.C. Row Ramp North	A	1.8	0.53	A
E.C. Row Ramp South	A	4.0	0.48	A
Labelle St.	A	7.7	0.76	B
Grand Marais Rd. / Lambton St.	B	13.9	0.73	B
Pulford St.	B	12.8	0.58	B

Intersection	LOS, Peak Through Movement (WB/NB)	Delay per Vehicle(s), Peak Through Movement (WB/NB)	V/C Ratio, Peak Through Movement (WB/NB)	Overall Intersection LOS
Cabana Rd. / Todd Ln.	C	33.9	0.80	D
Huron Church Line	B	13.7	0.74	C
St. Clair College	B	12.4	0.56	A
Cousineau Rd.	C	22.4	0.74	C
Howard Ave.	C	27.3	0.75	C

TABLE 7.21 – EXISTING PM PEAK HOUR & DIRECTION (SOUTHBOUND/EASTBOUND) INTERSECTION LEVEL OF SERVICE, HURON CHURCH ROAD/HIGHWAY 3 CORRIDOR

Intersection	LOS, Peak Through Movement (SB/EB)	Delay per vehicle (s), Peak Through Movement (SB/EB)	V/C Ratio, Peak Through Movement (SB/EB)	Overall Intersection LOS
College Ave.	C	27.6	0.87	C
Girardot St.	A	6.3	0.66	A
Tecumseh Rd.	B	15.8	0.73	C
Dorchester Rd.	A	2.6	0.62	A
Prince Rd / Totten St.	A	4.8	0.69	A
Malden Rd.	B	11.9	0.85	B
Northwood St. / Industrial Dr.	A	6.2	0.76	B
E.C. Row Ramp North	A	8.3	0.81	B
E.C. Row Ramp South	A	2.9	0.62	A
Labelle St.	B	11.8	0.70	B
Grand Marais Rd. / Lambton St.	B	13.8	0.76	B
Pulford St.	A	8.3	0.54	A
Cabana Rd. / Todd Ln.	D	45.5	0.86	D
Huron Church Line	B	14.5	0.52	B
St. Clair College	A	5.6	0.56	B
Cousineau Rd.	C	27.4	0.75	C
Howard Ave.	D	39.6	0.90	C

During the AM peak hour, only the intersection of Highway 3 and Todd Lane/Cabana Road West is operating at an overall LOS below LOS C. There are no peak-direction through movements operating below LOS C. The peak through movement (northbound) at the intersection of Huron Church Road and Malden Road is currently operating with a V/C ratio of 0.86, indicating that it is approaching its theoretical capacity.

For the PM peak hour, the intersection of Highway 3 and Cabana Road West/Todd Lane is again operating below LOS C, with the eastbound through movement also operating at LOS D. This indicates that all traffic at this intersection is beginning to experience delay that is approaching unacceptable levels. There are four intersections within the studied corridor where southbound through movements are currently operating with V/C ratios of 0.85 or above, indicating that they are approaching their theoretical capacity.

TRAFFIC OPERATIONS ALONG EXISTING ROADWAYS

Travel time and arterial LOS are other means of evaluating traffic operations along a corridor. For the entire corridor between Highway 401 and the Ambassador Bridge, the existing morning peak hour northbound travel time was calculated to be 13 minutes (800 seconds). The afternoon peak hour southbound travel time is nearly 13 minutes (770 seconds). These times are generally consistent with travel times observed in the field.

Table 7.22 shows arterial level of service. Generally, roadway links along the corridor operate with arterial LOS of C or better, supporting the overall corridor LOS. However, deficiencies were found around Tecumseh Road, Malden Road, Todd Lane/Cabana Road West, Huron Church Line and Howard Avenue, which report lower LOS ranging from D to F. The arterial operating conditions on these links are consistent with the traffic volumes, turning movements, capacity and delay found at their associated intersections.

TABLE 7.22 – EXISTING ARTERIAL LEVEL OF SERVICE, HURON CHURCH ROAD/HIGHWAY 3 CORRIDOR

Segment	AM Peak Hour		PM Peak Hour	
	WB/NB	SB/EB	WB/NB	SB/EB
Ambassador Bridge-College St.	B	N/A	B	N/A
College St.-Girardot St.	B	B	A	B
Girardot St.-Tecumseh Rd. W	F	B	E	C
Tecumseh Rd. W-Dorchester St.	C	B	C	C
Dorchester St.-Prince Rd.	C	C	C	C
Prince Rd.-Malden Rd.	B	C	B	D
Malden Rd.-Industrial Rd.	C	B	B	B
Industrial Rd.-E.C. Row (north ramp)	B	B	C	C
E.C. Row (north ramp)-E.C. Row (south ramp)	B	B	B	B
E.C. Row (south ramp)-Spring Garden Rd.	B	C	B	C
Spring Garden Rd.-Lambton St.	C	B	C	C
Lambton St.-Pulford St.	B	B	B	B
Pulford St.-Todd Lane	F	C	F	D
Todd Lane-Huron Church Line	A	D	A	D
Huron Church Line-St. Clair College	A	A	A	A
St. Clair College-Cousineau Rd.	A	A	A	B
Cousineau Rd.-Howard Ave.	C	A	D	B
Overall	B	B	B	C

SUMMARY

Overall, the results indicate that corridor operations are constrained at select intersections throughout its length. These intersections create bottlenecks at critical locations, resulting in the degraded traffic operations shown at intersections such as Tecumseh Road and Todd Lane/Cabana Road West. It should also be noted that the results presented in this section represent a snapshot of traffic conditions in February 2006, when traffic data was collected for this study.

Seasonal variations in traffic and other factors may result in different operating conditions at other times of the year. However, regardless of season, traffic operations have improved considerably since July 2004 when U.S.-bound border processing capacity was added at the bridge, even though truck traffic has continued to increase. The improvements from pre-July 2004 traffic operations are due mostly to this expanded border processing capacity.

7.7 Constructability Issues

GEOLOGY / SUBSURFACE ENVIRONMENT

Further to the information presented in Chapter 4, an intensive geotechnical deep drilling program was initiated as part of this EA study to confirm the integrity of the underlying bedrock. This program was initiated due to an area of known historical solution mining of salt in the vicinity of two of the practical crossing alternatives (Practical Crossing Alternative B and Practical Crossing Alternative C) which are described in more detail in Chapter 8.

A Geotechnical Advisory Group, consisting of international experts on geotechnical engineering, was commissioned to provide technical guidance and review of this deep drilling program.

The findings of the deep drilling program identified significant risks in the vicinity of the approach structure for Crossing C (refer to Section 8.1.3).

Further details with regard to the results of the program are summarized in the *Draft Practical Alternatives Evaluation Constructability Report - Plaza and Crossing Alternatives*.

7.8 Utilities

As part of the existing conditions investigations within the Area of Continued Analysis, the study team contacted utility companies and the municipalities to obtain information with regard to existing utility locations as well as future planned utilities. Based on this information obtained a composite utility plan was developed and is illustrated in Exhibit 7.32A to 7.32G.

EXHIBIT 7.32A – EXISTING UTILITY CONDITIONS (OJIBWAY PARKWAY TO MALDEN ROAD)

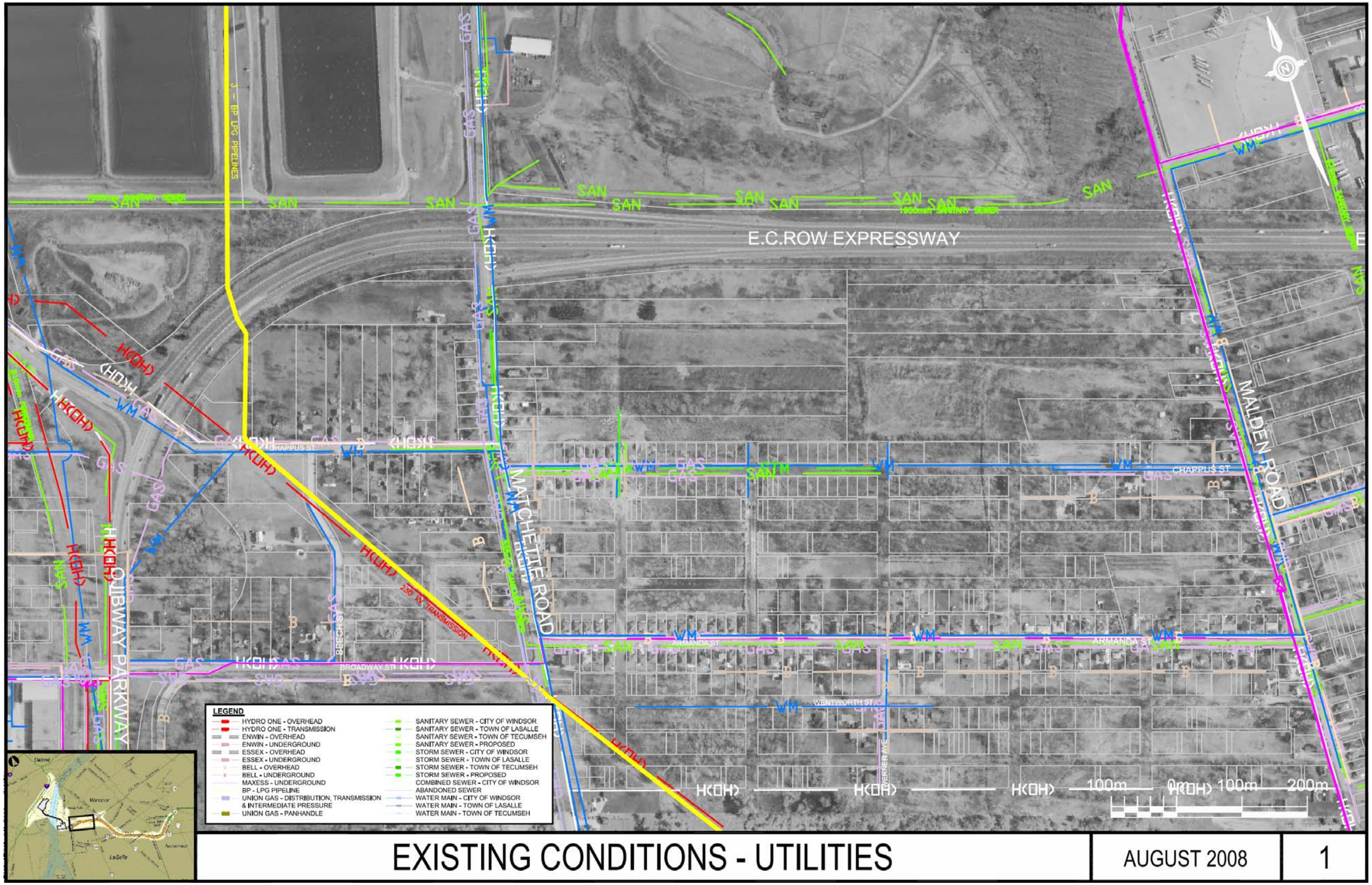
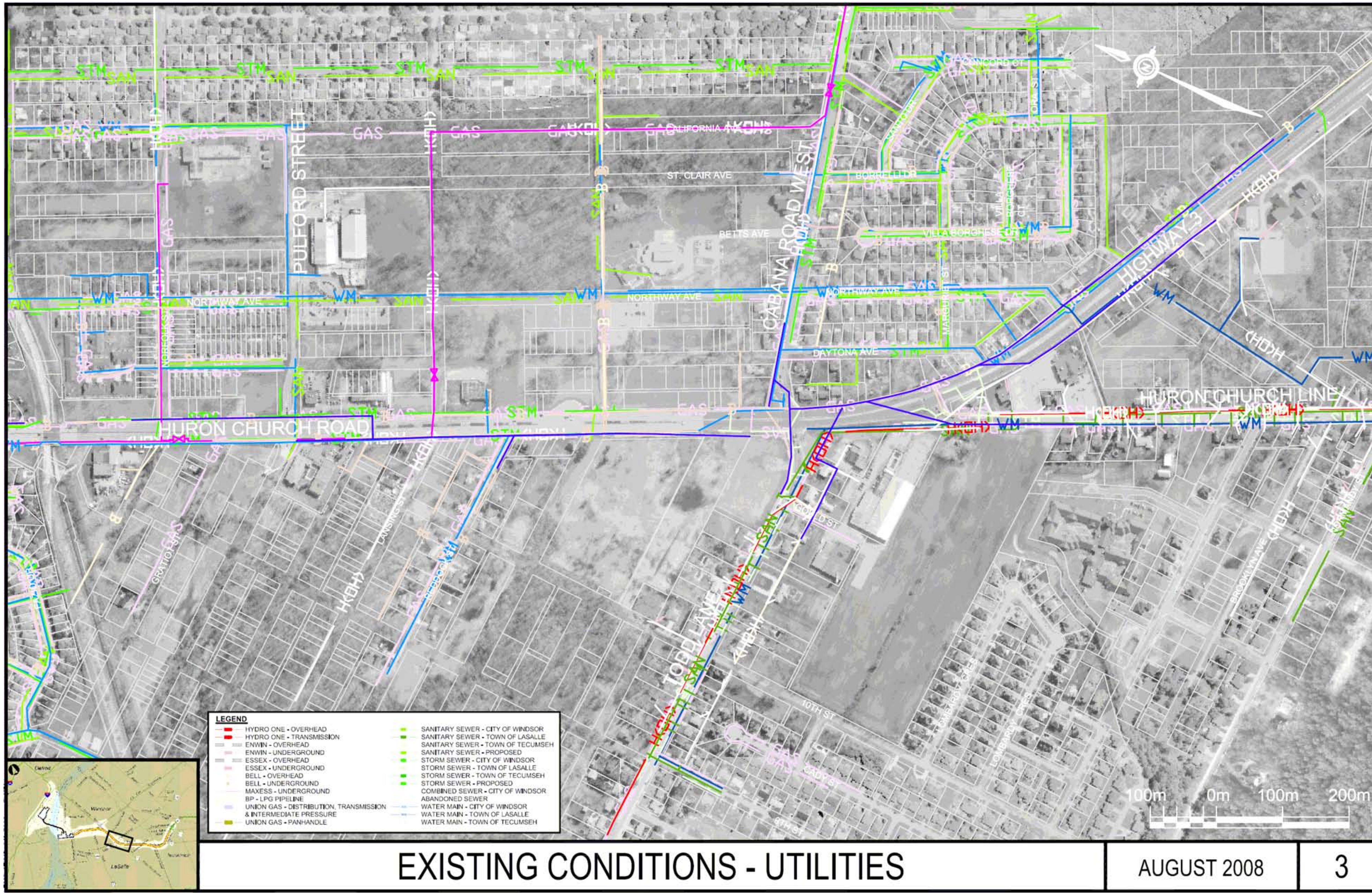


EXHIBIT 7.32B – EXISTING UTILITY CONDITIONS (MALDEN ROAD TO GRAND MARAIS ROAD WEST)

EXHIBIT 7.32C – EXISTING UTILITY CONDITIONS (HURON CHURCH ROAD CORRIDOR / HURON CHURCH LINE)



Canada U.S. Department of Transportation Federal Highway Administration Ontario MDOT Michigan Department of Transportation

URS

EXHIBIT 7.32D – EXISTING UTILITY CONDITIONS (HURON CHURCH ROAD TO COUSINEAU ROAD)

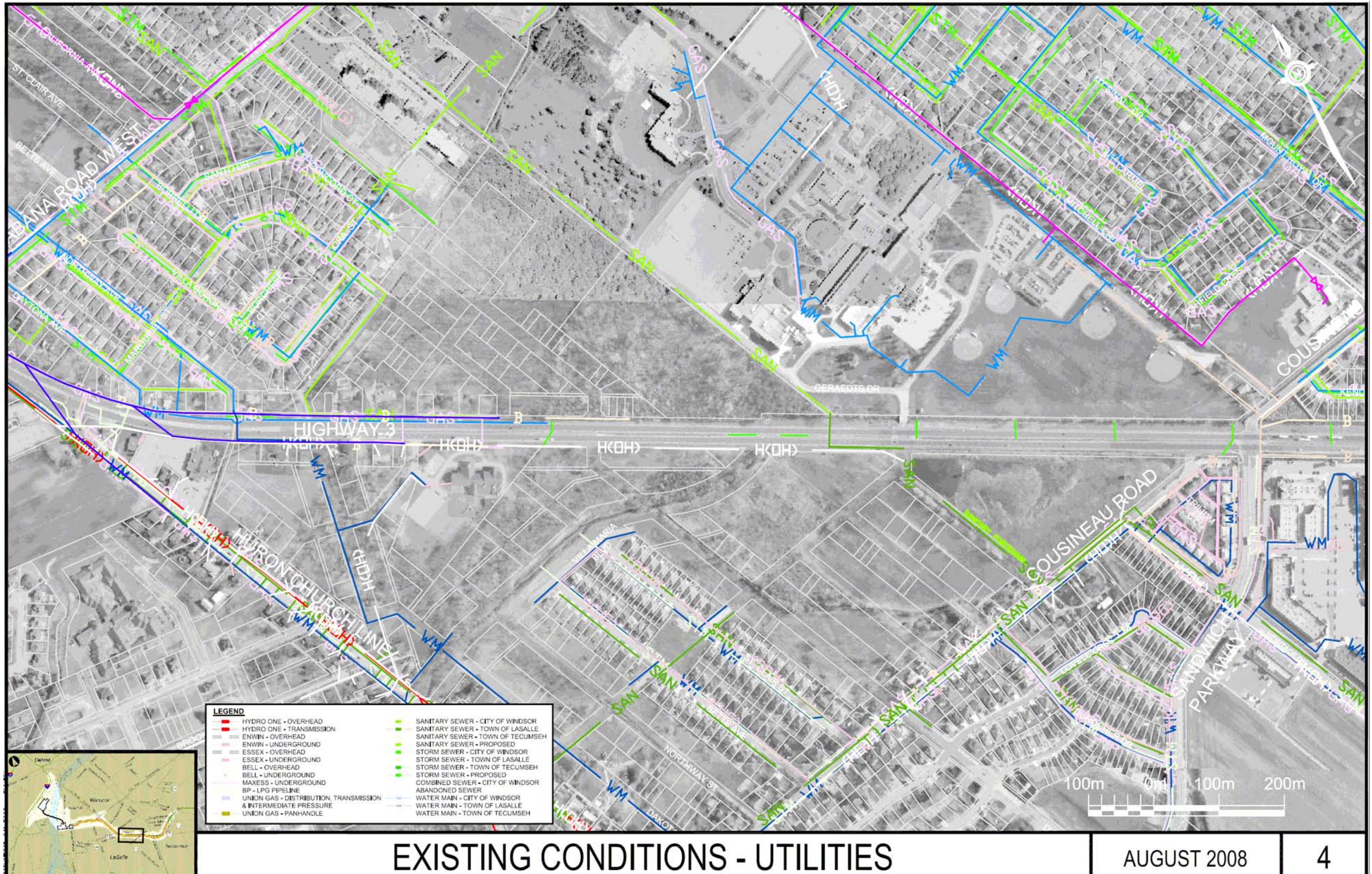


EXHIBIT 7.32E – EXISTING UTILITY CONDITIONS (COUSINEAU ROAD TO HOWARD AVENUE)

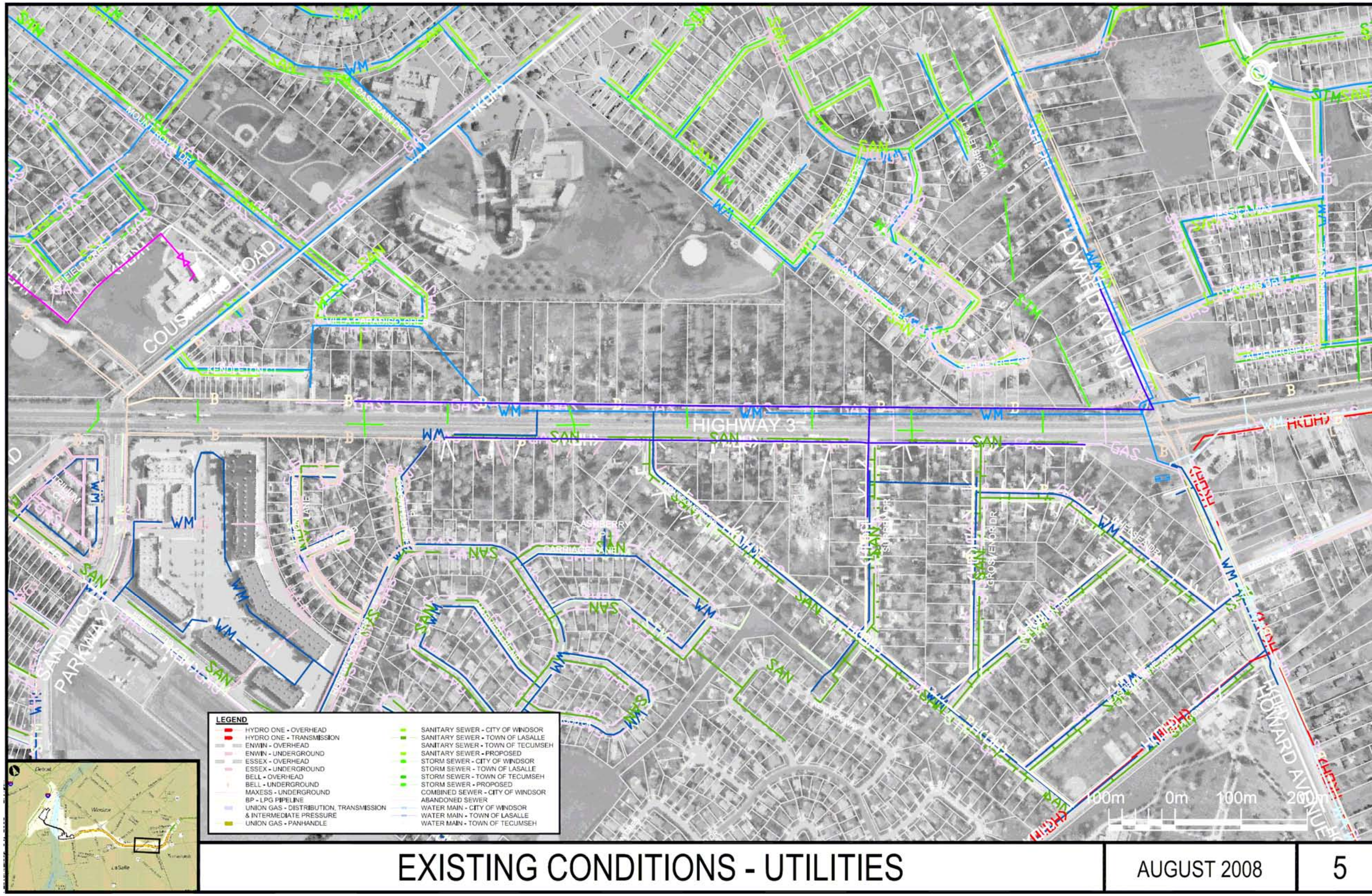
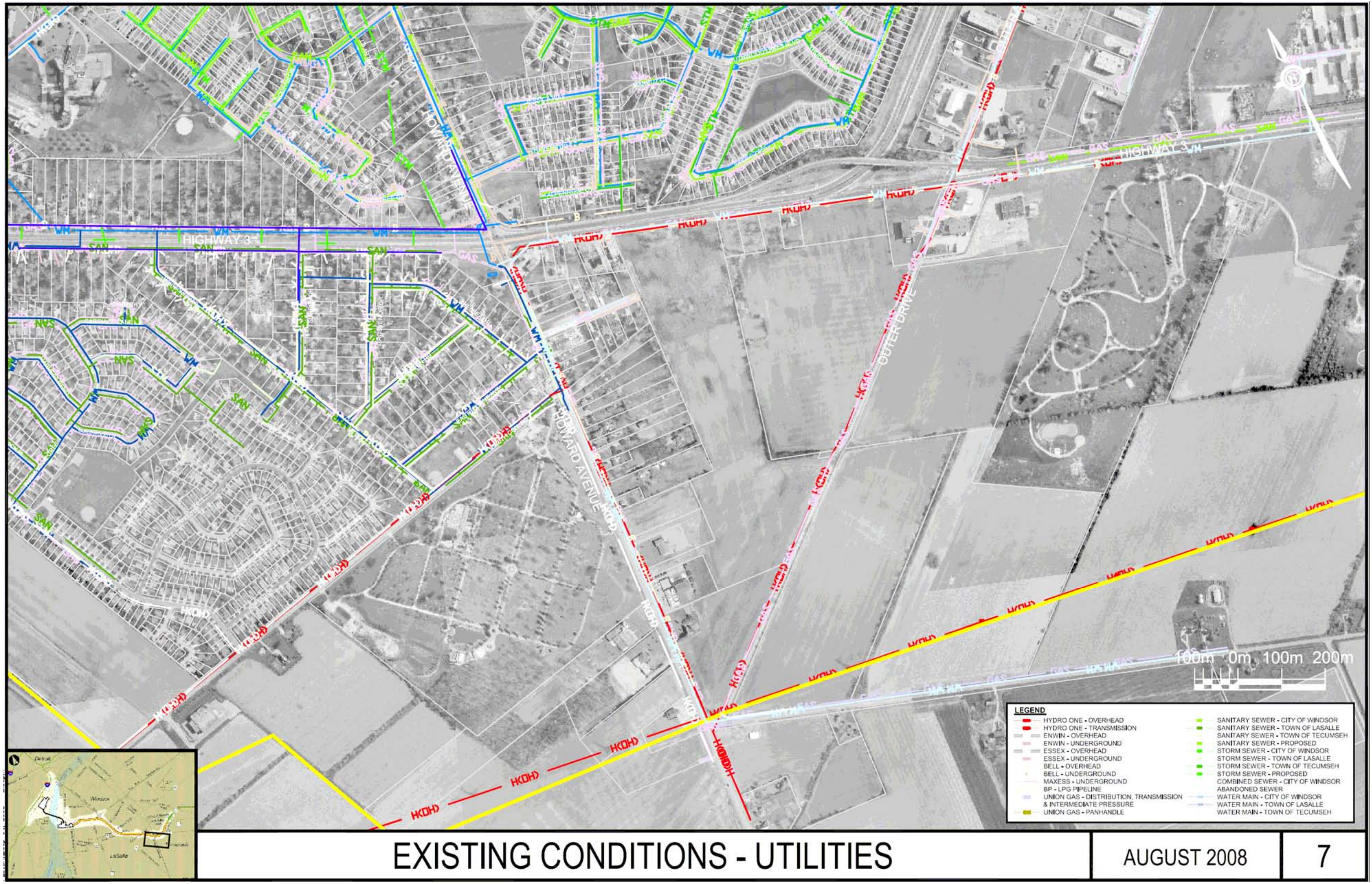


EXHIBIT 7.32F – EXISTING UTILITY CONDITIONS (HOWARD AVENUE TO NORTH TALBOT ROAD)

EXHIBIT 7.32G – EXISTING UTILITY CONDITIONS (NORTH TALBOT ROAD TO OUTER DRIVE)



8 PRACTICAL ALTERNATIVES FOR CROSSINGS, PLAZAS AND ACCESS ROADS

The term "practical alternative" is used to describe the more refined alternatives that emerge from the assessment and evaluation of the broader level conceptual alternatives, i.e. the illustrative alternatives. This terminology was adopted on both sides of the border to promote the coordinated approach between the two EA processes.

As described in more detail in Chapter 6, the assessment and evaluation of the illustrative crossing, plaza and access road alternatives led to the development of an Area of Continued Analysis (ACA). The development of the practical crossing, plaza and access road alternatives within the ACA was based upon the corresponding illustrative alternatives that were carried forward. For ease of reference, the relationship between the illustrative alternatives carried forward and the practical alternatives discussed in this chapter is summarized in Exhibits 8.1 to 8.3 in Section 8.1.2. Each exhibit corresponds to a particular practical crossing alternative, and shows the associated practical plaza alternatives. The corresponding illustrative crossing and plaza alternatives are also noted on the plans.

This chapter provides an overview of the generation, assessment and evaluation of the practical crossing, plaza and access road alternatives. For further details, the reader is referred to the following reports:

- *Generation and Assessment of Practical Alternatives and Selection of the Technically and Environmentally Preferred Alternative – Access Road Alternatives (December 2008);*
- *Generation and Assessment of Practical Alternatives and Selection of the Technically and Environmentally Preferred Alternative – Plaza and Crossing Alternatives (December 2008);*
- *Assessment of Practical Access Road Alternatives Memorandum – Improve Regional Mobility (May 2008);*
- *Draft Practical Alternatives Evaluation Working Paper – Air Quality Impact Assessment (May 2008);*
- *Draft Practical Alternatives Evaluation Working Paper – Noise and Vibration Assessment (May 2008);*
- *Draft Practical Alternatives Evaluation Working Paper – Social Impact Assessment (April 2008);*
- *Draft Practical Alternatives Evaluation Working Paper – Economic Impact (May 2008);*
- *Draft Practical Alternatives Evaluation Assessment Report – Existing and Planned Land Use (May 2008);*
- *Draft Practical Alternatives Evaluation Working Paper – Archaeology (April 2008);*
- *Draft Practical Alternatives Evaluation Working Paper – Cultural Heritage (April 2008);*
- *Draft Practical Alternatives Evaluation Working Paper – Natural Heritage (April 2008);*
- *Draft Practical Alternatives Evaluation Working Paper – Stormwater Management Plan (March 2008);*
- *Draft Practical Alternatives Evaluation Working Paper – Waste and Waste Management (May 2008);*
- *Draft Practical Alternatives Evaluation - Constructability Report for Plaza & Crossing Alternatives (December 2008);*
- *Draft Structural Planning Report for Practical Alternatives (May 2008);*
- *Draft Preliminary Construction Cost Estimate Report for Practical Alternatives (Access Road and Inspection Plazas) (May 2008); and,*
- *Draft Level 2 Traffic Operations Analysis of Practical Alternatives (December 2008).*

8.1 Practical Canadian Plaza and Crossing Alternatives

This section documents the factors considered in generating practical alternatives (bridge crossing, inspection plaza) as well as descriptions of the specific alternatives considered, an assessment of impacts and benefits associated with these alternatives, and the evaluation leading to the identification of a technically and environmentally preferred alternative (TEPA). For further details, refer to the *Generation and Assessment of Practical Alternatives and Selection of the Technically and Environmentally Preferred Alternative – Access Road Alternatives, December 2008*.

The U.S. team published its Draft Environmental Impact Statement (DEIS) in February 2008. The DEIS contains technical analysis of the crossing alternatives, and the U.S. plazas. This section of the report provides a summary of the analysis undertaken by the Canadian Team, as well as a summary of the analysis undertaken by the U.S. team, based on the information in the DEIS, and ongoing collaboration with the U.S. team. The U.S. team announced its final decision through their Final Environmental Impact Statement (FEIS) on December 5, 2008.

8.1.1 Generation of Plaza and Crossing Alternatives

CROSSINGS

The Canadian and U.S. study teams considered the following technical objectives in generating the practical crossing alternatives:

- Maintain navigational clearances on the Detroit River;
- Locate crossing in area of sound bedrock;
- Avoid as much as possible areas sensitive to traffic impacts of crossing (e.g., noise, vibration, air quality) such as residential neighbourhoods;
- Minimize length of crossing;
- Maximum grade of approach to crossing is 5 per cent; and
- Provide for six traffic lanes.

These technical objectives were derived based on consultation with agencies, municipalities, specialists (including traffic, highway design, foundations and structural specialists), and the public.

As noted in Chapter 6, the Detroit River is an important waterway for marine traffic on the Great Lakes. As such, bridges are required to span the river at a clearance of at least 46 m at the shipping channel as defined by the U.S. Coast Guard and Transport Canada – Navigable Waters Division. The height requirements and potential span lengths on the Detroit River suggest that any bridge on the Detroit River within the Area of Continued Analysis will need to be either a suspension bridge or a cable-stayed bridge. Additional consultation with U.S. and Canadian government agencies and shipping operators led to the decision to not place any piers in the Detroit River for a new span. Piers in this section of the Detroit River were considered too hazardous to marine navigation.

The Canadian and U.S. teams developed three practical crossing alternatives. The practical crossing and plaza alternatives are discussed in more detail in Section 8.1.2, and illustrated schematically in Exhibits 8.1 to 8.3.

PLAZAS

The following key considerations served as a basis in generating practical plaza alternatives:

- Proximity to Border: Canada Border Services Agency (CBSA) and U.S. Customs and Border Protection (CBP) require that the plazas be located as close to the border (i.e. bridge crossing) as possible, to reduce security / monitoring requirements for border agencies. Where plazas cannot be directly connected to the bridge, secure connections would be required to prevent goods and travellers from avoiding inspection. In Canada, a secure roadway of 1500 m was considered the guideline for a maximum reasonable distance, subject to consideration of land use and line of sight.
- Site Area: The site must provide adequate space to accommodate projected traffic demand, as well as turn-around opportunities for drivers and the installation of equipment systems prior to and after inspection points, on-site secondary inspection, some storage capacity for traffic queues on the plaza, and the ability to expand in the future.

  For the Detroit International Crossing study, inspection plaza areas of approximately 30 to 40 ha were considered for new crossings, based on the preliminary assumption that international truck traffic will be distributed equally between the new crossing and the Ambassador Bridge.

  To minimize visual and noise impacts and provide acceptable access for emergency vehicle services (fire, police, etc.), it was determined that the plaza elevation should not vary significantly from elevations of the adjacent lands and roadways.

  Plaza layouts and locations were influenced by proximity to the new international bridge and/or other bridges over existing highways or rail lines. As an example, the vertical clearance requirements for shipping extend to the edge of the Detroit River. The distance over which an approach structure would descend from the river crossing (assumed to be approximately 46 m above the riverbank to meet navigational clearance requirements) would be approximately one kilometre with a maximum grade of 5 per cent.

  Geotechnical conditions were also considered in siting plaza alternatives. Specifically, the plaza alternatives were sited away from the known salt extraction areas north of Prospect Avenue.
- Adjacent Land Use: Locate the plaza in an area where surrounding land uses would not be overly sensitive to the continuous operation, noise and lighting of "Port-Of-Entry" facilities. Alternatively, the plaza could be located in areas where additional land would be available to screen and buffer the Port-Of-Entry from existing sensitive land uses.

  The site should be located away from residential areas, schools and other community uses. Sites should not be visible from neighbouring lands, but should provide good visibility to surrounding areas and approaches. Areas with significant development should also be avoided.
- Environmental Issues: Consideration should be given to the presence of toxic and/or hazardous materials, wetlands and/or endangered species; cultural, social and economic impacts.
- Emergency Services and Access: The site should be served by more than one roadway to allow for roadway interruption; consideration should be given to response time for medical and fire emergency services, and proximity to hospitals.
- Existing Easements and Right-of-Ways: Consideration should be given to gas lines, water and sewer lines, power and telecommunication lines, rail lines, and local and private roadways.
- Water Availability: Consideration should be given to water sources and protection from sabotage or other threats of contamination.

The siting of practical plaza alternatives was based on the results of the assessment of illustrative plaza alternatives, additional study within the Area of Continued Analysis (ACA) and consultation with border agencies, businesses, property owners and the public.

Input received at Public Information Open Houses in November 2005 and workshops in January 2006 (refer to Chapter 3) and correspondence with the public identified several specific community objectives that were considered in the generation of inspection plaza locations:

- Concern with impacts to Sandwich community; keep plaza south of Prospect Avenue;
- Keep away from natural features (Ojibway Prairie Area, Spring Garden ANSI, Black Oak Woods);
- Place plaza in the Brighton Beach industrial area;
- Keep plaza away from the sinkhole location;
- Place plaza on as much vacant land as possible; and
- Place plazas away from residential areas.

The study team developed three distinct plaza locations and four plaza alternatives which are described in detail in Section 8.1.2.

8.1.2 Description of Practical Plaza and Crossing Alternatives

A total of three practical crossing alternatives and four practical plaza alternatives were developed on the basis of the generation criteria discussed in Section 8.1.1.

PRACTICAL CROSSING ALTERNATIVES

Practical Crossing Alternative A

Practical Crossing Alternative A ('Crossing A') is within the X-10 corridor, and is illustrated in Exhibit 8.1. This crossing alternative connects to the south end of the plaza area on the U.S. side of the river. Due to the distance required to reach existing grade, the crossing connects only to Practical Plaza Alternative A ('Plaza A') on the Canadian side of the river.

Crossing A is the longest of the alternatives, with a main span of 1220 m. Piers within the river were not considered in the crossing alternatives. A clear span of 1220 m limits the type of bridge possible for Crossing A to a suspension bridge.

Crossing A completely avoids the known salt extraction wells in the area north of Prospect Avenue

Practical Crossing Alternative B

Practical Crossing Alternative B ('Crossing B'), illustrated in Exhibit 8.2, and is the other crossing within the X-10 corridor and connects to the south end of the plaza area on the U.S. side of the river. The crossing connects to Plaza A and Plaza B1 on the Canadian side of the river. Crossing B has a main span of 870 m. A clear span of 870 m can be provided by both suspension and cable-stayed bridge types.

On the Canadian side of the river, Crossing B is aligned over an existing aggregate operation (Southwestern Sales) and vacant land owned by Ontario Power Generation (OPG). From these OPG lands, an approach structure connects to Plaza B or Plaza A.

The Crossing B main structure is situated just south of Prospect Avenue, south of the area of known brine wells. The crossing and approach structure avoid the known brine wells area.

Practical Crossing Alternative C

Practical Crossing Alternative C ('Crossing C') is within the X-11 corridor, and is illustrated in Exhibit 8.3. This alternative featured four distinct crossing-plaza combinations, including two ways of connecting to Plaza A (via the Brighton Beach area or parallel to the Ojibway Parkway), a connection to Plaza B, and a connection to Plaza C. Crossing C has a main span of 760 metres. A clear span of 760 metres can be provided by both suspension and cable-stayed bridge types.

On the Canadian side of the river, Crossing C is aligned over an existing fueling depot (Sterling Marine Fuels). The approach to the main crossing passes over the known brine wells area between Prospect Avenue and John B. Street.

PRACTICAL PLAZA ALTERNATIVES

Practical Plaza Alternative A

Practical Plaza Alternative A ('Plaza A') is approximately 90 acres in size, and is bounded by Ojibway Parkway, E.C. Row Expressway, Malden Road and Armanda Street/Broadway Street. Plaza A connects to all three crossing alternatives via approach roads that are approximately 2.0 km to 3.5 km in length (corresponding to Crossing A and Crossing C, respectively).

The site consists of primarily open space, woodlots and residential units that consist of established and recently constructed houses. Practical Plaza Alternative A is illustrated in Exhibits 8.1 to 8.3.

Approximately 150 m south of Plaza A is Armanda Street, a neighbourhood consisting of single-family houses. Plaza A would require existing Matchette Road to be closed between E.C. Row Expressway and just north of Armanda Street. Based on consultation with the municipalities, this portion of Matchette Road would need to realigned so that the current access provided by Matchette Road between Windsor and LaSalle can be maintained.

Practical Plaza Alternative B

Practical Plaza Alternative B ('Plaza B') is approximately 34 ha in size. Plaza B connects to Crossing C, and is illustrated in Exhibit 8.3. Plaza B connects to Crossing C via an approach road that is approximately 2.0 km in length.

There are few residential units directly within the site, however, the site is adjacent to primarily industrial area that includes the Nemak Plant (automotive manufacturing plant) to the east, the West Windsor Power Plant to the east and OPG Brighton Beach Power Station to the west. Potential impacts to these utilities and industrial uses were considered in the analysis and evaluation of Plaza B (refer to Section 8.1.3).

Practical Plaza Alternative B1

Practical Plaza Alternative B1 ('Plaza B1') is approximately 32 ha in size, and is a variation of Plaza B. Plaza B1 connects to Crossing B, and is illustrated in Exhibit 8.2. Plaza B1 connects to Crossing B via an approach road that is approximately 0.8 km in length. This alternative has a different layout and footprint than Plaza B due to the alignment of the connection of Crossing B at the north end of the plaza.

This site is also situated within the Brighton Beach Industrial Area, bounded by the Detroit River, Chappus Street, Ojibway Parkway and Broadway Street.

Practical Plaza Alternative C

Practical Plaza Alternative C ('Plaza C') is approximately 42 ha in size. Plaza C connects to Crossing C, and is illustrated in Exhibit 8.3. Plaza C connects to Crossing C via an approach road that is approximately 1.2 km in length.

Plaza C is located on vacant lands owned by OPG, Southwestern Sales (an existing aggregate operation) and on the Keith Transformer Station, which would require relocation.

The plaza is sited directly adjacent to the Detroit River shoreline. Along the north limit is Prospect Avenue; on the east side is Sandwich Street and a trucking operation and the West Windsor Power Plant; and to the south is Chappus Street and the Brighton Beach Industrial Area.

EXHIBIT 8.1 – PRACTICAL CROSSING ALTERNATIVE A AND CORRESPONDING PRACTICAL PLAZA ALTERNATIVES

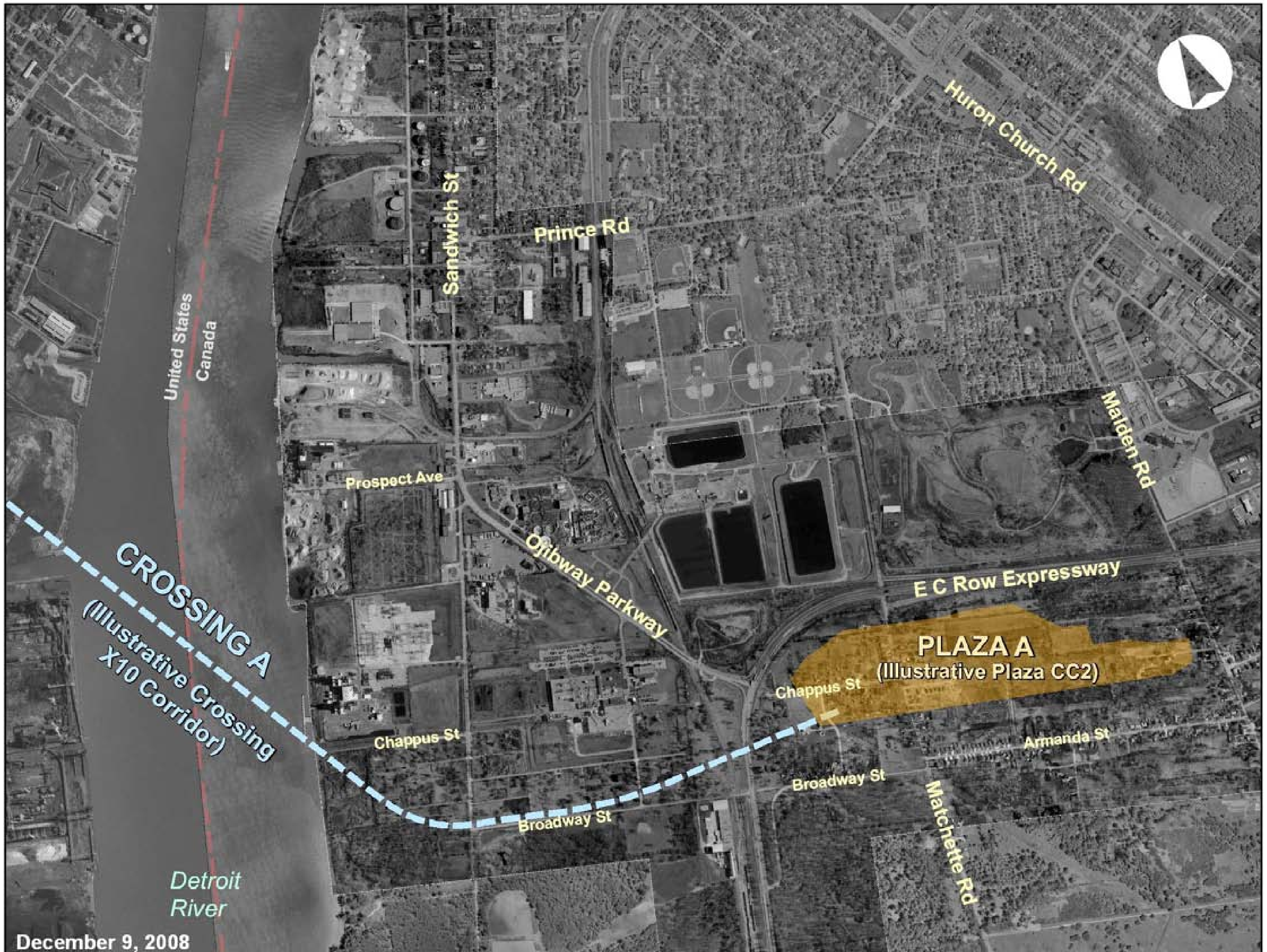


EXHIBIT 8.2 – PRACTICAL CROSSING ALTERNATIVE B AND CORRESPONDING PRACTICAL PLAZA ALTERNATIVES

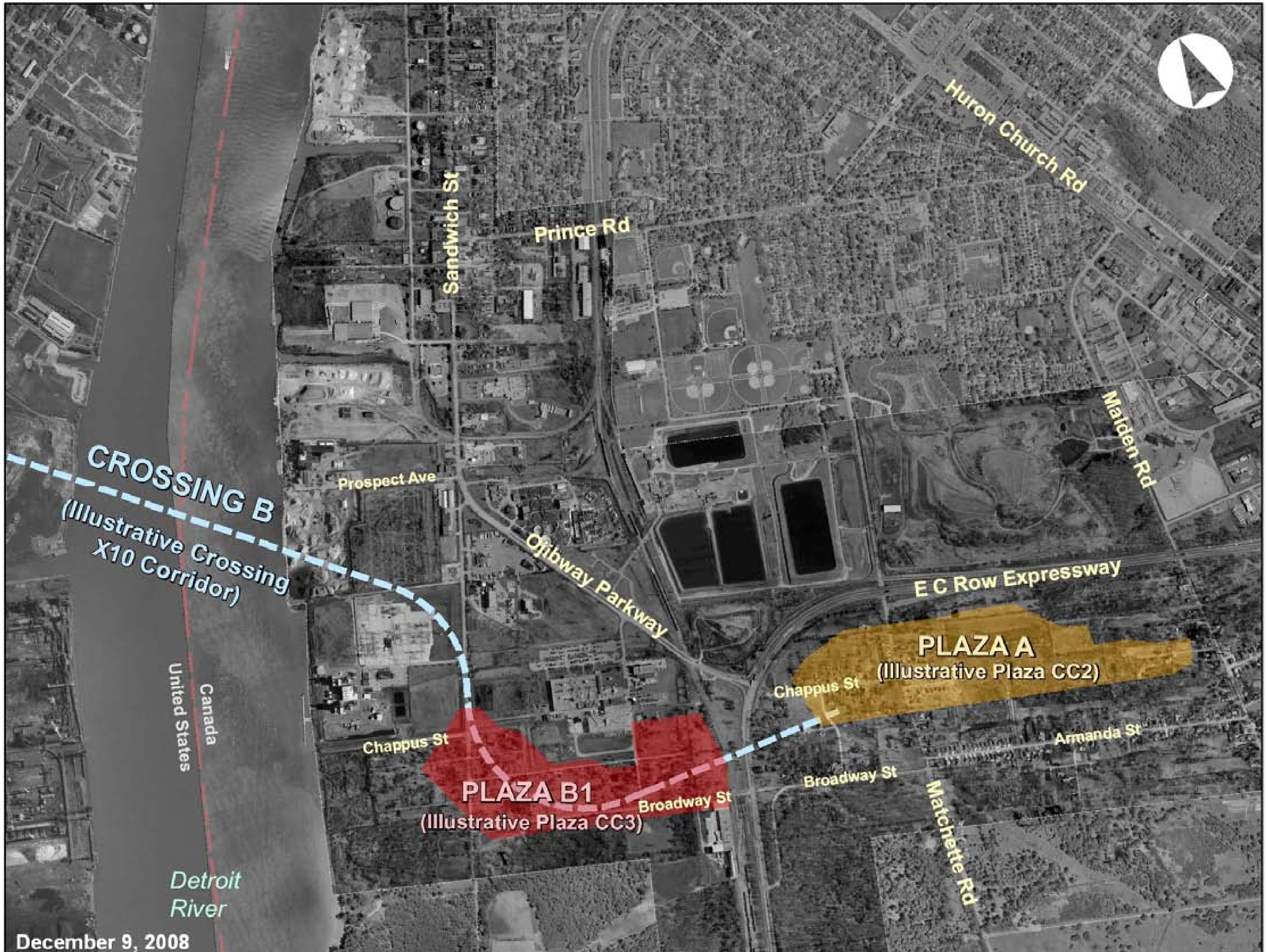
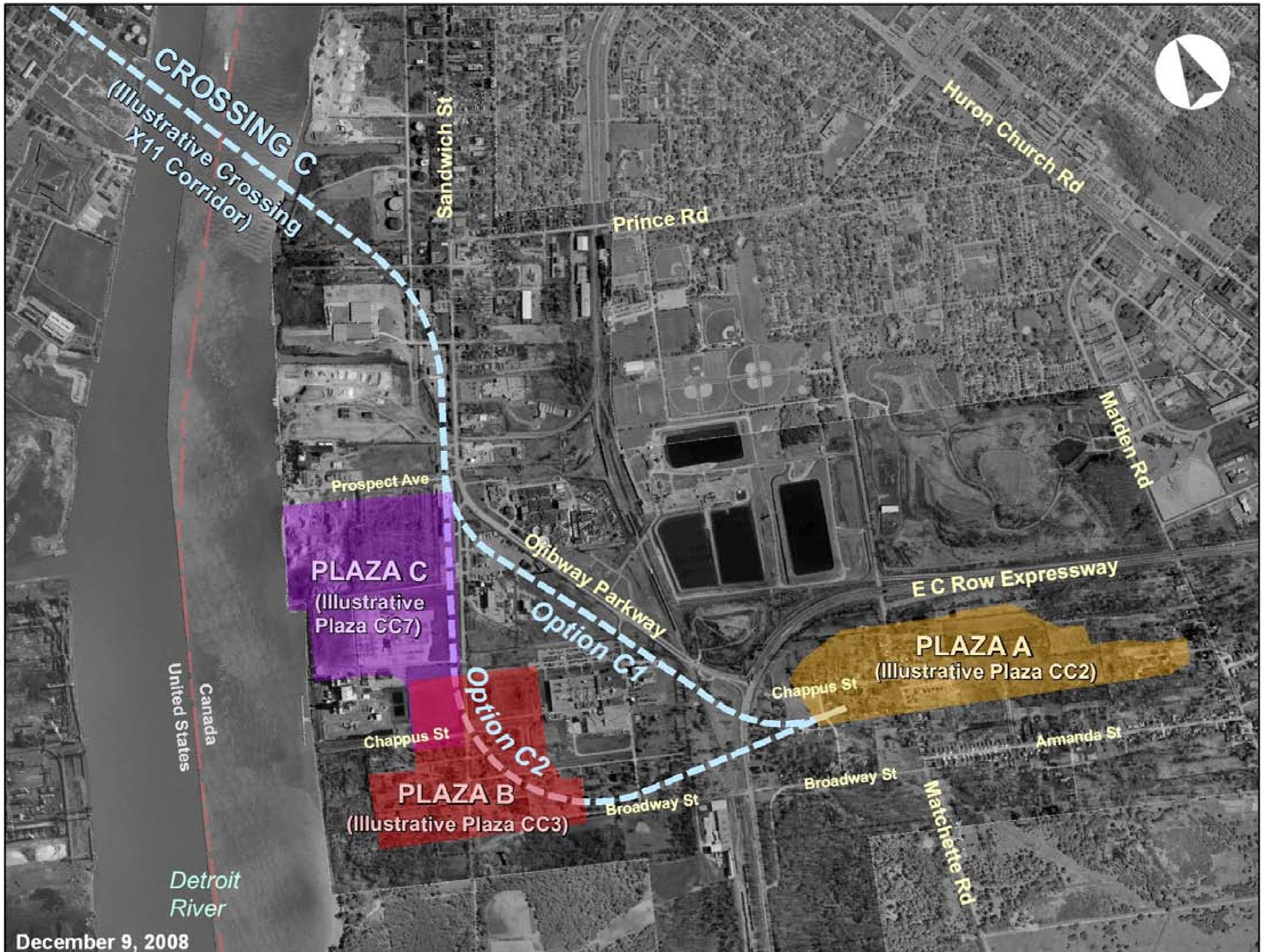


EXHIBIT 8.3 – PRACTICAL CROSSING ALTERNATIVE C AND CORRESPONDING PRACTICAL PLAZA ALTERNATIVES



8.1.3 Analysis and Evaluation

The Canadian study team examined each crossing/Canadian plaza combination to determine the preferred Canadian plaza site for each crossing.

In December 2006, the initial analysis of these seven crossing/plaza combinations was presented together with the U.S. plaza/crossing analysis at the fourth round of Public Information Open Houses (refer to Chapter 3 for further details of this PIOH). The Canadian side information was updated over the summer of 2007 and presented at the fifth round of Public Information Open Houses in August 2007 (also summarized in Chapter 3).

For the purposes of the assessment, the alternatives were organized by crossing corridor to determine best plaza/crossing combination by corridor.

- Crossing A/Plaza A
- Crossing B/Plaza A
- Crossing B/Plaza B1
- Crossing C/Plaza A via Brighton Beach
- Crossing C/Plaza A via Ojibway Parkway
- Crossing C/Plaza B
- Crossing C/Plaza C

The approved EA TOR for the Detroit International Crossing study identified two evaluation methods to be employed in the evaluation process: reasoned argument method and arithmetic method. The assessment and evaluation of these alternatives was undertaken following both a reasoned argument method, and an arithmetic method (weighted scoring). The reasoned argument method was the primary method, while the arithmetic method was the secondary method, which served as a basis of comparison for the evaluation findings.

REASONED ARGUMENT METHOD

Crossing A Corridor Alternatives

The geometric constraints posed by the navigational clearances over the Detroit River, the grade separation requirement at the Ojibway Parkway and Essex Terminal Railway (ETR) corridors, and the maximum design grade of the crossing and approach roadways eliminated the possibility for Crossing A to connect into a plaza in the Plaza B area (i.e. west of ETR). Similarly, a connection from Crossing A to Plaza C was deemed too circuitous and inefficient to be considered a reasonable alternative. Therefore, Crossing A was evaluated solely in combination with Plaza A, and as such, was carried forward in the assessment.

Plaza A is located along the south side of the E.C. Row Expressway between Malden Road and Ojibway Parkway. This alternative falls within Windsor's Malden Planning District, which is largely a residential community integrated with a protected natural area. Some of the residential areas along Matchette Road, Beech Street, Chappus Street and Armanda Street date back to the 1930s. New residential development is also occurring on lands immediately south of E.C. Row Expressway. Current residents describe the character of the community primarily as having a natural setting, with the feeling of living in the country while enjoying the amenities of the city.

Table 8.1 provides a summary of the analysis of Crossing A-Plaza A. Further details of the analysis of this alternative are provided in a document entitled *Generation and Assessment of Practical Alternatives and Selection of the Technically and Environmentally Preferred Alternative - Plaza and Crossing Alternatives*.

Crossing B Corridor Alternatives

Crossing B can connect to either Plaza A or Plaza B1. Plaza B1 is situated west of Ojibway Parkway on lands acquired by the City of Windsor for the purposes of establishing an industrial park. The Brighton Beach Industrial Park is named after the former Brighton Beach neighbourhood which previously occupied these lands. Over time, most of the residences have been acquired and removed so the area is generally vacant. The industrial area also includes the OPG Brighton Beach and West Windsor power plants, the Nemak Automotive manufacturing plant, Keith Transformer Station, Windsor Salt, and aggregate storage facilities.

Table 8.2 provides a summary of a comparison of Plaza A and Plaza B1 alternatives with Crossing B based on the results of the analysis. Further details of the analysis of these alternatives are provided in a document entitled *Generation and Assessment of Practical Alternatives and Selection of the Technically and Environmentally Preferred Alternative - Plaza and Crossing Alternatives*.

Crossing C Corridor Alternatives

Crossing C can connect to Plazas A, B and C. The connection from Plaza A to Crossing C was assessed assuming two different routes. One route paralleled the alignment of Ojibway Parkway, passing between the Nemak Plant and the City of Windsor's Lou Romano Water Reclamation Plant. The second route paralleled Broadway Street and Sandwich Street, passing through the Brighton Beach Industrial Area.

Plaza B is located in the Brighton Beach industrial area west of Ojibway Parkway and north of Broadway Street. Plaza C is located north of the Plaza B site, in the area west of Sandwich Street and south of Prospect Avenue. Residents of Sandwich have indicated to the study team that many consider Prospect Avenue as the southern limit of their community. Portions of the Plaza C site are currently occupied by the Brighton Beach Power Station, the Keith Transformer Station as well as vacant land. A portion of the plaza site is also occupied by Southwestern Sales Corporation, which stores and distributes aggregate and other construction materials.

The results of the geotechnical deep drilling program discussed in Chapter 7 identified the need to incorporate a cable-stayed or suspension bridge for the approach to Crossing C to mitigate the considerable issues associated with the uncertain bedrock integrity. This would result in a significant cost premium (approximately $325 million) as well as an impact to the construction schedule as compared to the other two crossing alternatives, which would feature more conventional approach structures.

Table 8.3 provides a summary of a comparison of Plaza A, B and C alternatives with Crossing C based on the results of the analysis. Further details of the analysis of these alternatives are provided in a document entitled *Generation and Assessment of Practical Alternatives and Selection of the Technically and Environmentally Preferred Alternative - Plaza and Crossing Alternatives*.

Evaluation of Crossing A, Crossing B and Crossing C Alternatives – Canadian Side

The results of the evaluations summarized in Tables 8.1 to 8.3 identified that Crossing A-Plaza A, Crossing B-Plaza B1 and Crossing C-Plaza B are the plaza-crossing alternatives to be considered on the Canadian side. Table 8.4 summarizes the characteristics, advantages and disadvantages of these three alternatives, as the decision on the preferred crossing is a bi-national decision. Section 8.1.4 summarizes the overall assessment of the plaza and crossing alternatives.

Further details of the analysis of these alternatives are provided in a document entitled *Generation and Assessment of Practical Alternatives and Selection of the Technically and Environmentally Preferred Alternative - Plaza and Crossing Alternatives*.

ARITHMETIC METHOD

Crossing B Corridor Alternatives

In accordance with the evaluation process developed for this study, this assessment was also conducted using an arithmetic approach (weighted scoring), based on factor scores assigned by the factor specialists and factor weighting scenarios developed earlier in the study.

As described in Section 6.2.3 with regard to the evaluation of the illustrative crossing, plaza and access road alternatives, in addition to weighting scenarios developed by the study team, weighting scenarios were also developed based on public input and input from the Community Consultation Group (CCG). These weighting scenarios were also utilized for the evaluation of the practical crossing, plaza and access road alternatives.

The results of this assessment are presented in Table 8.5. As can be seen in the table, the arithmetic results are consistent with the reasoned argument evaluation considering both the unweighted and weighted scores, as well as across all three weighting scenarios. Plaza B1 is the preferred Canadian plaza for Crossing B.

Crossing C Corridor Alternatives

The results of the arithmetic method assessment of the Corridor C alternatives are presented in Table 8.6. In reviewing the results of the two methods, the study team was satisfied that the results of the reasoned argument are valid and appropriate. To some degree, the limitations of the seven-point scoring system utilized for this study underemphasize the difference between the two alternatives in terms of cost and constructability impacts. At the same time, the differences between these two alternatives in terms of their impacts to natural features are adequately reflected in the impact scoring.

The magnitude and significance of the cost and constructability impacts between the alternatives are considered to be greater than the magnitude and significance of the differences in natural features impacts. The Plaza B alternative is therefore preferred over the Plaza C alternative.

Evaluation of Crossing A, Crossing B and Crossing C Alternatives – Canadian Side

The results of the arithmetic method assessment of the preferred Crossing A, Crossing B and Crossing C alternatives are presented in Table 8.7. The results indicate that Crossing B-Plaza B1 is the highest ranking alternative, followed by the Crossing A-Plaza A alternative, and the Crossing C-Plaza B alternative, respectively. These results are consistent with those of the reasoned argument method presented in this section.

TABLE 8.1 – SUMMARY OF ANALYSIS – CROSSING A - PLAZA A

Evaluation Factor	Measure	Crossing A – Plaza A
Changes to Air Quality	Changes in $PM_{2.5}$ Concentration	Increases in $PM_{2.5}$ within 250 m of crossing and plaza under certain conditions; potential to influence air quality in Armanda Street/Matchette Road area
	Changes in NO_x Concentrations	Increases in NO_x within 250 m of crossing and plaza under certain conditions; potential to influence air quality in Armanda Street/Matchette Road area
Protection of Community and Neighbourhood Characteristics	Effect on Local Access – Number of Roads Crossed / Closed / Connected	7 crossings / 7 closings / 4 connections – Matchette Road realignment; Minor out-of-way travel
	Noise receptors with change in noise levels >5 dBA (2035; with mitigation; compared to future do-nothing)	1
	Potential Acquisitions Households	62
	Potential Acquisitions Businesses/Industries	1
	Social Features (institutional) displaced	1 – Erie Wildlife Rescue
	Overall Effect on Community Character/Cohesion	Greater impact on community character for Armanda Street/Matchette Road neighbourhood compared to other alternatives due to proximity of new plaza to this residential area;
Maintain Consistency with Existing and Planned Land Use	Consistency	Plaza location not consistent with existing land uses of the Malden Planning District; impacts to existing and planned residential uses Crossing and approach are consistent as these are located in industrial area;
	Known Contaminated Sites Impacted – No./Area (ha)	4 sites/1 ha
Protect Cultural Resources	Designated built heritage features potentially displaced	1 Cultural Landscape Unit – Brighton Beach 1 Built Heritage Feature
	Direct impacts to Parks	Ojibway Park (0.7 ha)
	Potential archaeological sites affected	0 – pre-contact habitation site/Euro-Canadian homesteads 6 – pre-contact findspots
Protect the Natural Environment	Feature impacts	Loss of 2.98 ha of provincially rare vegetation communities Loss of 232 specimens/colonies of species at risk Approximately 7.38 ha of designated natural areas within the 120 m of proposed property limit
Improve Regional Mobility	2035 Average Daily Car and Truck Volume	Canadian plaza and crossing sized to accommodate average daily traffic of 39,000 vehicles (cars and trucks) in 2035.
	Distance from plaza to international border	2.5 km
	Canadian Plaza Operational Considerations	Good accessibility to/from local road network Good access to local utilities for site services Distance from border to plaza > 1.5 km is less desirable; requires on-going security monitoring; 700 m section of at-grade roadway through vacant lands also a security/monitoring concern Plaza provides sufficient size for addressing needs to 2035 and beyond; while there is flexibility to address new/expanded inspection functions within the plaza site, expansion of plaza beyond the identified footprint may be problematic due to existing land uses adjacent to the plaza site.
Cost and Constructability	Is it constructible?	Yes
	Key Issues	Length of main span (approx. 1200 m) means suspension bridge is only practical bridge type; Risk and additional cost associated with project timeframe is high due to magnitude of required construction and longer main-span.
	Construction cost, 2011 CDN $	$830 million (Malden Road to international border, including one-half of crossing construction cost)

TABLE 8.2 – SUMMARY OF ANALYSIS – CROSSING B ALTERNATIVES

Evaluation Factor	Measure	Crossing B – Plaza A	Crossing B – Plaza B1
Changes to Air Quality	Changes in $PM_{2.5}$ Concentration	Increases in $PM_{2.5}$ within 250 m of crossing and plaza under certain conditions	
	Changes in NO_x Concentrations	Increases in NO_x within 250 m of crossing and plaza under certain conditions	
Protection of Community and Neighbourhood Characteristics	Effect on Local Access – Number of Roads Crossed / Closed / Connected	4 crossings / 9 closings / 4 connections – Minor out-of-way travel; Matchette Road realignment	4 crossings / 12 closings / 4 connections – Minor out-of-way travel
	Noise receptors with change in noise levels >5 dBA (2035; with mitigation; compared to future do-nothing)	2	0
	Potential Acquisitions Households	65	36
	Potential Acquisitions Businesses/Industries	1	1
	Social Features (institutional) displaced	1 (Erie Wildlife Rescue)	
	Overall Effect on Community Character/Cohesion	Negative effect on community character for Armanda Street/Matchette Road neighbourhood due to displacement of homes and proximity of neighbourhood to new plaza	Negative effect on community character for Matchette Road/Chappus Street neighbourhood due to displacement of several homes to accommodate interchange connection at E.C. Row/Ojibway Pkwy
Maintain Consistency with Existing and Planned Land Use	Consistency	Plaza location not consistent with existing land uses and zoning in Malden Planning District Crossing and approach are located in portland industrial area and are considered to be consistent	Plaza located in industrial area; more consistent with existing land uses and zoning Crossing and approaches are located in portland industrial area and are considered to be consistent
	Known Contaminated Sites Impacted – No./Area (ha)	11 sites/5 ha	17 sites/24 ha
Protect Cultural Resources	Designated built heritage features potentially displaced	1 Cultural Landscape Unit - Brighton Beach 2 Built Heritage Features – house	1 Cultural Landscape Unit - Brighton Beach 3 Built Heritage Features – houses
	Direct impacts to Parks	Ojibway Park (0.7 ha)	Ojibway Park (0.7 ha)
	Potential archaeological sites affected	0 – pre-contact habitation site/Euro-Canadian homesteads 6 – pre-contact findspots	2 – pre-contact habitation site/Euro-Canadian homesteads 4 – pre-contact findspots
Protect the Natural Environment	Feature impacts	Loss of 2.70 ha of provincially rare vegetation communities Loss of 223 specimens/colonies of species at risk Approximately 2.38 ha of designated natural areas within 120 m of proposed property limit	Loss of 1.09 ha of provincially rare vegetation communities Loss of 185 specimens/colonies of species at risk Approximately 10.96 ha of designated natural areas within 120 m of proposed property limit
Improve Regional Mobility	2035 Average Daily Car and Truck Volume	Canadian plaza and crossing sized to accommodate average daily traffic of 39,000 vehicles (cars and trucks) in 2035.	
	Distance from plaza to international border	2.9 km	1.4 km
	Canadian Plaza Operational Considerations	Distance from border to plaza > 1.5 km is less desirable; requires on-going security monitoring; 700 m section of at-grade roadway through vacant lands also a security/ monitoring concern	Distance to plaza < 1.5 km is preferable; good (direct) sight lines between plaza and crossing
Cost and Constructability	Is it constructible?	Yes	
	Key Issues	No issues affecting cost and constructability identified	
	Construction cost, 2011 CDN $	$687 million to $751 million (Malden Road to international border, including one-half of crossing construction cost)	$648 million to $712 million (Malden Road to international border, including one-half of crossing construction cost)

Evaluation Factor	Measure	Crossing B – Plaza A	Crossing B – Plaza B1
Summary of Assessment	Both alternatives have similar effects on air quality and cultural resources and similar cost estimates. The Plaza A alternative displaces more residences and is considered to have a greater negative effect on the residential neighbourhood of Matchette Road/Armanda Street. These greater effects are due to the proximity of the residential neighbourhood to the plaza. In addition to higher direct effects, the Plaza A alternative is determined to have higher indirect and nuisance effects related to noise, dust, etc. Plaza B1 is located in an industrial park, and is therefore considered to have less community impacts and greater consistency with land use. The Plaza A alternative also results in a greater impact to natural features than the Plaza B1 alternative. Operationally, both plazas will operate well under future peak travel demand. However Plaza B1 is preferred over Plaza A based on the shorter distance to the international border and the direct connection between the crossing and the plaza (less security/monitoring requirements). Based on this assessment, Plaza B1 provides more transportation and mobility benefits and fewer impacts. Plaza B1 is preferred to Plaza A for connecting to Crossing B.		

TABLE 8.3 – SUMMARY OF ANALYSIS – CROSSING C ALTERNATIVES

Evaluation Factor	Measure	Crossing C – Plaza A (via Ojibway Parkway)	Crossing C – Plaza A (via Brighton Beach)	Crossing C – Plaza B	Crossing C – Plaza C
Changes to Air Quality	Changes in $PM_{2.5}$ Concentration	Increases in $PM_{2.5}$ within 250 m of crossing and plaza under certain conditions; potential to influence air quality in Armanda Street area and portion of Sandwich		Increases in $PM_{2.5}$ within 250 m of crossing and plaza under certain conditions; potential to influence air quality in portion of Sandwich	
	Changes in NO_x Concentrations	Increases in NO_x within 250 m of crossing and plaza under certain conditions; potential to influence air quality in Armanda Street area and portion of Sandwich		Increases in NOx within 250 m of crossing and plaza under certain conditions; potential to influence air quality in portion of Sandwich	
Protection of Community and Neighbourhood Characteristics	Effect on Local Access – Number of Roads Crossed / Closed / Connected	7 crossings / 4 closings / 4 connections – – minor out-of-way travel; Matchette Road realignment	7 crossings / 3 closings / 4 connections – minor out-of-way travel; Matchette Road realignment	7 crossings / 16 closings / 5 connections – minor out-of-way travel; Relocation of Broadway Street / Sandwich Street connection	5 crossings / 13 closings / 4 connections – minor out-of-way travel
	Noise receptors with change in noise levels >5 dBA (2035; with mitigation; compared to future do-nothing)	3	4	0	0
	Potential Acquisitions Households	64	66	38	35
	Potential Acquisitions Businesses/Industries	6	5	5	5
	Social Features (institutional) displaced	1 (Erie Wildlife Rescue)			
	Overall Effect on Community Character/Cohesion	Negative effect on community character for Armanda Street neighbourhood due to proximity of new plaza; Negative effect on community character for Sandwich Towne due to proximity of new crossing.		Negative effect on community character for Sandwich Towne due to proximity of new crossing.	
Maintain Consistency with Existing and Planned Land Use	Consistency	Plaza location not consistent with existing land uses of the Malden Planning District; impacts to existing and planned residential uses Crossing and approaches located in occupied and vacant industrial areas; consistent	Plaza location not consistent with existing land uses of the Malden Planning District; impacts to existing and planned residential uses Crossing and approaches located in occupied and vacant industrial areas; consistent	Plaza location in occupied and vacant industrial areas; consistent Crossing and approaches located in occupied and vacant industrial areas; consistent	Plaza location in occupied and vacant industrial areas; consistent Crossing and approaches located in occupied and vacant industrial areas; consistent
	Known Contaminated Sites Impacted – No./Area (ha)	22 sites/12 ha	29 sites/24 ha	29 sites/24 ha	30 sites/50 ha
Protect Cultural Resources	Designated built heritage features potentially displaced	2 Cultural Landscape Units – Brighton Beach; unconfirmed tunnel 1 Built Heritage Feature - house	2 Cultural Landscape Units – Brighton Beach; unconfirmed tunnel 2 Build Heritage Features – houses	2 Cultural Landscape Units – Brighton Beach; unconfirmed tunnel 3 Built Heritage Features – houses	2 Cultural Landscape Units – Brighton Beach; unconfirmed tunnel 2 Built Heritage Features – houses
	Direct impacts to Parks	Ojibway Park (0.7 ha)	Ojibway Park (0.7 ha)	Ojibway Park (0.7 ha)	Ojibway Park (0.7 ha)
	Potential archaeological sites affected	0 – pre-contact habitation sites/Euro-Canadian homesteads 5 – pre-contact findspots	0 – pre-contact habitation sites/Euro-Canadian homesteads 6 – pre-contact findspots	3 – pre-contact habitation sites/Euro-Canadian homesteads 4 – pre-contact findspots	1 – pre-contact habitation sites/Euro-Canadian homesteads 3 – pre-contact findspots
Protect the Natural Environment	Feature impacts	loss of 2.70 ha of provincially rare vegetation communities loss of 186 specimens/colonies of species at risk Approximately 1.73 ha of designated natural areas within 120 m of proposed property limit	loss of 2.69 ha of provincially rare vegetation communities loss of 231 specimens/colonies of species at risk Approximately 1.48 ha of designated natural areas within 120 m of proposed property limit	loss of 2.02 ha of provincially rare vegetation communities loss of 195 specimens/colonies of species at risk Approximately 14.82 ha of designated natural areas within 120 m of proposed property limit	loss of 0.89 ha of provincially rare vegetation communities loss of 153 specimens/colonies of species at risk Approximately 7.77 ha of designated natural areas within 120 m of proposed property limit

Evaluation Factor	Measure	Crossing C – Plaza A (via Ojibway Parkway)	Crossing C – Plaza A (via Brighton Beach)	Crossing C – Plaza B	Crossing C – Plaza C
Improve Regional Mobility	2035 Average Daily Car and Truck Volume	Canadian plaza and crossing sized to accommodate average daily traffic of 39,000 vehicles (cars and trucks) in 2035.			
	Distance from plaza to international border	3.3 km	3.9 km	2.3 km	1.6 km
	Canadian Plaza Operational Considerations	Good accessibility to/from local road network Good access to local utilities for site services Distance from border to plaza > 1.5 km is less desirable; requires ongoing security monitoring; section of at-grade roadway through vacant land use also a security/monitoring concern Plaza provides sufficient size for addressing needs to 2035 and beyond; while there is flexibility to address new/expanded inspection functions within the plaza site, expansion of plaza beyond the identified footprint may be problematic due to existing land uses adjacent to the plaza site.	Good accessibility to/from local road network Good access to local utilities for site services Distance from border to plaza > 1.5 km is less desirable; requires ongoing security monitoring; section of at-grade roadway through vacant land use also a security/monitoring concern Plaza provides sufficient size for addressing needs to 2035 and beyond; while there is flexibility to address new/expanded inspection functions within the plaza site, expansion of plaza beyond the identified footprint may be problematic due to existing land uses adjacent to the plaza site.	Good accessibility to/from local road network Good access to local utilities for site services Distance from border to plaza > 1.5 km is less desirable; requires ongoing security monitoring; section of at-grade roadway through vacant land use also a security/monitoring concern Plaza provides sufficient size for addressing needs to 2035 and beyond; while there is flexibility to address new/expanded inspection functions within the plaza site, expansion of plaza beyond the identified footprint may be problematic due to existing land uses adjacent to the plaza site.	Good accessibility to/from local road network Good access to local utilities for site services Distance from border >1.5 km, however the road connection is elevated with direct connection to crossing; good (direct) sight lines between plaza and crossing Plaza provides sufficient size for addressing needs to 2035 and beyond; while there is flexibility to address new/expanded inspection functions within the plaza site, expansion of plaza beyond the identified footprint may be problematic due to existing land uses adjacent to the plaza site.
Cost and Constructability	Is it constructible?	Yes, but results of geotechnical investigations identified that there is a subsurface cavity caused by salt extraction activities in the vicinity of Sandwich Street and Prospect Avenue. Further settlements due to this cavity represent risks to the design and operation of the approach roadway connecting to Crossing C. It is not certain that further investigation will be successful in reducing or eliminating these risks.			
	Key Issues	Costs and risks associated with approach road crossing of brine well area Direct impact to Sterling Marine Fuels fueling depot	Costs and risks associated with approach road crossing of brine well area Direct impact to Sterling Marine Fuels fueling depot	Costs and risks associated with approach road crossing of brine well area Direct impact to Sterling Marine Fuels fueling depot	Costs and risks associated with approach road crossing of brine well area Costs and risks associated with relocation of Keith Transformer Station Direct impact to Sterling Marine Fuels fueling depot
	Construction cost, 2011 CDN $	$979 million to $1,049 million (Malden Road to international border, including one-half of crossing construction cost)	$985 million to $1,055 million (Malden Road to international border, including one-half of crossing construction cost)	$1,015 million to $1,085 million (Malden Road to international border, including one-half of crossing construction cost)	$1,142 million to $1,212 million (Malden Road to international border, including one-half of crossing construction cost)
Summary of Assessment		The Plaza A alternatives were considered to have higher overall impacts in comparison to the Plaza B and Plaza C alternatives. The Plaza A alternatives result in greater direct and indirect nuisance impacts to the residential and natural areas in the Matchette Road/E.C. Row/Armanda Street area due to the location of this plaza. In addition, the distance between the plaza and the border with the Plaza A alternatives is well beyond the desirable distance identified by Canada Border Services Agency, resulting in greater monitoring/security concerns compared to the other alternatives. Finally, the Plaza A alternatives offered no advantages over the Plaza B and C alternatives with the connection to Crossing C. The Plaza C alternative is noted as having slightly less impact on local air quality due to the layout of the plaza and greater buffer area provided around the apron area of the plaza in comparison to Plaza B. The Plaza C alternative was also found to have lower impacts to significant natural features than the Plaza B alternative. However, the Plaza C alternative carries substantially higher construction costs, and the potential to add several more years to the construction period than the Plaza B alternative due to the conflict with the Keith Transformer Station. It should be noted that all alternatives have similar constructability issues with regard to the existing brine well area, and the proximity to Sterling Marine Fuels. The differences in air quality impacts between the Plaza B and C alternatives noted above are of no consequence in this industrial area of West Windsor as no sensitive receivers are located within 250 m of either plaza. The difference in impacts to natural features between the Plaza B and C alternatives is predominantly related to terrestrial communities of high significance and provincially rare specimens/colonies. The Plaza B option impacts two additional areas of high significance habitat, resulting in approximately one hectare more area impacted, and 195 specimens/colonies compared to 153 with the Plaza C alternative. In either case, mitigation of impacts through integration, relocation and salvage will be required for the habitat of high significance and provincially rare specimens/colonies with either alternative. Providing increased capacity, improving border processing capabilities and providing reasonable and secure crossing options in this important trade corridor are the primary objectives of this study and are highly important to the local, regional and national economies on both sides of the river. Approvals and staging for the relocation of the Keith Transformer Station can delay completion of the new crossing several years; in the meantime, increased congestion and delays on the border crossing network, extended disruption to communities due to increased infiltration of international traffic onto local streets, and failure to attract new employment to the region could negatively impact the local communities. Given the need to mitigate the impacts to terrestrial communities for either plaza alternative, the schedule risks and additional costs associated with the relocation of the Keith Transformer Station associated with the Plaza C alternative were considered to be of greater importance than the increased impacts to natural features. Therefore, the Plaza B alternative was carried forward for further consideration.			

TABLE 8.4 – EVALUATION OF CROSSING A, CROSSING B AND CROSSING C ALTERNATIVES – CANADIAN SIDE

Evaluation Factor	Measure	Crossing A – Plaza A	Crossing B – Plaza B1	Crossing C - Plaza B
Changes to Air Quality	Changes in $PM_{2.5}$ Concentration	Increases in $PM_{2.5}$ within 250 m of crossing and plaza under certain conditions; potential to influence air quality in Armanda Street/Matchette Road area	Increases in $PM_{2.5}$ within 250 m of crossing and plaza under certain conditions;	Increases in $PM_{2.5}$ within 250 m of crossing and plaza under certain conditions; potential to influence air quality in portion of Sandwich
	Changes in NO_x Concentrations	Increases in NO_x within 250 m of crossing and plaza under certain conditions; potential to influence air quality in Armanda Street/Matchette Road area	Increases in NO_x within 250 m of crossing and plaza under certain conditions;	Increases in NO_x within 250 m of crossing and plaza under certain conditions; potential to influence air quality in portion of Sandwich
Protection of Community and Neighbourhood Characteristics	Effect on Local Access – Number of Roads Crossed / Closed / Connected	7 crossings / 7 closings / 4 connections – Matchette Road realignment; Minor out-of-way travel	4 crossings / 12 closings / 4 connections – Minor out-of-way travel	7 crossings / 16 closings / 5 connections – minor out-of-way travel; Relocation of Broadway Street / Sandwich Street connection
	Noise receptors with change in noise levels >5 dBA (2035; with mitigation; compared to future do-nothing)	1	0	0
	Potential Acquisitions Households	62	36	38
	Potential Acquisitions Businesses/Industries	1	1	5
	Social Features (institutional) displaced	1 (Erie Wildlife Rescue)		
	Overall Effect on Community Character/Cohesion	Greater impact on community character for Armanda Street/Matchette Road neighbourhood compared to other alternatives due to proximity of new plaza to this residential area;	Less impact on community character compared to other alternatives; both plaza and crossing are situated in industrial area	Greater impact on community character of Sandwich compared to other alternatives due to proximity of new crossing to this residential area.
Maintain Consistency with Existing and Planned Land Use	Consistency	Plaza location not consistent with existing land uses of the Malden planning district; impacts to existing and planned residential uses Crossing and approach are consistent as these are located in industrial area;	Crossing and plaza are consistent as these are located in industrial area;	Crossing and plaza are consistent as these are located in industrial area;
	Known Contaminated Sites Impacted – No./Area (ha)	4 sites/1 ha	17 sites/24 ha	29 sites/24 ha
Protect Cultural Resources	Designated built heritage features potentially displaced	1 Cultural Landscape Unit 1 Built Heritage Feature (low significance)	1 Cultural Landscape Unit 3 Built Heritage Features (low significance)	2 Cultural Landscape Units 3 Built Heritage Features (low significance)
	Direct impacts to Parks	Ojibway Park (0.7 ha)	Ojibway Park (0.7 ha)	Ojibway Park (0.7 ha)
	Potential archaeological sites affected	0 pre-contact habitation sites/ Euro-Canadian homesteads 6 pre-contact findspots	2 pre-contact habitation sites/ Euro-Canadian homesteads 4 pre-contact findspots	3 pre-contact habitation sites/ Euro-Canadian homesteads 4 pre-contact findspots
Protect the Natural Environment	Feature impacts	Loss of 2.98 ha of provincially rare vegetation communities Loss of 232 specimens/colonies of species at risk Approximately 7.38 ha of designated natural areas within 120 m of proposed property limit	Loss of 1.09 ha of provincially rare vegetation communities Loss of 185 specimens/colonies of species at risk Approximately 10.96 ha of designated natural areas within 120 m of proposed property limit	Loss of 2.02 ha of provincially rare vegetation communities Loss of 195 specimens/colonies of species at risk Approximately 14.82 ha of designated natural areas within 120 m of proposed property limit

<table>
<tr><th>Evaluation Factor</th><th>Measure</th><th>Crossing A – Plaza A</th><th>Crossing B – Plaza B1</th><th>Crossing C - Plaza B</th></tr>
<tr><td rowspan="3">Improve Regional Mobility</td><td>2035 Average Daily Car and Truck Volume</td><td colspan="3">Canadian plaza and crossing sized to accommodate average daily traffic of 39,000 vehicles (cars and trucks) in 2035.</td></tr>
<tr><td>Distance from plaza to international border</td><td>2.5 km</td><td>1.4 km</td><td>2.3 km</td></tr>
<tr><td>Canadian Plaza Operational Considerations</td><td>Good accessibility to/from local road network
Good access to local utilities for site services
Distance from border to plaza > 1.5 km is less desirable; requires ongoing security monitoring; 700 m section of at-grade roadway through vacant lands also a security/monitoring concern
Plaza provides sufficient size for addressing needs to 2035 and beyond; while there is flexibility to address new/expanded inspection functions within the plaza site, expansion of plaza beyond the identified footprint may be problematic due to existing land uses adjacent to the plaza site.</td><td>Good accessibility to/from local road network
Good access to local utilities for site services
Distance to plaza < 1.5 km is preferable; good (direct) sight lines between plaza and crossing
Plaza provides sufficient size for addressing needs to 2035 and beyond; while there is flexibility to address new/expanded inspection functions within the plaza site, expansion of plaza beyond the identified footprint may be problematic due to existing land uses adjacent to the plaza site. It was also noted that this plaza is in reasonable proximity to the waterfront, offering an opportunity to incorporate marine inspection functions at the plaza, if required.</td><td>Good accessibility to/from local road network
Good access to local utilities for site services
Distance from border to plaza > 1.5 km is less desirable; requires ongoing security monitoring; 400 m section of at-grade roadway through vacant lands also a security/monitoring concern
Plaza provides sufficient size for addressing needs to 2035 and beyond; while there is flexibility to address new/expanded inspection functions within the plaza site, expansion of plaza beyond the identified footprint may be problematic due to existing land uses adjacent to the plaza site. It was also noted that these plaza is in reasonable proximity to the waterfront, offering an opportunity to incorporate marine inspection functions at the plaza, if required.</td></tr>
<tr><td rowspan="3">Cost and Constructability</td><td>Is it constructible?</td><td>Yes</td><td>Yes</td><td>Yes, but results of geotechnical investigations identified that there is a subsurface cavity caused by salt extraction activities in the vicinity of Sandwich Street and Prospect Avenue. Further uncontrolled settlements due to this cavity represent risks to the design and operation of the approach roadway connecting to Crossing C. It is not certain that further investigation will be successful in reducing or eliminating these risks</td></tr>
<tr><td>Key Issues</td><td>Length of crossing (approximately 1200 m) leads to cost and constructability risks</td><td>None identified</td><td>Costs and risks associated with approach road crossing of brine well area
Direct impact to Sterling Marine Fuels fueling depot</td></tr>
<tr><td>Construction cost, 2011 CDN $</td><td>$830 million
(Malden Road to international border, including one-half of crossing construction cost)</td><td>$648 million to $712 million
(Malden Road to international border, including one-half of crossing construction cost)</td><td>$1015 million to $1085 million
(Malden Road to international border, including one-half of crossing construction cost)</td></tr>
<tr><td colspan="2">Summary of Assessment</td><td colspan="3">Overall, the Crossing A-Plaza A was found to have many disadvantages and few advantages over the other alternatives. This alternative was found to have higher impacts to community and neighbourhood features, land use and natural features than the other alternatives. In addition, this alternative was found to provide lower benefits to regional mobility compared to the other alternatives. This alternative has lower cost and constructability impacts than Crossing C-Plaza B.
The cost and constructability issues with the Crossing C-Plaza B alternative are a serious disadvantage of this alternative. This alternative was also found to have greater community and cultural feature impacts to Sandwich. Overall, Crossing C-Plaza B was found to have many disadvantages, and no advantages, over Crossing B-Plaza B1 alternative.
Crossing B-Plaza B1 offers more advantages and has no notable disadvantages when compared to the Crossing A and Crossing C alternatives. The crossing and plaza are situated away from residential areas and sufficiently close to the international border. This alternative has the lowest impacts to natural and community features, and is comparable to the other alternatives in terms of its impacts to air quality, land use and cultural features. No alternative provides greater benefits to regional mobility and this alternative has the lowest cost.</td></tr>
</table>

Table 8.5 – Results of Arithmetic Evaluation – Crossing B Alternatives

Factor	Weight	Study Team Weighting: Plaza A Score	Plaza A Weighted Score	Plaza B1 Score	Plaza B1 Weighted Score
Changes in Air Quality	12.39	2	24.78	2	24.78
Protection of Community and Neighbourhood Characteristics	15.93	1	15.93	2	31.86
Maintain Consistency with Existing & Planned Land Use	12.39	2	24.78	3	37.17
Protect Cultural Resources	12.39	3	37.17	3	37.17
Protect the Natural Environment	15.93	1	15.93	2	31.86
Improve Regional Mobility	17.70	5	88.50	6	106.20
Cost and Constructability	13.27	2	26.54	2	26.54
Total	100.00	16	233.63	20	295.58
Rank	Unweighted	2		1	
	Weighted		2		1

Factor	Weight	Public Weighting: Plaza A Score	Plaza A Weighted Score	Plaza B1 Score	Plaza B1 Weighted Score
Changes in Air Quality	17.32	2	34.64	2	34.64
Protection of Community and Neighbourhood Characteristics	15.49	1	15.49	2	30.98
Maintain Consistency with Existing & Planned Land Use	12.89	2	25.78	3	38.67
Protect Cultural Resources	13.14	3	39.42	3	39.42
Protect the Natural Environment	16.34	1	16.34	2	32.68
Improve Regional Mobility	15.28	5	76.40	6	91.68
Cost and Constructability	9.54	2	19.08	2	19.08
Total	100.00	16	227.15	20	287.15
Rank	Unweighted	2		1	
	Weighted		2		1

Factor	Weight	Community Consultation Group Weighting: Plaza A Score	Plaza A Weighted Score	Plaza B1 Score	Plaza B1 Weighted Score
Changes in Air Quality	17.30	2	34.60	2	34.60
Protection of Community and Neighbourhood Characteristics	13.88	1	13.88	2	27.76
Maintain Consistency with Existing & Planned Land Use	13.69	2	27.38	3	41.07
Protect Cultural Resources	13.12	3	39.36	3	39.36
Protect the Natural Environment	17.11	1	17.11	2	34.22
Improve Regional Mobility	14.83	5	74.15	6	88.98
Cost and Constructability	10.07	2	20.14	2	20.14
Total	100.00	16	226.62	20	286.13
Rank	Unweighted	2		1	
	Weighted		2		1

Legend

Score	1	2	3	4	5	6	7
Benefit/ Impact	High Impact	Medium Impact	Low Impact	Neutral/ No Impact	Low Benefit	Medium Benefit	High Benefit

TABLE 8.6 – RESULTS OF ARITHMETIC EVALUATION – CROSSING C ALTERNATIVES

Study Team Weighting

Factor	Weight	Plaza A (via Ojibway Parkway)		Plaza A (via Brighton Beach)		Plaza B		Plaza C	
		Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score
Changes in Air Quality	12.39	2	24.78	2	24.78	2	24.78	2	24.78
Protection of Community and Neighbourhood Characteristics	15.93	1	15.93	1	15.93	2	31.86	2	31.86
Maintain Consistency with Existing and Planned Land Use	12.39	2	24.78	2	24.78	3	37.17	3	37.17
Protect Cultural Resources	12.39	3	37.17	3	37.17	3	37.17	3	37.17
Protect the Natural Environment	15.93	2	31.86	1	15.93	2	31.86	3	47.79
Improve Regional Mobility	17.70	5	88.50	5	88.50	5	88.50	6	106.20
Cost and Constructability	13.27	2	26.54	2	26.54	2	26.54	1	13.27
Total	100.00	17	249.56	16	233.63	19	277.88	20	298.24
Rank	Un-weighted	3		4		1		1	
	Weighted		3		4		2		1

Public Weighting

Factor	Weight	Plaza A (via Ojibway Parkway)		Plaza A (via Brighton Beach)		Plaza B		Plaza C	
		Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score
Changes in Air Quality	17.32	2	34.64	2	34.64	2	34.64	2	34.64
Protection of Community and Neighbourhood Characteristics	15.49	1	15.49	1	15.49	2	30.98	2	30.98
Maintain Consistency with Existing and Planned Land Use	12.89	2	25.78	2	25.78	3	38.67	3	38.67
Protect Cultural Resources	13.14	3	39.42	3	39.42	3	39.42	3	39.42
Protect the Natural Environment	16.34	2	32.68	1	16.34	2	32.68	3	49.02
Improve Regional Mobility	15.28	5	76.4	5	76.4	5	76.40	6	91.68
Cost and Constructability	9.54	2	19.08	2	19.08	2	19.08	1	9.54
Total	100.00	17	243.49	16	227.15	19	271.87	20	293.95
Rank	Un-weighted	3		4		1		1	
	Weighted		3		4		2		1

TABLE 8.6 – RESULTS OF ARITHMETIC EVALUATION – CROSSING C ALTERNATIVES (CONT'D)

Factor	Weight	Community Consultation Group Weighting							
		Plaza A (via Ojibway Parkway)		Plaza A (via Brighton Beach)		Plaza B		Plaza C	
		Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score
Changes in Air Quality	17.30	2	34.60	2	34.60	2	34.60	2	34.60
Protection of Community and Neighbourhood Characteristics	13.88	1	13.88	1	13.88	2	27.76	2	27.76
Maintain Consistency with Existing and Planned Land Use	13.69	2	27.38	2	27.38	3	41.07	3	41.07
Protect Cultural Resources	13.12	3	39.36	3	39.36	3	39.36	3	39.36
Protect the Natural Environment	17.11	2	34.22	1	17.11	2	34.22	3	51.33
Improve Regional Mobility	14.83	5	74.15	5	74.15	5	74.15	6	88.98
Cost and Constructability	10.07	2	20.14	2	20.14	2	20.14	1	10.07
Total	100.00	17	243.73	16	226.62	19	271.30	20	293.17
Rank	Un-weighted	3		4		1		1	
	Weighted		3		4		2		1

Legend

Score	1	2	3	4	5	6	7
Benefit/ Impact	High Impact	Medium Impact	Low Impact	Neutral/ No Impact	Low Benefit	Medium Benefit	High Benefit

TABLE 8.7 – RESULTS OF ARITHMETIC EVALUATION – CROSSING A, CROSSING B AND CROSSING C ALTERNATIVES – CANADIAN SIDE

Factor	Weight	Study Team Weighting					
		Crossing A – Plaza A		Crossing B – Plaza B1		Crossing C - Plaza B	
		Score	Weighted Score	Score	Weighted Score	Score	Weighted Score
Changes in Air Quality	12.39	2	24.78	2	24.78	2	24.78
Protection of Community and Neighbourhood Characteristics	15.93	1	15.93	3	47.79	2	31.86
Maintain Consistency with Existing and Planned Land Use	12.39	2	24.78	3	37.17	3	37.17
Protect Cultural Resources	12.39	3	37.17	3	37.17	3	37.17
Protect the Natural Environment	15.93	1	15.93	2	31.86	2	31.86
Improve Regional Mobility	17.70	6	106.20	7	123.90	7	123.90
Cost and Constructability	13.27	2	26.54	2	26.54	1	13.27
Total	100.00	17	251.33	22	329.21	20	300.01
Rank	Un-weighted	3		1		2	
	Weighted		3		1		2

TABLE 8.7 – RESULTS OF ARITHMETIC EVALUATION – CROSSING A, CROSSING B AND CROSSING C ALTERNATIVES – CANADIAN SIDE (CONT'D)

Factor	Weight	Public Weighting					
		Crossing A – Plaza A		Crossing B – Plaza B1		Crossing C - Plaza B	
		Score	Weighted Score	Score	Weighted Score	Score	Weighted Score
Changes in Air Quality	17.32	2	34.64	2	34.64	2	34.64
Protection of Community and Neighbourhood Characteristics	15.49	1	15.49	3	46.47	2	30.98
Maintain Consistency with Existing and Planned Land Use	12.89	2	25.78	3	38.67	3	38.67
Protect Cultural Resources	13.14	3	39.42	3	39.42	3	39.42
Protect the Natural Environment	16.34	1	16.34	2	32.68	2	32.68
Improve Regional Mobility	15.28	6	91.68	7	106.96	7	106.96
Cost and Constructability	9.54	2	19.08	2	19.08	1	9.54
Total	100.00	17	242.43	22	317.92	20	292.89
Rank	Un-weighted	3		1		2	
	Weighted		3		1		2

Factor	Weight	Community Consultation Group Weighting					
		Crossing A – Plaza A		Crossing B – Plaza B1		Crossing C - Plaza B	
		Score	Weighted Score	Score	Weighted Score	Score	Weighted Score
Changes in Air Quality	17.30	2	34.60	2	34.60	2	34.60
Protection of Community and Neighbourhood Characteristics	13.88	1	13.88	3	41.64	2	27.76
Maintain Consistency with Existing and Planned Land Use	13.69	2	27.38	3	41.07	3	41.07
Protect Cultural Resources	13.12	3	39.36	3	39.36	3	39.36
Protect the Natural Environment	17.11	1	17.11	2	34.22	2	34.22
Improve Regional Mobility	14.83	6	88.98	7	103.81	7	103.81
Cost and Constructability	10.07	2	20.14	2	20.14	1	10.07
Total	100.00	17	241.45	22	314.84	20	290.89
Rank	Un-weighted	3		1		2	
	Weighted		3		1		2

Legend

Score	1	2	3	4	5	6	7
Benefit/ Impact	High Impact	Medium Impact	Low Impact	Neutral/ No Impact	Low Benefit	Medium Benefit	High Benefit

8.1.4 Bi-national Evaluation of Practical Crossing and Plaza Alternatives

As discussed in **Section 8.1.3**, three crossing-plaza combinations were carried forward for consideration by the Canadian and U.S. study teams:

- Crossing X-10A, with U.S. Plaza P-a and Canadian Plaza A
- Crossing X-10B, with U.S. Plaza P-a and Canadian Plaza B1
- Crossing X-11C, with U.S. Plaza P-c and Canadian Plaza B

The analysis and evaluation of alternatives was based on the seven factor areas noted in the previous section. The following summarizes the findings documented in the U.S. *Draft Environmental Impact Statement (DEIS), February 2008*, and the Canadian *Generation and Assessment of Practical Alternatives and Selection of the Technically and Environmentally Preferred Alternative – Plaza and Crossing Alternatives, December 2008*.

AIR QUALITY

In Canada, the plazas and crossings are located in areas where no major transportation facilities presently exist; all plaza and crossing alternatives therefore result in increases in concentrations of pollutants over the "Do Nothing" alternative. The results of the air quality modelling of the plaza and crossing combinations indicate that the greatest changes to air quality occur around the plaza areas as opposed to the crossings. The plazas connected to the Crossing X-10B and X-11C alternatives are located in industrial areas away from sensitive receptors. With Crossing X-10A, Plaza A has a greater buffer area around the tolling/inspection plazas, where vehicles stopping/queuing/starting up will occur. Nonetheless, impacts to adjacent residences may occur under certain conditions. All three crossing-plaza alternatives were found to have moderate impacts due to the impacts being limited to within 250 m of the Plazas.

In the U.S., air quality will improve even under the "Do Nothing" alternative because of U.S. Environmental Protection Agency rules and regulations under the *Clean Air Act* and the *National Ambient Air Quality Standards*. Regional air quality will also improve because of the closings of old manufacturing plants due to the decline in the economy and a shift to more service-oriented industries. Local air quality conditions in the Mexicantown area at the Ambassador Bridge are expected to improve with opening of the *Ambassador Bridge Gateway Project* in 2009. All of the new crossing/plaza alternatives will aid in improving air quality by spreading the automotive traffic in Southwest Detroit and reducing the number of heavy-duty diesel trucks within the neighbourhoods. The Ambassador Bridge has Mexicantown as its neighbour to the east. The Delray neighbourhood is located to the west of the new plaza. Mexicantown is an expanding, neighbourhood. Splitting traffic between two bridges/plazas will reduce the pollution now concentrated in one area.

Overall, there was no preference for a particular Crossing/Plaza alternative based on the air quality factor.

COMMUNITY AND NEIGHBOURHOOD CHARACTERISTICS

In Canada, the Crossing X-10A impact to the Armanda Street/Matchette Road neighbourhood is considered of greater effect than the other alternatives. This assessment is based on there being a higher degree of change in neighbourhood character from park-like residential to industrial with the introduction of the Plaza A site.

The results of community consultation on the crossing alternatives indicate concern that the crossing X-11C alternative would have a notable impact to community character in Sandwich Towne. These concerns are related to potential increases in traffic and nuisance impacts (noise, dust) and the relative proximity of the new crossing to Ambassador Bridge. In addition, the Crossing X-11C alternative also has the potential to impact approximately 100 homes in Sandwich Towne with noise increases greater than five decibels (dB) – a level of increased noise which requires mitigation be considered. A noise barrier to reduce changes in noise levels to below 5 dB is estimated to cost approximately $CAD 20million.

Crossing X-10B, with the plaza and crossing located in the industrial lands west of Sandwich Street is not expected to have a substantial impact to the community and neighbourhood features in this part of the city.

In the U.S., the X-11C Crossing would have a greater number of impacts to active residential and business units as compared to Crossing X-10A and X-10B; albeit relatively few in comparison to the plaza and interchange.

Overall, from the perspective of protecting community and neighbourhood characteristics, the Crossing X-11C alternative was least preferred. Between the X-10 alternatives, X-10B is preferred based on lower residential impacts.

EXISTING AND PLANNED LAND USE

In Canada, the Crossing X-10A alternative was considered to have higher impacts to land use in comparison to the other alternatives. This is reflective of the existing land use in the Malden Planning District, which is primarily residential, integrated with natural features. This land use would be heavily disrupted by Plaza A, which would be located on generally undeveloped lands south of E.C. Row between Malden Road and Ojibway Parkway. The other crossing alternatives are located generally within industrial lands in the Windsor port area and carry less impact to land use.

In the US, with the "Do Nothing" alternative, trends indicate continued industrialization of the Delray area will occur at the cost of the residential area that now exists. Existing land use patterns are expected to continue with little change in the remainder of the ACA. However, forecasts by Southeast Michigan Council of Governments (SEMCOG) indicate losses in population and jobs in the region that could lead to abandonment of some currently active land uses.

If the proposed crossing is built, positive land use changes are possible in the U.S. The vision is to create a better place to live, with a new crossing system as its neighbour. The 60 ha+ plaza associated with Crossing X-10A, X-10B, or X-11C could be the separator of neighbourhood uses to the west and logistics/industrial uses to the east. A number of households and businesses will be displaced if the project is constructed. If any of them choose to relocate in the Delray area, that would help move the vision closer to reality. MDOT, in partnership with FHWA is exploring a number of concepts by which enhancements may be made to the Delray area if it becomes the "host community" for the project. These concepts are applicable with either an X-10A, X-10B or X-11C Crossing.

With regard to contaminated sites, several known or high potential sites were identified on both sides of the river. Recommendations in both the U.S. and Canadian studies include preliminary site investigations (PSI) for most of the medium- and high-rated sites. Further assessment of the regulatory status and site conditions of other sites is also recommended. The PSIs will be completed for the preferred alternative and access can be obtained by provisions in applicable federal/state/provincial law.

Overall, the X-10A Crossing was identified as least preferred based on greater impacts associated with the Canadian plaza.

CULTURAL RESOURCES

In Canada, the alternatives impact six to seven archaeological sites which are either pre-contact habitation sites/ Euro-Canadian homesteads or pre-contact findspots, which are generally considered of low/medium significance. The Crossing X-11C alternative was noted as having a higher impact to the cultural landscape of the historic town of Sandwich. Although no significant portion of the historic town of Sandwich is directly affected, this crossing may impact the heritage sensitive area through introduction of physical, visual, audible or atmospheric elements that are not in keeping with the resources and/or their setting.

All of the alternatives have the same impact to Ojibway Park; a corner of the park (0.7 ha) is impacted near Ojibway Parkway/Broadway Street.

In the U.S., numerous areas were examined during the archaeological field study. Most locations produced little or nothing of archaeological value, because of the heavy degree of prior disturbance. No evidence of prehistoric or historic Native American land use was observed. It was determined that no prehistoric archaeological resources are affected by any of the practical alternatives. Three aboveground (built) heritage features are in, or partially in, the footprint of all practical alternatives and will require removal, resulting in an adverse effect to be mitigated.

In terms of parks and playgrounds in the U.S., South Rademacher Playground, South Rademacher Community Recreation Center and the Post-Jefferson Playlot are each located in the plaza area of every practical alternative and would be removed (used) by the plaza.

Overall, the Crossing X-11C alternative was least preferred.

NATURAL FEATURES

In Canada, all alternatives result in some loss of provincially rare specimens or colonies, impacts to ecological landscapes and impacts to terrestrial communities and ecosystems of high significance. The Crossing X-10A alternative has the greatest impact on provincially rare vegetation communities (2.98 ha impacted) and species at risk (232 specimens/colonies impacted). Given the regional importance of these natural features, the Crossing X-10A alternative was considered to be least preferred in terms of protecting the natural environment. Overall, the Crossing X-10B alternative was considered to have slightly lower impacts to natural features than Crossing X-11C.

In the U.S., Crossing X-11C would impact a total of 0.004 ha of low quality wetland at the edge of the Detroit River. Loss of this wetland will result in minimal impacts to wetland function and value.

Overall, Crossing X-10A was least preferred.

REGIONAL MOBILITY

In Canada, all three crossing alternatives are expected to work effectively under future (2035) peak travel demands and add additional border crossing and border processing capacity to the Detroit River border transportation network. The new crossing is expected to carry approximately 2,000 vehicles in the PM peak hour from the U.S. into Canada (the peak direction of travel) in 2035, which would provide substantial relief to Huron Church Road and reduce the likelihood of congestion on this arterial roadway. The variance noted by the U.S. travel time analysis suggests the X-11 alternative could result in greater traffic volumes on Huron Church Road during peak travel periods to the point that intersections along Huron Church Road will remain congested as in the “Do Nothing” alternative, lowering the level of service on this key roadway link in the border transportation network. By comparison, the X-10 crossing alternatives are more likely to result in improved transportation levels of service on Huron Church Road over the Do Nothing condition as well as the X-11 Alternative, thereby providing greater benefits to regional and local mobility.

Crossing X-10A was noted as having several security/monitoring concerns, including undesirable distance from Plaza A to the international border (2.5 km), no direct line of sight between the border and the plaza, and a 700 m section of at-grade roadway that is out of the direct line of sight from the plaza in the Brighton Beach industrial area.

In the U.S., there may be an increase in traffic due to additional development stimulated by the new border crossing. But, negative congestion effects are not expected either on major arteries or local neighbourhood streets in the study area. Analyses that were part of the Detroit International Crossing study and the Detroit *Intermodal Freight Terminal Study* covering all of Southwest Detroit and East Dearborn indicate there is virtually no congestion now nor expected in the 25-year future. Further analysis undertaken by the U.S. study team pertaining to travel time comparisons between Crossing X-11 and Crossing X-10 alternatives suggests the volume of traffic using the X-10 crossings could be as much as 50 per cent more than the traffic using the X-11 crossing. This variance is reflective of differences in access and circulation between the U.S. plaza layouts serving crossings X-10 and X-11.

Overall, Crossing X-10B is preferred.

CONSTRUCTABILITY

Two major factors influencing the cost and constructability of the new international crossing are: soundness of the bedrock and bridge length of the crossing itself. The section of the Detroit River shoreline under consideration for the new international crossing has a history of salt mining activities. Each study team undertook extensive geotechnical testing of the bedrock conditions to a depth of approximately 500 m, i.e., below the salt producing layers. The purpose of this detailed geotechnical work was to determine whether there are any unknown brinewells in the area under consideration for future crossings, and to verify the limits of any subsurface influence of past salt mining activities.

In Canada, detailed geotechnical investigations in the area of Sandwich Street north of Prospect Avenue confirmed that there are underground conditions in this area, which could pose a risk to any roadway built in this vicinity. It is believed that the underground caverns left from previous brinewell activity in the area of Sandwich Street are interconnected with other caverns further west. These interconnected caverns are also believed to have caused a sinkhole to form immediately west of Sandwich Street. (In February 1954, the ground on the Windsor Salt property collapsed into a sinkhole about 8 m deep at the centre, 150 m in diameter). Several buildings and railroad facilities were irreparably damaged during this incident.)

The proposed approach roadway to Crossing X-11C passes over the eastern end of the former solution mining well field and a subsurface anomaly that is suspected to be a brine-filled cavity, rubble zone and disturbed rock mass. Initial estimates suggest that the rock mass above this anomaly could subsidence ranging up to values on the order of 3 m. The proportion of such subsidence that has already occurred or may occur in the future cannot be quantified at this time because of uncertainties associated with the nature and position of the identified anomaly. Additional study will be required to refine the range of risks and orders of magnitude of future settlement that should be accommodated by design. The field exploration and testing program and historical data are not sufficient to clearly assess the three-dimensional extent, specific location, or potential limits of influence of this subsurface anomaly. The level of effort (investigation, testing, and analysis) that may be required to further refine these issues relative to the Crossing X-11C approach alignment is extensive and, if undertaken, may still be insufficient to consider supporting structures on the rock within and adjacent to the identified limits of solution mining influence within an acceptable degree of risk.

The Canadian study team has considered a 660 m long-span structure extending over the zone of influence of this brinewell area between Prospect Avenue and John B. Street. There still remains some risk as to the acceptability of this solution and the continual operation of this crossing, even with this mitigation. The constructability and maintenance risks associated with the approach roadway to Crossing X-11C were noted as significant disadvantages of the Crossing X-11C Alternative. This long-span structure will also have its own impacts on the character of the nearby community, as well as noise and aesthetic impacts. In addition, having two long-span structures on the Crossing X-11C alignment increases the construction and maintenance costs of this alternative.

In the U.S., the difference in impacts between Crossings X-10A and X-10B were indistinguishable except in how each can be built. The X-10A Crossing was developed to avoid the area around known historical brine mining in Canada. The alignment of the X-10A Crossing would start near the location of X-10B in the U.S. and land in Canada southwest of the Brighton Beach Power Station. Analyses determined that the only feasible structure type for Crossing X-10A is a suspension bridge with an unsuspended back span. The X-10A bridge is the longest of the alternatives with a main span of 1200 m. Although suspension bridges with main spans exceeding that length do exist, this would become the longest bridge of its type in the Americas. The bridge analyses conducted by the U.S. and Canadian study teams evaluated eight constructability factors. Of those, cost, risk to controlling cost, schedule duration, and risk to controlling the schedule were considered to be differentiating among the crossings. The estimated construction cost of the X-10A Crossing at $920 million is significantly greater than the other suspension bridges at Crossings X-10B and X-11 (X-10B at $550 million and X-11 at $600 million). The construction duration of 62 months for Crossing X-10A is over one year more than the other alignments.

Overall, Crossing X-10B was preferred.

OVERALL ASSESSMENT

The overall assessment of crossing alternatives based on the seven major factor areas are summarized in Table 8.8.

TABLE 8.8 – OVERALL ASSESSMENT OF CROSSING AND PLAZA ALTERNATIVES

Factor	Crossing Alternative (including plazas)		
	X-10A	X-10B	X-11C
Air Quality	No preference		
Community & Neighbourhood Characteristics		Preferred	Least Preferred
Existing & Planned Land Use	Least Preferred		
Cultural Resources			Least Preferred
Natural Environment	Least Preferred		
Regional Mobility		Preferred	
Constructability		Preferred	

Overall, Crossing X-10B was identified as the preferred alternative in three of the six factor areas in which a preference could be expressed. Both the X-10A and X-11C alternatives were identified as least preferred in two factor areas. Crossing X-10B was not identified as the least preferred in any factor area.

The constructability issues with the Crossing X-11C alternative are a serious disadvantage of this alternative. Overall, Crossing X-11C was found to have many disadvantages, and no advantages, over Crossing X-10B alternative.

Similarly, the Crossing X-10A alternative was noted as having higher community and natural impacts on the Canadian side and greater cost and constructability risks with no advantages on the U.S. side.

In contrast, the Crossing X-10B alternative was found to have notable advantages on both sides of the river and no disadvantages in comparison to the other alternatives. Both the Canadian and U.S. study teams identified Improve Regional Mobility as the most important factor area. It is also worth noting that the ownership model (based on public agency control) and contractual arrangements for construction and operation of the new crossing and plazas has not been finalized by the partner governments undertaking this study. Joint agreement on the preferred alternative from a constructability perspective is an equally significant conclusion of this evaluation.

For the purposes of the environmental studies in both countries, both a suspension bridge and a cable-stay bridge are being carried forward. There are no substantive differences among these options. The final bridge type selection will be completed during subsequent stages of the project. Additional details of the two bridge options are provided in Chapter 9, and schematic illustrations of the two options are included in Exhibit 9.5.

8.2 Practical Access Road Alternatives

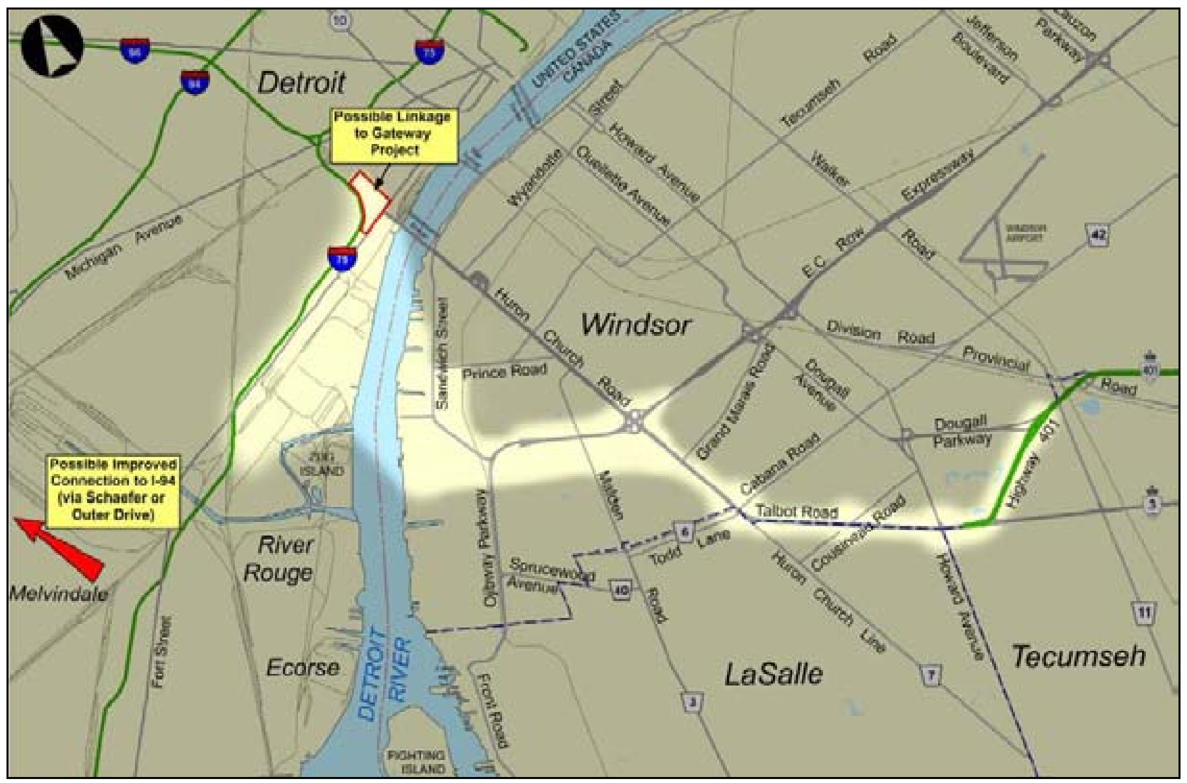
This section documents the factors considered in generating practical access road alternatives as well as descriptions of the specific alternatives considered, an assessment of impacts and benefits associated with these alternatives, and the evaluation leading to the identification of a Technically and Environmentally Preferred Alternative (TEPA).

8.2.1 Generation of Practical Access Road Alternatives

As discussed in Chapter 6, the evaluation of the illustrative plaza, crossing and access road alternatives led to the identification of an Area of Continued Analysis (ACA) that would be studied further to develop practical crossing, plaza and access road alternatives for a new international crossing (refer to Exhibit 8.4).

The ACA was presented through consultation activities and documented in the *Draft Generation and Assessment of Illustrative Alternatives Report (November 2005)*. In subsequent months, with technical parameters and in consultation with communities, municipalities, agencies and other stakeholders, the study team developed a set of practical alternatives for the Canadian plaza, crossing and access road. The initial practical alternatives were presented for comments at consultation activities held in March 2006 corresponding to the third round of PIOHs.

EXHIBIT 8.4 – AREA OF CONTINUED ANALYSIS



In general, the alternatives developed for the new access road were based on the premise that it would extend from Highway 401 at North Talbot Road to the new plaza. Based on the mobility needs of the project, as well as community/municipal consultation, the following objectives guided the generation of practical alternatives in the Huron Church Road/Highway 3 corridor.

- Separate international and local traffic;
- Maintain the local and regional function of the Huron Church Road/Highway 3 corridor;
- Keep the existing traffic within the existing corridor during construction to minimize traffic infiltration onto other city streets; and
- Minimize direct and indirect property impacts.

The study team considered four basic operational concepts:

- Integrated freeway with interchanges. Service roads provided, as needed, to maintain local access and circulation;
- Separate freeway paralleled by one-way service roads;
- Separate freeway paralleled by existing Highway 3/Huron Church Road;
- Tunnel below a rebuilt Highway 3/ Huron Church Road corridor.

The study team concluded that Concept 1 (an integrated freeway with local service roads only as required) would not adequately achieve the above-noted objectives. Specifically:

- This alternative does not separate local and international traffic. Any future back-ups or congestion associated with delays at the border could cause back-ups on the freeway and impact local/regional traffic;
- As the new freeway will be a fully controlled access facility, it will be impossible to achieve the same level of local and regional mobility as currently exists in the corridor;
- This concept does not offer any substantial advantages with respect to minimizing property impact along the right-of-way, however, it is clear that property impacts associated with interchanges at Todd Lane/Cabana Road West and Cousineau Road would create both direct and indirect impacts on the adjacent communities.

The remaining three concepts were developed into five cross-section alternatives that better met the objectives. On this basis, the study team developed the following five initial access road alternatives between Highway 3 and the Malden Road area.

- Alternative 1A – At-grade six-lane freeway with parallel one-way service roads on either side of the freeway;
- Alternative 1B – Below-grade six-lane freeway with parallel one-way service roads on either side of the freeway;
- Alternative 2A – At-grade six-lane freeway with parallel service roads on one side of the freeway;
- Alternative 2B – Below-grade six-lane freeway with parallel service roads on one side of the freeway;
- Alternative 3 – Six lane freeway in a cut and cover tunnel with service roads on the surface.

In addition, in the area of Howard Avenue to Huron Church Line, the at-grade and below-grade access road alternatives analyzed included two slightly different alignment options:

- Option 1 provides for widening the access road corridor primarily to the north (Windsor) side of Highway 3; and
- Option 2 provides for widening the access road corridor primarily to the south (LaSalle) side of Highway 3.

The study team developed the appropriate horizontal and vertical alignments for each of these five alternatives through consideration of the following issues:

- Minimizing direct property impacts; and
- Construction staging to maintain traffic within the corridor.

Once the horizontal and vertical alignments were developed, the appropriate right-of-way requirements were identified, considering the need for grading, drainage, utilities, berms/barriers and landscaping.

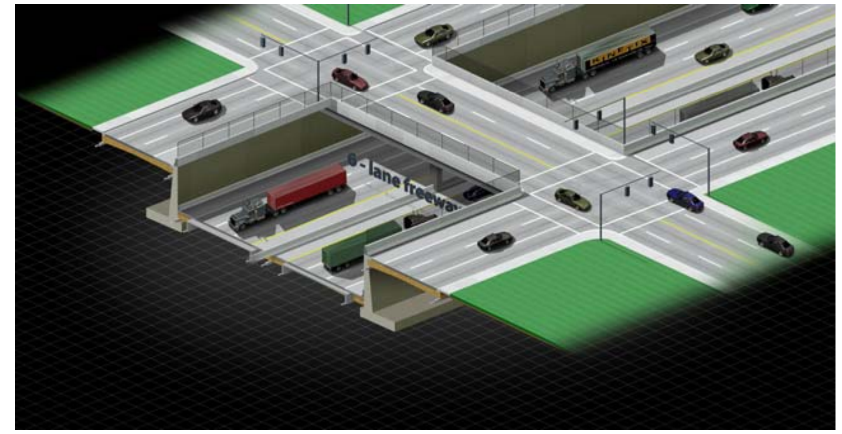
The access road alternatives were generated in accordance with Ontario Ministry of Transportation (MTO) geometric design guidelines. With the exception of the tunnel alternative, geometric design considerations (such as minimum radii, maximum grade and lane widths) consistent with a posted speed of 100 km/h (design speed of 120 km/h) were applied in generating the access road alternatives. The minimum radius applied to these alternatives was 650 m and the maximum grade was 3 per cent. For the tunnel alternative, geometric design considerations were based on a posted speed of 80 km/h (design speed of 90 km/h). Although the minimum radius and maximum grade of the tunnel were the same as for the other alternatives, human factor considerations, and stopping sight distance requirements led to the reduction in posted speed.

For the section west of Huron Church Road to the river, all alternatives considered an access road at-grade with overpasses at Malden Road and Matchette Road, which roughly matched the profile of the E.C. Row Expressway. This was required as a result of the poor soil conditions in this area, the proximity and profile of the E.C. Row Expressway, and other geometric constraints.

Typical cross-sections of the Practical Access Road Alternatives are shown schematically in **Exhibit** 8.5. All alternatives include a six-lane freeway and four-lane service road system.

EXHIBIT 8.5 – TYPICAL PROPOSED CROSS-SECTIONS – PRACTICAL ALTERNATIVES (NOT TO SCALE)

1A One-way service roads on either side of 6-lane freeway at-grade.



1B One-way service roads either side of 6-lane freeway below-grade.

3 Cut-and-cover tunnel below rebuilt Highway 3/Huron Church Road Corridor.

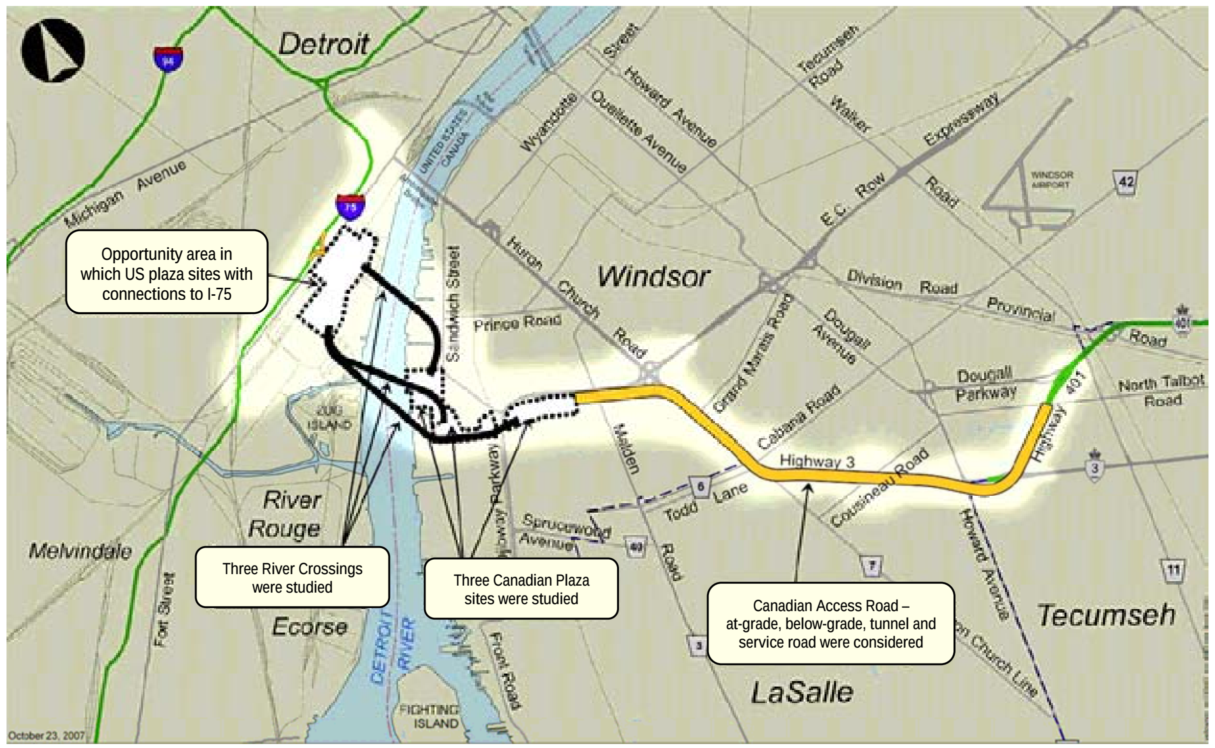
2A Six-lane freeway at grade, parallel to Highway 3/Huron Church Road corridor.

2B Six-lane freeway below-grade, parallel to Highway 3/Huron Church Road corridor.

8.2.2 Description of Practical Access Road Alternatives

The practical crossing, plaza and access road alternatives initially considered for the analysis are shown schematically in plan view in Exhibit 8.6 and are illustrated in additional detail in Exhibits 8.7 to 8.11.

EXHIBIT 8.6 – PRACTICAL CROSSING, PLAZA & ACCESS ROAD ALTERNATIVES



The five initial access road alternatives were presented to public at the third round of PIOHs in March 2006. Input received at the third round of Public Information Open Houses, workshops and through correspondence with the public included several suggestions for the access road alternatives:

- Tunnel the access road from Todd Lane/Cabana Road West to E.C. Row Expressway;
- Tunnel from Howard Avenue to Turkey Creek;
- Tunnel under the existing roadway;
- Incorporate air ventilation buildings into the design of the roadway;
- Create a controlled access freeway on the existing roadways;
- Provide local access roads on either side of the highway;
- Consider an interchange at Cousineau Road or Howard Avenue; and
- Avoid impacts to existing community facilities including schools and sports fields.

The remainder of 2006 focused on technical analysis of the five practical access road alternatives. The preliminary results of the technical analysis was presented to the public at the fourth round of PIOHs held in December 2006. Comments received during this round of consultation indicated that local residents wanted an access road to a new border crossing that:

- Takes trucks off local streets;
- Strong preference for below-grade roadway, including tunnel;
- Reduces the amount of pollutants in the air;
- Improves the movement of border-bound traffic;
- Is not intrusive;
- Is state-of-the-art;
- Will not be determined on cost alone;
- Improves the quality of life; and,
- Provides a long-term solution.

Consultations continued after the open houses and workshops with growing interest around a concept which would be a combination of the below-grade and tunnel alternatives. The study team began developing a more “green” parkway-like alternative. The concept would include the best components of the practical alternatives based on the findings to date in a green corridor with tunneled sections, a grade separated recreational trail system, and extensive urban design of the green areas. The modified access road alternative featured:

- A below-grade freeway from Howard Avenue to E.C. Row Expressway with 10 tunnel sections ranging from 120 to 240 m in length, located in areas to provide community connectivity;
- A separate service road for local traffic to maintain access to neighbourhoods and local businesses;
- A widened right-of-way with buffer areas to reduce the potential nuisance effects of the roadway on adjacent neighbourhoods; and,
- Provision for recreational trails along the corridor, connecting to existing trails and providing new connections along and across the Huron Church Road/Highway 3 corridor.
- Improved interchange at Howard Avenue/Highway 3 that allows for diversion of longer distance traffic using Howard Avenue and a connection to a future Laurier Parkway.

This alternative, developed as a new alternative based on the below-grade and tunnel alternatives, was identified as The Parkway (refer to Exhibit 8.12).

Exhibit 8.7A– Practical Access Road Alternative 1A

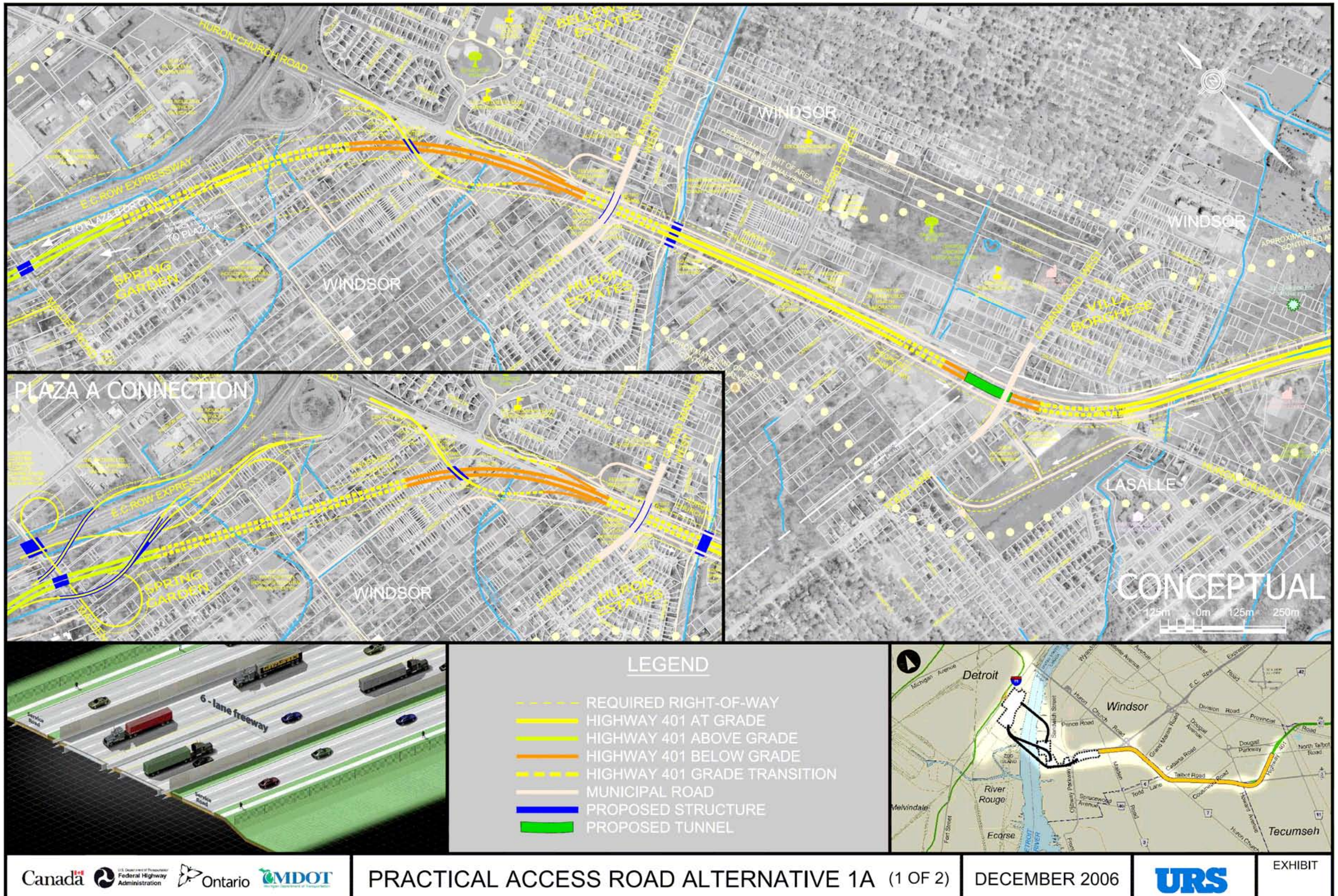


EXHIBIT 8.7B– PRACTICAL ACCESS ROAD ALTERNATIVE 1A

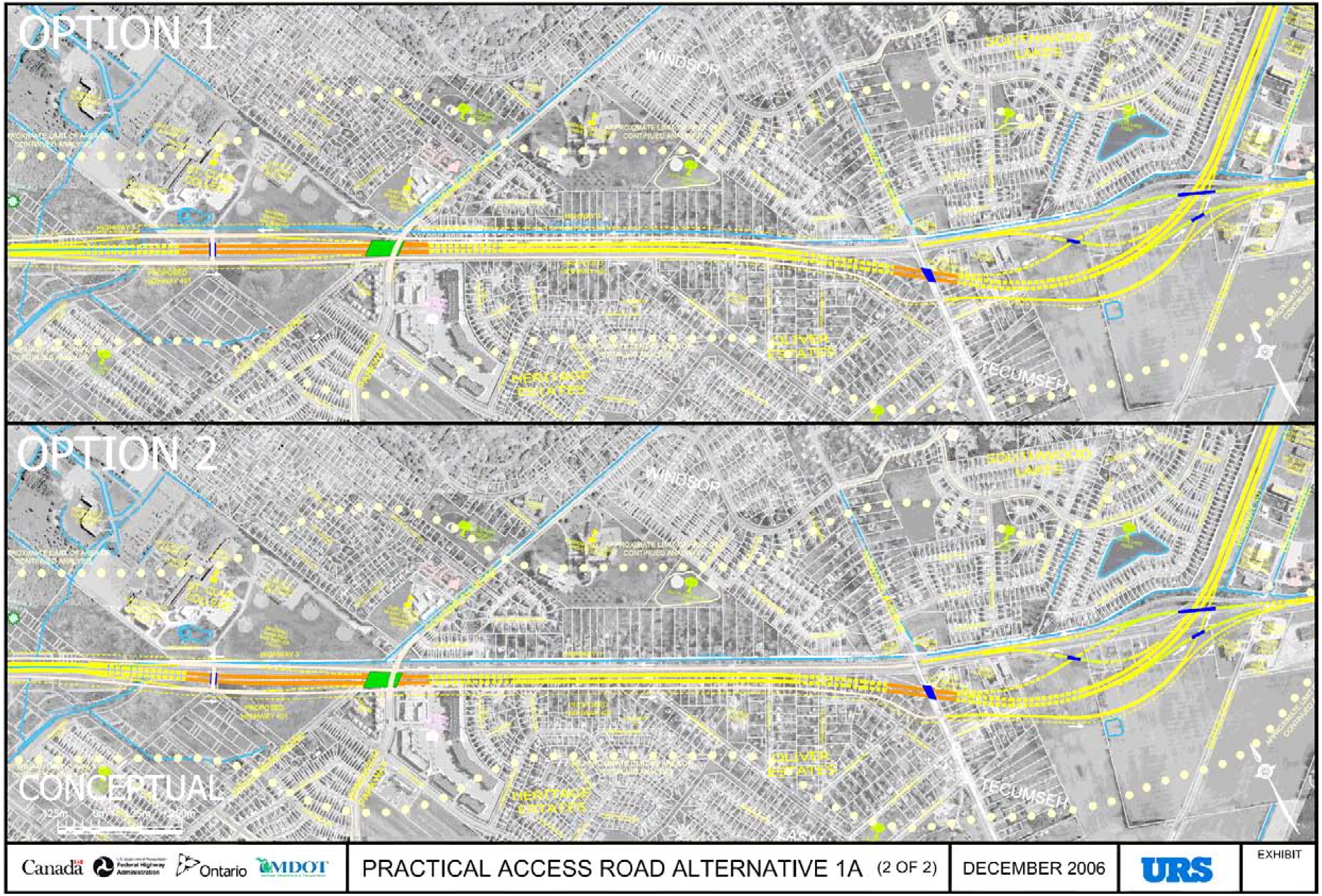


EXHIBIT 8.8A – PRACTICAL ACCESS ROAD ALTERNATIVE 1B

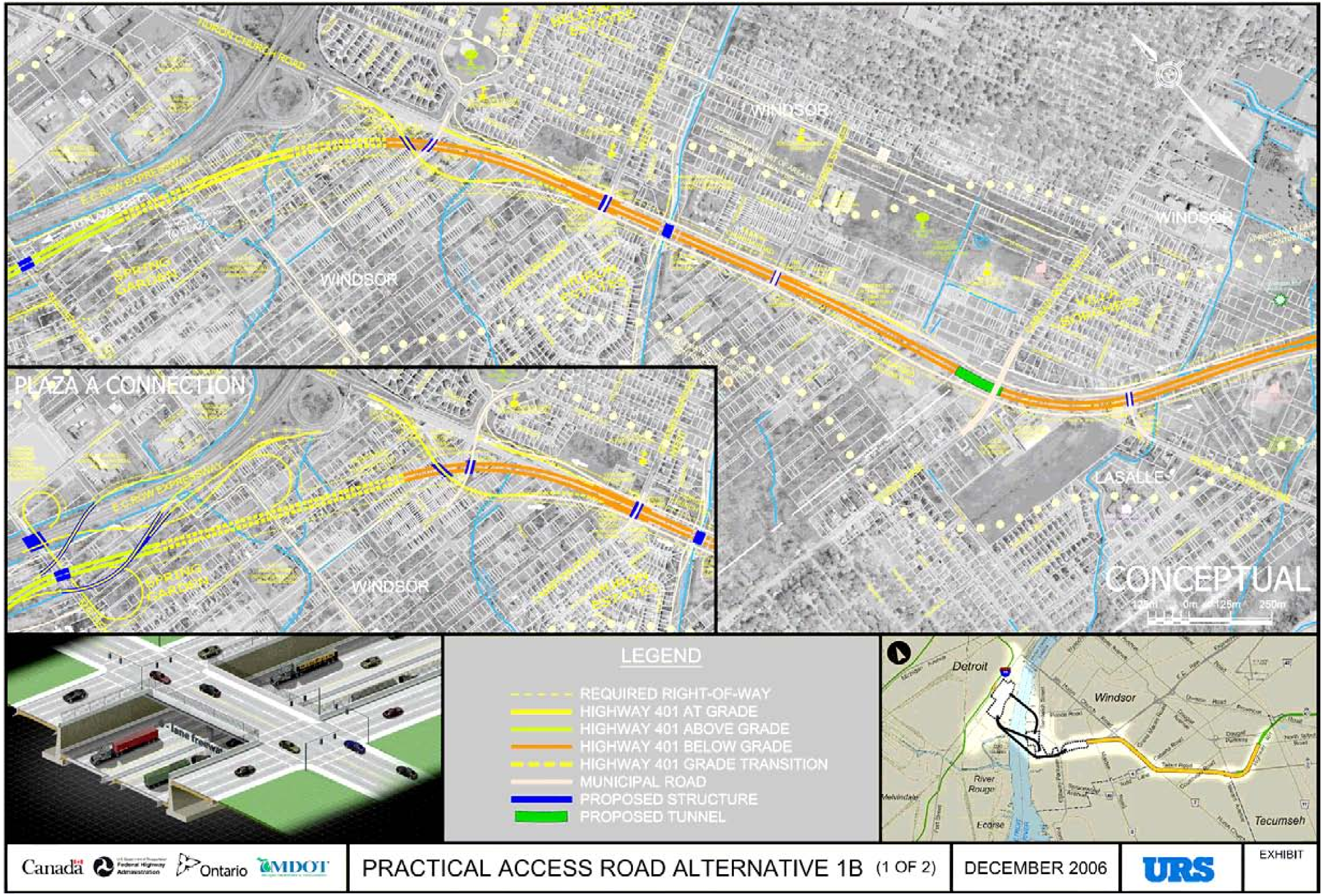
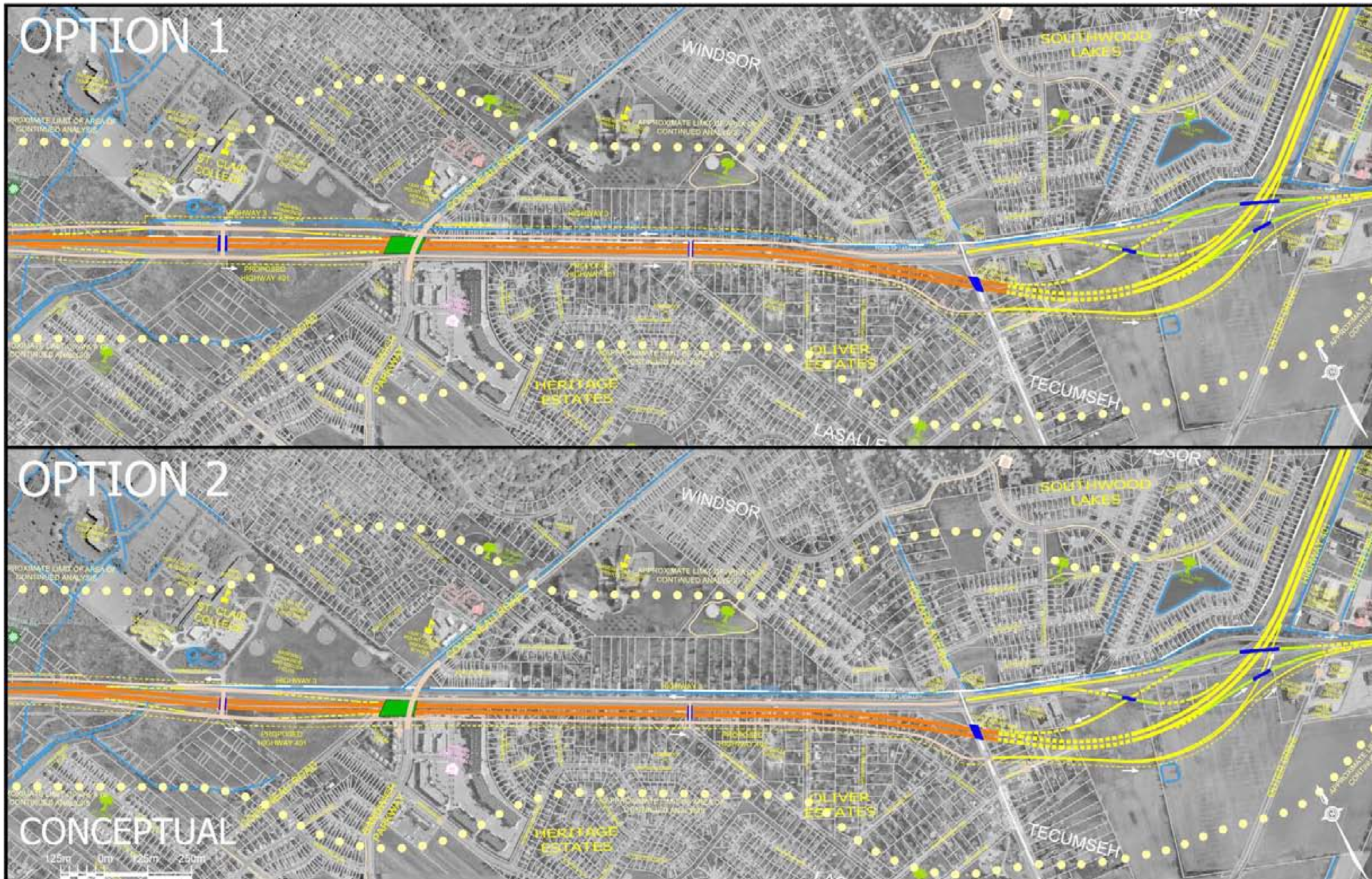


EXHIBIT 8.8B – PRACTICAL ACCESS ROAD ALTERNATIVE 1B



Canada / Federal Highway Administration / Ontario / MDOT	PRACTICAL ACCESS ROAD ALTERNATIVE 1B (2 OF 2)	DECEMBER 2006	URS	EXHIBIT

EXHIBIT 8.9A – PRACTICAL ACCESS ROAD ALTERNATIVE 2A

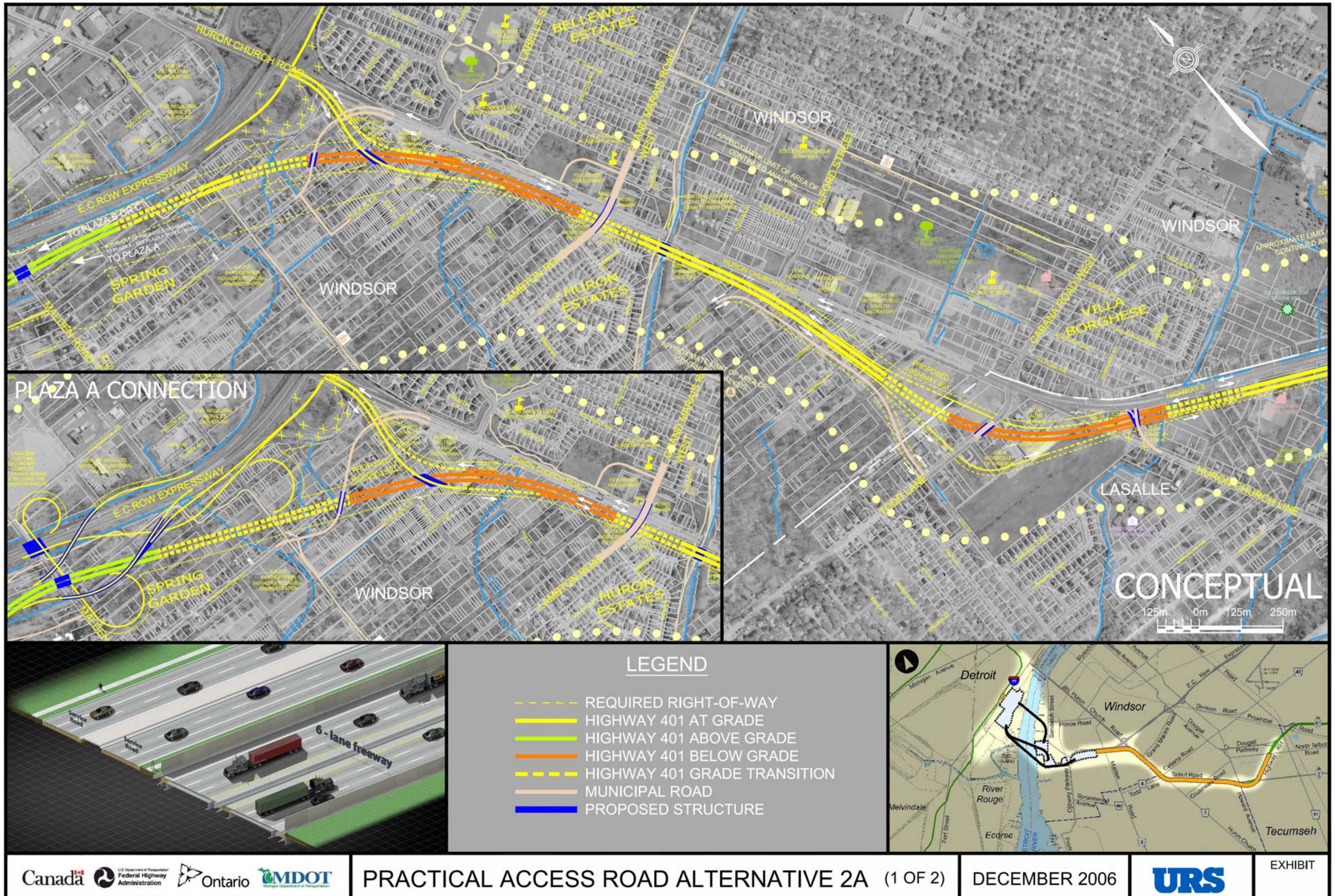
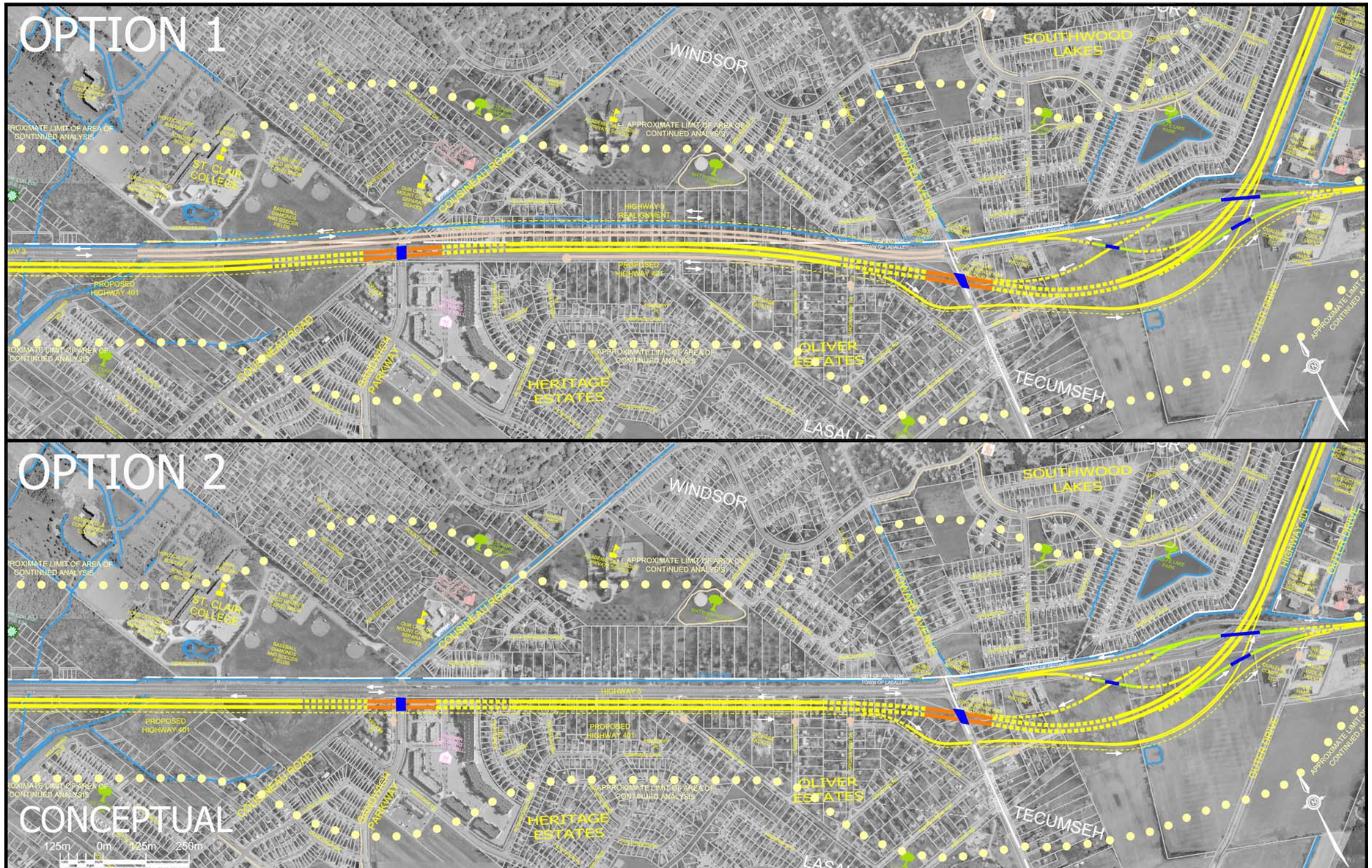


EXHIBIT 8.9B – PRACTICAL ACCESS ROAD ALTERNATIVE 2A



Canada / Federal Highway Administration / Ontario / MDOT	PRACTICAL ACCESS ROAD ALTERNATIVE 2A (2 OF 2)	DECEMBER 2006	URS	EXHIBIT

EXHIBIT 8.10A – PRACTICAL ACCESS ROAD ALTERNATIVE 2B

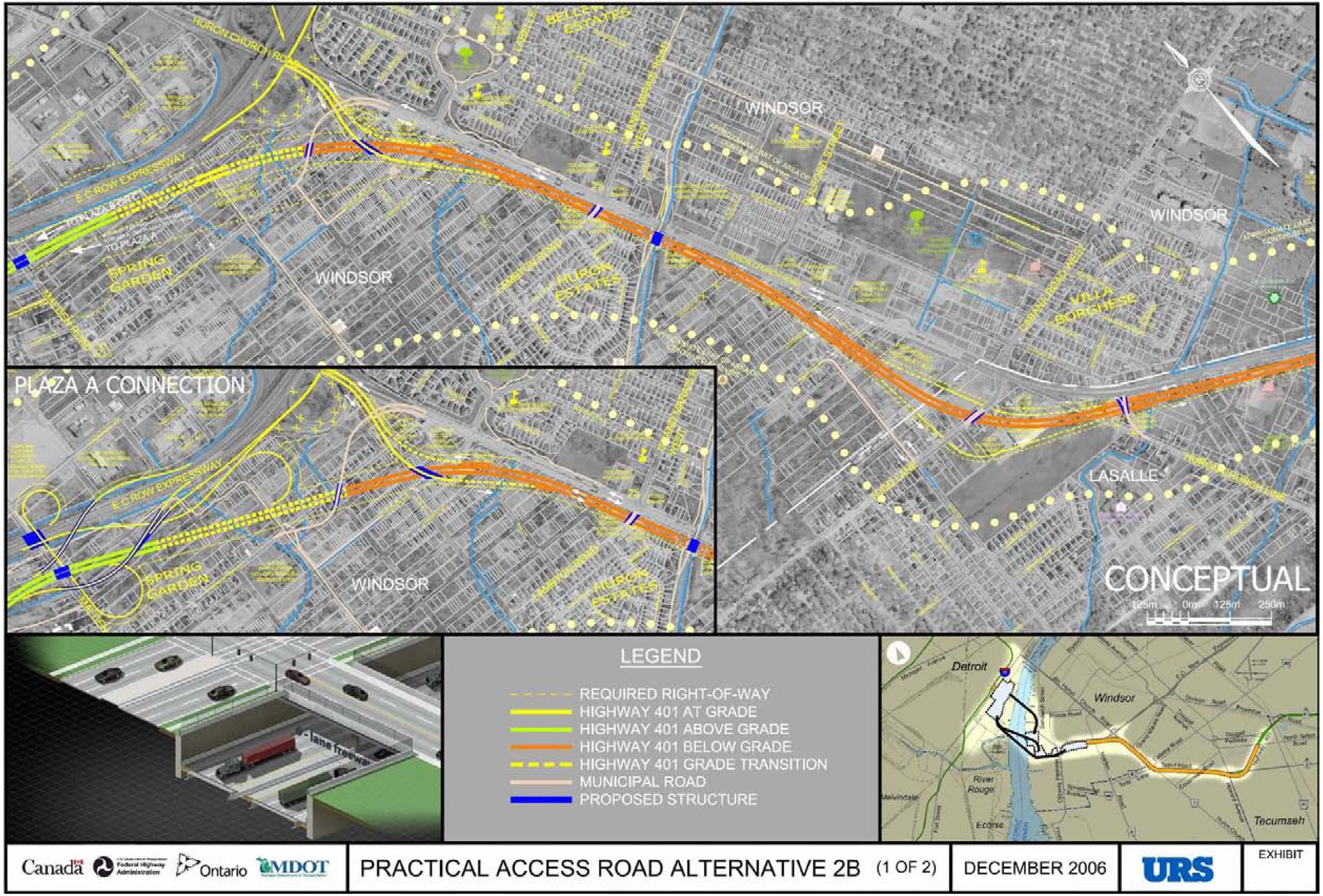


EXHIBIT 8.10B – PRACTICAL ACCESS ROAD ALTERNATIVE 2B

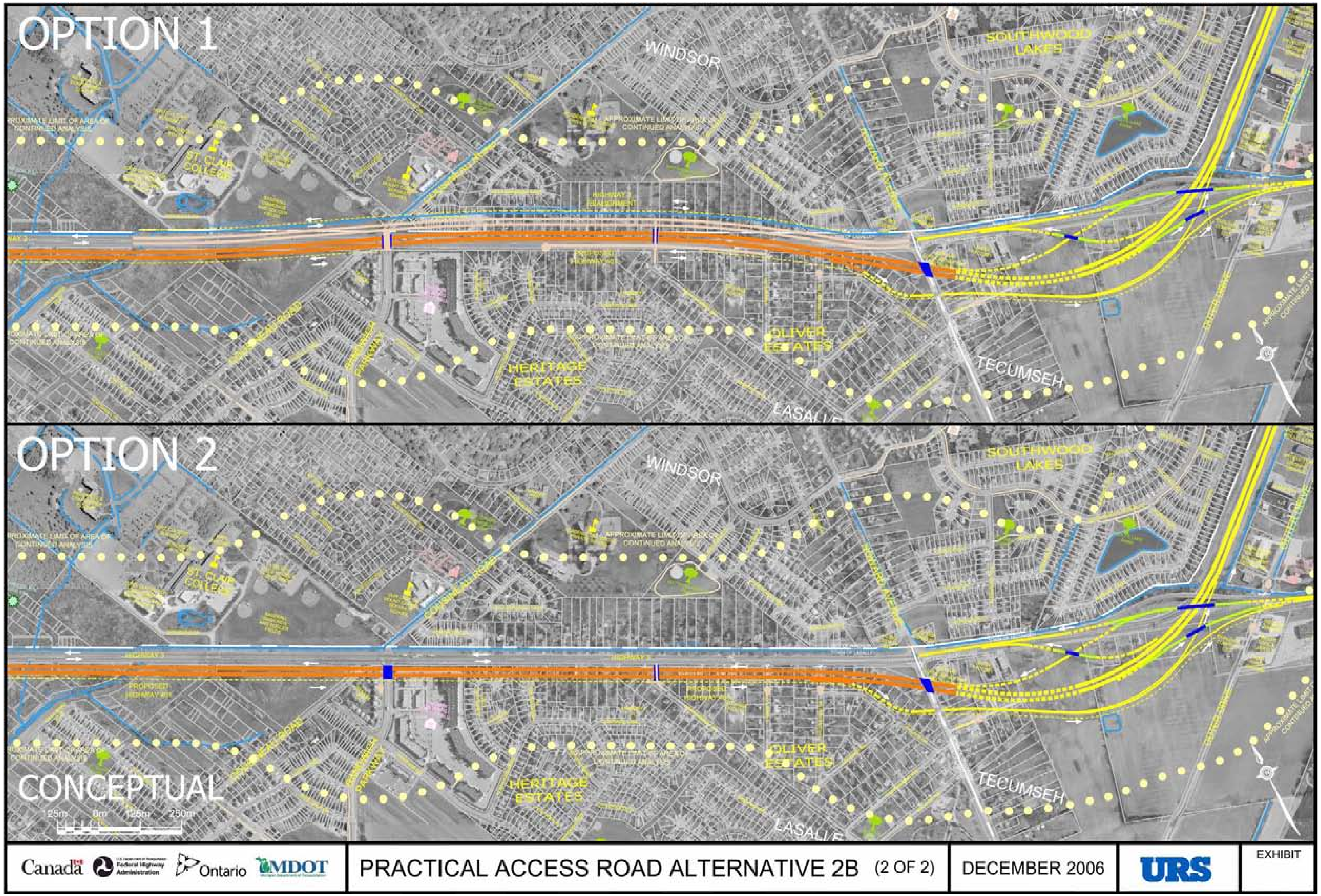


EXHIBIT 8.11A – PRACTICAL ACCESS ROAD ALTERNATIVE 3

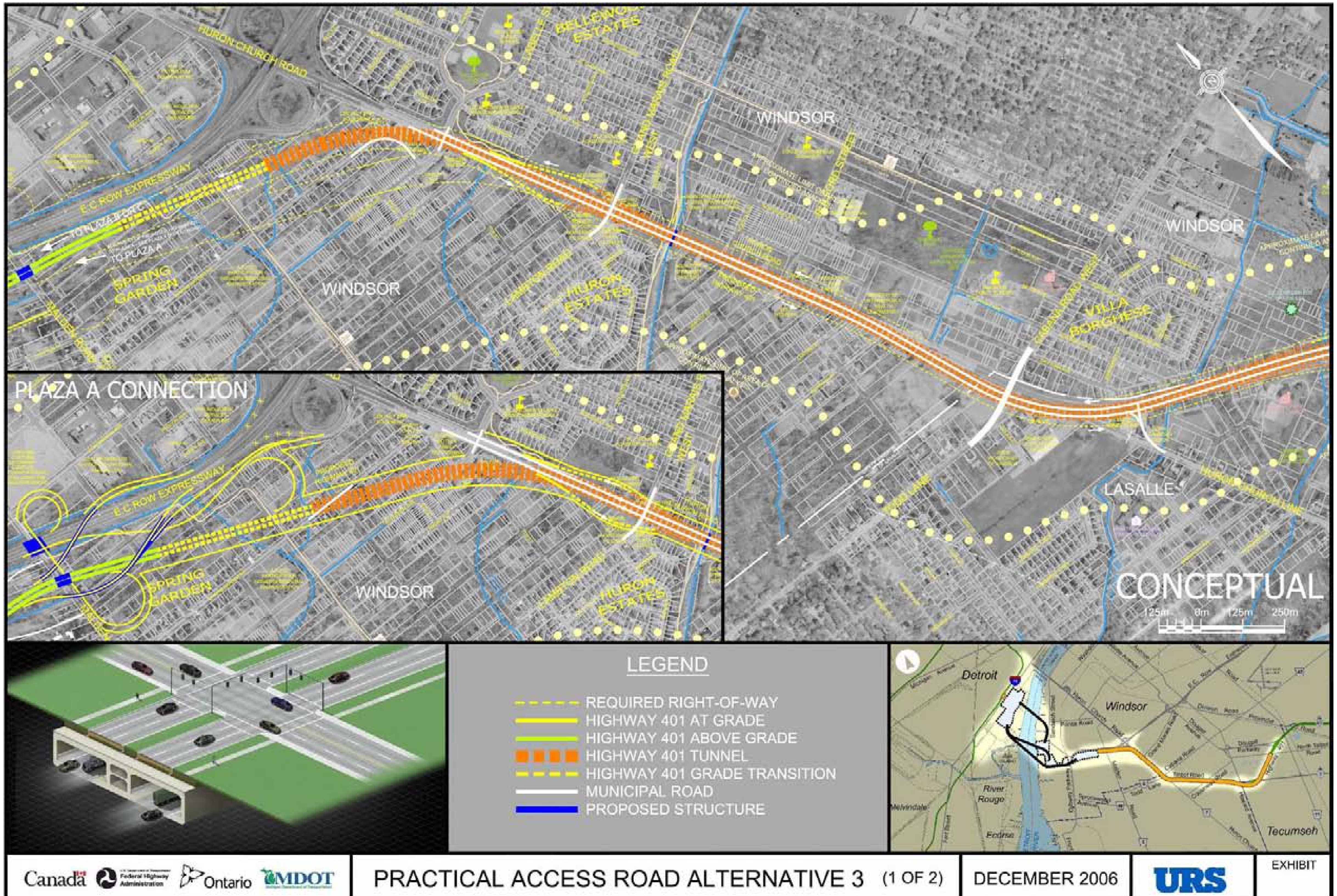
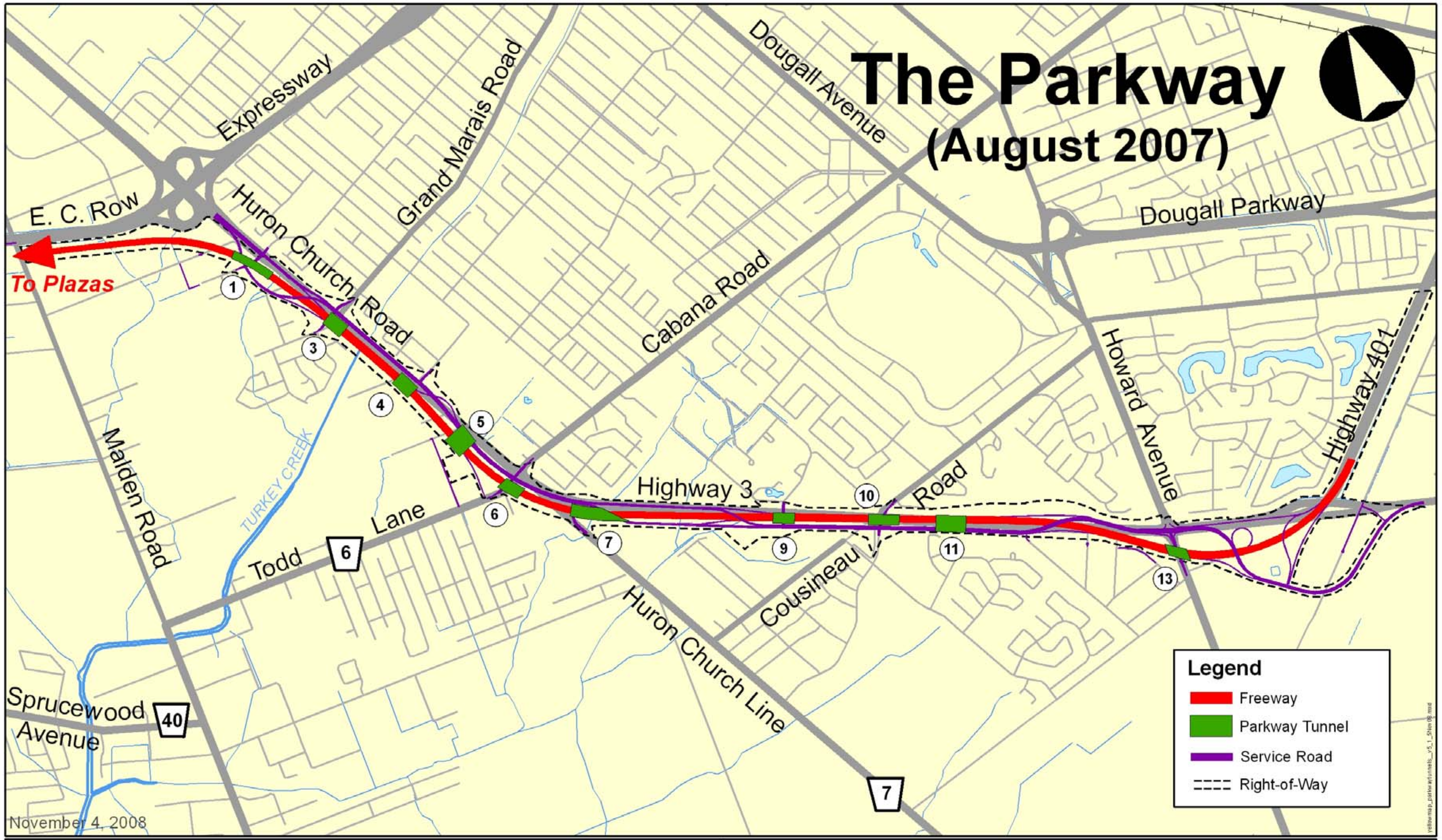


EXHIBIT 8.11B – PRACTICAL ACCESS ROAD ALTERNATIVE 3

EXHIBIT 8.12 – THE PARKWAY ALTERNATIVE



I.D.	Location of Tunnel	Tunnel Length (M)	Roof Area (Sq M)	I.D.	Location of Tunnel	Tunnel Length (M)	Roof Area (Sq M)
1	Spring Garden Road / Labelle Street	240	10,810	7	Huron Church Line	240	17,040
3	Grand Marais Road	120	9,550	9	St. Clair College	120	7,225
4	Pulford Street	120	9,705	10	Cousineau Road	170	9,590
5	Reddock Street	120	15,320	11	Hearthwood Place	165	14,805
6	Cabana Road	120	8,300	13	Howard Avenue	120	6,900

The ten tunnel sections of The Parkway were strategically placed to maintain existing access across and along the corridor, as well to provide new connections for roads, trails and wildlife linkages. The spacing between tunnel sections was also considered. Having two (or more) tunnel sections with insufficient space between them increases the risk that under certain emergency conditions, smoke from one tunnel section could be carried into the downwind tunnel section. The tunnel sections were developed with a minimum length of 120 m and were limited to a maximum length of 240 m. The minimum length of 120 m was determined to be a sufficient length to accommodate a community connection and allow for options for landscaping/green space to be placed on top of the tunnel so as to lessen any 'barrier effect' of the freeway for the neighbourhoods on either side of the access road. Highway tunnels longer than 240 m are subject to more complex fire and life safety requirements and regulations that would substantially alter the design, construction, operation and maintenance requirements. Table 8.9 provides the locations, lengths and rationale for the tunnel sections developed for The Parkway.

TABLE 8.9 – PARKWAY TUNNEL SECTION LOCATIONS, LENGTHS AND RATIONALE

Location	Length	Rationale for tunnel location/length
Bethlehem Avenue/ Labelle Street	240 m	Maintains existing road crossing at Labelle Street/Bethlehem Avenue. Provides improved connection between Bellewood neighbourhood/Bellewood Park/Bellewood School and Spring Garden/Bethlehem neighbourhoods/Spring Garden Road Prairie/Windsor community trails. Tunnel length of 240 m provides opportunities for public space and gateway features; this tunnel is situated at junction of The Parkway and Huron Church Road and is viewed by motorists entering Canada via the new crossing or the Ambassador Bridge.
Grand Marais Road/ Lambton Road	120 m	Maintains existing road crossing at Grand MaraisRoad/Lambton Road. Provides improved connection between Bellewood neighbourhood/Bellewood Park/Bellewood School and Huron Estates neighbourhood and Spring Garden Road Prairie. Tunnel also provides improved connection for existing West Windsor Recreationway trail; presently trail passes under Huron Church Road at Grand Marais Drain; in times of high water flows in the drain, this trail is closed. With The Parkway, this trail will need to be relocated due to changes to Grand Marais Drain structure. Trail will be relocated to allow crossing of The Parkway and service road either via Grand Marais tunnel or Pulford Avenue tunnel. Tunnel length constrained by road profile at south end (freeway is not as deep at Grand Marais drain crossing as other locations), location of exit ramp to service road and service road structure at north end.
Pulford Street	120 m	Provides improved connection between residential area on east side of Huron Church Road and South Windsor Recreation Complex to Huron Estates neighbourhood and Spring Garden Road Prairie. Tunnel also provides improved connection for existing West Windsor Recreationway trail; presently, trail passes under Huron Church Road at Grand Marais Drain; in times of high water flows in the drain, this trail is closed. With The Parkway, this trail will need to be relocated due to changes to Grand Marais Drain structure. Trail will be realigned to allow crossing of The Parkway and service road either via Grand Marais tunnel or Pulford Avenue tunnel. Tunnel length constrained by road profile at north end (freeway is not as deep at the Grand Marais drain crossing as other locations) and location of entrance ramp from service road at south end.
Reddock Street	120 m	Provides improved wildlife linkage and new community connection between Oakwood Bush/Oakwood School/Windsor community trails and Spring Garden Road Prairie. Both the freeway and service road pass through this tunnel leaving a road-free connection at the surface. Tunnel length constrained by service road profile at north and south ends (service road profile rises from 7 m below grade to at-grade at intersections on both sides of tunnel).
Todd Lane/ Cabana Road West	120 m	Maintains existing road crossing at Todd Lane/Cabana Road West. Provides improved connection between Villa Borghese neighbourhood/Oakwood Bush/Oakwood School and Todd Lane neighbourhood and Spring Garden Road Prairie. Tunnel length constrained by service road profile at north end and proximity of tunnel to the south.
Huron Church Line	240 m	Maintains an existing road connection for Huron Church Line and the service road. Provides improved wildlife linkage and improved community connection between Lennon Drain/St. Clair College environmentally sensitive area and Cahill Drain candidate natural heritage site lands/LaSalle Woods/LaSalle community trails.
St. Clair College Entrance	120 m	Maintains an existing road connection for the main entrance to the college and the service road. Provides improved wildlife linkage and improved community connection between St. Clair College environmentally sensitive area/athletic fields and Cahill Drain candidate natural heritage site lands/Windsor Crossing commercial area/LaSalle community trails. No residential neighbourhood in this immediate area, but as the main entrance to the college, this area is expected to have a relatively high volume of pedestrian and cyclist traffic. A length of 120 m was considered adequate for meeting the connectivity requirements at this location.
Cousineau Road/ Sandwich West Parkway	170 m	Maintains existing road crossing at Cousineau Rd/Sandwich West Parkway. Provides improved community connection between St. Clair College and athletic fields/Our Lady of Mt. Carmel School/Kendleton Court and Villa Paradiso neighbourhoods and Heritage Estates neighbourhood/Windsor Crossing commercial area/LaSalle community trails. Length of tunnel sections in this area is constrained by service road profile at east end (service road profile rises from 7 m below grade to at-grade at intersection at Cousineau/Sandwich West Pkwy). Given the extent of buffer area at west end of tunnel section, a length of 170 m was considered adequate for meeting the connectivity requirements at this location.
Hearthwood Place	165 m	Provides improved wildlife linkage and new community connection between Villa Paradiso and Kendleton Court neighbourhoods/Matthew Rodzik Park/new green space north of corridor and Heritage Estates neighbourhood/Windsor Crossing commercial area/LaSalle community trails. Both the freeway and service road pass through this tunnel leaving a road-free connection at the surface. The length of tunnel section is constrained by service road profile at west end (service road profile rises from 7 m below grade to at-grade at intersection at Cousineau/Sandwich West Pkwy). East limit of tunnel constrained by proximity of at-grade intersection at Montgomery Dr. and entrance ramp to freeway.
Howard Avenue	120 m	Maintains existing road crossing at Howard Avenue. Provides improved community connection between Shadetree neighbourhood/Matthew Rodzik Park/new green space north of corridor and Oliver Estates neighbourhood/ LaSalle community trails. Tunnel length of 120 m provides opportunities for public space and Gateway features; this is the first tunnel along the Parkway as viewed by motorists entering Windsor/LaSalle via Highway 401 or Highway 3.

The Parkway alternative was presented for public review and comment at the fifth round of PIOHs in August 2007. In addition, meetings with ministries, agencies, municipalities, consultation groups and other stakeholders were also held to review the preliminary analysis of the practical access road alternatives and discuss the features of The Parkway.

GREENLINKWINDSOR CONCEPT

In October 2007, the City of Windsor presented an access road concept entitled GreenLinkWindsor. Like The Parkway, the GreenLinkWindsor concept proposed a below-grade freeway with tunnel sections, a separate service road for local traffic, a right-of-way with buffer areas between the corridor and adjacent residential areas, and a continuous recreational trail system along the corridor (see **Exhibit** 8.14).

EXHIBIT 8.13 – GREENLINKWINDSOR[1]

Further details with regard to the study team's review of the GreenLinkWindsor proposal are documented in **Chapter 3** of this report.

The study team carefully considered the GreenLinkWindsor concept, as well as the comments provided by other stakeholders, including other municipalities, government agencies and the public. The comments received were used to refine The Parkway.

Based on this input, and on further deliberations by the study team, a number of refinements were made to The Parkway alternative in the period following the August 2007 Public Information Open Houses. These refinements were adopted to reduce the effects of The Parkway alternative and to improve the transportation benefits and community benefits to the greatest extent practical. Following is a discussion of the refinements that were adopted between August 2007 and April 2008:

Additional tunnel section at Spring Garden

The Parkway alternative did not initially include a tunnel section in this area. A 200 metre long tunnel section was added to maintain the connection residents presently enjoy between Spring Garden residential area and vacant natural area adjacent to E.C. Row Expressway. The location and length of a tunnel section in this area is constrained by the roadway profile at the west end and the proximity of the Labelle Street/Bethlehem Avenue tunnel to the south.

Revised location and length of Howard Avenue tunnel

The Howard Avenue tunnel section was initially proposed in a location to maintain the existing road crossing at Howard Avenue as well as to provide improved community connection between Shadetree neighbourhood/Matthew Rodzik Park/new green space north of corridor and Oliver Estates neighbourhood/LaSalle community trails. As a result of comments provided through consultation events, including PIOH and subsequent community meetings with residents of Oliver Estates neighbourhood in particular to improve the effectiveness of connectivity between communities (nearer to residences), the tunnel section was shifted westerly from Howard Avenue to the area near Chelsea Drive. A tunnel section of 240 m in this area provides opportunities for landscaping/public space and gateway features on this roof deck, and this is the first tunnel along The Parkway as viewed by motorists entering Windsor/LaSalle via Highway 401 or Highway 3. The Howard Avenue road crossing will be accommodated by a roadway overpass.

Other tunnel lengths and locations refined

Adjustments were made to some tunnel locations to provide improved tunnel spacing and better alignments and locations for road and trail alignments. While most of these refinements were minor in nature and did not change the length of the tunnel sections, the modifications made at the Cousineau Road/Sandwich West Parkway and Hearthwood Place tunnels are notable. The length of the Cousineau Road/Sandwich West Parkway tunnel section was reduced by 50 to 120 m, while the section of tunnel covering the freeway at Hearthwood Place was lengthened by 55 to 220 m. The net effect of these modifications was that there was more tunneled section would be provided near adjacent residential areas, resulting in greater connectivity improvements.

Pedestrian and cyclists trails refined

The Parkway alternative presented at the August 2007 Public Information Open Houses featured a concept for a continuous pedestrian/cyclist trail system parallel to and separate from the freeway and service road. This trail system concept included grade separations (i.e. overpasses) at most road crossings so as to limit the conflicts between pedestrians, cyclists and motorists. Refinements were made to the trail system concept including removing overpasses at certain road crossings and changing or eliminating sections of trail to reflect comments received from property owners whose property would be impacted to accommodate the trail system and concerned about loss of privacy due to the proximity of trail overpasses to their property. In addition, some overpasses were removed and trail locations changed to provide better access between the trail system and the local street system. In identifying the refinements, an important principle of the trail concept was retained, in that trail users are able to traverse The Parkway corridor from Howard Avenue to the Spring Garden/Bellewood Estates area without having to cross a lane of traffic.

New loop ramp at Todd Lane

Consultation on The Parkway included meeting with municipal emergency services to discuss issues pertaining to emergency response to an incident in The Parkway corridor. In reviewing the proposed access points to the freeway section of The Parkway, it was identified that access to The Parkway for Windsor and LaSalle emergency services could be greatly improved with the provision of a freeway entrance ramp in the area of Todd Lane. Such a connection would provide direct access to the section of the freeway east of Todd Lane/Cabana Road West which is important for emergency service access as there is a fire station on Cabana Road West just east of Huron Church Road, and a LaSalle fire station on Malden Road just south of Todd Lane. Upon investigation of options for a new connection

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and the local constraints in this area, the study team developed a loop ramp connection from Todd Lane to the eastbound freeway. A signalized intersection at the ramp terminal will enable access to the eastbound freeway from Todd Lane for all eastbound and westbound vehicles on Todd Lane/Cabana Road West, thereby providing improved access for local emergency services stationed near this area.

Highway 3/Howard Avenue Interchange modified to include a connection to Howard Avenue and the possible future Laurier Parkway Extension

In discussions with the Municipal Advisory Group (MAG), the study team identified that the section of Highway 401 between Highway 3 and Howard Avenue must address several transportation issues:

- To improve the design speed at this location over what is provided by the existing Highway 401 alignment, The Parkway includes a realignment of Highway 401 at the existing Highway 3 interchange.
- The Howard Avenue/Highway 3 intersection is a major intersection in the regional road network. This intersection would typically be a candidate site for an interchange with the new freeway. However, development in three quadrants of this intersection represents a constraint to interchange design and construction.
- There is also the opportunity to improve connections between Highway 3 and Highway 401 (all moves between these two provincial highways are presently not provided).
- The Essex-Windsor Regional Transportation Master Plan (October 2005) identified Highway 3, the Laurier Parkway extension to Howard Avenue, as well as Howard Avenue itself, as components of a regional road network. Improving connections between these roadways would improve regional mobility.

Upon review of existing and future land use and traffic operations in the area, the study team developed a concept to address the above transportation issues by providing a new interchange at Highway 3 in the vacant lands east of Howard Avenue, with new road connections to Highway 3 and to Howard Avenue. Such a roadway connection would allow north-south traffic destined to/from employment lands in the east to avoid the Howard Avenue intersection at the proposed service road. This would benefit traffic operations by reducing congestion at the Howard Avenue/service road intersection. This connection would also improve continuity for north-south traffic in this area by providing a more direct connection between Howard Avenue, the future Laurier Parkway, Highway 3 and Highway 401. It will also reduce the volume of traffic using the City of Windsor portion of Howard Avenue, which would be compatible with the City of Windsor's vision. Overall this connection would improve regional mobility between western Essex County, LaSalle and east Windsor/Tecumseh.

The refined Parkway alternative was identified as The Windsor-Essex Parkway (refer to Exhibit 8.15). The Windsor-Essex Parkway alternative was analyzed in accordance with the seven major factors and evaluated against the other at-grade and below-grade alternatives, as well as the cut and cover tunnel alternative. (Refer to Section 8.2.3).

EXHIBIT 8.14 – THE WINDSOR-ESSEX PARKWAY

I.D.	Location of Tunnel	Tunnel Length (M)	Roof Area (Sq M)	I.D.	Location of Tunnel	Tunnel Length (M)	Roof Area (Sq M)
1	Spring Garden	200	9,000	7	Cabana Road West	120	8,300
2	Ramp N-E and Labelle Street	240	10,810	8	Huron Church Line	240	14,400
4	Grand Marais Road West	120	9,550	11	St. Clair College	120	7,225
5	Pulford Street	120	9,705	12	Cousineau Road	120	7,225
6	Reddock St - Double Tunnel	120	15,320	13	Hearthwood Place - Double Tunnel	220	19,250
				15	Oliver Estates Area	240	13,200

Structures 3 9 10 14 16 17 18 are proposed as roadway overpasses

8.2.3 Analysis and Evaluation

The evaluation of practical alternatives for the Canadian access road was conducted in conjunction with the evaluation of the Canadian plaza-crossing-U.S. plaza and U.S. connecting road, leading to a 'technically and environmentally preferred' end-to-end solution connecting Highway 401 in Ontario to Interstate 75 in Michigan.

As noted previously, the approved *EA TOR (2004)* identified two evaluation methods to be employed in the evaluation process: reasoned argument method and arithmetic method. These methods were employed in the analysis and evaluation of illustrative alternatives (refer to Chapter 6), as well as the analysis and evaluation of practical plaza and crossing alternatives (refer to Section 8.1). A similar approach was employed for the analysis and evaluation of the practical access road alternatives. While the same seven key factors were used, the performance measures were modified to make them applicable to the roadway alternatives considered. Table 8.10 provides a summary of the evaluation factors and performance measures for evaluating the practical access road alternatives.

TABLE 8.10 – PRACTICAL ACCESS ROAD ALTERNATIVES EVALUATION FACTORS AND PERFORMANCE MEASURES – CANADIAN SIDE

Rating Factor	Performance Measure Categories	Performance Measure
Changes in Air Quality	Regional Burden	Analysis based on traffic model results.
	Dispersion (NO_x and $PM_{2.5}$ as health based indicator substances)	Analysis for key roadway links
Protect Community/ Neighbourhood Characteristics	Traffic Impacts Volumes by Vehicle Type Local Access	 Peak period volumes on specific links by mode (cars, trucks, and international trucks). Number of streets crossed, closed, or connected with an interchange.
	Noise	Analysis based on traffic model results for key roadway links.
	Community Cohesion/Community Character	Encroachment/severance on neighbourhood based on professional judgment. Impact on delivery of community services (function of road closures) based on professional judgment.
	Acquisitions (Whole or Partial) Residential Business	 Number of dwelling units by type; population estimate based on average persons per dwelling unit Number of business establishments; employment estimate based on average employees per business for area.
	Institutions Farm Property / Structures	Number of institutions by type (church, schools, etc.). Operations/structures affected.
	Public Safety/Security (Plaza Only)	Assessment based on professional judgment.
Maintain Consistency with Existing and Planned Land Use	Land Use (existing and planned)	Designation of "consistent," "not consistent," or "not applicable" with goals, objectives and/or policies based on review of official planning documents.
	Development Plans	Designation of "compatible," "not compatible," or "not applicable" with plans for upcoming development that may not be covered by official plans.
	Contaminated Sites/Disposal Sites	Number of documented sites affected.
Protect Cultural Resources	Historical	Number of listed sites affected.
	Parklands	Number of parks by type; number of hectares affected. Includes subset for Coastal Zone Management sites.
	Archaeological Sites	Number of known sites affected.
Protect the Natural Environment	Environmental Significant Features	Area (in hectares) affected by type.
	Surface Water Quality/Groundwater	Area of floodplains affected (hectares); number of water crossings (including secondary rivers and streams); Detroit River channel alteration; number and general location of in-water piers; wells/groundwater sources affected; number of water intakes affected.
	Environmentally Significant Species/ Habitat	Area of habitat (hectares) affected by type; list of species; other significant features.
	Farmland/Prime Agricultural Soils	Area affected (hectares) by soil type
	Other Natural Resources	Area affected measured by area of right-of-way.
Improve Regional Mobility	Highway Network Effectiveness Service Levels Vehicle kilometres of Travel Vehicle Hours of Travel Distance Travelled	Level of Service (LOS) classification by major facility type. By major facility type. By major facility type. Average km for car, local truck, and international truck.

Rating Factor	Performance Measure Categories	Performance Measure
	Continuous/ongoing river crossing capacity (i.e. redundancy)	Assessment of availability of crossing options.
	Operational Considerations of Crossing System (River Crossing and Plaza)	Distance to plaza from international border; accessibility; serviceability; security; flexibility for expansion.
Cost and Constructability[2]	Millions of CAD$ (expressed in year 2011 dollars)	Length of alternative, preliminary construction costs, constructability including site constraints; geotechnical constraints; construction staging/ duration; traffic maintenance; risk assessment.

Between March 2006 and July 2007, the study team conducted the analysis of the five initial access road alternatives:

1) **Alternative 1A** - At-grade freeway with separate one-way service roads located on either side of the freeway
2) **Alternative 1B** - Below-grade freeway with separate one-way service roads located on either side of the freeway
3) **Alternative 2A** - At-grade freeway with separate service road located on one side of the freeway
4) **Alternative 2B** - Below-grade freeway with separate service road located on one side of the freeway
5) **Alternative 3** - Freeway in cut and cover tunnel with at-grade service road on top of tunnel

Preliminary findings of the analysis of the five initial access road alternatives were released for public review at Open Houses held in December 2006 and August 2007. Subsequently, the analysis of The Windsor-Essex Parkway alternative was undertaken and the results incorporated with those of the initial five access road alternatives. The evaluation of the six access road alternatives was conducted to identify the Technically and Environmentally Preferred Alternative (TEPA) for the access road. The results of this analysis and evaluation were presented at the sixth round of Public Information Open Houses in June 2008.

REASONED ARGUMENT METHOD

The results of the reasoned argument evaluation of the six access road alternatives are documented in a number of technical documents prepared by the study team. The key findings for each of the seven evaluation factors are presented in **Exhibit 8.15**. Further details of the analysis of these alternatives are provided in a document entitled *Generation and Assessment of Practical Alternatives and Selection of the Technically and Environmentally Preferred Alternative – Access Road Alternatives (December 2008);*

[2] In the evaluation of Illustrative Alternatives, this factor was entitled Minimize Cost; for the evaluation of Practical Alternatives, the title of this factor was revised to Cost and Constructability to more adequately reflect the basis of the assessment from a cost and constructability perspective.

EXHIBIT 8.15 – SUMMARY OF PRACTICAL ALTERNATIVES EVALUATION – ACCESS ROAD

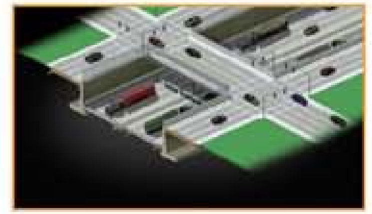
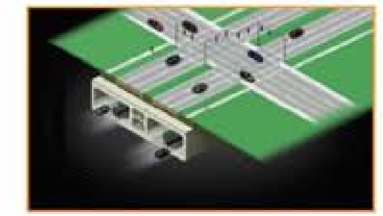
FACTOR/ MEASURE	ALTERNATIVE 1A 		ALTERNATIVE 1B 		ALTERNATIVE 2A 		ALTERNATIVE 2B 		ALTERNATIVE 3 	PARKWAY 
	Option 1 (Widen to North on Hwy 3)	**Option 2** (Widen to South on Hwy 3)	**Option 1** (Widen to North on Hwy 3)	**Option 2** (Widen to South on Hwy 3)	**Option 1** (Widen to North on Hwy 3)	**Option 2** (Widen to South on Hwy 3)	**Option 1** (Widen to North on Hwy 3)	**Option 2** (Widen to South on Hwy 3)		
Changes to Air Quality										
Results of modeling	• Predicted concentrations of NO_x are lower in the future compared to today's values due to changes in fuels and vehicular technologies.		• Predicted concentrations of NO_x are lower in the future compared to today's values due to changes in fuels and vehicular technologies. • Depressed alternatives result in slightly lower $PM_{2.5}$ concentrations in comparison to the at-grade alternatives.		• Predicted concentrations of NO_x are lower in the future compared to today's values due to changes in fuels and vehicular technologies.		• Predicted concentrations of NO_x are lower in the future compared to today's values due to changes in fuels and vehicular technologies. • Depressed alternatives result in slightly lower $PM_{2.5}$ concentrations in comparison to the at-grade alternatives.		• Predicted concentrations of NO_x are lower in the future compared to today's values due to changes in fuels and vehicular technologies but NO_x concentrations are greater compared to non-tunnel alternatives over a broader area (greater dispersion from ventilation stacks) • Tunnel results in lower concentrations of $PM_{2.5}$ in vicinity of the first 50m from the ROW compared to the other alternatives.	• Predicted concentrations of NO_x are lower in the future compared to today's values due to changes in fuels and vehicular technologies. • Depressed alternatives result in slightly lower $PM_{2.5}$ concentrations in comparison to the at-grade alternatives.
Overall Assessment	• All access road alternatives represent an improvement to local air quality over the no-build alternative. • The assessment found essentially no difference among the access road alternatives (at grade, below grade, tunnel) in terms of the improvements provided to local air quality compared to the no-build alternative; the end-to-end tunnel offers a slightly greater reduction in particulate concentrations within 50m of the ROW under certain conditions compared to the other alternatives, but a slight increase in NOx over a broader area. • All alternatives were considered to have an equally low impact to air quality.									
Protection of Community and Neighbourhood Characteristics										
Potential Acquisitions Residences Businesses	• 180-230 • 31	• 160-210 • 45	• 180-230 • 31	• 160-210 • 45	• 190-230 • 26	• 170-220 • 40	• 180-230 • 26	• 170-220 • 40	• 140-180 • 43-45	• 309-333 • 48
Community Features Potentially Displaced	• 3 – Montessori Preschool, Royal Canadian Legion, Heritage Park Alliance Church	• 4 – Montessori Preschool, Royal Canadian Legion, Heritage Park Alliance Church, Trillium Court Housing (partial)	• 3 – Montessori Preschool, Royal Canadian Legion, Heritage Park Alliance Church	• 4 – Montessori Preschool, Royal Canadian Legion, Heritage Park Alliance Church, Trillium Court Housing (partial)	• 3 – Montessori Preschool, Royal Canadian Legion, Heritage Park Alliance Church (partial)	• 4 – Montessori Preschool, Royal Canadian Legion, Heritage Park Alliance Church, Trillium Court Housing (partial)	• 3 – Montessori Preschool, Royal Canadian Legion, Heritage Park Alliance Church (partial)	• 4 – Montessori Preschool, Royal Canadian Legion, Heritage Park Alliance Church, Trillium Court Housing (partial)	• 4 – Montessori Preschool, Royal Canadian Legion, Heritage Park Alliance Church, Trillium Court Housing (partial)	• 5 – Montessori Preschool, Royal Canadian Legion, Heritage Park Alliance Church, Trillium Court Housing (entire property), St. Clair College Athletic Fields
Noise Receptors with >5 dB increase (after mitigation)	• 1 (additional investigations in Malden Road/ Spring Garden area are required)	• 0 (additional investigations in Malden Road/ Spring Garden area are required)	• 1 (additional investigations in Malden Road/ Spring Garden area are required)	• 0 (additional investigations in Malden Road/ Spring Garden area are required)	• 0 (additional investigations in Malden Road/ Spring Garden area are required)	• (additional investigations in Malden Road/ Spring Garden area are required)	• (additional investigations in Malden Road/ Spring Garden area are required)	• 0 (additional investigations in Malden Road/ Spring Garden area are required)	• 0 (additional investigations in Malden Road/Spring Garden area are required)	• 0 (additional investigations in Malden Road/Spring Garden area are required)
Effect on Access	• 9 road closings • 20 local access connections to new transportation facility • No access to the new corridor from Cabana Road/Todd Lane; no access to Howard Avenue from Highway 401 Eastbound. • Full access to St. Clair College.		• 13 road closings • 14-15 local access connections to new transportation facility • Partial access to/ from the new corridor from/to Cabana Road/Todd Lane. • Full access to St. Clair College • No direct access to Howard Avenue.		• 15 road closings • 15 local access connections to new transportat'n facility • Full access to/ from new corridor from/to Cabana Rd/Todd Lane; no direct access to St. Clair College/Howard Ave	• 15 road closings • 14 local access connections to new transportat'n facility • Full access to/ from new corridor from/to Cabana Rd/ Todd Lane; no direct access to St. Clair College/Howard Ave	• 14 road closings • 10 local access connections to new transportat'n facility • Full access to/ from new corridor from/to Cabana Rd/ Todd Lane; no direct access to St. Clair College/Howard Ave	• 14 road closings • 11 local access connections to new transportat'n facility • Full access to/ from new corridor from/to Cabana Rd/ Todd Lane; no direct access to St. Clair College/Howard Ave	• 9 road closings • 13 local access connections to new transportation facility • No access to/from Cabana Road/Todd Lane; No access to Howard Avenue from Highway 401 Eastbound.	• 18 road closings • 17 local access connections to new transportation facility • No access to/from Cabana Road/Todd Lane; No access to Howard Avenue from Highway 401 Eastbound

EXHIBIT 8.15 – SUMMARY OF PRACTICAL ALTERNATIVES EVALUATION – ACCESS ROAD (CONT'D)

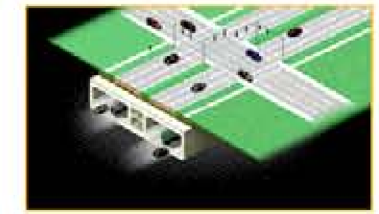
FACTOR/ MEASURE	ALTERNATIVE 1A 	ALTERNATIVE 1B 	ALTERNATIVE 2A 	ALTERNATIVE 2B 	ALTERNATIVE 3 	PARKWAY 
	Option 1 (Widen to North on Hwy 3) / Option 2 (Widen to South on Hwy 3)	Option 1 (Widen to North on Hwy 3) / Option 2 (Widen to South on Hwy 3)	Option 1 (Widen to North on Hwy 3) / Option 2 (Widen to South on Hwy 3)	Option 1 (Widen to North on Hwy 3) / Option 2 (Widen to South on Hwy 3)		
Impact on Community Character/Cohesion	• Overall, similar impacts to community compared to other alternatives • Communities of Spring Garden, Bethlehem Street, Reddock Street and Talbot Road (between Cousineau Road and Howard Avenue) Montgomery-Chelsea Drive and Mero Avenue will experience change to community character and cohesion • The displacement of households within the neighbourhoods will result in a change in character within each community • Reddock Street will experience a change in community character and cohesion due to the access road alignment encroaching into the community • The Bethlehem community will experience a change in character and cohesion due to development of Bethlehem Street to accommodate local traffic traveling from Spring Garden to Huron Church Road	• Overall, similar impact to community compared to other alternatives • Communities of Spring Garden, Bethlehem Street, Reddock Street, Kendleton Court, and Talbot Road (between Cousineau Road and Howard Avenue) and Mero Avenue will experience change to community character and cohesion • Below grade alternative has lower aesthetic impacts than the at-grade options • Reddock Street will experience a change in community character and cohesion due to the access road alignment encroaching into the community • Removes traffic from the viewshed of adjacent neighbourhoods	• Overall, similar impact to community compared to other alternatives • Communities of Spring Garden, Bethlehem Street, Reddock Street and Talbot Road (between Cousineau Road and Howard Avenue) and Mero Avenue will experience change to community character and cohesion • Over half of the households on Reddock Street will be displaced • The residential in-fill area of Kendleton Court will be displaced with option 1; no households will be displaced in Kendleton Court with option 2 • Talbot Road community will experience a change in character and cohesion due to the displacement of one entire side of Talbot Road, with either option 1 or option 2	• Overall, similar impact to community compared to other alternatives • Communities of Spring Garden, Bethlehem Street, Reddock Street and Talbot Road (between Cousineau Road and Howard Avenue) and Mero Avenue will experience change to community character and cohesion • All Kendleton Court households will be displaced with alignment option 1; with alignment option 2 only one Kendleton Court household is displaced • Provides for some aesthetic benefits to the community at large and to adjacent neighbourhoods • Removes traffic from the viewshed of adjacent neighbourhoods	• Overall, similar impact to community compared to other alternatives • Impacts to Spring Garden, Talbot Road, Bethlehem Street, Mero Avenue, and Montgomery-Chelsea Drive neighbourhoods • In the Talbot Road community, the displacement of households is limited to the LaSalle side of Talbot Road; resulting in a change in community character and cohesion as approximately one half of the community is displaced • Tunnel alignment to Plaza A will result in a displacement of 32 out of 48 households on Bethlehem Street; which will result in a change in character and cohesion • Lowest aesthetic impact, but visual impact of ventilation buildings, which are not compatible with the surrounding landscape; residents will have the ventilation buildings and stacks as part of their permanent viewshed	• Impacts to Spring Garden, Talbot Road, Bethlehem Street, Reddock Street, Kendleton Court, Trillium Court neighbourhoods • Talbot Road (between Cousineau and Howard) community will experience a change in character and cohesion due to the displacement of all the households on both sides of the street • Trillium Court community will be entirely displaced, resulting in a change to community cohesion and character • In the Kendleton Court community, the displacement of households is limited to one side of the street. • Parkway provides a greenspace buffer to adjacent neighbourhood communities, thus reducing the number of residents adjacent to the roadway. • Parkway provides connectivity between communities and community features that currently does not exist • Greenspace buffer between residents and freeway/service roads will result in fewer residents experiencing long term nuisance effects
Overall Assessment	• Overall, all alternatives are considered to have a high impact to community characteristics. • All alternatives displace a high number of residences and businesses along the corridor and represent a substantive change to the local character and cohesion for the neighbourhoods along the corridor. • The separation of local and international traffic and the additional roadway capacity provided will deter infiltration of international traffic onto local municipal streets, providing a benefit to south/west Windsor and LaSalle. • The effects of loss of businesses along the corridor is offset by the ability of these businesses to locate elsewhere in the local area, improved access for these businesses over what is presently provided, and the benefits of thousands of direct and indirect project related jobs created by the construction of the new access road • The at-grade alternatives and below-grade alternatives 2A and 2B do not provide any improvements to community cohesion and character. The end-to-end tunnel does not provide the same benefits to community character and cohesion as it does not improve linkages across the Huron Church/Highway 3 corridor over the current condition and reduces visibility for local businesses • The Windsor-Essex Parkway has the highest displacement of homes and businesses, but provides a greater improvement to overall community character and cohesion of the corridor by improving linkages between neighbourhoods, buffering neighbourhoods from highway nuisance effects and providing new open space/recreational facilities along the corridor. These improvements result in a better long-term solution for the community. Based on the extent of long term improvements to community character and cohesion in south/west Windsor and LaSalle, the Windsor-Essex Parkway is slightly preferred over the other alternatives as having the least overall impacts to community and neighbourhood characteristics.					
Consistency with Existing & Planned Land Use						
Consistency	• Alternative utilizes Huron Church Road/ Highway 3 Corridor (major roadway, historical connection to border crossing); • Proposed facility is consistent with local Official Plans	• Alternative utilizes Huron Church Road/ Highway 3 Corridor (major roadway, historical connection to border crossing); • Proposed facility is consistent with local Official Plans	• Alternative utilizes Huron Church Road/ Highway 3 Corridor (major roadway, historical connection to border crossing) • Proposed facility is consistent with local Official Plans	• Alternative utilizes Huron Church Road/ Highway 3 Corridor (major roadway, historical connection to border crossing) • Proposed facility is consistent with local Official Plans	• Alternative utilizes Huron Church Road/ Highway 3 Corridor (major roadway, historical connection to border crossing) • Proposed facility is consistent with local Official Plans	• Alternative utilizes Huron Church Road/ Highway 3 Corridor (major roadway, historical connection to border crossing) • Proposed facility is consistent with local Official Plans including the Healthy Communities policies and objectives • Parkway provides opportunities for additional parkland & recreational features

EXHIBIT 8.15 – SUMMARY OF PRACTICAL ALTERNATIVES EVALUATION – ACCESS ROAD (CONT'D)

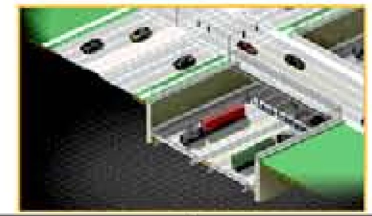
FACTOR/ MEASURE	ALTERNATIVE 1A 		ALTERNATIVE 1B 		ALTERNATIVE 2A 		ALTERNATIVE 2B 		ALTERNATIVE 3 	PARKWAY 
	Option 1 (Widen to North on Hwy 3)	Option 2 (Widen to South on Hwy 3)	Option 1 (Widen to North on Hwy 3)	Option 2 (Widen to South on Hwy 3)	Option 1 (Widen to North on Hwy 3)	Option 2 (Widen to South on Hwy 3)	Option 1 (Widen to North on Hwy 3)	Option 2 (Widen to South on Hwy 3)		
Total area of land use impacts	• 78 ha	• 74 ha	• 75 ha	• 78 ha	• 81 ha	• 78 ha	• 80 ha	• 85 ha	• 65 ha	• 99 ha
Contaminated Sites/Potentially impacted area of high potential for contamination	• 17/9 ha	• 17/3.6 ha	• 18/3.5 ha	• 13/3.6 ha	• 17/4 ha	• 17/4 ha	• 16/3.8 ha	• 16/4 ha	• 16/3 ha	• 20/3 ha
Overall Assessment	• All the alternatives are developed in the same existing transportation corridor in Windsor and LaSalle and Tecumseh. • The nature of existing and planned land uses affected by all alternatives are essentially the same. • The Windsor-Essex Parkway demonstrates a greater consistency with local municipal planning in terms of meeting objectives that improve the quality of life for its residents. The tunnel sections over the below-grade freeway, additional buffer spaces along and across the corridor, opportunities for new recreational trails with connections to existing trails and wildlife linkages contribute to a corridor that better connects communities and natural features. • The Windsor-Essex Parkway alternative is preferred over the other alternatives.									
Protection of Cultural Resources										
Built Heritage Features Displaced	• 7 to 8 field identified built heritage features displaced		• 7 to 8 field identified built heritage features displaced		• 5 field identified built heritage features displaced		• 5 field identified built heritage features displaced		• 6 to 8 field identified built heritage features displaced	• 7 to 8 field identified built heritage features displaced
Disrupted	• 1 to 3 field identified built heritage features disrupted		• 1 to 3 field identified built heritage features disrupted	• 3 to 4 field identified built heritage features disrupted	• 6 field identified built heritage features disrupted		• 6 field identified built heritage features disrupted		• 3 to 5 field identified built heritage features disrupted	• 3 to 4 field identified built heritage features disrupted
Parks	• 1 Impacted – Property taking • 5 impacted – potential disruption to access	• 6 Impacted – Potential disruption to access	• 1 Impacted – Property taking • 5 impacted – potential disruption to access	• 6 Impacted – Potential disruption to access	• 1 Impacted – Property taking • 5 impacted – potential disruption to access	• 6 Impacted – Potential disruption to access	• 1 Impacted – Property taking • 5 impacted – potential disruption to access	• 6 Impacted – Potential disruption to access	• 1 Impacted – Property taking • 5 impacted – potential disruption to access	• 1 impacted-Property taking • 5 impacted – potential disruption to access • adds 240 acres of additional parkland and greenspace, and over 20 km of new recreational trails with the Windsor-Essex Parkway design
Archaeology Disturbance or destruction of known significant archaeological sites	• 1 to 2 small pre-contact habitation sites • 9 pre-contact findspots	• 1 to 2 small pre-contact habitation sties • 9 pre-contact findspots e.g. no known sites of high to moderate significance impacted	• 1 to 2 small pre-contact habitation sites • 9 pre-contact findspots	• 1 to 2 small pre-contact habitation sites • 9 pre-contact findspots	• 2 to 3 small pre-contact habitation sites • 10 to11 pre-contact findspots	• 2 to 3 small pre-contact habitation sites • 10 pre-contact findspots	• 2 to 3 small pre-contact habitation sites • 10 to 11 pre-contact findspots	• 2 to 3 small pre-contact habitation sites • 9 to 10 pre-contact findspots	• 1 to 3 small pre-contact habitation sites • 8 pre-contact findspots	• 3 to 4 small pre-contact habitation sites • 15 to 17 pre-contact findspots
Overall Assessment	• In terms of reducing impacts to built heritage features and cultural landscapes, Alternatives 2A and 2B with the alignment connecting to Plaza A have the lowest impacts. Alternatives 1A and 1B have the highest impacts, regardless of the connecting plaza alignment considered. • All the access road alternatives impact a similar number of existing municipal parks; only the Windsor-Essex Parkway provides over 100 ha (240 acres) of new open space suitable for active/passive recreational faculties and over 20 kilometres of additional recreational trails, with connections to the existing trail systems. • Given that no access road alternatives have sites with human remains or large pre-contact Aboriginal (village) sites (based on the evidence to date), all access road alternatives are assessed to have low to medium archaeological impact to known archaeological sites. • Overall, the Windsor-Essex Parkway was considered to be the preferred access road alternative on the basis of greater benefits to cultural resources by way of increasing the amount of park space and trails available to local residents, with similar low impacts to built heritage and archaeological features, compared to the other alternatives.									

EXHIBIT 8.15 – SUMMARY OF PRACTICAL ALTERNATIVES EVALUATION – ACCESS ROAD (CONT'D)

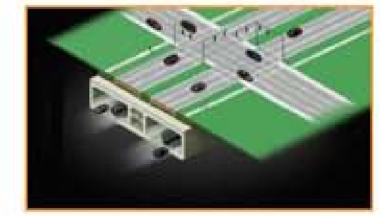
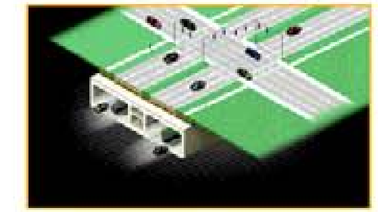
FACTOR/ MEASURE	ALTERNATIVE 1A		ALTERNATIVE 1B		ALTERNATIVE 2A		ALTERNATIVE 2B		ALTERNATIVE 3	PARKWAY
										
	Option 1 (Widen to North on Hwy 3)	Option 2 (Widen to South on Hwy 3)	Option 1 (Widen to North on Hwy 3)	Option 2 (Widen to South on Hwy 3)	Option 1 (Widen to North on Hwy 3)	Option 2 (Widen to South on Hwy 3)	Option 1 (Widen to North on Hwy 3)	Option 2 (Widen to South on Hwy 3)		
Protection of Natural Environment										
Fish and Fish Habitat	• No critical fish habitat impacted by any access road alternatives									
Plant/Vegetation Species	• 0.44 ha to 1.43 ha of provincially rare vegetation impacted	• 0.50 ha to 1.53 ha of provincially rare vegetation impacted	• 0.43 ha to 1.46 ha of provincially rare vegetation impacted	• 0.54 ha to 1.46 ha of provincially rare vegetation impacted	• 1.19 ha to 2.22 ha of provincially rare vegetation impacted	• 1.18 ha to 2.22 ha of provincially rare vegetation impacted	• 0.82 ha to 1.86 ha of provincially rare vegetation impacted	• 0.82 ha to 1.86 ha of provincially rare vegetation impacted	• 0.50 ha to 1.48 ha of provincially rare vegetation impacted	• 1.47 ha to 2.54 ha of provincially rare vegetation impacted
Wildlife Species and Habitat	• 102 to 142 specimens/colonies of species at risk	• 92 to 134 specimens/colonies of species at risk	• 112 to 152 specimens/colonies of species at risk	• 103 to 152 specimens/colonies of species at risk	• 122 to 162 specimens/colonies of species at risk	• 116 to 155 specimens/colonies of species at risk	• 105 to 145 specimens/colonies of species at risk		• 92 to 131 specimens/colonies of species at risk	• 141 to 180 specimens/colonies of species at risk • wider right of way/buffer areas provides greater opportunities for restoration and enhancement of natural features along the corridor
Overall Assessment	• Overall, all the access road alternatives are considered as having similar impacts to natural features. While no one access road alternative was identified as being preferred over all others, the alternatives that avoid the Malden Road/Spring Garden area (i.e. those with the access road alignment connecting to plazas B/C) are slightly preferred.									
Improvements to Regional Mobility										
Highway Capacity	• Six lane freeway with controlled access and service roads provides sufficient capacity to meet future (2035) travel demand; Peak Hour LOS (2035) = C									
Continuous Capacity	• All alternatives provide comparable access between the service roads and the cross streets with slight differences: • Safety of controlled access freeway for access road is greatly increased compared to present arterial roadway with signalized intersections and other entrances/conflict points • Provides increased local and regional mobility over the "do nothing" alternative • Provides substantial travel time savings for local traffic when compared to the "do nothing" alternative		• Safety of controlled access freeway for access road is greatly increased compared to present arterial roadway with signalized intersections and other entrances/conflict points • Provides increased local and regional mobility over the "do nothing" alternative • Provides substantial travel time savings for local traffic when compared to the "do nothing" alternative		• Safety of controlled access freeway for access road is greatly increased compared to present arterial roadway with signalized intersections and other entrances/conflict points • Provides increased local and regional mobility over the "do nothing" alternative • Provides substantial travel time savings for local traffic when compared to the "do nothing" alternative		• Safety of controlled access freeway for access road is greatly increased compared to present arterial roadway with signalized intersections and other entrances/conflict points • Provides increased local and regional mobility over the "do nothing" alternative • Provides substantial travel time savings for local traffic when compared to the "do nothing" alternative		• Safety of controlled access freeway for access road is greatly increased compared to present arterial roadway with signalized intersections, other entrances/conflict points • Provides increased local and regional mobility over the "do nothing" alternative • Provides substantial travel time savings for local traffic when compared to the "do nothing" alternative • The positive effects of tunnels on safety include elimination of adverse weather conditions and increased driver attention and/or slower speeds due to the confined driving space • Elements of tunnel driving that negatively affect safety may include limited visibility due to tunnel walls and light changes at the portals; it is much more difficult to control events in a tunnel crash; motorists' escape is not simple, and it is harder for emergency response teams to reach the crash site • The consequences of a crash in a tunnel are greatly increased over those on an open road, however, the frequency of catastrophic events is low, and the occurrence of general traffic crashes (on a tunneled freeway) is marginally less than on an open road	• Safety of controlled access freeway for access road is greatly increased compared to present arterial roadway with signalized intersections and other entrances/conflict points • Provides increased local and regional mobility over the "do nothing" alternative • Provides substantial travel time savings for local traffic when compared to the "do nothing" alternative • Provides more favourable traffic operations on the service road than the other alternatives • Provides higher degree of mobility between the service road and the new freeway when compared to the other alternatives.

EXHIBIT 8.15 – SUMMARY OF PRACTICAL ALTERNATIVES EVALUATION – ACCESS ROAD (CONT'D)

FACTOR/ MEASURE	ALTERNATIVE 1A 		ALTERNATIVE 1B 		ALTERNATIVE 2A 		ALTERNATIVE 2B 		ALTERNATIVE 3 	PARKWAY 
	Option 1 (Widen to North on Hwy 3)	Option 2 (Widen to South on Hwy 3)	Option 1 (Widen to North on Hwy 3)	Option 2 (Widen to South on Hwy 3)	Option 1 (Widen to North on Hwy 3)	Option 2 (Widen to South on Hwy 3)	Option 1 (Widen to North on Hwy 3)	Option 2 (Widen to South on Hwy 3)		
Reasonable and Secure Options	• All access road alternatives provide freeway connection to a river crossing as well as connections to Huron Church Road at E.C. Row enabling choice between new and existing crossings									
Overall Assessment	• All alternative provide a significant improvement to regional mobility by getting long distance truck traffic off local streets and providing full freeway access to/from the border. The local and regional function of the existing Highway 3/Huron Church Road corridor is improved by providing parallel service roads which can be designed to meet the needs of the community. • The Windsor-Essex Parkway provides better access between the local street system and the freeway, providing greater benefits to regional mobility than the other alternatives. This advantage led to the determination that the Windsor-Essex Parkway is preferred over the other access road alternatives.									
Cost and Constructability										
Estimated Construction Cost ($CAD 2011 dollars), North Talbot Road to Malden Road	• $750 M to $920 M		• $1.19 B to $1.36 B		• $620 M to $790 M		• $1.03 B to $1.20 B		• $3.6 B to $3.78 B	• $1.5 B to $1.6 B
Key Constructability Issues	• Traffic management during construction • Availability of resources and materials • Utility relocations • Watercourse crossings • 0.3 km zone requiring soil stabilization techniques		• Traffic management during construction • Availability of resources and materials • Utility relocations • Watercourse crossings • Soil stabilization techniques required over 2.5 km		• Traffic management during construction • Availability of resources and materials • Utility relocations • Watercourse crossings • 0.3 km zone requiring soil stabilization techniques		• Traffic management during construction • Availability of resources and materials • Utility relocations • Watercourse crossings • Soil stabilization techniques required over 2.5 km		• Traffic management during construction • Availability of resources and materials • Utility relocations • Watercourse crossings • Soil stabilization required over 2.5 km • Testing, commissioning and maintenance of tunnel support systems (ventilation, lighting communications, etc.)	• Traffic management during construction • Availability of resources and materials • Utility relocations • Watercourse crossings • Soil stabilization required to over 2.5 km • Additional annual maintenance will be required for the Cahill and Lennon Drains
Overall Assessment	• The at-grade alternatives have the lowest construction costs and the least constructability risks, while the end-to-end tunnel alternative carries the highest costs and greatest constructability risks. The below-grade alternatives, including the Windsor-Essex Parkway, carry estimated costs much less than the tunnel alternative, with lower cost and constructability risks. • Alternative 2A, which is an at-grade alternative with a parallel two-lane service road is the preferred alternative based on cost and constructability. This alternative requires the least cost and least constructability risks. The new freeway could be built alongside much of the Huron Church/Highway 3 corridor without interfering with traffic. This alternative also avoids below-grade construction at Grand Marais Drain, which is an area of high risk construction.									
Evaluation Summary	• The Windsor-Essex Parkway was identified as preferred or slightly preferred over the other access road alternatives in four of the seven key factor areas considered. In two of the seven factor areas, no clear preference was identified; in the area of Cost and Constructability, the at-grade alternative 2A was identified as the preferred alternative. The Windsor-Essex Parkway was the second-most expensive alternative and is identified as having greater cost and constructability risks than the other alternatives expect for the tunnel alternative. • Overall, the Windsor-Essex Parkway was considered to provide a better balance of impacts and benefits than the at-grade alternative 2A. The advantages of the Windsor-Essex Parkway in terms of providing greater protection to community and neighbourhood characteristics, a greater consistency with existing and planned land use, greater protection of cultural features and greater improvements to regional mobility than alternative 2A. • Although alternative 2A has more cost and constructability advantages, it offers much less community, land use, cultural and mobility advantages than the Windsor-Essex Parkway. The study team therefore identified the Windsor-Essex Parkway as the preferred access road alternative.									

The results of the access road alternatives evaluation are summarized in Table 8.11:

TABLE 8.11 – SUMMARY OF EVALUATION OF PRACTICAL ACCESS ROAD ALTERNATIVES

Factor	Preferred Alternative
Changes to Air Quality	No Clear Preference
Protect Community and Neighbourhood Characteristics	Windsor-Essex Parkway
Maintain Consistency with Existing and Planned Land Use	Windsor-Essex Parkway
Protect Cultural Resources	Windsor-Essex Parkway
Protect the Natural Environment	No Clear Preference
Improve Regional Mobility	Windsor-Essex Parkway
Cost and Constructability	Alternative 2A

The Windsor-Essex Parkway was identified as preferred over the other access road alternatives in four of the seven key factor areas considered. In two of the seven factor areas, no clear preference was identified. In the area of Cost and Constructability, the at-grade Alternative 2A was identified as the preferred alternative. For Changes to Air Quality the no clear preference was due to the limited range of impacts (typically within the first 50 m), the contribution from other sources including transboundary, and the overall loading for all scenarios is essentially equivalent. The Windsor-Essex Parkway alternative was the second-most expensive alternative and is identified as having greater cost and constructability risks than the other alternatives except for the tunnel alternative.

Overall, The Windsor-Essex Parkway was considered to provide a better balance of impacts and benefits than the at-grade Alternative 2A. The advantages of The Windsor-Essex Parkway provides greater protection to community and neighbourhood characteristics, more compatibility with existing and planned land use, greater protection of cultural features and greater improvements to regional mobility than Alternative 2A.

Although Alternative 2A has more cost and constructability advantages, it offers much less community, land use cultural and mobility advantages than The Windsor-Essex Parkway. The study team therefore identified The Windsor-Essex Parkway as the preferred practical access road alternative.

ARITHMETIC METHOD

The evaluation of practical access road alternatives was also conducted using an arithmetic method based on numerical weighting and scoring of impacts. The arithmetic evaluation of the practical access road alternatives was conducted in the same manner as the arithmetic evaluation of the practical plaza and crossing alternatives (refer to Section 8.1) and also utilized the weighting scenarios developed based on public input and input from the Community Consultation Group (CCG). The results of the arithmetic evaluation of practical access road alternatives is provided in Table 8.12.

TABLE 8.12 – ARITHMETIC EVALUATION OF PRACTICAL ACCESS ROAD ALTERNATIVES

Factor	Weight Study Team	1A Score	1A Weighted Score	1B Score	1B Weighted Score	2A Score	2A Weighted Score	2B Score	2B Weighted Score	3 Score	3 Weighted Score	Parkway Score	Parkway Weighted Score
Air	12.39	3	37.17	3	37.17	3	37.17	3	37.17	3	37.17	3	37.17
Community	15.93	1	15.93	1	15.93	1	15.93	1	15.93	1	15.93	1	15.93
Land Use	12.39	2	24.78	2	24.78	2	24.78	2	24.78	2	24.78	2	24.78
Cultural	12.39	3	37.17	3	37.17	3	37.17	3	37.17	3	37.17	3	37.17
Natural	15.93	3	47.79	3	47.79	3	47.79	3	47.79	3	47.79	3	47.79
Mobility	17.70	6	106.20	6	106.20	6	106.20	6	106.20	6	106.20	7	123.90
Cost/Constructibilty	13.27	3	39.81	2	26.54	3	39.81	2	26.54	1	13.27	2	26.54
Total	100.00	21	308.85	20	295.58	21	308.85	20	295.58	19	282.31	21	313.28
Rank	Unweighted	1		4		1		4		6		1	
	Weighted		2		4		2		4		6		1

Factor	Weight Public	1A Score	1A Weighted Score	1B Score	1B Weighted Score	2A Score	2A Weighted Score	2B Score	2B Weighted Score	3 Score	3 Weighted Score	Parkway Score	Parkway Weighted Score
Air	17.32	3	51.96	3	51.96	3	51.96	3	51.96	3	51.96	3	51.96
Community	15.49	1	15.49	1	15.49	1	15.49	1	15.49	1	15.49	1	15.49
Land Use	12.89	2	25.78	2	25.78	2	25.78	2	25.78	2	25.78	2	25.78
Cultural	13.14	3	39.42	3	39.42	3	39.42	3	39.42	3	39.42	3	39.42
Natural	16.34	3	49.02	3	49.02	3	49.02	3	49.02	3	49.02	3	49.02
Mobility	15.28	6	91.68	6	91.68	6	91.68	6	91.68	6	91.68	7	106.96
Cost/Constructibilty	9.54	3	28.62	2	19.08	3	28.62	2	19.08	1	9.54	2	19.08
Total	100.00	21	301.97	20	292.43	21	301.97	20	292.43	19	282.89	21	307.71
Rank	Unweighted	1		4		1		4		6		1	
	Weighted		2		4		2		4		6		1

Factor	Weight Community Consultation Group	1A Score	1A Weighted Score	1B Score	1B Weighted Score	2A Score	2A Weighted Score	2B Score	2B Weighted Score	3 Score	3 Weighted Score	Parkway Score	Parkway Weighted Score
Air	17.30	3	51.9	3	51.9	3	51.90	3	51.90	3	51.90	3	51.90
Community	13.88	1	13.88	1	13.88	1	13.88	1	13.88	1	13.88	1	13.88
Land Use	13.69	2	27.38	2	27.38	2	27.38	2	27.38	2	27.38	2	27.38
Cultural	13.12	3	39.36	3	39.36	3	39.36	3	39.36	3	39.36	3	39.36
Natural	17.11	3	51.33	3	51.33	3	51.33	3	51.33	3	51.33	3	51.33
Mobility	14.83	6	88.98	6	88.98	6	88.98	6	88.98	6	88.98	7	103.81
Cost/Constructibilty	10.07	3	30.21	2	20.14	3	30.21	2	20.14	1	10.07	2	20.14
Total	100.00	21	303.04	20	292.97	21	303.04	20	292.97	19	282.90	21	307.80
Rank	Unweighted	1		4		1		4		6		1	
	Weighted		2		4		3		4		6		1

Unweighted Scores

The unweighted scores represent the total of the impact scores determined by the study team based on the degree of impacts or benefits of each alternative. As can be seen in Table 8.12, the two at-grade alternatives (1A and 2A) and The Windsor-Essex Parkway were ranked highest overall. This reflects similarities in the balance of benefits and costs – the at-grade alternatives were found to be the lowest cost alternatives with the least constructability issues. The Windsor-Essex Parkway provides more benefits to regional mobility at higher costs than the at-grade solutions.

The rankings of the other alternatives reflect the higher impacts, lower benefits and/or increased costs compared to the higher ranked alternatives.

Weighted Scores

The weighted scores reflect the level of importance as well as the degree of impacts and benefits of each alternative. The results indicate that:

- The results of the weighted scoring were the same in terms of how each alternative was ranked among the three weighting scenarios considered
- The study team, public and CCG weighting scenarios identified The Windsor-Essex Parkway as the highest ranking alternative; consistent with the unweighted scores, this result reflects the

balance of high transportation benefits, comparable community and natural features impacts and comparable cost and constructability impacts

- The cut and cover tunnel alternative was the lowest ranked by all three weighting scenarios. This result reflects the relatively few benefits of a tunnel alternative in comparison to the other alternatives, at a much higher cost with greater constructability impacts.

The study team considered the results of the arithmetic method as a validation of the recommendations developed through the reasoned argument method presented in Exhibit 8.15. As such, The Windsor-Essex Parkway was selected as the technically preferred access road alternative for this study.

The Technically and Environmentally Preferred Alternative (TEPA) for this study therefore consists of The Windsor-Essex Parkway, connecting to Plaza B1, together with Crossing X-10B. Further details with regard to the TEPA are provided in Chapter 9.

9 DESCRIPTION OF THE RECOMMENDED PLAN

The selection of the Technically and Environmentally Preferred Alternative (TEPA) was made following a complete analysis and evaluation of practical alternatives for the crossing, plaza and access road. As discussed in Chapter 8, the TEPA for this study consists of The Windsor-Essex Parkway connecting to Plaza B1 together with Crossing X-10B.

Subsequent to the selection and presentation of The Windsor-Essex Parkway, Plaza B1 and Crossing X-10B as the components of the TEPA, several refinements were developed based on further technical analysis and stakeholder consultation, with the objectives of further enhancing the benefits or mitigating the effects of the TEPA. The refinements that were made are as follows:

- Core Collector – The Windsor-Essex Parkway alignment has been shifted to integrate The Windsor-Essex Parkway into the E.C. Row Expressway corridor, further away from the Spring Garden area.
- Howard Avenue Diversion – The southern portion of Howard Avenue has been diverted to The Windsor-Essex Parkway interchange.
- Highway 3 Roundabout – A roundabout is included in The Windsor-Essex Parkway/Howard Avenue Diversion/Highway 3 interchange.
- Cousineau and Hearthwood Tunnels – The location and length of tunnels at Cousineau Road and Hearthwood Place has been revised.
- Huron Church Line Intersection Relocation – A cul-de-sac design for local residential access and relocation of the proposed Huron Church Line intersection has been incorporated. Expanded buffer zones have been provided.
- Expanded Windsor-Essex Parkway Buffer Zones – Expanded buffer zones have been provided at various locations along The Windsor-Essex Parkway corridor.

Each of these refinements provides a benefit or assists to mitigate the effects of the TEPA. Additional details of the benefits and mitigation provided by these refinements is provided in the Technical Memoranda prepared for the various technical disciplines (see list below).

The combination of the TEPA and associated refinements along with the proposed mitigation measures are referred to collectively as the Recommended Plan. The impacts on environmental features resulting from the Recommended Plan as well as proposed measures for mitigation are described in Chapter 10. This chapter provides a description of the recommended crossing, international plaza, approach freeway and service road network. The concept design described in this chapter is presented in the concept design plates included in Appendix A.

The Recommended Plan has been developed to a concept design level, with sufficient detail as 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.

For further details of the information presented in this chapter, the reader is referred to the following reports:

- *Bridge Conceptual Engineering Report (February 2008);*
- *Draft Practical Alternatives Evaluation – Constructability Report for Access Road Alternatives (May 2008);*
- *Draft Practical Alternatives Evaluation – Constructability Report for Plaza and Crossing Alternatives (December 2008);*
- *Draft Practical Alternatives Evaluation Assessment Report – Stormwater Management Plan (March 2008);*
- *Level 3 Traffic Operations Analysis of the Technically and Environmentally Preferred Alternative (December 2008;) and,*
- *Draft Pavement Engineering for Planning Report – Area of Continued Analysis (March 2008);*

9.1 Concept Design Features – Detroit River Crossing

The new river crossing will be constructed to link new inspection plazas on the Canadian and U.S. sides of the Detroit River, and will be a key component of the new end-to-end transportation system that will link existing Highway 401 to the U.S. Interstate system. The crossing will be constructed on the X10-B alignment and will consist of both a main bridge that will span the entire width of the Detroit River, and approaches to the main bridge constructed on piers that will connect to plazas in both Canada and the U.S. For the purposes of the environmental studies in both Canada and the U.S., both a suspension bridge and a cable-stayed bridge are being carried forward to subsequent stages for analysis, evaluation and selection of the preferred bridge type. The final bridge type will be recommended at the completion of subsequent stages of the project. Exhibit 9.1 illustrates the location of the proposed crossing.

EXHIBIT 9.1 – PROPOSED CROSSING LOCATION

9.1.1 Geometrics

GENERAL

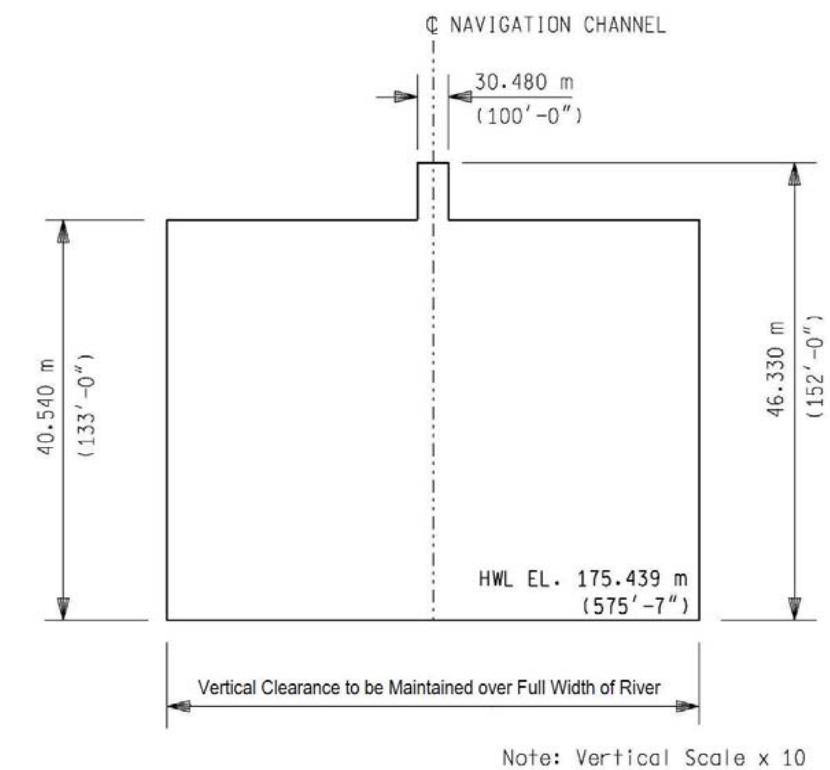
The Detroit River is a major commercial shipping lane and important waterway for marine traffic on the Great Lakes. As such, a navigation clearance box (envelope) of adequate size will be provided so as not to restrict marine traffic along the channel. The navigation envelope shown in **Exhibit 9.2** will be provided by the new crossing, and has been developed based on consultations with the U.S. Coast Guard and Transport Canada, as well as shipping industry representatives. This navigation envelope is intended to provide, at a minimum, the same navigation clearance as that provided by the Ambassador Bridge.

The proposed crossing will avoid the placement of piers in the Detroit River for both the suspension bridge and cable-stayed bridge options. The decision to avoid piers in the river was made based on consultation with U.S. and Canadian government agencies and shipping operators, as piers in this section of the Detroit River were considered to be too hazardous to marine navigation.

The main towers (for the suspension bridge option) or pylons (for the cable-stayed option) will be located near the edge of the river bank. On the Windsor side of the Detroit River, these will be located on land within the Southwestern Sales property. Piers will be spaced between 45 to 60 m apart along the approach structure between the main span bridge and Canadian inspection plaza, and will be extended until the vertical alignment is within approximately 4 m of the existing ground. The "touch-down" point of the approach will be located directly north of the Canadian plaza.

The proposed main crossing will have a main span length of between 840 m and 855 m, depending on the final bridge type selection. The main span bridge crosses the Detroit River at a skew angle of approximately 69 degrees to the centerline of the navigation channel. On the Canadian side of the river, the crossing is aligned over an existing aggregate operation (Southwestern Sales) and vacant land owned by Ontario Power Generation. The main structure is situated just south of Prospect Avenue, south of the area of known brine wells. The recommended crossing and approach structure avoid the known brine wells area, and avoid major industries such as Brighton Beach Power Station, West Windsor Power Plant and Windsor Salt.

EXHIBIT 9.2– DETROIT RIVER NAVIGATION ENVELOPE



DESIGN CRITERIA

Geometric elements of the approach to the main bridge and of the main span bridge itself have been designed to meet the standards set forth in the *Geometric Design Standards for Ontario Highways (GDSOH)*. The details of these geometric design elements are provided in the following paragraphs. Both the approach from the plaza and the main bridge itself will have a posted speed of 60 km/hr and a design speed of 80 km/hr.

The main river crossing structure is subject to the design codes of both the U.S. and Canada and the bridge will be designed using the International System of Units (SI units). The design shall meet the requirements of the *AASHTO LRFD Bridge Design Specifications, SI Units, 4th Edition*, and the *Canadian Highway Bridge Design Code, CAN/CSA S6-06 (S6)*. In general the more restrictive code shall govern.

A design life of 75 years will be used for statistical assessment of appropriate loads, in accordance with *AASHTO LRFD Bridge Design Specifications Article 1.2 – Definitions*. The service life of the bridge for assessing serviceability of all components will be 120 years. For specific components where it is not practicable to achieve a 120-year life, these components will be designed with the ability to be replaced. Examples of such components include, but are not limited to, stay cables, bearings, expansion joints, deck wearing surface, navigation lighting, and roadway lighting.

CROSS-SECTION

Both the main span bridge and the approach from the plaza to the main bridge will consist of six-lanes, with three lanes in either direction. All six lanes will be 3.75 m in width. Fully paved shoulders 3.0 m wide will be provided on the right side of the travelled lanes in either direction, along with a 1.0 m flush median. The outside shoulder width provides the flexibility to accommodate cyclists, subject to the policies of the border agencies. Concrete barriers will be provided to the outside of the shoulders, and a 1.6 m wide barrier protected sidewalk will be provided on one side of the crossing.

Additional details of the main span bridge and approach cross-sections are provided in **Exhibits** 9.3 and 9.4. It should be noted that the structural depth shown in **Exhibit** 9.3 and the girder sizing and spacing shown in **Exhibit** 9.4 are conceptual only, and are subject to change during subsequent stages of design.

EXHIBIT 9.3– TYPICAL CROSS-SECTION – MAIN SPAN BRIDGE

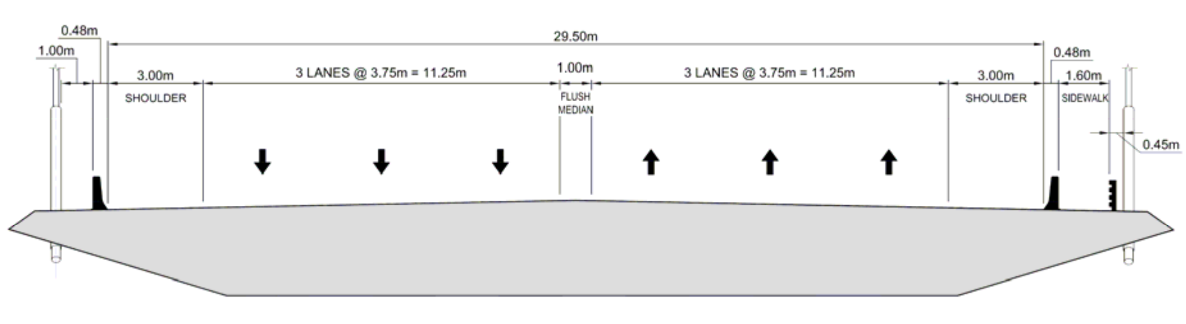
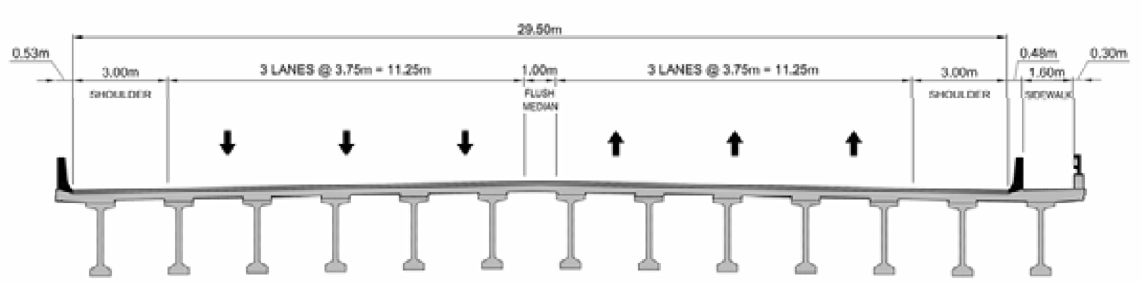


EXHIBIT 9.4– TYPICAL CROSS-SECTION – APPROACH BRIDGE



HORIZONTAL ALIGNMENT

The entire length of the main span bridge will be constructed on a tangent alignment for either the suspension bridge or cable-stayed bridge option. A horizontal curve has been provided between the tangent portion of the main span bridge and the Canadian Plaza. This horizontal curve has a radius of 400 m, which exceeds the minimum radius of 250 m that is required for an 80 km/hr design speed.

The approach to the bridge will cross over McKee Road, which provides private access to local industrial operations. Should the final location of the approach piers interfere with access to McKee Road, a realignment of McKee Road will be provided. A realignment of Sandwich Street will be provided where the approach to the main span bridge connects to the proposed plaza.

VERTICAL ALIGNMENT

The vertical alignment of the main span bridge will exceed the clearance requirements identified in the navigation envelope shown in **Exhibit** 9.2, with a clearance of at least 46 m at the shipping channel defined by Transport Canada – Navigable Waters Division and the U.S. Coast Guard. The maximum grade of the crossing will be five per cent. The vertical sag and crest curves will meet or exceed the minimum requirements set forth in the GDSOH for an 80 km/hr design speed. Minimum clearance requirements will be met or exceeded at McKee Road and the realignment of Sandwich Street.

9.1.2 Design Features

The main span bridge will be either a suspension bridge or a cable-stayed bridge. The final bridge type will be selected during subsequent stages of the project. The primary design features of the two bridge alternatives are described below. Additional details of the two bridge alternatives are provided in the *Bridge Conceptual Engineering Report, February 2008*. The height of both the suspension bridge towers and cable-stayed bridge pylons are a function of the length of the main span, and as such there is little flexibility in this overall height. Schematic illustrations of the two bridge alternatives are included in **Exhibit** 9.5.

SUSPENSION BRIDGE

The suspension bridge alternative consists of an 855 m suspended main span across the Detroit River, with unsuspended backstay spans of approximately 250 m at either end. The main span would be supported at either end by a reinforced concrete tower extending approximately 140 m above their footings. The tower height is a function of the main span bridge length and has been established based on an historically efficient cable span-to-sag ratio of 10:1. Each tower would consist of two tower legs that would rest atop solid pedestals, which in turn would be fixed to a pile-supported footing. The tower legs would have dimensions of approximately 28 m by 18 m at their base, and would be supported by 3.0 m diameter drilled shafts.

The bridge deck would be a steel orthotropic box girder structure approximately 35 m wide and that is continuous from tower to tower. Between the two main towers, the deck would be supported at appropriate intervals by wire rope suspenders connected to the main cables. The main cables would be comprised of galvanized steel wires, while the suspender ropes would be fabricated of galvanized, high-strength wire rope. The suspender ropes would be designed such that they could be removed at isolated locations for inspection, maintenance or replacement without closing the bridge to traffic. Once the full weight of the bridge is hanging from the suspender ropes, both the main cable wires and the suspender ropes would be coated for corrosion protection and waterproofing.

The main cables would be supported at either end of the towers by gravity anchorages. These anchorages would use a combination of self weight, passive soil resistance and direct load transfer to bedrock to resist the pull of the suspension cables. The anchorages at either end of the bridge represent a significant portion of the cost of the suspension bridge alternative, and would have dimensions of approximately 65 m by 56 m. The anchorage on the Windsor side of the river would be constructed on land owned by Ontario Power Generation (OPG).

CABLE-STAYED BRIDGE

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 their footings. The height of the concrete pylons above the bridge deck is a function of the main span bridge length, and has been established as 20 to 25 per cent of the main span length which correlates to a historically efficient stay angle. Two alternative pylon shapes have been investigated. A-frame and inverted Y shaped pylons were chosen based on structural capacity and wind resistance forces. These options would be reviewed further should the cable-stayed alternative be selected as the preferred bridge option. Each pylon would include two pylon legs that would rest atop a drilled shaft supported footing. The pylon legs would be spaced approximately 60 m apart at their base and have dimensions of approximately 21 m by 21 m. The legs would then be supported by 2.5 m diameter drilled shafts, which would extend down into bedrock. The stay cables would be designed such that they can be removed at isolated locations for inspection, maintenance or replacement without closing the bridge to traffic.

The main span bridge deck would be approximately 35 m wide and could accommodate both steel and concrete construction. Between the two main pylons, the deck would be supported at 15 m intervals by prestressed stay cables. The side spans of the bridge would be supported by three piers spaced at 80 m intervals, along with a larger main anchor pier. The bridge deck would be developed as a hybrid design with a concrete box girder for the side spans and a portion of the main span near the towers, and with a steel orthotropic box girder for the centre portion of the main span. It is recommended that the side span bridge deck be constructed of concrete to increase the mass of the deck and minimize uplift in the anchor piers.

EXHIBIT 9.5 – CONCEPTUAL ILLUSTRATIONS OF ALTERNATIVE BRIDGE TYPES

CABLE-STAYED BRIDGE

SUSPENSION BRIDGE

9.1.3 Right-of-Way Requirements

The crossing will have a standard width right-of-way of 80 m between the Canadian Plaza and the Detroit River. This will accommodate either bridge structure type.

9.1.4 Illumination

Full illumination will be provided along the entire length of the crossing, along both the approach from the plaza to the main span bridge, and on the main span bridge itself. It is recognized that lighting and illumination of the bridge structure and bridge facility may pose a hazard to nocturnal bird species, with the degree of hazard also being a function of the bridge type (cable-stayed or suspension). Additional details of illumination along the crossing will be considered during future design stages. Design considerations will include showcase lighting to highlight the architectural amenities of the bridge, safety considerations, and mitigation affects on bird migration.

9.1.5 Stormwater Management

Stormwater management for runoff treatments for the crossing structure will be investigated during future design stages. Alternative methods for providing quantity and quality treatment will be examined, all in accordance with the latest applicable MOE design standards and guidelines.

Deck drains are not recommended for drainage of the bridge deck, as direct discharge to the Detroit River without out providing quality control would occur. Possible alternatives may utilize pipe systems integrated within the crossing to convey stormwater off of the structure. If determined to be feasible, the runoff could be conveyed to a treatment facility (wetpond or grassed swales) where quality, quantity and erosion treatments could be provided. The feasiblilty, sizing and location of the treatment facility will be confirmed during future design stages.

Additional information pertaining to proposed drainage impacts as well as potential mitigation measures are presented in Section 10.4.9.

9.1.6 Construction Methods and Staging

The approach from the plaza to the main span bridge and the main span bridge itself can be constructed using typical construction methods. Construction of the approach and main bridge will be completed in such a manner so as to minimize disruption to the surrounding community and to maintain local access to residences and businesses.

A general concept for construction of the main span bridge has been developed for both the suspension bridge and cable-stayed bridge alternatives. Additional details of construction methods to be employed for construction of the main span bridge are included in the *Bridge Conceptual Engineering Report* .

It should be noted that construction methods and staging are the responsibility of the selected contractor, subject to the provisions and specifications of the contract. The implementing authorities will develop these contract documents to be in accordance with this Environmental Assessment.

The following planning level assessment and specifications of methods and staging has been developed to confirm basic feasibility.

UTILITY RELOCATION

The relocation of existing utilities and other municipal services will be required. This utility relocation stage is often completed prior to the primary construction stages. Relocations and approvals will generally take place in the early stages of construction to minimize risk to construction schedules. Numerous utilities are located within the crossing alignment and will require relocation, including hydro, Bell, Union Gas, Cogeco, steam pipes, and municipal watermains and sanitary sewers. The approach to the main bridge will impact the overhead hydro connection between the Hydro One Keith Transformer Station and the adjacent hydro tower lines, and the connection will need to be buried beneath the approach structure. In addition, the bridge approach traverses the eastern portion of Hydro One's Keith Transformer Station site. The bridge approach has been situated to avoid the need for physical relocation of the existing transformers. Additional details regarding impacts and potential mitigation strategies relating to the Hydro One Keith Transformer Station are discussed in Chapter 10.

SUSPENSION BRIDGE CONSTRUCTION

For the suspension bridge alternative, it is anticipated that construction would be completed in five major stages, as generally described below.

Tower and Anchorage Foundations

Following mobilization, work would begin on the tower and anchorage foundations. The tower foundations consist primarily of drilled shafts and a footing, and construction methods would involve conventional techniques for drilled shafts and footings of this size. The anchorage foundations have been designed similar to those of the Ambassador Bridge. Further design phases of the project will involve additional subsurface testing to determine soil properties and select the most cost effective foundation type.

Tower and Anchorage Construction

The second primary stage of construction involves construction of both the towers and the anchorages. Reinforcement for the towers can be prefabricated off-site as much as practicable and placed by crane. Concrete can be placed by pump truck for the initial stages of tower construction, though with increasing height during later stages the concrete can be delivered by tower crane. Temporary supports may be required to mitigate problematic wind conditions as the tower legs extend higher. Anchorage construction consists of mass concrete pours, wall construction and slab construction, all of which can be accomplished with conventional construction techniques for the respective methods.

Main Cable and Suspender Installation

When the towers are complete and the anchorage construction is advanced far enough to receive suspension system components, construction of the suspension system can begin. To provide access for cable spinning operations, a catwalk can be erected from anchorage to anchorage that follows the free cable profile. The catwalk system is comprised of several support and hand strands, open mesh flooring and sides, frames at regular intervals, and several cross bridges between cables. A storm system is provided to stabilize the catwalk in high winds and provide for profile adjustment as necessary.

Bridge Deck Fabrication

The bridge deck can be fabricated at an off-site location in a number of smaller segments. The size of the segments would be limited by transport methods and equipment available to hoist the segments into place. Once fabricated, the segments could be trial-assembled on the ground, either on-site or at a nearby yard. As discussed, the contractor will be responsible to assure the use of an on-site location will not interfere with construction of the plaza facilities, subject to the requirements of the contract documents.

Bridge Deck Erection and Finishing

After trial assembly of the fabricated deck segments, the segments would be transported to the site, likely by barge. Docking facilities will be required to transfer the bridge segments to the barge, although this may not necessarily be needed at the site. The segments can be hoisted into place by a pair of lifting gantries supported by, and spanning the two main cables. Once lifted into position, the weight of the segments would be transferred to the permanent suspenders and the segments connected to one another. When the deck is complete, operations would begin to install the electrical/mechanical systems, roadway barriers, deck waterproofing, and so forth.

The delivery of superstructure deck units by barge was discussed with the appropriate agencies including the Coast Guard, and there was an acceptance in principal of the need to have temporary access in the river to deliver bridge components. Specific access requirements will be quantified and included in the future permit applications. It is anticipated that during construction the contractor will be required to coordinate with Transport Canada and the Coast Guard regarding permit requirements for each activity in the waterway.

CABLE-STAYED BRIDGE CONSTRUCTION

For the cable-stayed bridge alternative, construction would be completed in five major stages, similar to the general stages for construction of the suspension bridge option.

Pylon and Anchor Pier Foundations

Following mobilization, work would begin on the pylon and anchor pier foundations. Construction of both the pylon and anchor pier foundations can be completed in a similar manner as for the tower foundations for the suspension bridge option.

Pylon and Anchor Pier Construction

The second primary stage of construction involves construction of both the pylons and the anchor piers themselves. Construction of the pylons and anchor piers can be completed independent of each other and completed using similar construction methods as for the suspension bridge option.

Bridge Deck Fabrication

As with the suspension bridge option, the bridge deck can be fabricated at an off-site location in a number of smaller segments. The segments would be trial-assembled on the ground.

Stay Cable and Bridge Deck Erection

After trial assembly of the fabricated deck segments, the segments can be transported to the site and the main span erected in a cantilever manner from each tower, with a stay cable installed as each segment of the bridge deck is erected. Construction of the side spans can be accomplished concurrent with the tower construction, and completed in advance of the main span construction. Side span stay cable installation would mirror the main span stay cable installation.

The delivery of fabricated deck units by barge was discussed with the appropriate agencies including the Coast Guard, and there was an acceptance in principal of the need to have temporary access in the river to deliver bridge components. Specific access requirements will be quantified and included in the future permit applications. It is anticipated that during construction the contractor will be required to coordinate with Transport Canada and the Coast Guard regarding permit requirements for each activity in the waterway.

Finishing Works

When the main span deck is complete, operations would begin for the finishing works, including construction of the electrical/mechanical systems, roadway barriers, deck waterproofing, and so forth.

9.1.7 Considerations for Subsequent Development

Subsequent stages of design of the crossing will involve further investigations regarding bridge materials, foundations, structural monitoring and security, maintenance and durability requirements, a site-specific wind evaluation and additional geotechnical field investigations at anticipated foundation locations. Details of these issues are documented in the *Bridge Conceptual Engineering Report*.

The Detroit River International Crossing bridge represents a major structure and warrants consideration of the visual attributes and quality of the crossing. While the aesthetic development of the bridge has not been a primary objective during the conceptual development stage, there has been an awareness of the magnitude and importance of the crossing and attention was given to providing a logical and well proportioned structure. Subsequent stages of the bridge design will consider the visual quality and aesthetic development of the design. A series of Context Sensitive Design Workshops have been conducted in parallel with the development of the bridge concepts and the results of those workshops should be reasonably factored into the subsequent visual development of the bridge.

9.2 Concept Design Features – Plaza

The new international plaza on the Canadian side of the Detroit River crossing will be situated within the Brighton Beach Industrial Park. The plaza will be bounded by the Detroit River, Chappus Street, Ojibway Parkway and Broadway Street, and was previously identified as Inspection Plaza B1 in the development and evaluation of practical plaza alternatives (refer to Chapter 8).

The plaza is situated west of Ojibway Parkway mostly on lands acquired by the City of Windsor for the purposes of establishing an industrial park. The Brighton Beach Industrial Park is named after the former Brighton Beach neighbourhood which previously occupied these lands. Over time, most of the residences have been acquired and removed so the area is generally vacant. The existing industrial area also includes the Brighton Beach and West Windsor power plants, the Nemak Automotive manufacturing plant, a Hydro One transformer station and aggregate storage facilities. Exhibit 9.6 illustrates the location of the proposed international plaza.

EXHIBIT 9.6 – PROPOSED PLAZA LOCATION

9.2.1 Layout of Plaza Facilities and Operations

GENERAL

A conceptual layout of the plaza facilities is presented in the concept design plates in Appendix A. Although the precise layout of the various facilities within the plaza may be modified during future design phases of the plaza, the type and function of the major facilities within the plaza will remain generally unchanged. The final layout of the plaza will be based on consultation with the Canada Border Services Agency (CBSA). Ultimate ownership and operation of the plaza will be under the direction of the Government of Canada.

The international customs plaza will be built to accommodate projected border traffic to beyond the 2035 design year. The plaza will include 29 inbound primary inspection lanes and nine toll collection lanes. In addition to providing general traffic lanes for both passenger and commercial vehicles, the plaza will include dedicated NEXUS and FAST lanes to improve border crossing processing capabilities. The plaza layout illustrated in the concept design plates shows a fully developed plaza. Initial construction of the plaza may not include the fully developed plaza, as the plaza may be developed in stages.

The final design of the plaza will incorporate a local access road along the edge of the plaza that will provide continuity for traffic between Sandwich Street and Broadway Street as well as access for plaza employees. Local access will also be provided at the north end of the plaza from a realigned Sandwich Street to the Brighton Beach Power Station and Keith Transformer Station.

Emergency Medical Services (EMS) will be permitted to access the plaza and crossing as required, through both the local access roads to the plaza normally reserved for employee access, and through The Windsor-Essex Parkway. Shoulders on both The Windsor-Essex Parkway and the crossing will be wide enough to accommodate EMS vehicles in the event of an emergency.

PLAZA FACITILIES

The major facilities that will be included within the plaza include outbound toll booths, an outbound inspection area for occasional use, a primary inspection area for inbound vehicles, and a secondary inspection area for inbound vehicles. Both the primary and secondary inbound inspection areas will be divided into passenger and commercial areas, while some primary inspection lanes will be flexible for use by both cars and trucks. The plaza will also consist of a duty-free shop for use by outbound vehicles, a maintenance building, a main building designated for employee use along with employee parking, and drainage facilities including, but not limited to, a stormwater management/retention pond to treat runoff from the plaza. A local service road will also be provided within the plaza for internal use.

In general, vehicles entering the Canadian plaza from The Windsor-Essex Parkway on the Canadian side will pass through the outbound toll booths and outbound inspection area if being utilized. Vehicles will then have the option of stopping at the duty free shop before proceeding to the new international bridge crossing. Primary and secondary inspection for vehicles heading to the U.S. will occur at the new customs plaza to be constructed on the U.S. side of the crossing. Inbound vehicles entering the Canadian plaza from the bridge will be divided between passenger and commercial truck traffic, and will proceed through the primary inspection lanes. If necessary, passenger vehicles will proceed to the secondary inspection area designated for passenger vehicles, and commercial vehicles will proceed to the secondary inspection area designated for commercial vehicles. Vehicles will then proceed through the plaza and to The Windsor-Essex Parkway.

9.2.2 Property Requirements

The plaza will be approximately 55 ha (137 acres) in size. This area will encompass all primary and secondary inspection areas, toll booths, buildings and parking within the plaza, as well as all stormwater management features. During future design stages of the project, the specific sizing and layout of the plaza may be subject to minor revisions, however the location of the plaza will generally remain unchanged.

9.2.3 Illumination

The international customs plaza will be fully illuminated. Where practical, lighting used at the plaza should be designed to minimize light intrusion into surrounding areas, while ensuring adequate lighting for operational requirements. This may involve using full cut-off luminaires, shielding, if necessary, and investigating the use of conventional lighting in place of high mast lighting. Lighting should be focused downwards and shielded where necessary to prevent light spillage into nearby residential and community areas. Additional details of the proposed illumination within the plaza will be determined during future design stages.

9.2.4 Construction Methods and Staging

Construction of the plaza will primarily involve relocation of utilities, topsoil stripping, placement of fill, construction of drainage components (i.e., sewers, catchbasins and stormwater management facilities) and other utilities, construction of foundations for various plaza structures, plaza buildings, and paving. It is anticipated that each of these components can be constructed using normal construction methods. Construction of the customs plaza will be completed in such a manner so as to minimize disruption to the surrounding community and to maintain local access to residences and businesses.

9.2.5 Utilities

A number of utilities and other municipal services are located in the vicinity of the plaza that will require removal or relocation. The utility relocation stage is generally completed prior to the main construction stage. Relocations are anticipated to take place in the early stages of construction to minimize risk to construction schedules. Utilities in the vicinity of the plaza include hydro, Bell, Union Gas, Cogeco, steam pipes and municipal watermains and sanitary sewers. Significant utilities that will require relocation at the plaza include gas pipelines connecting to the Brighton Beach Power Station and the West Windsor Power Generation Plant, steam lines from the West Windsor Power Plant connecting to Archer Daniel Midland and Windsor Salt, and the various Hydro One transmission and distribution connections from the Hydro One Keith Transformer Station, which includes an international connection. In addition, the location of the plaza and bridge approach will preclude the ability for future expansion of the Keith Transformer Station. Potential future expansion of the Keith Transformer Station will be considered during the property acquisition process. Further consultation with Hydro One will be conducted during future design phases to identify the need to mitigate impacts with respect to salt usage on the bridge approach (i.e. deck heating, use of other de-icing agents, shielding of certain transformer elements, etc.). Additional details regarding impacts and potential mitigation strategies relating to the Hydro One Keith Transformer Station are discussed in Chapter 10.

9.2.6 Stormwater Management

The proposed plaza will consist primarily of impervious asphalt and building rooftops, which would, if unmitigated, contribute to increased pollutant loadings (oil, coolant, gasoline, etc.), roadside grit and garbage (gravel, sand, litter, etc.), infrequent pollutant spills, and localized increase of overland runoff to the receiving watercourses. Therefore, stormwater management for the plaza will be required to provide quality treatment for the catchment area. As the site is located adjacent to the Detroit River with direct access, no quantity control measures are considered necessary. Enhanced quality treatment will be provided in accordance with the MOE document *Stormwater Management Planning and Design Guidelines*, which requires the removal of a minimum of 80 per cent total suspended solids.

As illustrated in the plaza layout included in the concept design plates of Appendix A, stormwater management retention ponds will be constructed generally along the southern edge of the plaza property, with a smaller facility constructed in the northeast corner of the plaza. The size, location and configuration of these ponds will be refined during future design stages for the plaza. Minor storm runoff will be conveyed to the stormwater management ponds through a series of storm sewers, with the major storm runoff flowing overland to the facilities. To account for potential contaminant spills (e.g. oil, chemical, etc.) within the plaza, a mechanism to isolate spill materials is proposed within the ponds. The preferred method will be determined during future design stages. The stormwater management ponds will outlet to the Detroit River through a natural channel in the southwest portion of the plaza through an outlet structure controlling the release rate to the Detroit River. Due to the flat topography of the plaza location, portions of the plaza may be elevated to facilitate positive drainage, thereby reducing or eliminating any requirement for pumping stormwater from the plaza.

As the future design of the plaza progresses, opportunities to incorporate acceptable alternative stormwater solutions may be identified. Alternative stormwater solutions for the plaza that may be considered include permeable pavers, perforated storm sewer pipes, Green Roof systems, and infiltration basins. These alternative solutions will be designed to provide additional upstream quality and quantity control of runoff prior to reaching the stormwater management ponds. Additional analysis will be performed during subsequent design stages to assess the effectiveness and feasibility of these solutions at the plaza location. Measures to reduce the area of impervious surface associated with the new plaza will also be investigated during future design phases.

Additional information pertaining to proposed drainage and fisheries impacts as well as potential mitigation measures are presented in Sections 10.4.5 and 10.4.9.

9.2.7 Road Closures

The following municipal roads (or portions thereof) within the plaza area will require closure:

- Sandwich Street (City of Windsor)
- Chappus Street (City of Windsor)
- Water Street (City of Windsor)
- Cole Avenue (City of Windsor)
- Audrey Avenue (City of Windsor)
- Page Street (City of Windsor)
- Healy Street (City of Windsor)
- Wright Street (City of Windsor)
- Reed Street (City of Windsor)
- Linsell Street (City of Windsor)
- Scotten Road (City of Windsor)

A local access road along the edge of the plaza is proposed to provide connectivity for traffic between Sandwich Street and Broadway Street as well as to provide access for plaza employees.

9.3 Concept Design Features – The Windsor-Essex Parkway

The Windsor-Essex Parkway consists generally of a six-lane freeway portion connecting existing Highway 401 to the new inspection plaza, a four-lane service road connecting existing Highway 3 to existing Huron Church Road, and a multi-use recreational trail network. The conceptual design features of each of these components are presented in this section.

9.3.1 Geometrics

GENERAL

In general, the freeway portion of The Windsor-Essex Parkway is a six-lane urban freeway with paved shoulders and a paved median with an Ontario Tall Wall concrete median barrier. The freeway connects the proposed new inspection plaza to the existing alignment of Highway 401. From west to east, The Windsor-Essex Parkway corridor generally follows existing E.C. Row Expressway from Ojibway Parkway easterly to Huron Church Road, and then follows Huron Church Road from E.C. Row Expressway southerly to Highway 3. The corridor then follows Highway 3 easterly to existing Highway 401 and finally follows existing Highway 401 to North Talbot Road. Between Huron Church Road north of Bethlehem Avenue/Labelle Street and existing Highway 3 east of Outer Drive, The Windsor-Essex Parkway includes a four-lane service road. The service road will provide local community connections and access to the freeway, and will replace the existing local function of the Highway 3/Huron Church Road corridor. Exhibit 9.7 illustrates the full Windsor-Essex Parkway corridor.

Geometric elements of The Windsor-Essex Parkway have been designed to meet or exceed the standards set forth in the *Geometric Design Standards for Ontario Highways* (GDSOH). Details of these geometric design elements are provided in the following paragraphs. Additional information regarding the conceptual design of The Windsor-Essex Parkway is presented in the concept design plates located in Appendix A.

EXHIBIT 9.7 – THE WINDSOR-ESSEX PARKWAY CORRIDOR

CROSS-SECTION

All six through-lanes on the freeway portion of The Windsor-Essex Parkway will be 3.75 m in width and shoulders will be fully paved and 3.0 m in width (median and outside). The total width of the paved median will be 6.8 m which allows for two shoulders 3.0 m in width and an Ontario Tall Wall concrete median barrier, which is 0.8 m in width. Median shoulder widths may be increased locally at horizontal curves to provide adequate safe stopping sight distances.

Where speed change lanes are required in the vicinity of interchanges and access points, the width of these auxiliary lanes will be 3.5 m and the adjacent outside shoulder will be 2.5 m in width in accordance with GDSOH guidelines.

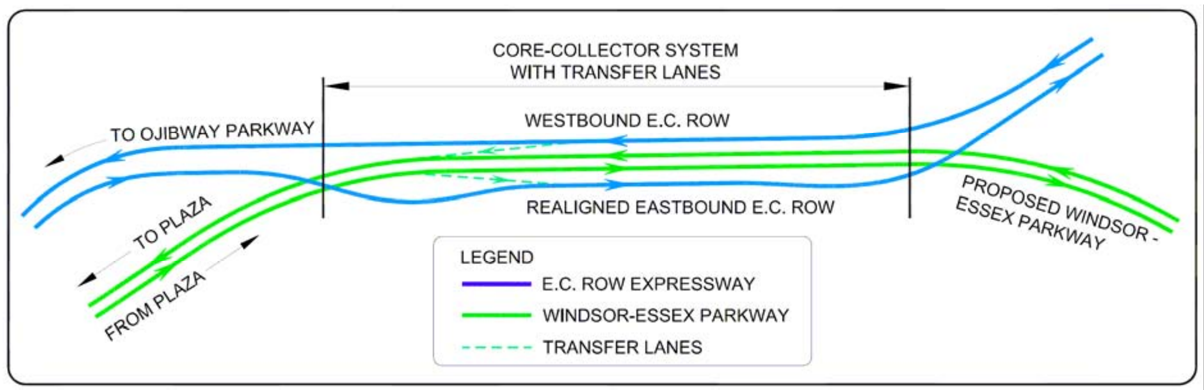
The proposed service road typically consists of four lanes 3.75 m in width with paved outside shoulders 2.5 m wide and a 1 m wide flush median. Right turn lanes 3.5 m in width and left turn lanes 3.0 m in width are provided locally at intersections where projected traffic volumes warrant such auxiliary lanes.

From the proposed customs plaza easterly approximately 1 km to where the freeway portion of The Windsor-Essex Parkway approaches E.C. Row Expressway approximately 0.3 km east of Matchette Road, the proposed freeway is grade separated over the Essex Terminal Railway, Ojibway Parkway and Matchette Road and situated south of existing E.C. Row Expressway.

From approximately 0.3 km east of Matchette Road to approximately 0.4 km west of Huron Church Road, the freeway portion of The Windsor-Essex Parkway and E.C. Row Expressway are integrated into a core-collector system. In this section, the eastbound and westbound lanes of E.C. Row Expressway diverge and the freeway portion of The Windsor-Essex Parkway is aligned between them.

The eastbound and westbound lanes of E.C. Row Expressway serve as the “collector” lanes of the system and the eastbound and westbound lanes of the freeway portion of The Windsor-Essex Parkway form the “core”. Transfer lanes will be provided along the core-collector system to connect the two freeways. Both the core and collector lanes (the proposed freeway and E.C. Row Expressway lanes) in this section will follow the existing profile of E.C. Row Expressway. Although the initial design of The Windsor-Essex Parkway through this section had the freeway beside the E.C. Row Expressway, the core-collector system was developed to reduce impacts to the Spring Garden community and adjacent to natural features. A schematic illustration of the core-collector system is included in Exhibit 9.8.

EXHIBIT 9.8 – CORE-COLLECTOR SYSTEM SCHEMATIC



From north of Bethlehem Avenue/Labelle Street to approximately 1.0 km east of Howard Avenue, the proposed freeway is below-grade and will incorporate open cut sections with vegetated side slopes where feasible. Retaining walls, either partial-height or full-height, will be utilized in localized areas to minimize property requirements and associated impacts throughout the corridor. Within this section, the location of the service road relative to the freeway varies. From north of Bethlehem Avenue/Labelle Street to east of Huron Church Line, the proposed service road is adjacent to the proposed freeway on the north side. From east of Huron Church Line to approximately 0.7 km west of Howard Avenue, the proposed service road is situated on the south side of the proposed freeway. From 0.7 km west of Howard Avenue to approximately 0.3 km east of Howard Avenue, the proposed service road is once again located adjacent to the proposed freeway on the north side. East of this location, no service road is proposed.

Although the freeway cross-section will incorporate open cut sections where feasible, retaining walls have been utilized in various locations to facilitate the roadway geometrics. Retaining walls have also been utilized in combination with open cut sections to reduce the depth of open cut, as discussed in Section 9.3.1.

From approximately 1.0 km east of Howard Avenue to North Talbot Road, The Windsor-Essex Parkway is predominantly at existing grade. There is no service road proposed through this section.

Exhibits 9.9 and 9.10 include additional details regarding elements of the access road and service road cross-sections. Exhibit 9.9 includes typical cross-sections of The Windsor-Essex Parkway along the Highway 3/Huron Church Road corridor, including adjacent service roads. Exhibit 9.10 includes typical cross-sections of The Windsor-Essex Parkway with no adjacent service roads, including at-grade and above-grade cross-sections along with the core-collector system adjacent to E.C. Row Expressway.

EXHIBIT 9.9 – TYPICAL CROSS-SECTIONS – THE WINDSOR-ESSEX PARKWAY WITH SERVICE ROAD

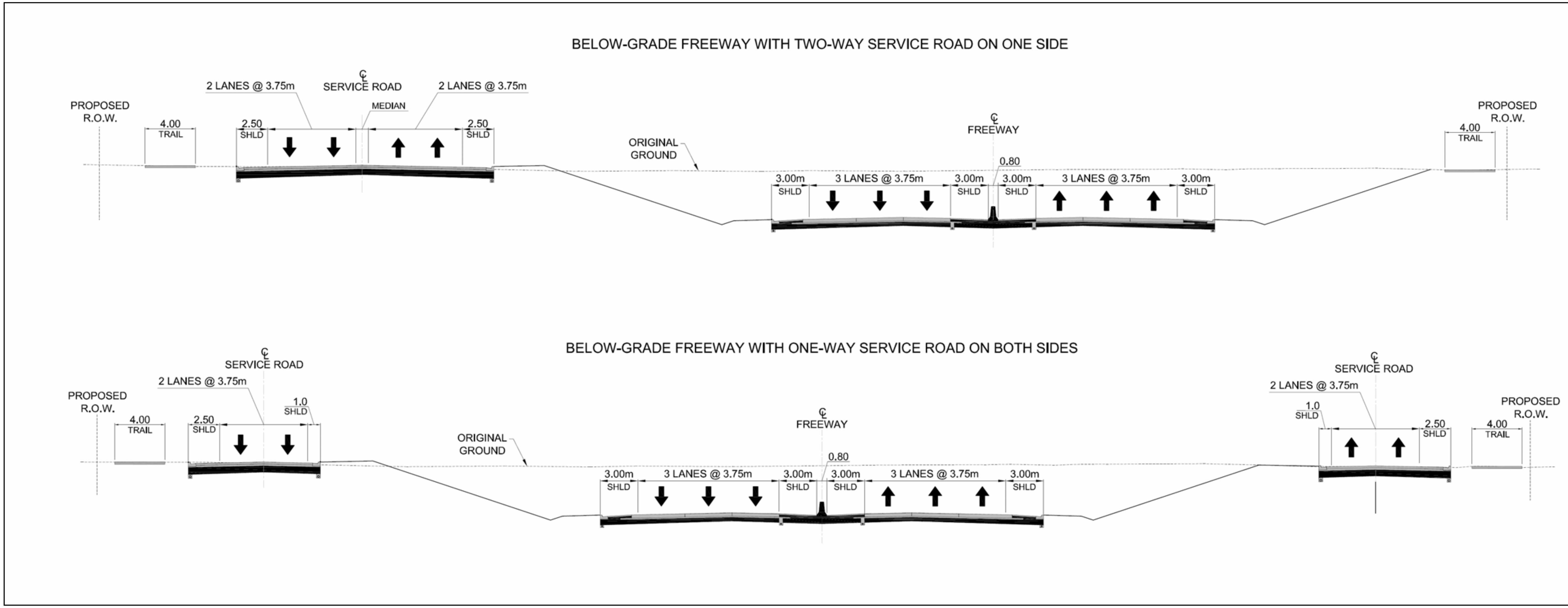
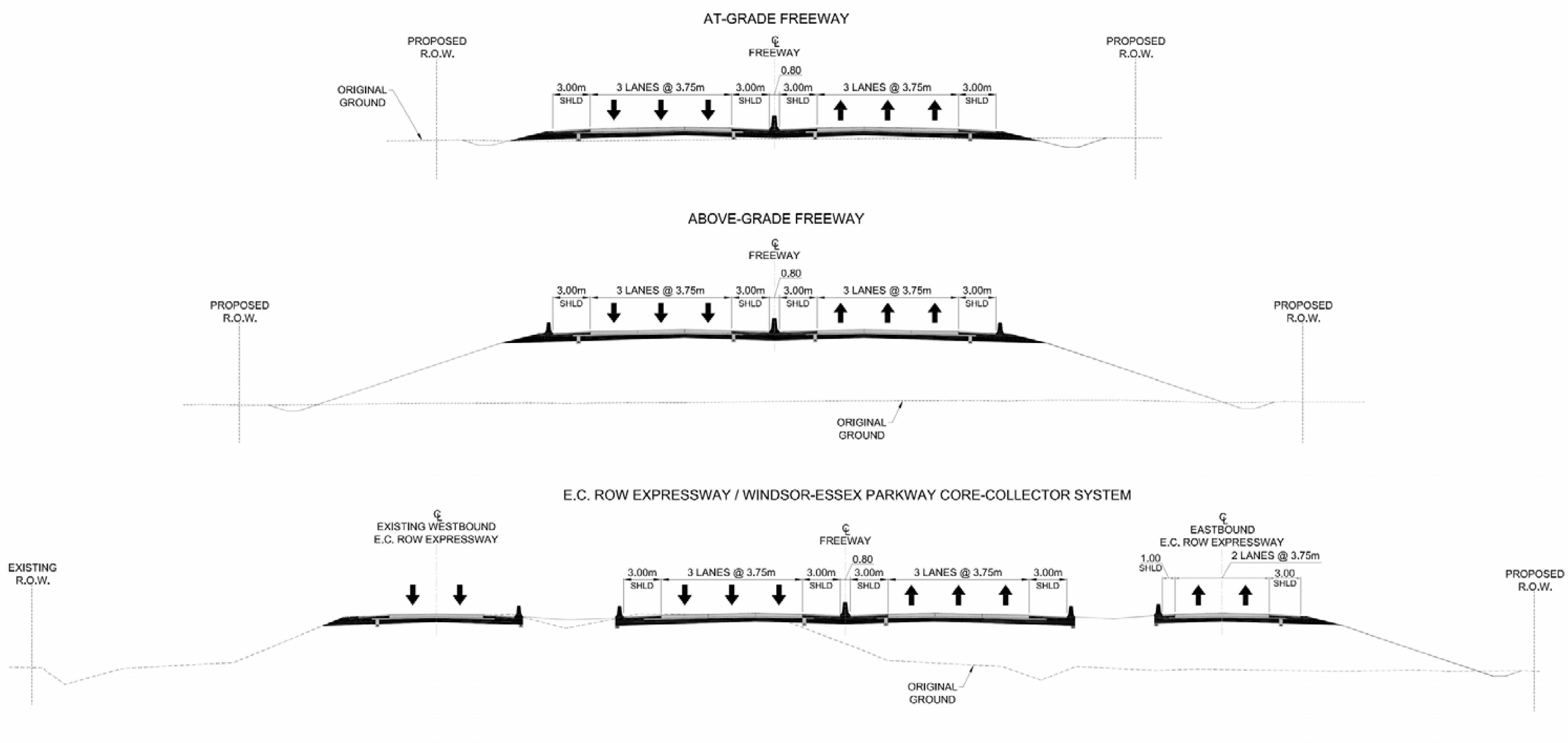


Exhibit 9.10 – Typical Cross-Sections – The Windsor-Essex Parkway with No Service Road



HORIZONTAL ALIGNMENT

Freeway

The horizontal alignment elements of the freeway portion of The Windsor-Essex Parkway were designed to meet or exceed the requirements set forth in the GDSOH.

Due to the termination of the proposed freeway at the new customs plaza, there is a need to slow traffic and change driver expectations as they approach the plaza. As such, the design speed of the proposed freeway varies along its length. Between the customs plaza and Huron Church Road, the design speed is 100 km/h. Between Huron Church Road and Huron Church Line, the design speed is 110 km/h. Between Huron Church Line and North Talbot Road, the design speed is 120 km/h.

There are a total of ten horizontal curves proposed for the alignment of the freeway portion of The Windsor-Essex Parkway. Radii of these curves range between 850 m and 10,000 m and all exceed minimum curve radius requirements for the proposed design speed as per the GDSOH. Table 9.1 summarizes the horizontal curves for the proposed freeway.

TABLE 9.1 – SUMMARY OF FREEWAY HORIZONTAL CURVES

Horizontal Curve Location	Roadway Design Speed	Minimum Required Radius	Proposed Radius
East of Ojibway Parkway	100 km/h	420 m	850 m
East of Matchette Road	100 km/h	420 m	1,100 m
North of Bethlehem Ave./Labelle St.	110 km/h	525 m	1,200 m
North of Lambton Rd./Grand Marais Rd. W	110 km/h	525 m	3,000 m
Pulford St.	110 km/h	525 m	3,000 m
Todd Lane/Cabana Rd. W	110 km/h	650 m	1,100 m
St. Clair College	120 km/h	650 m	7,000 m
Montgomery Drive	120 km/h	650 m	2,000 m
East of Howard Avenue	120 km/h	650 m	850 m
West of North Talbot Road	120 km/h	650 m	10,000 m

Illustration of the horizontal alignment of the freeway portion of The Windsor-Essex Parkway is presented in the concept design plates in Appendix A.

Service Road

The horizontal alignment elements of the service road portion of The Windsor-Essex Parkway were designed to meet or exceed the requirements set forth in the GDSOH. Between existing Highway 3 at the south limit of the proposed improvements and 0.5 km south of Huron Church Line, the service road has been designed for a design speed of 100 km/hr. There are a total of 14 horizontal curves associated with this stretch of the service road alignment. All of these horizontal curves exceed the curve radius requirements for a design speed of 100 km/hr (420 m).

From 0.5 km south of Huron Church Line to the north limit of the proposed improvements, the service road has a design speed of 80 km/hr. There are a total of seven horizontal curves associated with this stretch of the service road alignment. All of these horizontal curves exceed the curve radius requirements for a design speed of 80 km/hr (250 m).

Illustration of the horizontal alignment of the service road portion of The Windsor-Essex Parkway is presented in the concept design plates in Appendix A.

VERTICAL ALIGNMENT

Freeway

The vertical alignment of the freeway portion of The Windsor-Essex Parkway has been developed to a concept level of detail to allow for future refinements based on more detailed structural design as well as geotechnical and constructability considerations in subsequent phases of design. The vertical alignment of the proposed freeway will adhere to general principles as outlined in this section of the report.

For the purposes of description of the proposed freeway vertical alignment, elevations are described qualitatively using the following terms:

Below-grade – Top of pavement is between 4 - 8 m below the existing ground level;

Shallow Below-grade – Top of pavement is 0 – 4 m below the existing ground level;

At-grade – Top of pavement is between the existing ground level and 2 m above the existing ground level;

Above-grade – Top of pavement is more than 2 m above the existing ground level.

Transition – Profile is transitioning between "Below-grade" and "Above-grade".

The qualitative description of the freeway portion of The Windsor-Essex Parkway is tabulated section-by-section in Table 9.2.

TABLE 9.2 – QUALITATIVE DESCRIPTION OF PROPOSED FREEWAY ELEVATION

Freeway Section	Qualitative Elevation of Freeway Top of Pavement	Comment
From proposed plaza to approx. 0.3 km east of Matchette Road	Above-grade	Proposed freeway crosses over Essex Terminal Railway, Ojibway Parkway and Matchette Road
From approx. 0.3 km east of Matchette Road to approx. 0.3 km west of Malden Road	At-grade	Proposed freeway generally follows existing E.C. Row Expressway profile
From approx. 0.3 km west of Malden Road to approx. 0.4 km east of Malden Road	Above-grade	Proposed freeway crosses over Malden Road
From approx. 0.4 km east of Malden Road to approx. 0.8 km east of Malden Road	Transition	Proposed freeway transitions between above-grade and below-grade
From approx. 0.8 km east of Malden Road to approx. 0.2 km north of Turkey Creek	Below-grade	Proposed freeway crosses beneath local roads, proposed service road and various tunnel sections
From approx. 0.2 km north of Turkey Creek to approx. 0.3 km south of Turkey Creek	Shallow Below-grade	Proposed freeway crosses above Turkey Creek while remaining as far below existing ground level as possible
From approx. 0.3 km south of Turkey Creek to approx. 0.6 km east of Howard Avenue	Below-grade	Proposed freeway crosses beneath local roads, proposed service road and various tunnel sections
From approx. 0.6 km east of Howard Avenue to existing Highway 3 Underpass	Transition	Proposed freeway transitions from below-grade to at-grade
From Existing Westbound Highway 3 Underpass to North Talbot Road	At-grade	Proposed freeway matches existing Highway 401 profile

As discussed in the *Horizontal Alignment* section, the design speed of the freeway portion of The Windsor-Essex Parkway varies along its length. All elements of the vertical alignment of the proposed freeway meet or exceed the requirements set forth in the GDSOH for the proposed design speeds.

The minimum grade on the proposed freeway is 0.5 per cent, which meets the requirements of the GDSOH for a freeway with an urban drainage system. The maximum grade of the proposed freeway is 3.0 per cent, which meets the GDSOH requirements for freeways. A number of crest and sag vertical curves are located along the length of the freeway. All vertical curves meet or exceed the minimum curve requirements set forth in the GDSOH for the proposed design speeds.

Due to the significant amount of excavation required to construct the below-grade portions of the freeway, it is anticipated that there will be a need to dispose of clean fill. Opportunities to dispose of excavated material on-site may include berming in landscaped areas within The Windsor-Essex Parkway and filling at the new plaza site to achieve positive drainage and desirable connections to the entering and exiting roadways (i.e. the crossing approach and the new freeway). The need for disposal of excess material both on-site and off-site will be examined further during future design phases. As necessary, determination and selection of suitable off-site disposal sites will be the responsibility of the selected contractor. Opportunity for off-site disposal of excavated material could include the Essex-Windsor Solid Waste Authority closed landfill Site #3 on Puce Road north of Highway 401.

Illustration of the vertical alignment concept of the proposed freeway is presented in the concept design plates in Appendix A.

Service Road

As discussed in the *Horizontal Alignment* section, the design speed of the service road portion of The Windsor-Essex Parkway varies along its length. All elements of the vertical alignment of the service road meet or exceed the requirements set forth in the GDSOH for the proposed design speeds.

The proposed service road is predominantly at-grade throughout the corridor to tie into the existing local road network. However, in two localized areas (north of Todd Lane/Cabana Road West and east of Cousineau Road/Sandwich West Parkway) the proposed service road is below-grade for short distances where they pass beneath tunnel sections.

Illustration of the vertical alignment concept of the proposed service road is presented in the concept design plates in Appendix A.

INTERCHANGES AND ACCESS POINTS

Interchanges and access points between the proposed freeway, proposed service road and side roads are included in The Windsor-Essex Parkway design concept to facilitate mobility and local access in the corridor and provide the opportunity for border-bound motorists to choose a border crossing.

Many of the access points of the proposed freeway have been sited to optimize mobility in the corridor and at several locations it is not appropriate to describe the access points as "interchanges". As such, interchange spacing guidelines set forth in the *Geometric Design Standards for Ontario Highways (GDSOH)* were not applied for site selection but, instead, guidelines for spacing successive entrance and/or exit terminals were employed to ensure suitable operations.

Illustration of access point ramp locations and ramp geometrics is presented in the concept design plates in Appendix A.

Modern Roundabout at The Windsor-Essex Parkway/Highway 3/Howard Avenue Diversion

As part of The Windsor-Essex Parkway design concept, a modern roundabout is proposed for the intersection of realigned Highway 3, the proposed Howard Avenue diversion and the proposed freeway on and off-ramps east of Howard Avenue. The conceptual design of this roundabout has been developed in accordance with guidelines in the U.S. Federal Highways Administration (FHWA) document entitled *Roundabouts: An Informational Guide* as well as Section 26 of the *State of*

Wisconsin Facilities Development Manual which describes roundabout guidelines. British Colombia and Kansas Department of Transportation standards were also applied. The proposed modern roundabout has an inscribed diameter of 65 metres and a two-lane cross-section. Highway 3 forms the east leg, the proposed service road forms the west leg, an off-ramp and on-ramp from The Windsor-Essex Parkway forms the north leg and the proposed Howard Avenue diversion forms the south leg of the roundabout. Illustration of the proposed roundabout is presented in the concept design plates in Appendix A.

CARPOOL LOTS

The Ontario Ministry of Transportation has constructed and operated a network of carpool lots across southern Ontario since 1979. Carpool lots are constructed as a means of encouraging ride sharing and reducing congestion and vehicular emissions. The current Environmental Assessment study has considered the provision of carpool lots within the road network of The Windsor-Essex Parkway, and one site has been identified as a potential carpool lot location. This site is located on the east side of the Howard Avenue diversion, south of the proposed roundabout at realigned Highway 3. Further design stages of the project will include additional study as to the layout and feasibility of providing this carpool lot.

9.3.2 Crossing Roads

Numerous local, collector and arterial crossing roads intersect with The Windsor-Essex Parkway corridor. As part of the concept design of The Windsor-Essex Parkway, it is proposed that some of these crossing roads be provided with interchanges at the proposed freeway, some connected with the proposed service road, some grade-separated from the corridor and some closed. These crossing roads are summarized below. Illustration of crossing road treatments as part of the conceptual design of The Windsor-Essex Parkway is presented in the concept design plates in Appendix A.

FULL OR PARTIAL INTERCHANGES

Full or partial interchanges at the proposed freeway are proposed for the following crossing roads:

- Ojibway Parkway (full moves interchange)
- Todd Lane/Cabana Road West (partial moves interchange)
- Highway 3 (full moves interchange)

The Highway 3 interchange includes a modern roundabout that also provides access for the proposed Howard Avenue diversion to and from the interchange ramps on the proposed freeway. This configuration effectively provides a full moves interchange for the proposed Howard Avenue diversion south of the corridor.

INTERSECTIONS WITH PROPOSED SERVICE ROAD

Intersections with the proposed service road are proposed for the following crossing roads:

- Labelle Street/Bethlehem Avenue
- Lambton Road/Grand Marais Road West
- Pulford Street
- Todd Lane/Cabana Road West
- Huron Church Line
- Geraedts Drive (St. Clair College)
- Sandwich West Parkway/Cousineau Road
- Montgomery Drive
- Howard Avenue
- Outer Drive

Traffic on the proposed service road will have access to and from the proposed freeway in several locations along the corridor. These access points effectively provide access to and from the proposed freeway for all of the above listed crossing roads.

In addition, the roundabout at the proposed Highway 3 interchange includes a connection to the proposed service road which provides for access to and from the service road for Highway 3 and the proposed Howard Avenue diversion.

GRADE-SEPARATED CROSSINGS

Grade-separated crossings of the freeway with no access to The Windsor-Essex Parkway are proposed for the following crossing roads:

- Matchette Road (overpass)
- Malden Road (overpass)
- North Talbot Road (underpass)

Grade-separated crossings of the freeway with access to The Windsor-Essex Parkway service road are proposed for the following crossing roads:

- Labelle Street/Bethlehem Avenue
- Lambton Road/Grand Marais Road West
- Todd Lane/Cabana Road West
- Huron Church Line
- Geraedts Drive (St. Clair College)
- Sandwich West Parkway/Cousineau Road
- Howard Avenue

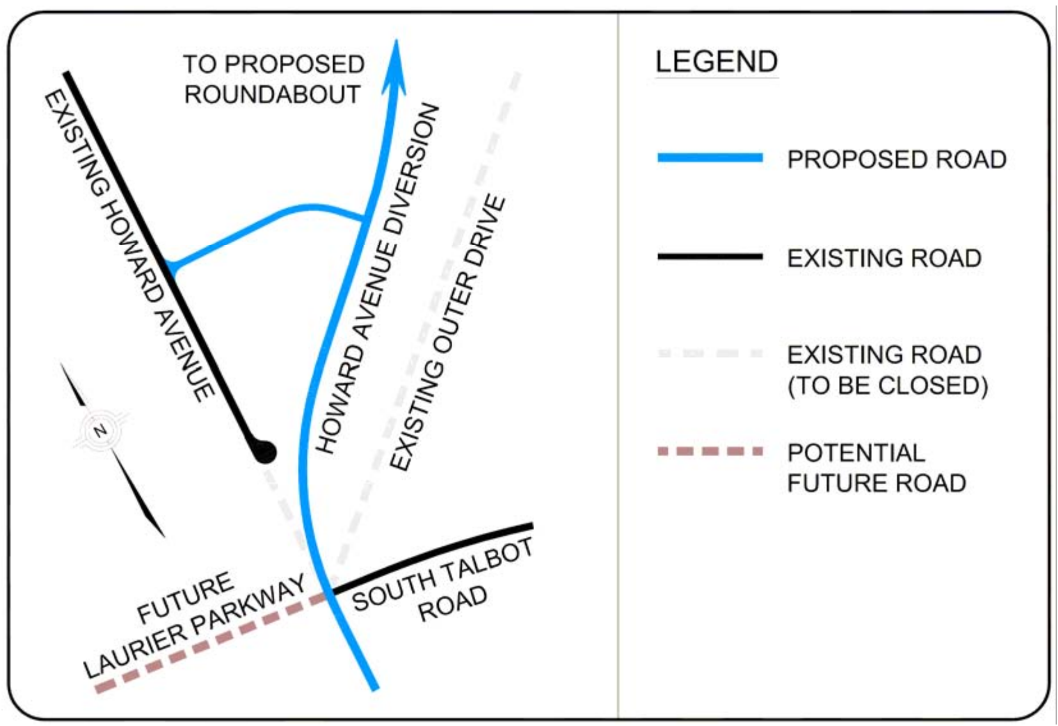
ADDITIONAL ROAD IMPROVEMENTS

The concept design of The Windsor-Essex Parkway includes the addition of a double left turn lane for the northbound approach of Ojibway Parkway at the existing intersection with the E.C. Row Expressway. The second left turn lane is required based on anticipated traffic operational concerns at the intersection. A second receiving lane will also be added to the northwest approach of the intersection to handle the additional left turn lane.

The concept design of The Windsor-Essex Parkway includes a realignment of existing Highway 3 east of Outer Drive, east of the freeway portion of The Windsor-Essex Parkway. The existing Highway 3 / Outer Drive intersection will be removed, and the connection from Outer Drive to Highway 3 will be provided via a new connecting road.

Howard Avenue will be realigned to the east to connect to the Howard Avenue diversion near South Talbot Road. This Howard Avenue diversion will replace Outer Drive and will form the south leg of the proposed roundabout described in Section 9.2.1. A schematic illustration of the proposed improvements at the Howard Avenue diversion is provided in Exhibit 9.11.

EXHIBIT 9.11 – HOWARD AVENUE DIVERSION SCHEMATIC



9.3.3 Right-of-Way Requirements

The property requirements for The Windsor-Essex Parkway are dependent upon the location of the service road, the proposed trail network, stormwater management ponds and watercourse realignments, and utility corridors. Where possible, existing rights-of-way have been utilized to minimize the impact on the surrounding environment and property owners. Property requirements are also dependent on providing buffering for surrounding communities and for protection of environmental features. Opportunities will be sought to forge partnerships with parties to restore and enhance required property with native and endangered species, and to transfer lands within The Windsor-Essex Parkway to parties that can best protect sensitive areas.

From the proposed inspection plaza easterly to Huron Church Road, the freeway portion of The Windsor-Essex Parkway will be integrated with the E.C. Row Expressway. This integration maximizes use of the existing E.C. Row Expressway right-of-way to minimize impact on the Spring Garden community and to adjacent natural features. Additional property required for The Windsor-Essex Parkway through this area will include property obtained for environmental mitigation and wildlife buffering purposes, for stormwater management ponds and for provision of the trail network. Through this section, the typical right-of-way to be required beyond the existing E.C. Row Expressway right-of-way is approximately 200 m (290 m total) with the maximum additional requirement being approximately 300 m (390 m total).

From north of Bethlehem Avenue/Labelle Street southerly to Todd Lane/Cabana Road West, The Windsor-Essex Parkway freeway and adjacent service road utilize the existing right-of-way of Huron Church Road. In addition to obtaining property for the freeway, service road and realigned crossing roads, additional property required through this section will include property required for stormwater management ponds, the proposed interchange at Todd Lane/Cabana Road West, environmental mitigation features, the proposed trail network and for utility corridors. Although the property requirement through this section is highly variable, the additional right-of-way requirement beyond the existing Huron Church Road right-of-way averages approximately 185 m (240 m total) with the maximum additional requirement being approximately 265 m (total width of 320 m).

From Todd Lane/Cabana Road West easterly to existing Highway 3, The Windsor-Essex Parkway freeway and adjacent service road utilize the existing right-of-way of Highway 3 to minimize impacts to adjacent properties. In addition to obtaining property for the freeway, service road and realigned crossing roads, additional property required through this section will include property obtained for stormwater management ponds, the proposed interchange west of Howard Avenue, environmental mitigation features, the proposed trail network and for utility corridors. Through this section, the additional right-of-way requirement beyond the existing Highway 3 right-of-way averages approximately 200 m (240 m total) with the maximum additional requirement being approximately 280 m (total width of 320 m).

From existing Highway 3 easterly to North Talbot Road, the freeway utilizes the existing Highway 401 right-of-way. No additional right-of-way is required in this section.

The property requirements described above are based on the concept design as it has been developed for the Environmental Assessment Study. The concept design is subject to more detailed study, which may change some elements of the concept design, and therefore the property requirements may also change.

Additional details of the right-of-way requirements of The Windsor-Essex Parkway are presented in the concept design plates in Appendix A.

9.3.4 Construction Methods and Staging

A general concept for construction staging of the freeway, service road and sideroad crossings has been developed as part of this Environmental Assessment Study to ensure that The Windsor-Essex Parkway can be constructed in a feasible manner while minimizing disruption of the surrounding communities and local traffic patterns as much as possible. In order to ensure minimal disruption, maintaining four lanes of traffic in the Highway 3/Huron Church Road corridor as well as the E.C. Row Expressway corridor has been established as a principle for development of the staging concept. This principle will be a key requirement in the development of detailed staging plans in future design phases. Additional details of the conceptual construction staging plan are included in the *"Draft Practical Alternatives Evaluation – Constructability Report for Access Road Alternatives"*. The general construction staging concept outlined below and presented in the report will be subject to refinement during future design stages of the project.

It should be noted that construction methods and staging are the responsibility of the selected contractor, subject to the provisions and specifications of the contract. The implementing authorities will develop these contract documents to be in accordance with this Environmental Assessment. The following planning level assessment and specifications of methods and staging has been developed to confirm basic feasibility.

HIGHWAY 3/HURON CHURCH ROAD CORRIDOR

The general construction staging concept for the freeway and service road consists of four primary stages preceded by an initial utility relocation stage. This preliminary staging concept is described generally below.

Utility Relocation

Early work would likely focus on the relocation of utilities and other municipal services. There are numerous utilities located within the corridor, including hydro, Bell, Union Gas, communication, cable television as well as municipal services such as watermains, storm sewers, municipal drains and sanitary sewers. These existing utilities within The Windsor-Essex Parkway corridor are discussed in Section 7.6 and are illustrated in the concept design plates in Appendix A. Further details regarding utility relocation are included in Section 9.3.12.

Stage 1

This first primary construction stage would focus on building the proposed service road, the realignment of the existing municipal roadways (where necessary), and the construction of any temporary staging roads. During this stage, traffic will remain primarily on the existing Highway 3 / Huron Church Road with some routing onto localized temporary staging roads within the corridor.

Stage 2

The second primary construction stage involves shifting local traffic to the new service road and temporary staging roads to allow for the excavation of the proposed freeway and construction of associated retaining walls, underpasses and tunnel sections. Construction of the remainder of the service road will be completed during this stage.

Stage 3

During the third primary construction stage, traffic will be fully relocated onto the service road while construction would focus on completion of the freeway portion of The Windsor-Essex Parkway.

Stage 4

During the fourth and final primary construction stage, the new freeway and service road facilities will be fully opened to traffic while efforts would focus on final construction details in the corridor, including the connection to Howard Avenue.

E.C. ROW EXPRESSWAY CORRIDOR

The general construction staging concept for The Windsor-Essex Parkway within the E.C. Row Expressway corridor will consist of two primary construction stages preceded by an initial utility relocation stage.

Utility Relocation

Early work would likely focus on the relocation of utilities and other municipal services. There are numerous utilities located within the corridor, including hydro, Bell, Union Gas, cable television as well as municipal services such as watermains, municipal drains and sanitary sewers.

Stage 1

This first primary construction stage would focus on construction of the realigned eastbound lanes of E.C. Row Expressway and associated structure, creating space between eastbound and westbound lanes for the proposed freeway portion of The Windsor-Essex Parkway which forms the core lanes of this core-collector system. During this stage, traffic will remain on the existing E.C. Row Expressway lanes.

Stage 2

The second primary construction stage involves shifting eastbound E.C. Row Expressway traffic to the newly constructed realignment of eastbound E.C. Row Expressway lanes (eastbound collectors). This will allow for construction of the freeway portion of The Windsor-Essex Parkway (core lanes) and associated structures.

9.3.5 Structures

TUNNEL SECTIONS

There are 11 tunnels proposed as part of The Windsor-Essex Parkway, ranging in length between 120 m and 240 m. These tunnels have been strategically located to maintain and enhance existing access along the corridor, as well as to provide new connections for roads, trails and wildlife linkages. In addition to providing local connections across the freeway portion of The Windsor-Essex Parkway, landscaping/public space will be provided on top of the tunnels so as to lessen any ‘barrier effect’ of the freeway for the neighbourhoods on either side of The Windsor-Essex Parkway.

Design details of each of the 11 individual tunnels will be confirmed during the future design phase of this project, including structural type and abutment selection. The provision of landscaping on top of each of the tunnels will include the placement of up to 1 m of topsoil along the entire tunnel area. The structural implications of providing this additional weight on each of the structures will be finalized during future stages of design. In addition, the precise location and length of these tunnels may be subject to further refinement during these future stages of design.

The general location, length and rationale/benefits of providing each of the 11 tunnels included as part of The Windsor-Essex Parkway are summarized in Table 9.3. The 11 tunnels are also identified on the concept design plates in Appendix A.

TABLE 9.3 – SUMMARY OF THE WINDSOR-ESSEX PARKWAY TUNNELS

Tunnel Name	General Location	Length	Rationale for Tunnel Location/Length
Spring Garden	Spring Garden Road	200 m	Maintains connection between Spring Garden residential area and vacant natural area adjacent to E.C. Row Expressway. Tunnel length of 200 m provides opportunities for public space and Gateway features; this tunnel is the first tunnel along The Windsor-Essex Parkway as viewed by motorists entering Canada via the new crossing. The location and length of this tunnel is constrained by the freeway profile at the west end (profile begins rising from below-grade to above-grade) and the proximity of the Labelle Street/Bethlehem Avenue tunnel to the south.
Labelle	Labelle Street / Bethlehem Avenue	240 m	Maintains existing road crossing at Labelle Street/Bethlehem Avenue. Provides improved connection between Bellewood neighbourhood/Bellewood Park/Bellewood School and Spring Garden/Bethlehem neighbourhoods/Spring Garden Road Prairie/Windsor community trails. Tunnel length of 240 m provides opportunities for public space and Gateway features; this tunnel is situated at the junction of The Windsor-Essex Parkway and Huron Church Road and will be viewed by motorists entering Canada via both the new bridge / The Windsor-Essex Parkway and the Ambassador Bridge / Huron Church Road.
Grand Marais	Grand Marais Road/ Lambton Road	120 m	Maintains existing road crossing at Grand Marais/Lambton. Provides improved connection between Bellewood neighbourhood/Bellewood Park/Bellewood School and Huron Estates neighbourhood and Spring Garden Road Prairie. Tunnel also provides improved connection for existing West Windsor Recreationway trail; presently this trail passes under Huron Church Road at Grand Marais Drain; in times of high water flows in the drain, this trail is presently closed. With The Windsor-Essex Parkway, this trail will be relocated to allow crossing of the freeway and service road via either the Grand Marais or Pulford Avenue tunnels. The tunnel length is constrained by the freeway profile at the south end (freeway is not as deep at the Grand Marais Drain crossing as other locations), distance between the exit ramp and the service road and service road structure at the north end.
Pulford	Pulford Street	120 m	Provides improved connection between the residential area on the east side of Huron Church Road and South Windsor Recreation Complex to Huron Estates neighbourhood and Spring Garden Road Prairie. Tunnel also provides improved connection for existing West Windsor Recreationway trail; the existing trail passes under Huron Church Road at Grand Marais Drain; in times of high water flows in the drain, this trail is presently closed. With The Windsor-Essex Parkway, this trail will be relocated to allow crossing of the freeway and service road via either the Grand Marais or Pulford Avenue tunnels. The tunnel length is constrained by the freeway profile at the north end (freeway is not as deep at Grand Marais drain crossing as other locations) and distance between the entrance ramp and the service road at the south end.
Oakwood	0.3 km north of Todd Lane / Cabana Rd. W	120 m	Provides improved wildlife linkage and new community connection between Oakwood Bush/Oakwood School/Windsor community trails and Spring Garden Road Prairie. Both the freeway and service road pass through this tunnel leaving a road-free connection at the ground surface. Tunnel length is constrained by service road profile at north and south ends (service road profile rises from below-grade to at-grade at intersections on both sides of tunnel).
Todd / Cabana	Todd Lane / Cabana Rd. W	120 m	Maintains existing road crossing at Todd Lane/Cabana Road West. Provides improved connection between Villa Borghese neighbourhood/Oakwood Bush/Oakwood School and Todd Lane neighbourhood/Spring Garden Road Prairie. Tunnel length constrained by the service road profile at the north end and proximity of tunnel to the south.
Villa Borghese	Huron Church Line	240 m	Maintains an existing road connection for Huron Church Line and the service road. Provides improved wildlife linkage and improved community connection between Lennon Drain/St. Clair College environmentally sensitive area and Cahill Drain candidate natural heritage site lands/LaSalle Woods/LaSalle community trails.

Tunnel Name	General Location	Length	Rationale for Tunnel Location/Length
St. Clair College	St. Clair College Entrance	120 m	Maintains an existing road connection for the main entrance to the college and the service road. Provides improved wildlife linkage and improved community connection between St. Clair College environmentally sensitive area and athletic fields, Cahill Drain candidate natural heritage site lands, Windsor Crossing commercial area, LaSalle community trails and future residential development in LaSalle. No existing residential neighbourhood in this immediate area, but as the main entrance to the college, this area is expected to have a relatively high volume of pedestrian and cyclist traffic. A length of 120 m was considered adequate for meeting the connectivity requirements at this location.
Cousineau	Cousineau Road	170 m	Maintains existing road crossing at Cousineau Rd/Sandwich West Parkway. Provides improved community connection between St. Clair College and athletic fields/Our Lady of Mt. Carmel School, and Villa Paradiso neighbourhoods with Heritage Estates neighbourhood/Windsor Crossing commercial area/LaSalle community trails. When The Windsor-Essex Parkway was introduced in 2008, this tunnel was shortened by 50 m from the previous version, to enable the extension of the Hearthwood Place tunnel section. However, based on further consideration, public feedback, and the decision to purchase additional properties on Homestead Lane and Kendleton Court to provide additional buffer spacing, the tunnel is now proposed to be 170 m long. Length of tunnel in this area is constrained by the service road profile at the east end (service road profile rises from below grade to at-grade at intersection of Cousineau/Sandwich West Pkwy), and proximity to Hearthwood Place tunnel.

Tunnel Name	General Location	Length	Rationale for Tunnel Location/Length
Hearthwood	Hearthwood Place	165 m	Provides improved wildlife linkage and new community connection between Villa Paradiso neighbourhood/Matthew Rodzik Park/new green space north of corridor and Heritage Estates neighbourhood/Windsor Crossing commercial area/LaSalle community trails. Both the freeway and service road pass through this tunnel leaving a road-free connection at the ground surface. When The Windsor-Essex Parkway was introduced in 2008, the freeway portion of this tunnel was proposed to be 220 m long. However, based on difficulties associated with the construction of an "L-shaped" tunnel, public feedback, and the decision to provide additional buffer on both sides of the freeway in this area, the tunnel length has been adjusted downwards to 165 m. (Note: In order to provide additional buffer in this area, additional properties on Homestead Lane and Kendleton Court will be purchased). Length of tunnel section is constrained by service road profile at the west end (service road profile rises from below grade to at-grade at intersection of Cousineau/Sandwich West Pkwy), and the proximity to Cousineau tunnel. East limit of tunnel constrained by proximity of at-grade intersection at Montgomery Dr. and entrance ramp to freeway.
Oliver Estates	0.3 km west of Howard Avenue	240 m	Provides improved community connection between Shadetree neighbourhood /Matthew Rodzik Park/new green space north of corridor and Oliver Estates neighbourhood/ LaSalle community trails. Tunnel length of 240 m provides opportunities for landscaping/public space and Gateway features to be incorporated in this area; this is the first tunnel along The Windsor-Essex Parkway as viewed by motorists entering Windsor/LaSalle via Highway 401 or Highway 3.

ROADWAY UNDERPASSES/OVERPASSES

In addition to the 11 tunnel sections described above, there are 14 underpass and overpass structures proposed as part of The Windsor-Essex Parkway allowing grade-separation between the freeway, service road, ramps and side roads. The general location and function of these underpass and overpass structures are summarized in Table 9.4. These underpass and overpass structures are also included on the design plates in Appendix A.

TABLE 9.4 – SUMMARY OF THE WINDSOR-ESSEX PARKWAY UNDERPASS AND OVERPASS STRUCTURES

Name and General Location	Description and Function
Ojibway Parkway / ETR Overpass at The Windsor-Essex Parkway, east of plaza	Eight-lane overpass structure (six general purpose lanes and two auxiliary lanes) providing grade-separation between existing Ojibway Parkway/ETR and freeway portion of The Windsor-Essex Parkway, directly east of the new plaza.

Name and General Location	Description and Function
Matchette Road Overpass at The Windsor-Essex Parkway	Eight-lane overpass structure (six general purpose lanes and two auxiliary lanes) providing grade-separation between existing Matchette Road and freeway portion of The Windsor-Essex Parkway, south of existing E.C. Row Expressway.
Eastbound E.C. Row Expressway Overpass, east of Matchette Road	Three-lane overpass structure providing grade-separation between realigned eastbound E.C. Row Expressway and freeway portion of The Windsor-Essex Parkway, east of Matchette Road.
Malden Road Overpass at The Windsor-Essex Parkway	Overpass structure providing grade-separation between existing Malden Road and realigned E.C. Row Expressway/freeway portion of The Windsor-Essex Parkway. Depending on the final separation between The Windsor-Essex Parkway and both eastbound and westbound E.C. Row Expressway, separate structures may be constructed for the freeway and for E.C. Row Expressway. Removal of the existing Malden Road structure at eastbound E.C. Row Expressway may also be required as part of construction of this structure.
Eastbound E.C. Row Expressway Overpass, west of Spring Garden Tunnel	Three-lane overpass structure providing grade-separation between realigned eastbound E.C. Row Expressway and freeway portion of The Windsor-Essex Parkway, west of Spring Garden Tunnel.
Eastbound Service Road Underpass, west of Grand Marais Road/Lambton Street	Two-lane underpass structure providing grade-separation between eastbound service road and freeway portion of The Windsor-Essex Parkway, west of Grand Marais Road/Lambton Street.
Service Road Overpass, east of Pulford Street	One-lane overpass structure providing grade-separation between westbound service road and vehicles entering westbound freeway portion of The Windsor-Essex Parkway, east of Pulford Street.
Eastbound Service Road Underpass, east of Huron Church Line	Two-lane underpass structure providing grade-separation between eastbound service road and freeway portion of The Windsor-Essex Parkway, east of Huron Church Line.
Westbound Service Road Underpass, east of Cahill Drain	Two-lane underpass structure providing grade-separation between westbound service road and freeway portion of The Windsor-Essex Parkway, east of Cahill Drain and west of St. Clair College Tunnel.
Service Road Underpass near Montgomery Street	Four-lane underpass structure providing grade-separation between service road and freeway portion of The Windsor-Essex Parkway, west of Howard Avenue.
Howard Avenue Underpass at The Windsor-Essex Parkway	Two/Three-lane underpass structure providing grade-separation of Howard Avenue and freeway portion of The Windsor-Essex Parkway.
Highway 3 Underpass at East of Howard Avenue	Four/Five-lane underpass structure providing grade-separation between realigned Highway 3 and freeway portion of The Windsor-Essex Parkway, east of Howard Avenue.
Ramp E-E/W Underpass, south of existing Highway 3 and east of Howard Avenue	One-lane underpass structure providing grade-separation over freeway portion of The Windsor-Essex Parkway for vehicles exiting from westbound freeway.

Name and General Location	Description and Function
North Talbot Road Underpass at existing Highway 401	Two-lane underpass structure providing grade-separation for North Talbot Road across Highway 401. New structure required to replace existing North Talbot Road structure due to widening of Highway 401 to six-lanes at this location.

RETAINING WALLS

A significant portion of the freeway section of The Windsor-Essex Parkway is below grade, while the service road and crossing roads are at (or close to) existing ground level. Although the freeway cross-section will incorporate open-cut sections with vegetated side slopes where feasible, retaining walls will be utilized in numerous locations to accommodate roadway geometrics and to minimize property requirements and other associated impacts throughout the corridor. Retaining walls have also been utilized in combination with open-cut sections to ensure side slope stability, as discussed in Section 9.3.1. Further details regarding the height and locations of retaining walls along the corridor will be determined during future design stages of the project.

PEDESTRIAN/CYCLIST OVERPASSES

As discussed in Section 9.3.6, a multi-use trail network will be incorporated into The Windsor-Essex Parkway to provide safe and continuous recreational travel along the length of the corridor for cyclists and pedestrians. The trail network will consist of eight grade separations, or pedestrian overpasses, at locations where the trail system crosses side roads or the proposed service road. Although the trail network is subject to refinement during future design phases, the concept presented in this Environmental Assessment Report provides for a continuous pathway throughout the corridor that is grade-separated at locations where a roadway is encountered. The locations of the pedestrian overpasses along The Windsor-Essex Parkway are presented in the concept design plates in Appendix A. It is recognized that further design work on the trail system may alter the location of the pedestrian overpasses identified in the report, along with the pedestrian overpasses identified in the concept design plates. Future decisions regarding the trail network will involve additional consultation with the public and local municipalities.

9.3.6 Multi-use Trail Network

The concept design of The Windsor-Essex Parkway includes an extensive multi-use trail network along the length of the corridor. The conceptual trail network design was developed in part based on feedback received at various Context Sensitive Solutions workshops held during the study. The trail network provides for a continuous path between the existing trail at the Malden Road/E.C. Row Expressway underpass and the Howard Avenue diversion, with grade separated trail crossings allowing cyclists and pedestrians to travel the length of the corridor without encountering a motor vehicle. The proposed trail network concept also includes numerous alternate paths through the corridor with at-grade crossings of roadways allowing access to the continuous trail network from several locations outside The Windsor-Essex Parkway. Cyclists and pedestrians will be able to choose between the continuous trail, with overpasses, or an alternate route, with at-grade intersections.

Grade-separated trail crossings of roadways will be typically achieved using conventional bridges and approaches on earth embankments in such a way as to ensure grade separations are not seen as a "barrier" to potential users. Vertical grades on the trail throughout the network (including approaches to grade separations) will be limited to a maximum of 5 per cent to ensure all grades are easily negotiated by cyclists and pedestrians.

At-grade trail crossings of roadways will be designed in accordance with appropriate standards for pedestrian and cyclist crossings to ensure safe and efficient use of the trail network. The typical width of the multi-use trail is 4 m to allow for use by both pedestrians and cyclists.

Future design and consultation stages of The Windsor-Essex Parkway will include a consideration of issues such as winter maintenance of the trail system and the surface treatment to be provided along the trail.

Illustration of the proposed concept for the multi-use trail network of The Windsor-Essex Parkway is presented within the concept design plates in Appendix A. Further design work on the trail system may alter the location of the pedestrian overpasses identified in the report, along with the pedestrian overpasses identified in the concept design plates. Future decisions regarding the trail network will involve additional consultation with the public and local municipalities.

9.3.7 Drainage and Stormwater Management

This section generally describes the proposed drainage components of The Windsor-Essex Parkway including watercourses/drains adjacent to and crossing the corridor as well as the proposed stormwater management plan. Illustration of the proposed drainage system is presented within the concept design plates in Appendix A of this document, and additional details of the proposed drainage system and assessment methodology are included in the *Draft Practical Alternatives Evaluation Assessment Report – Stormwater Management Plan*. Additional information pertaining to proposed drainage and fisheries impacts as well as potential mitigation measures are presented in Sections 10.4.5 and 10.4.9.

ADJACENT WATERCOURSES AND CROSSINGS

There are numerous existing watercourses adjacent to and crossing The Windsor-Essex Parkway corridor. These primarily include the Wolfe Drain, Cahill Drain, Lennon Drain, Grand Marais Drain, Basin Drain, Youngstown Drain, Titcombe Drain and McKee Drain. Where watercourses cross the proposed freeway, culverts/structures have been designed to convey the 100-year storm without negatively impacting the upstream flood elevations. Where watercourses cross local roads, culverts/structures are designed to convey the 10-year and 25-year storms for spans less than 6 m and greater than 6 m respectively. The following paragraphs describe the manner in which flows in these watercourses will be conveyed as part of The Windsor-Essex Parkway conceptual design.

Wolfe and Cahill Drains

Wolfe and Cahill Drains currently run parallel to Highway 3 conveying runoff from the developed area north of the corridor and crossing The Windsor-Essex Parkway in the vicinity of St. Clair College. The drains have been sized to convey between the 10 and 25-year storm before overtopping Highway 3, with overland flows spilling to the south. Proposed construction of The Windsor-Essex Parkway will require improvements to the conveyance capacity of the drain channels, as well as the drain alignments.

Between Howard Avenue and St. Clair College, the Wolfe/Cahill Drain is re-aligned to the north of the proposed service road in a naturalized channel containing meanderings, vegetation and other measures to enhance the fish habitat. The channel is designed to convey the 100-year storm peak flows without impacting the proposed freeway or upstream floodlines. Due to the below-grade section of the freeway in this area, this Wolfe/Cahill Drain flow will be conveyed to the south side of the corridor through a submerged concrete culvert. The culvert will consist of three 2.0 m diameter concrete pipes, with one pipe acting as a low-flow conveyance pipe, and the remaining two pipes conveying higher storm events.

The West Cahill Drain Tributary currently crosses Highway 3 west of the primary Cahill Drain Crossing at St. Clair College. In an effort to limit the number of submerged culvert crossings under the highway, the tributary will be diverted along the north side of the proposed service road to a confluence with the main Cahill Drain before crossing the service road and freeway at a single location. As the existing tributary connects with the Cahill Drain immediately downstream of Highway 3, this diversion is not considered significant.

Fish passage systems will be provided at the Cahill Drain to provide safe fish passage across the below-grade freeway portion of The Windsor-Essex Parkway. Fish locks are being proposed to raise and lower migrating fish across The Windsor-Essex Parkway thereby maintaining access to upstream spawning areas. This method has proven to be effective in other applications.

Lennon Drain

Lennon Drain currently provides drainage to the residential community east and west of the drain. An existing on-line stormwater management pond is located immediately upstream of the existing Highway 3 crossing, providing quantity storage to the drain and decreasing the overall size requirements for the current crossing structure. To be conservative, this existing stormwater management pond was not considered when sizing the crossing associated with The Windsor-Essex Parkway.

Due to the below-grade section of the freeway in this area, the Lennon Drain will also be conveyed to the south side of the corridor within a submerged concrete culvert. The culvert will consist of a 3.0 m x 1.5 m concrete box culvert structure. The structure has been sized to convey peak flows associated with the 100-year storm without impacting the upstream flood elevations.

As with the Cahill Drain crossing, fish locks are being proposed at the Lennon Drain to raise and lower migrating fish across The Windsor-Essex Parkway, thereby maintaining access to upstream spawning areas.

Grand Marais Drain

Grand Marais Drain currently provides drainage for approximately 2800 ha of upstream drainage area. This drain is conveyed under Highway 3 in a concrete-lined channel approximately 7 m below existing grade. The concrete-lined channel includes a concrete-lined low flow channel with concrete-lined flood banks.

The low existing elevation of the Grand Marais Drain channel provides the opportunity for the freeway to cross above the channel while still remaining below the existing ground level. As such, the Grand Marais Drain flow will be conveyed below the proposed service road and access road within a three-cell 10.0 m x 2.0 m concrete box culvert. The structure has been sized to convey peak flows associated with the 100-year storm without impacting the upstream flood elevations.

Basin Drain

Basin Drain begins at the outlet of the existing 2.1 m x 1.5 m box culvert on the south side of the E.C. Row Expressway. The box culvert is an outfall for a storm sewer system providing drainage for the upstream industrial development.

The vertical alignment of the freeway portion of The Windsor-Essex Parkway rises from below-grade to above-grade between the Spring Garden tunnel and Malden Road in such a manner that the access road is approximately at-grade where it crosses the Basin Drain. As such, the existing Basin Drain storm sewer outfall can be extended or re-aligned to provide conveyance beneath the proposed freeway.

Youngstown Drain

The existing alignment of the Youngstown Drain, which originates within the loop ramp in the southwest quadrant of the existing E.C. Row Expressway/Huron Church Road interchange, currently crosses the proposed freeway alignment where the freeway is proposed to be below-grade. In an effort to limit the need for submerged culvert crossings, the runoff originating within the loop ramp will be realigned to the drainage channel flowing on the north side of the E.C. Row Expressway, connecting to Basin Drain upstream of the proposed culvert. Since the existing drain connects with Basin Drain approximately 200 m downstream of the proposed realignment, the diversion is not considered significant.

Titcombe Drain

Titcombe Drain is a small conveyance channel beginning immediately south of the E.C. Row Expressway. The drain currently conveys a small area from Malden Road to Titcombe Drain southerly.

In the vicinity of Titcombe Drain, the freeway portion of The Windsor-Essex Parkway (core lanes) and realigned E.C. Row Expressway (collector lanes) are above-grade. The proposed freeway (core and collectors) does not impact the drain itself, but will have a minor impact on the drainage area of the drain. Therefore, an analysis will be completed during subsequent design phases to confirm that the existing (pre-construction) peak flow rates of Titcombe Drain will be the same after construction of The Windsor-Essex Parkway.

McKee Drain

McKee Drain currently conveys runoff from an area immediately south of E.C. Row Expressway and west of Titcombe Drain, ultimately discharging to the Detroit River. The existing drain runs parallel to E.C. Row Expressway to west of Matchette Road, where it crosses E.C. Row Expressway. The location of the freeway portion of The Windsor-Essex Parkway will require minor realignments to McKee Drain.

East of Matchette Road, the McKee Drain will be realigned along the south side of the proposed freeway. The existing crossing at Matchette Road will be replaced with a new concrete box culvert, discharging to the existing downstream portion of McKee Drain on the north side of the proposed freeway. Between Matchette Road and the E.C. Row Expressway crossing, McKee Drain will be realigned to the north in an effort to maximize the area available for a proposed stormwater management facility. Downstream of the E.C. Row Expressway, McKee Drain will follow the existing flow route to the Detroit River.

STORMWATER MANAGEMENT PLAN

Stormwater Management Criteria

The Ontario Ministries of Transportation (MTO) and the Environment (MOE) have developed specific protocol for assessing drainage impacts from transportation projects which must be applied to all transportation projects in the province. In general terms, the drainage impact is determined by comparing the existing condition runoff effects within the study area to the proposed condition runoff effects.

For all development projects, quality and quantity treatment of runoff is necessary. Stormwater quality is degraded by increased pollutant loadings (oil, gravel, garbage, etc), measured based on the total impervious percentage increase over the existing condition. Since drainage within the study area discharges to the various tributaries of Turkey Creek, including the Wolfe Drain, Cahill Drain, Lennon Drain, Basin Drain, and Titcombe Drain, which have varying degrees of environmental sensitivity, Enhanced Protection Level quality treatment will be provided to runoff from the highway, where possible, removing a minimum of 80 per cent of total suspended solids (TSS). The MTO requires that quantity control and erosion treatment be provided to ensure that post development flows do not exceed pre development conditions. This requirement also addresses the requirements of the Essex Region Conservation Authority (ERCA). The MOE document "Stormwater Management Planning and Design Manual" outlines the increase in pollutants over the development area, as well as providing guidelines for potential mitigations.

Runoff Conveyance

Runoff from the service road portion of The Windsor-Essex Parkway and below-grade sections of the freeway portion of The Windsor-Essex Parkway (generally within the Highway 3/Huron Church Road corridor) will be captured and conveyed within an urban drainage system consisting of catch basins and storm sewers. The storm sewer system for the proposed freeway will be designed to accommodate the 100-year storm in order to prevent flooding into the driving lanes. The storm sewer system for the proposed service road will be designed to accommodate the 10-year storm.

In below-grade sections of the proposed freeway, several pumping stations are required at the various low points in order to pump stormwater runoff that has been collected in the storm sewer system to the stormwater management ponds at ground-level. Three individual pumps will be provided at each pumping station, with each individual pump capable of handling 50 per cent of the runoff from the 100-year storm. Storage facilities will also be provided at each pumping station for excess runoff volumes. Additional details of the pumping stations will be confirmed during subsequent design phases.

Where the proposed freeway is above-grade along The Windsor-Essex Parkway/E.C. Row Expressway core-collector system, runoff will be captured and conveyed within a median storm sewer system discharging to right-of-way ditching consisting of enhanced grassed swales and roadside ditches. Where the proposed freeway is at-grade east of existing Highway 3, runoff from the proposed freeway will be captured and conveyed within a rural-type drainage system consisting of enhanced grassed swales and roadside ditches.

Stormwater Management

The existing sections of the Highway 3/Huron Church Road and E.C. Row Expressway corridors in the vicinity of The Windsor-Essex Parkway does not currently provide either quality or quantity treatment for runoff from the highway. Therefore, in the existing condition, all pollutant loadings from the Highway

3/Huron Church Road and E.C Row Expressway corridors are discharged directly to the receiving watercourses. In an effort to improve this existing situation, stormwater management providing quality, quantity and erosion treatment will be provided for both the freeway and service road portions of The Windsor-Essex Parkway prior to being discharged to downstream watercourses. To achieve this, stormwater management wetponds are proposed throughout The Windsor-Essex Parkway that are designed to provide *Enhanced Protection Level* treatment as outlined in the Ministry of the Environment (MOE) document entitled *Stormwater Management Planning and Design Manual*. In addition, as part of the concept design, oil/grit separators are proposed at various locations along the proposed service road to provide additional quality treatment for runoff.

A total of nine stormwater management wetponds are proposed within the corridor as part of The Windsor-Essex Parkway concept design to provide quality, quantity and erosion treatment of roadway runoff before being discharged to existing watercourses. The wetponds will provide removal of 80 per cent of total suspended solids (TSS), 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.

9.3.8 Traffic Operations

A detailed traffic analysis (micro-simulation analysis) of the traffic operations for the freeway portion of The Windsor-Essex Parkway between the new customs plaza and North Talbot Road has been undertaken using a VISSIM model. This VISSIM model also incorporated the service road portion of The Windsor-Essex Parkway as well as all key intersections and ramp terminals for the purpose of obtaining travel times, anticipated speeds, delays and traffic queues. The 95th percentile queue lengths (which are the queue lengths expected to occur only 5 per cent of the time) at signalized intersections were used to determine required storage lengths at intersections to accommodate the anticipated demand. It should be noted that the micro-simulation analysis was performed for both year 2035 AM and year 2035 PM peak hours.

Results of the traffic analysis are summarized in this section. Additional information regarding the results of the traffic analysis completed as part of this study can be found in the *Level 3 Traffic Operations Analysis of the Technically and Environmentally Preferred Alternative*.

TRAFFIC VOLUMES

The section of the proposed freeway that carries the most traffic is between Labelle Street and Grand Marais Road in the southbound direction, just downstream from the first on-ramp from the proposed service road. This section carries approximately 3,000 vehicles per hour during the PM peak hour (2035), which corresponds to Level of Service (LOS) “C” operations, with 23 per cent commercial vehicles in the traffic flow. Traffic flow will be at or near the free-flow speed of the freeway, although freedom to manoeuvre within the traffic stream will be somewhat restricted. All other mainline segments operate at LOS “C” or better, and it is expected that traffic on the freeway will operate at free-flow speeds through the 2035 horizon year.

TRAVEL TIME

As previously mentioned, the proposed freeway facility is expected to operate at free-flow conditions between Howard Avenue and the new plaza. The VISSIM analysis (year 2035) demonstrated that travel times to the new crossing from Highway 401 east of the Highway 3 interchange in both AM and PM peak hours would be in the eight minute range. Travel times to the Ambassador Bridge (with the new crossing in place) are anticipated to be in the 10 to 11-minute range during both AM and PM peak hours. The Base Case (future no-build) analysis (year 2035) showed travel times to the Ambassador Bridge in the 18-minute range during the AM peak hour, while inbound traffic (Canada-bound) was found to take over 25 minutes to travel between the Ambassador Bridge and east of the Highway 401/Highway 3 interchange during the PM peak hour. Exhibits 9.12 and 9.13 summarize a comparison of travel times between The Windsor-Essex Parkway and Base Case scenarios.

EXHIBIT 9.12 – TRAVEL TIME COMPARISON: WESTBOUND/NORTHBOUND FROM EAST OF HIGHWAY 3/HIGHWAY 401 INTERCHANGE TO THE NEW CROSSING AND THE AMBASSADOR BRIDGE

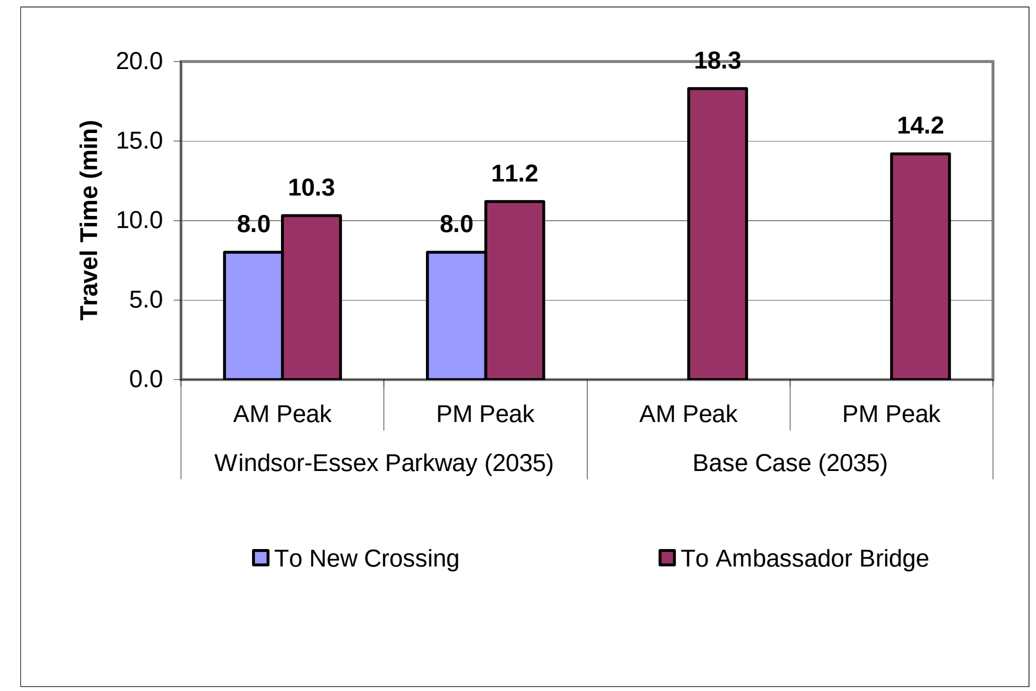
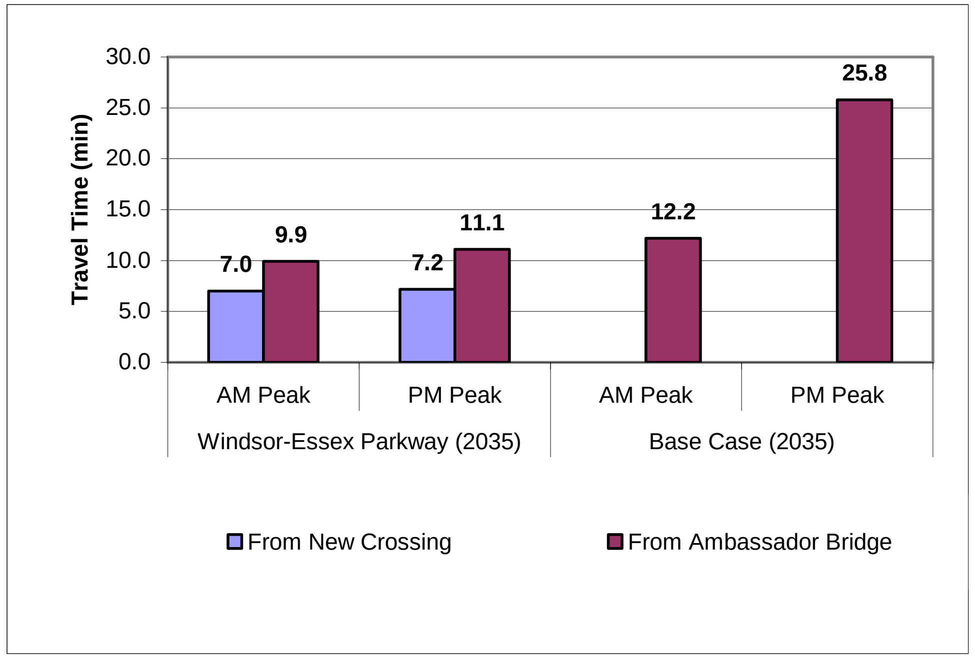


EXHIBIT 9.13 – TRAVEL TIME COMPARISON: EASTBOUND/SOUTHBOUND FROM THE NEW CROSSING AND THE AMBASSADOR BRIDGE TO EAST OF HIGHWAY 3/HIGHWAY 401 INTERCHANGE



INTERCHANGES AND ACCESS POINTS

As discussed in Sections 9.3.1 and 9.3.2, numerous interchanges and access points between the proposed freeway, proposed service road and crossing roads are included in the concept design of The Windsor-Essex Parkway to facilitate mobility and local access in the corridor and maximize the opportunity for cross-border motorists to choose a border crossing. The following ramps to and from the proposed freeway are proposed as part of The Windsor-Essex Parkway:

Northbound/westbound:

1. To Howard Avenue/Highway 3/Laurier Parkway extension/proposed service road (off-ramp);
2. From Highway 3/Laurier Parkway extension, east of Howard Avenue (on-ramp);
3. From proposed service road, west of Howard Avenue (on-ramp);
4. To proposed service road, west of St Clair College (off-ramp);
5. From proposed service road, north of Cabana Road West (on-ramp);
6. To proposed service road, south of Labelle Street (off-ramp);
7. From westbound collector lanes (E.C. Row Expressway), west of Malden Road;
8. To Ojibway Parkway (off-ramp); and
9. From Ojibway Parkway (on-ramp).

Southbound/eastbound:

1. To Ojibway Parkway (off-ramp);
2. From Ojibway Parkway (on-ramp);
3. To eastbound collector lanes (E.C. Row Expressway), west of Malden Road
4. From proposed service road, south of Labelle Street (on-ramp);
5. To Cabana Road West/ Todd Lane (off-ramp);
6. From Cabana Road West / Todd Lane (on-ramp);
7. To proposed service road, east of Huron Church Line (off-ramp);
8. From proposed service road, west of St Clair College (on-ramp);
9. From proposed service road, west of Howard Avenue (on-ramp);
10. To Highway 3/Laurier Parkway extension, east of Howard Avenue (off-ramp); and
11. From Highway 3/Laurier Parkway extension/proposed service road (on-ramp).

INTERSECTIONS/RAMP TERMINALS

All key intersection operations including ramp terminals were analyzed using the VISSIM software package. All intersections are expected to operate at LOS "C" or better through the year 2035, which corresponds to an average delay per vehicle of between 20 and 35 seconds.

Additionally, the 95^{th} percentile traffic queues at the study area intersections were calculated. Results of this queue-length analysis indicate that queues are not anticipated to extend to the upstream intersections.

Windsor-Essex Parkway/Highway 3/Howard Avenue Diversion Roundabout

Analysis of the proposed roundabout at The Windsor-Essex Parkway/Highway 3/Howard Avenue Diversion was performed using both VISSIM (micro-simulation) and ARCADY (Assessment of Roundabout Capacity and Delay) – a static analysis software for roundabout assessments. The following provides a brief summary of the analysis results.

The VISSIM analysis indicates that the roundabout is anticipated to operate well with an overall Level of Service "B" during the year 2035 PM peak hour, which corresponds to an average delay per vehicle of between 10 and 20 seconds.

Results of the ARCADY analysis indicate similar anticipated operation performance measures such as queue lengths and delays during the year 2035 PM peak hour in comparison with the results from VISSIM.

As such, both the VISSIM and ARCADY analyses confirmed that the roundabout will be operating below capacity in the 2035 horizon year.

EMERGENCY SERVICES ACCESS

The study team met with municipal staff and the municipal emergency services representatives to identify access requirements for local emergency services. These discussions identified that:

- A means of accessing the proposed freeway eastbound and westbound at Todd Lane/Cabana Road West is very important. Windsor Fire has a station just east of Huron Church Road on Cabana Road West, and LaSalle Municipal Emergency Services has a facility at Malden Road/Normandy Road. Services based at these facilities would require access to the new freeway primarily via Todd Lane/Cabana Road West to best respond to incidents on the freeway.

- A means of accessing the proposed freeway westbound at Howard Avenue is also desirable. Such a connection would facilitate access to incidents in the westbound lanes between Howard Avenue and Cousineau Road/Sandwich West Parkway.

The Windsor-Essex Parkway has been developed to accommodate the requested access by inclusion of an eastbound on-ramp at Todd Lane/Cabana Road West, a westbound on-ramp from the proposed service road west of Todd Lane/Cabana Road West and a westbound on-ramp from the proposed service road west of Howard Avenue.

9.3.9 Illumination

Full illumination will be provided along the median of the freeway portion of The Windsor-Essex Parkway, between North Talbot Road and the inspection plaza. Conventional illumination systems will be provided on the outside of the service roads and side roads, and throughout some sections of the trail system. Interchanges and intersections within The Windsor-Essex Parkway will also be adequately illuminated. Illumination will be designed to provide sufficient lighting for the roadways while limiting light trespass beyond the roadways, and full cut-off luminaires will be provided.

Illumination within the tunnel sections of the freeway will be designed to ensure driver's eyes can adjust to the changing lighting conditions between the tunnel and open sections of the freeway. Adaptive lighting will be provided that varies the strength of illumination depending on the time of day and lighting conditions outside the tunnel, and illumination density may be gradually reduced from the portal to the interior of the tunnels.

Additional details of the illumination system will be determined during subsequent stages of design of The Windsor-Essex Parkway. Further stages of design will also include the consideration of renewable energy sources to power portions of the illumination system, including the use of solar panels to power lighting along the trail system.

9.3.10 Advanced Traffic Management System (ATMS)

The Windsor-Essex Parkway will include an Advanced Traffic Management System (ATMS). In keeping with the concept of creating an Intelligent Border Crossing, the ATMS system will help to reduce travel delay and travel time uncertainty, enhance safety, reduce the costs associated with cross-border travel, and reduce the negative impacts of the border crossing to surrounding communities. The ATMS system will assist in the rapid detection and response to incidents and dissemination of incident, roadway condition, and travel time information to motorists and other stakeholders including, but not limited to, border services agencies, local communities, law enforcement and public safety agencies, commercial fleets, and broadcast media.

OVERVIEW OF ATMS ELEMENTS

The ATMS elements of the Recommended Plan include the following:

- Variable Message Signs (VMS)
- Closed Circuit Television (CCTV)
- Vehicle Detection
- Communications System
- Queue Warning System (QWS)

Variable Message Signs (VMS)

VMS will be placed on the mainline and adjacent arterials at decision points, and at key locations for travel times. All VMS will be mounted over the roadway except for arterial signs which will be on the side of the road. VMS will be used to inform motorists of potential diversion routes, slow traffic ahead, incidents ahead, lane designations for customs and maintenance activities, etc. VMS can also be used to inform motorists of travel times to key destinations such as customs and toll booths.

Closed Circuit Television (CCTV)

CCTV will be used to monitor the roadway operations. Cameras will be positioned to provide full coverage of the roadway and all tunnel sections, and each VMS will also be visible from a camera. Cameras will provide full pan/tilt/zoom capability, and, as a secondary consideration, will provide viewing of ramps and cross streets. One camera will be placed in each direction of travel at all tunnel sections in order to provide full viewing in both directions. Cameras at tunnel sections will be positioned such that the cameras will monitor traffic in the tunnel from behind the vehicles in order to eliminate the blooming effect created by vehicle headlights and thus ensure a clear view of traffic in the tunnel.

Vehicle Detection

Vehicle detectors will be placed at regular intervals along the freeway and the ramps using minimally invasive detectors in each travelled lane of both directions of travel. These detectors will have closer spacing in tunnel sections to enhance detection capability. The vehicle detectors will be monitored to determine congestion levels and the occurrence of incidents. The vehicle detection system will be capable of providing speed, volume, occupancy, and vehicle length classifications by using dual detectors in each lane at every detector location on the mainline. Presence detectors will be provided on on-ramps at future ramp metering locations; ramp metering will eventually allow for the management of congestion that occurs as a result of incidents, border crossing delays, and demand exceeding capacity of the roadway.

Communications System

Communications will consist of a single mode fibre optics system within the project area. The communications system shall connect all ATMS elements within the project area and connect these elements to a hub that will be located near the Highway 401/Highway 3 interchange to MTO's West Region Traffic Operations Centre (London TOC). Connections to other systems and users are expected to be made from the London TOC. The communications network will provide sufficient bandwidth to support full motion video at 30 frames per second from each camera simultaneously as well as data from all field devices and provide a two-way path for command and monitoring of all field devices. The connection from the hub to the London TOC will be via leased media. A repeater system will also be required in the tunnel sections for use by emergency personnel.

Queue Warning System (QWS)

The purpose of the QWS is to alert drivers of downstream congestion, in the rare event of traffic queues caused by delays at the border crossing. The goal of the QWS is to reduce rear end collisions that typically occur at the back of the queue. The QWS will be fully automated and does not require operator input. As part of the QWS, certain vehicle detectors approaching the border crossing in the westbound direction will be designated as queue detectors to detect in real time when traffic queues have developed. An overhead VMS will be positioned at each queue detection station. The QWS will display a queue message at the overhead VMS immediately upstream of where the queue is detected so that vehicles have time to reduce their speed and be prepared to stop when they reach the back of the queue. The QWS will also inform London TOC operators of when traffic is starting to queue.

9.3.11 Pavement

Existing roadways of all classification within the study area are currently surfaced with either rigid (concrete) or flexible (asphaltic concrete) pavements. Current improvements to Highway 401 east of the study area are mostly being completed using concrete pavements. Preliminary pavement designs have been completed as part of this study for the purposes of preliminary cost estimating and identifying feasible rigid and flexible pavement designs to be carried forward to subsequent design phases. Additional details of the preliminary pavement designs are included in the *Draft Pavement Engineering for Planning Report – Area of Continued Analysis*.

Pavement surface has significant influence on the generation of noise from the roadway and therefore must be considered carefully during subsequent design phases. Design of the pavement surfaces to be used for all elements of The Windsor-Essex Parkway will be carried out in such a way that the generation of noise from roadway elements does not exceed the noise levels assumed within the acoustic modelling carried out within this Environmental Assessment for the purposes of identifying impacts to surrounding communities and mitigation strategies.

9.3.12 Utilities

There are numerous utilities located along The Windsor-Essex Parkway corridor that will require protection, relocation or abandonment as a result of the proposed plan. Utilities within the corridor include, but are not limited to the following:

- City of Windsor – watermains
- City of Windsor – sanitary sewers
- Town of LaSalle – watermains
- Town of LaSalle – sanitary sewers
- Town of Tecumseh – watermains
- Hydro One – aerial transmission lines
- Hydro One – aerial distribution lines
- Enwin – aerial and buried distribution lines
- Essex Powerlines – aerial and buried distribution lines
- Union Gas – various pressures and distribution lines
- Union Gas – Union Gas Panhandle Pipeline
- BP Canada – Liquid Petroleum Gas (LPG) lines
- Bell Canada – telephone and communications, aerial lines and buried duct
- Cogeco – cable TV and communications

It is anticipated that utility relocation will generally be completed prior to the primary stages of construction, as described in Section 9.3.4. Any existing utilities along the proposed Windsor-Essex Parkway corridor that are no longer required as a result of property acquisitions will be removed. Utilities that must be maintained parallel to The Windsor-Essex Parkway will be relocated to utility corridors running on either side of the service road, where possible and as required. Where design requirements or grading limits are such that the utility corridors cannot be located adjacent to the service roads, utility corridors will be located either along the proposed trail system or along the new limits of the right-of-way. In these situations, the trail system will be designed to allow access to the utility corridors for maintenance purposes. Where the utility corridors are located at the limits of the proposed right-of-way, a maintenance access road will be provided above the utility corridor. This access road could be constructed with either granular or geo-textile material, in order that vegetation be allowed to grow while still providing a stable driving surface for vehicles accessing the corridor.

It is anticipated that utilities that are required to cross The Windsor-Essex Parkway will be located within the tunnel sections, where available. These utilities will be located above the roof of the tunnel, within the topsoil that will be placed for landscaping purposes. Special insulation or heating will be required for watermains crossing the tunnels to protect them from freezing. In areas where utilities that are required to cross the freeway and service road cannot make use of the tunnels, separate utility bridges may be required.

Where the freeway will be constructed at or above existing ground between Ojibway Parkway and west of Huron Church Road, existing aerial plant will be relocated below ground. It is not anticipated that any existing buried plant will require relocation along either Malden Road or Matchette Road. Relocations for buried plants will be required along Ojibway Parkway and Chappus Street. At the east end of The Windsor-Essex Parkway east of Howard Avenue, utilities running along existing Highway 3 and Outer Drive will be relocated to follow the realigned roadways. One Hydro One tower located at existing Howard Avenue at South Talbot Drive will require relocation as a result of the Howard Avenue diversion.

An allowance could be made for municipal services (i.e. sanitary sewer and watermain) to service potential development areas between Gratiot Street and Reddock Street. These municipal services could include a sanitary forcemain and a sewage pumping station situated west of the freeway connecting to an existing sanitary system east of The Windsor-Essex Parkway. Similarly, a watermain connection could be considered at this location with a connection to the existing watermain network east of the service road. These utilities could be located above the roof of the Pulford Street tunnel. Other alternatives for connections to local services should be considered during the development approval process. Implementation of these services will be dependent on the approval of development plans in this area, and MTO would be responsible solely for providing service connections across The Windsor-Essex Parkway to this area and not the actual servicing of the lots.

The following is a list of some of the major utilities to be impacted by The Windsor-Essex Parkway, along with the potential strategy for relocation. Complete details of the proposed utility relocation strategy will be confirmed during future design stages of the project.

- 500mm watermain connecting the City of Windsor to the Towns of LaSalle and Tecumseh. This watermain may be relocated to a utility bridge crossing the freeway near Howard Avenue. The metering station connections to the Towns of LaSalle and Tecumseh can be relocated to the south side of the freeway.

- 300mm sanitary sewer force main connecting the Town of LaSalle to the City of Windsor. This force main may be relocated to cross under the freeway in the vicinity of St. Clair College. This work may also require crossing under the relocated Cahill Drain.
- Existing sanitary sewers at Lambton Road and Spring Garden Road will require redirection to eliminate existing crossings across the future below-grade freeway. These sanitary sewers may be redirected to connect to an existing sanitary sewer in the Second Avenue road allowance.
- The Union Gas Panhandle Pipeline runs underneath Lambton Road and Grand Marais Road and is a major pipeline connection between the United States and Canada. This pipeline will likely require relocation due to construction of the Grand Marais Tunnel. The relocated pipeline will likely be relocated near the Turkey Creek/Grand Marais Drain to minimize the depth required to cross below the freeway.
- Hydro One transmission lines in the vicinity of Ojibway Parkway and Matchette Road at the proposed freeway. The elevation of these lines will be increased at this location to meet the clearance requirements between the lines and the above-grade freeway.
- Three BP Canada LPG lines between Ojibway Parkway and Matchette Road will cross the proposed freeway. The impacts of the freeway crossing these pipelines in fill will require further review.

9.3.13 Assumptions, Designations and Road Closures

ASSUMPTIONS

Permanent assumptions of portions of municipal roads will be required. Municipal roads affected by permanent assumptions, along with approximate limits of assumption, are as follows:

- Huron Church Road (City of Windsor) - from City of Windsor/Town of LaSalle municipal boundary northerly to E.C. Row Expressway.
- E.C. Row Expressway (City of Windsor) - from Huron Church Road westerly to Ojibway Parkway.
- Ojibway Parkway (City of Windsor) - from the Essex Terminal Railway crossing southerly to E.C. Row Expressway and from E.C. Row Expressway south-westerly to Broadway Street (intersection on the east side of Ojibway Parkway).

Temporary assumptions of portions of municipal roads will be required to facilitate construction. Assumed portions not required for highway purposes will be transferred back to municipalities upon completion of construction. Roads affected by temporary assumptions are as follows:

- Outer Drive (Town of Tecumseh)
- South Talbot Road (Town of Tecumseh)
- Howard Avenue (Town of Tecumseh and Town of LaSalle)
- Surrey Drive (Town of LaSalle)
- Montgomery Drive (Town of LaSalle)
- Cousineau Road (City of Windsor)
- Sandwich West Parkway (Town of LaSalle)
- Geraedts Drive (City of Windsor)
- Huron Church Line (Town of LaSalle)
- Cabana Road West (City of Windsor)
- Todd Lane (Town of LaSalle)
- Tenth Street (Town of LaSalle)
- Pulford Street (City of Windsor)
- Grand Marais Road West (City of Windsor)
- Lambton Road (City of Windsor)
- Labelle Street (City of Windsor)
- Sixth Street (City of Windsor)
- Seventh Street (City of Windsor)
- Bethlehem Avenue (City of Windsor)
- Spring Garden Road (City of Windsor)
- Malden Road (City of Windsor)
- Matchette Road (City of Windsor)
- Broadway Street (City of Windsor)

DESIGNATIONS

The Windsor-Essex Parkway corridor (including the freeway and service road components as well as assumed portions of Huron Church Road, E.C. Row Expressway and Ojibway Parkway) will be designated as Controlled Access Highway (CAH). The approximate limits of the CAH designation will extend from the end of the existing Highway 401 CAH designation (at Highway 3) in Tecumseh to the Ojibway Parkway/Broadway Street East intersection in Windsor.

The Howard Avenue Diversion will be designated as CAH between the roundabout and the Howard Avenue Connection, south of this point it will be designated as King's Highway. The portion designated as King's Highway will be transferred to the relevant municipality after the completion of construction.

The following existing and/or proposed roadways will be designated as King's Highway to facilitate construction and will be transferred to the relevant municipality after the completion of construction.

- Howard Avenue Connection
- Huron Church Line cul-de-sac
- Tenth Street Extension to Reddock Street
- Service Road Connection along the Pittsburgh Street right-of-way*
- Reddock Street-Gratiot Street Connection*
- Spring Garden Road Connection to Bethlehem Avenue (across from Sixth Street)

* NOTE: A connection to the service road along the Pittsburgh Street right-of-way (across from Pulford Street) would be considered only if development plans in this area are approved prior to construction commencing on the Windsor-Essex Parkway. In this instance, the ministry would construct this connection across the Pulford Street tunnel along with a connection between Reddock Street and Gratiot Street. Any further development of the local road network in this area would be the responsibility of the developer and subject to applicable provincial and municipal approvals.

All municipal road rights-of-way that are assumed on a temporary basis to facilitate construction will be designated as King's Highway.

ROAD CLOSURES

The following municipal roads (or portions thereof) within the area to be designated for The Windsor-Essex Parkway will require closure:

- Outer Drive (Town of Tecumseh)*
- Mero Avenue (Town of Tecumseh)
- Howard Avenue (Town of Tecumseh and Town of LaSalle)*
- Grosvenor Drive (Town of LaSalle)
- Surrey Drive (Town of LaSalle)
- Homestead Lane (Town of LaSalle)
- Kendleton Court (Town of LaSalle)
- Cousineau Road (Town of LaSalle)
- Gould Street (Town of LaSalle)
- Reddock Street (City of Windsor)
- Lansing Street (City of Windsor)
- Pittsburgh Street (City of Windsor)
- Gratiot Street (City of Windsor)
- Sansotta Court (City of Windsor)
- Lamont Avenue (City of Windsor)
- Valebrook Street (City of Windsor)
- Fifth Street (City of Windsor)
- Yorktown Avenue (City of Windsor)
- Spring Garden Road (City of Windsor)
- Chappus Street (City of Windsor)
- Beech Street (City of Windsor)

* NOTE: In the area of the proposed Howard Avenue Diversion, existing Howard Avenue will be closed at or about the south limit of the Apostolic Christian Church and Outer Drive will be closed between the service road and South Talbot Road.

10 ENVIRONMENTAL EFFECTS AND MITIGATION OF THE RECOMMENDED PLAN

This section identifies the impacts on environmental features resulting from the Recommended Plan as described in Chapter 9 and summarizes the proposed measures for mitigation.

As noted in Chapter 9, subsequent to the selection and presentation of The Windsor-Essex Parkway, Plaza B1 and Crossing X-10B as the components of the TEPA, several refinements were developed. These refinements were based on additional technical analysis and stakeholder consultation, with the objectives of further enhancing the benefits or mitigating the effects of the TEPA and are discussed in more detail in the introduction to Chapter 9.

A factor-specific assessment and analysis of environmental impacts was carried out for the TEPA. The refinements to the TEPA were being undertaken during the summer and fall of 2008, in parallel with the factor-specific analysis. The analysis undertaken for the TEPA has been reviewed and updated for the Recommended Plan, as appropriate. The updated work is documented in a series of technical memoranda listed below. In the case of the reports dealing with Natural Heritage and Landscape Planning, timing permitted inclusion of the Recommended Plan in the original technical reports, and no technical memorandum is required.

The most significant refinement to the TEPA is the modification to the alignment of The Windsor-Essex Parkway, which has been shifted to the north, to integrate The Windsor-Essex Parkway into the E.C. Row Expressway corridor, further away from the Spring Garden area. This refinement was included in the assessment of the impacts that are summarized in the following sections of this chapter.

In summary, all of the mitigation measures outlined in this chapter apply to the Recommended Plan

List of Technical Reports and Memoranda

- *Air Quality Impact Assessment - Technically and Environmentally Preferred Alternative (December 2008)*
- *Air Quality Impact Assessment – The Recommended Plan Analysis – Technical Memorandum (December 2008)*
- *Human Health Risk Assessment - Technically and Environmentally Preferred Alternative (December 2008)*
- *Human Health Risk Assessment – The Recommended Plan Analysis – Technical Memorandum (December 2008)*
- *Social Impact Assessment - Technically and Environmentally Preferred Alternative (December 2008) –*
- *Social Impact Assessment – The Recommended Plan Analysis – Technical Memorandum (December 2008)*
- *Noise & Vibration Impact Assessment - Technically and Environmentally Preferred Alternative (December 2008)*
- *Noise & Vibration Impact Assessment – The Recommended Plan Analysis – Technical Memorandum (December 2008)*
- *Built Heritage Impact Assessment - Technically and Environmentally Preferred Alternative (December 2008)*
- *Built Heritage Impact Assessment – The Recommended Plan Analysis – Technical Memorandum (December 2008*
- *Archaeological Assessment - Technically and Environmentally Preferred Alternative (December 2008)*
- *Archaeological Assessment – The Recommended Plan Analysis – Technical Memorandum (December 2008*
- *Natural Heritage Assessment - The Recommended Plan (December 2008)*
- *Urban Design and Landscape Planning Report – The Recommended Plan (December 2008)*
- *Draft Practical Alternatives Evaluation Working Paper – Economic Impact (May 2008)*
- *Economic Impact – The Recommended Plan Analysis – Technical Memorandum (December 2008)*
- *Draft Practical Alternatives Evaluation Working Paper – Waste and Waste Management (May 2008)*
- *Waste and Waste Management – The Recommended Plan Analysis – Technical Memorandum (December 2008)*
- *Existing and Planned Land Use – The Recommended Plan Analysis – Technical Memorandum (December 2008)*
- *Draft Practical Alternatives Evaluation Assessment Report – Existing and Planned Land Use (May 2008)*

It should be noted that all of the environmental factors, with the exception of the Human Health Risk Assessment have been used at every evaluative stage leading to the development of the Recommended Plan. The Human Health Risk Assessment was conducted for the Recommended Plan.

To facilitate the reader's understanding of this section, some background information drawn from the technical reports and technical memoranda is included for each factor.

The methodologies for the various investigations are consistent with the work plans that were prepared by the study team and reviewed by applicable agencies and interested stakeholders. This approach is also consistent with the approved *EA Terms of Reference (ToR)*, May 2004.

For each factor, including the Human Health Risk Assessment, the analysis of the environmental effects has been made of the future "No-Build" case and for the Recommended Plan.

10.1 Air Quality

ASSESSING AIR QUALITY IMPACTS

The Ontario Ministry of the Environment (MOE) as a component of the MOE standard setting process has developed a list of the Ambient Air Quality Criteria (AAQCs). The AAQCs are effect-based levels in air, with variable averaging time (e.g., 24-hour, 1 hour and 10 minutes) appropriate for the effect that it is intended to protect against. The AAQCs, which represent desirable levels in ambient air, are used for assessing general air quality and the potential for causing an adverse effect. The Standards Development Branch of the MOE publishes a set of guideline limits in *Ontario's Ambient Air Quality Criteria* (MOE, 2008). These criteria are not enforceable and with certain contaminants such as acrolein, the AAQCs are set below ambient background concentrations.

Federal Air Quality Objectives encompass three levels of air quality objectives: maximum desirable level (MDL), maximum acceptable level (MAL) and maximum tolerable level (MTL). The MAL is intended to provide adequate protection against effects on soil, water, vegetation, materials, visibility, personal comfort and well-being. The MAL is considered to be a realistic objective. **Table 10.1** summarizes the applicable available criteria from the MOE and Environment Canada.

The existing air quality is greatly influenced by local, regional, 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 contaminants from the heavily industrialized areas of Detroit, nearby communities and beyond. Air quality impacts in the area are dominated by the substances that combine to produce smog or acid rain. A report by the Ministry of the Environment on *Transboundary Air Pollution in Ontario (2005)* indicates that for Windsor, eliminating all Ontario sources of emissions of $PM_{2.5}$ and NO_2 will have no impact on air quality during smog days due to the significant contribution from transboundary sources.

Air quality effects of the Recommended Plan and future "No-Build" have been assessed using a combination of existing air monitoring data and air dispersion modelling. Air dispersion modelling must be used to assess the impacts of future changes, such as implementation of the alternatives, and changes in fuels, vehicle technologies and traffic volumes. The predictive air quality model (CAL3QHCR) used is specifically designed to assess impacts from roads and highways. The model incorporates the differences between moving vehicles, and queued vehicles that are idling, as well as differences in road elevations and other parameters.

Potential air quality effects from roadways decrease with increasing distance from the roadway. Therefore, the greatest effects will occur immediately adjacent to the roadway.

TABLE 10.1 - AIR QUALITY CRITERIA FOR ASSESSED CONTAMINANTS

Contaminant	Averaging Time	MOE AAQC $\mu g/m^3$ (ppb)	Federal AQ Objective or Maximum Acceptable Level (MAL) ($\mu g/m^3$)
NO_x	1 h	400 (200)	400
	24 h	200 (100)	200
	Annual	-	100[1]
$PM_{2.5}$	24 h	30	30 *
PM_{10}	24 h	50 (interim)	-
PM	24 h	120	120
	Annual	60	70
Acrolein	24 h	0.08	-
	½ hr	0.24	-
SO_2	1 hr	690	900
	24 hr	275	310
	Annual	55	62
Carbon Monoxide (CO)	1 hr	36,200	36,200
	8 hr	15,700	15,700
Carbon Dioxide (CO2)	-	-	-
VOC	-	-	-
1,3 Butadiene	-	-	-
Benzene	-	-	-
Acetaldehyde	½ hr	500	-
	24 hr	500	-
PAHs[2]	24 hr-	22.5	-
Formaldehyde	24 hr	65	-

Notes
NO_x – nitrogen oxides – sum of nitrogen dioxide (NO_2) and nitric oxide (NO)
$PM_{2.5}$ includes all particulate matter with an aerodynamic diameter less than 2.5 µm – considered respirable
[1] MAL is for NO_2
- Indicates no criterion available
comes into force in 2010
2 – surrogate of naphthalene used

ASSESSMENT METHODOLOGY

The analysis of future air quality conditions was completed using the following approach:

- Compile data on contaminants listed in the Air Quality Work Plan, which was approved by regulatory agencies;
- Determine background concentrations;

- Input traffic data for future conditions, including The Windsor-Essex Parkway, Plaza B1 and Crossing X-10B;
- Calculate pollutant emissions from the highway corridor for existing and future conditions;
- Use air dispersion model (CAL3QHCR) with meteorological data from Windsor Airport to determine future air pollutant concentrations in the vicinity of the corridor (essentially all of west Windsor) and at sensitive receptor locations (such as schools and residences); and,
- Compare pollution concentrations corresponding to future "Build" and future "No-Build" conditions.

Data on the existing air pollutant concentrations in the Windsor area was obtained from two MOE air monitoring stations located on College Avenue and on University Avenue. These monitoring stations were considered representative of air quality in Windsor.

Traffic projections were developed for the Detroit River International Crossing study for all main roads in the corridor for each year considered in the assessment, which were 2015, 2025 and 2035. This included the future "No-Build" case (i.e. expected traffic volumes if no new access road/crossing is built), as well as for the Recommended Plan.

Emission rates from these vehicles were input into the CalTrans CAL3QHCR roadway dispersion model, which is accepted for use in Ontario by the MOE for assessment of transportation impacts and is supported by Environment Canada. Improvements in fuels and technologies legislated to occur over the next several years and historical fleet turnover rates were considered in these emission rates. The model incorporated meteorological data from Windsor Airport, to determine predicted air pollutant concentrations at over 2400 receptor locations in West Windsor.

The uncertainties and inevitable variability associated with predicting future traffic flows, weather conditions and emission rates place some limitations on the accuracy of model results; however, the results are useful and acceptable for comparing between the future "No-Build" and the Recommended Plan.

PREDICTED AIR QUALITY IMPACTS

In general, the air quality assessment shows that potential impacts from The Windsor-Essex Parkway would be small relative to background concentrations and limited to areas in close proximity to the road. The greatest benefit of The Windsor-Essex Parkway will be from the reduction in truck idling along the traffic corridor. Overall the implementation of The Windsor-Essex Parkway will mitigate future transportation related air quality impacts within the study area over the future "No-Build" alternative because it provides a wide right-of-way and improvements in traffic flow, by eliminating stop-and-go conditions caused by the traffic signals that exist in the Highway 3 / Huron Church Road corridor today.

The study found that in comparing future conditions to existing conditions for both future "No-Build" and with The Windsor-Essex Parkway, air quality will improve for gaseous pollutants, particularly NO_x, due to newer engine technologies and fuels despite the predicted increase in traffic due to population growth, but could slightly deteriorate for coarser particulate due to road dust arising from increased traffic flows. Standards for coarser particulate (PM_{10}) are based on visibility.

The results of the study show, that the existing air quality in the study area is typical of an urban setting, which is characterized by elevated pollutant concentrations in relation to rural areas, with periodic compromised air quality due to particulate based contaminants, which typically occurs during smog events.

Overall, based on the results of the study, the air dispersion modelling demonstrated that the potential air quality impacts arising from either future "No-Build" or the Recommended Plan would be very small and limited to nearby the roads.

In general terms, The Windsor-Essex Parkway will mitigate future transportation related air quality impacts within the study area for gaseous contaminants but may result in higher concentrations of PM within a limited distance from The Windsor-Essex Parkway. However, by implementing The Windsor-Essex Parkway, air quality improvements will be realized outside the Area of Continued Analysis (ACA), as traffic will be returned to the corridor, instead of infiltrating throughout local streets.

Air quality in the vicinity of the proposed plaza will be impacted relative to future "No-Build" within approximately 250 m from the Plaza property boundary by 2035. The highest impacts will likely occur within 50 to 100 m of the boundary. Given the location of the plaza in an industrial area, impacts to residential areas are minimized.

The results for the proposed crossing indicate that the maximum predicted concentrations of $PM_{2.5}$ and NOx are generally similar to those of The Windsor-Essex Parkway. Given the location of the crossing impacts to air quality for residential areas are not predicted.

The Ministry of the Environment (MOE) publishes air quality conditions in different locations in Ontario, including Windsor, through their Air Quality Index (AQI). This information is available to the public on an hourly basis. The AQI is an indicator of air quality based on the highest pro-rated hourly pollutant measurements of six common air contaminants, of which NO_2 and $PM_{2.5}$ are considered. The range of concentration of the contaminants determines the Air Quality Index. When $PM_{2.5}$ is the driver for air quality, a change of about 6 $\mu g/m^3$ is required to move the Index from one rating to another. For NO_2 the concentration differences required to move the Index from one rating to another is about 100 $\mu g/m^3$.

Air quality impacts generally follow expected trends based on the changes in vehicle emission factors and increases in traffic volumes over time. In summary, results of the modelling indicate that:

- the concentrations of the contaminants decrease as the distance from the roadway increases;
- with the exception of 1hr concentrations of NOx and 24 hr concentrations of $PM_{2.5}$ under maximum conditions in the vicinity of the proposed plaza, there are no differences in concentrations relating to the Recommended Plan that would cause the AQI to be degraded;
- gaseous contaminants generally reduce over time although the reduction is partially off-set by the increase in traffic; and
- the PM concentrations increase with time, as traffic volumes are predicted to increase from 2015 through 2035.

While not specifically included in the analysis, traffic conditions along Huron Church Road north of the E.C. Row towards the Ambassador Bridge are expected to decrease by approximately 20 per cent with the Recommended Plan. Congestion and traffic queuing should also decrease accordingly, thereby resulting in further air quality improvements.

MITIGATION MEASURES

The construction of the Recommended Plan has the potential to affect the air quality in the vicinity of the site during the construction phase. As with any construction site, these emissions will be of relatively short duration and are unlikely to have any long-lasting effect on the surrounding area. Dust impacts should be mitigated through the use of proper controls, such as:

- periodic watering of unpaved (unvegetated) areas;
- periodic watering of stockpiles;
- limiting speed of vehicular travel;
- use of water sprays during the loading, unloading of materials;
- sweeping and/or water flushing of the entrances to the construction zones; and,
- use of calcium chloride.

Road sweeping practices in accordance with maintenance standards will be employed to reduce silt loading on The Windsor-Essex Parkway.

These types of controls aid in minimizing impacts to the environment during the construction phase.

10.1.1 Human Health Risk Assessment

The primary objective of the Human Health Risk Assessment (HHRA) was to help determine the potential for an overall adverse effect on human health for residents in the immediate area of the Recommended Plan.

Human Health Risk Assessments are used to determine if a particular chemical poses a significant risk to human health. If it were possible to prevent humans from being exposed to chemicals then there would be no need to conduct a risk assessment. Since it is impossible to prevent such exposure, and since exposure to many naturally occurring substances also pose health risks, risk assessments become an important tool in evaluating these risks.

Risk assessment helps scientists and regulators identify serious health hazards and determine ways to reduce exposure so that there is no significant health risk to the public. The term “human health risk assessment” is often misinterpreted because people think that a risk assessment will provide information as to whether an exposure to a chemical causes a current health problem or symptom that they are experiencing. Risk assessments do not provide this information; studies that look for these types of linkages are generally epidemiological studies. These studies generally include a survey of health problems in a community and provide a comparison of these health problems to other cities, communities or populations as a whole.

While both of these types of studies are important, health risk assessments and epidemiological studies have different objectives. Most epidemiological studies examine whether past chemical exposures may be responsible for documented health problems in a specific group of people whereas human health risk assessments evaluate whether current or future chemical exposures will pose health risks to a broad population such as a city or a community. The scientific methods used in a human health risk assessment cannot be used to link individual illnesses to past exposures to chemicals; additionally, health risk assessments and epidemiological studies cannot prove that a specific chemical caused an individual’s illness.

Regulatory bodies use risk assessments to determine drinking water guidelines, site clean-up criteria, and the safe use of pesticides, to name a few. Human health risk assessments use both sound science and professional judgment and are a constantly developing process.

Health Canada has carried out a preliminary epidemiological study in the Windsor area related to mortality and cancer incidence for the period 1979-1999. The results suggest a potential risk for diseases associated with long-term air pollution exposure such as bronchitis, emphysema, lung cancer and lung cancer incidence and mortality from circulatory diseases. These diseases were attributed to transborder air pollution but are preliminary in nature and further studies are underway to assess chronic cardiorespiratory outcomes in relation to air and traffic pollution.

HUMAN HEALTH RISK ASSESSMENT PROCESS

The primary objective of the human health risk assessment was to help interpret the potential for an overall adverse effect of the Recommended Plan, including potential adverse effects to people and in the immediate area surrounding the proposed roadway. The human health risk assessment used the predicted concentrations for the Recommended Plan that were provided in the Air Quality Impact Assessment. The plaza and crossing were not assessed in the Human Health Risk Assessment since there were no nearby receptors (see *Air Quality Impact Assessment - Technically and Environmentally Preferred Alternative (December 2008)* for more details). Three horizon years (2015, 2025 and 2035) were evaluated in the risk assessment.

The methods followed in this risk assessment comply with procedures outlined by regulatory agencies such as Ontario Ministry of the Environment, Environment Canada, Health Canada, the Canadian Council of Ministers of the Environment (CCME) and the United States Environmental Protection Agency (U.S. EPA).

The chemicals of concern identified in the Air Quality Impact Assessment (refer to Section 10.1) were gaseous air pollutants (nitrogen oxides (NO_2), and sulphur dioxide (SO_2)), fine particulate matter ($PM_{2.5}$), and volatile organic compounds (VOC) such as acrolein, acetaldehyde, benzene, formaldehyde and 1, 3-butadiene which are associated with vehicle emissions. The Human Health Risk Assessment used four different steps as provided in the various regulatory frameworks. They are:

- the problem formulation stage, in which the various chemicals of concern, receptors, exposure pathways, and scenarios are identified;
- the exposure assessment, where predicted exposures are calculated for the various receptors and chemicals of concern;
- the hazard assessment, in which exposure limits for the chemicals of concern are determined; and,
- the risk characterization stage, where the exposure and hazard assessment steps are integrated.

Since the Recommended Plan for the Detroit River International Crossing study is currently in the planning stage, it is not possible to directly measure emissions associated with the proposed roadway, their potential effect on the ground level air concentrations or possible health outcomes in the community. Therefore, various mathematical models for the prediction of emission rates were used. These are summarized in the document entitled, “*Air Quality Impact Assessment - Technically and Environmentally Preferred Alternative (December 2008)* to determine the exposure to various human receptors considered to be representative of the community. The risk assessment included exposure through inhalation and ingestion of chemicals associated with vehicle emissions through direct deposition to vegetation, as well as deposition to soils and uptake by vegetation.

ASSESSMENT METHODOLOGY

The Human Health Risk Assessment involved a comparative evaluation between the Recommended Plan for the Detroit River International Crossing and the existing conditions or future “No-Build” scenario in the local area as outlined in the Air Quality Impact Assessment (Section 10.1).

The possibility of short-term (1 hour, 8 hour, 24 hour) and long-term (annual) adverse human health outcomes were assessed based on exposures at the maximum concentration that would occur at different areas along The Windsor-Essex Parkway. The use of the maximum predicted pollutant concentrations in each area covered the range of air concentrations that potentially could occur from activities on The Windsor-Essex Parkway. Conservative assumptions of exposure were used in the assessment to ensure that risks were not underestimated and this most likely resulted in an over-estimate of exposure. One example of a cautious assumption is that it was assumed that residents were exposed to vehicle emissions 24 hours a day, 7 days a week over their entire lifetime.

The Human Health Risk Assessment results were expressed as deterministic (single point) hazard quotients and cancer risk levels for long-term exposures, as well as hazard quotient values for both short-term and long-term exposures to gaseous air pollutants. In general, regulatory agencies such as Health Canada, the Ontario Ministry of the Environment and the U.S. EPA concur that a hazard quotient value below one (1) (for assessing gaseous air pollutants since they include background), a hazard quotient of 0.2 (for pathways assessment examining direct and indirect exposure from air pathways) and an incremental life-time cancer risk level of one in a million (1×10^{-6}) are not considered significant and are legislated by the Ontario Ministry of the Environment. The use of an incremental risk limit of 1×10^{-6} as set out by the Ontario Ministry of the Environment is more stringent than the 1×10^{-5} incremental risk limit that is acceptable to Health Canada and the U.S. EPA.

PREDICTED HUMAN HEALTH RISKS

The short-term and long-term health risk associated with exposure to the gaseous air pollutants (SO_2 and NO_2) was assessed based on using a hazard quotient value of 1 since background exposures were taken into account. The results showed that:

- The emissions of sulphur dioxide (SO_2) arising from vehicles traveling along the roadway for the future “No-Build” and the Recommended Plan scenarios were similar to background. Therefore, short-term risks arising from exposure to SO_2 were no different to background and the Recommended Plan does not result in any increased risk in comparison to the future “No-Build” scenario.
- The short-term and long-term risks associated with NO_2 were similar to background. In general, the short term and long term risks associated with exposure to NO_2 for the Recommended Plan are lower than the future “No-Build” scenario, indicating that there is less risk to residents in communities surrounding The Windsor-Essex Parkway for the Recommended Plan scenario. This is due to the reduction of stops and starts and idling on The Windsor-Essex Parkway. The Air Quality Impact Assessment attributes the lower NO_2 concentrations to less stopping and starting and idling on The Windsor-Essex Parkway.

There are no health based thresholds for Total Particulate Matter; the World Health Organization has concluded that fine particulate matter ($PM_{2.5}$) is more hazardous to health than coarser particles such as PM_{10}. Fine particulate matter ($PM_{2.5}$) background concentrations in the Windsor area are relatively high and are above health based toxicity reference values. The predicted concentrations for background exposure to $PM_{2.5}$ accounts for a significant portion of the hazard quotient for both the future “No-Build” and the Recommended Plan scenarios. In general, the Recommended Plan scenario results in lower hazard quotients than the future “No-Build” scenario. Thus, the results of the risk assessment associated with ($PM_{2.5}$) demonstrate that in general, future risks to residents in communities adjacent to the Recommended Plan will be lower than the future “No-Build” scenario which indicates that there is less risk to residents in communities surrounding The Windsor-Essex Parkway for the Recommended Plan scenario. This is due to the reduction of stops and starts and idling on The Windsor-Essex Parkway.

The incremental cancer risk values for long-term exposure to carcinogenic VOCs were above the regulatory risk level of one-in-a-million (1×10^{-6}) as was background exposure. However, the incremental risks for the Recommended Plan were no different than the risks associated with background. Thus, the Recommended Plan does not result in increased incremental cancer risks over background.

Hazard quotients for non-carcinogenic VOCs (predicted exposure dose ÷ chronic toxicity reference value) for background, future “No-Build” and the Recommended Plan scenarios were below 0.2 for benzene and 1,3-butadiene. Hazard quotients for acrolein, acetaldehyde and formaldehyde were all above 0.2 for background for the future “No-Build” and the Recommended Plan scenarios. However, the hazard quotients for the Recommended Plan were no different than the risks associated with background. Thus, the Recommended Plan does not result in increased incremental adverse health risks over background since background air concentrations in the Windsor area accounts for the major exposure for residents.

CONCLUSIONS

Based on the risk assessment, the following key conclusion can be drawn:

- Predicted concentrations of gaseous air pollutants, fine particulate matter, and Volatile Organic Compounds for the future “No-Build” and the Recommended Plan scenarios are not much different from each other and background. Thus, the Recommended Plan does not result in an increased health risk over the future “No-Build” or background scenarios. This conclusion supports the findings of the Air Quality Impact Assessment.

An evaluation of the uncertainties in various measurements and methods used in the risk assessment indicated that the risks have been over-estimated as a result of the assumptions made about exposure (which were generally cautious) (i.e. assumptions were made to overestimate exposures). The results of this uncertainty analysis support the overall conclusion of the assessment that the Recommended Plan does not result in an increased health risk over the future “No-Build” or background scenarios.

10.2 Socio-Economic Environment

10.2.1 Noise and Vibration

The Ontario Ministries of Transportation (MTO) and Environment (MOE) have developed a series of policies and guidelines for assessing noise impacts from transportation projects which must be applied to all MTO projects in the province. In late 2006, the MTO released its *Environmental Guide for Noise* to provide guidance to MTO personnel and consultants in the analysis of highway noise and its effects.

In general terms, the noise impact is determined by comparing the predicted noise levels after implementation of the Recommended Plan with the predicted future "No-Build" noise levels experienced by sensitive receptors. Typically, where the predicted Recommended Plan noise level exceeds the future "No-Build" noise level by 5 or more decibels (dB), mitigation measures to reduce the predicted levels to within 5 dB of the future "No-Build" levels, are to be considered. However, additional mitigation may also be required in specific circumstances.

Vibration impact is usually evaluated in terms both human response to building vibration and potential for structural damage to buildings. It is generally accepted that 0.14 mm/sec is the threshold of vibration perception for the average person. As the vibration level increases from this threshold, the average person will become increasingly uncomfortable. At 50 mm/sec, vibrations are likely to cause structural damage to buildings.

ASSESSMENT METHODOLOGY

The methodology for estimating noise levels consisted of the following key steps for evaluation of the Recommended Plan:

- Traffic data were established for the base year (2006), as well as for future years (2015, 2025 and 2035), representing baseline conditions and conditions for the Recommended Plan. Also, certain key information was determined, including Annual Average Daily Traffic (AADT), percentage of automobiles, percentage of heavy and medium trucks, speed limit, road elevation, local topography, surrounding ground conditions, etc.
- Sensitive noise receptors along the Recommended Plan route were identified. The receptors selected for assessment were those that were most potentially impacted (i.e. subject to frontline exposure) by the Recommended Plan. Multiple receptors were selected to capture the anticipated variations in exposure to noise from traffic based on the alignment of existing roads, and variations in traffic volumes. On this basis, a total of 41 receptors were selected along The Windsor-Essex Parkway.
- Baseline future ("No-Build") and project noise levels were estimated at each of the receptors, using the MOE's STAMSON traffic noise model. This was performed for 2015, 2025, and 2035. The key inputs to the STAMSON noise model are: traffic volume, percentage of automobiles, percentage of heavy and medium trucks, posted speed limit, road gradient, road surface type, local topography, surrounding ground surface cover, noise source height, receptor height and source to receptor distance.
- The impact of the plaza/crossing was assessed based on two groups of receptors; a total of 21 and 13 receptors were identified in Sandwich Towne and areas between Ojibway Parkway to Malden Road, respectively.
- The CADNA-A noise model was used to estimate receptor noise levels for the plaza and crossing. This model can be used to predict noise levels from both stationary and mobile noise sources. The modelling approach considered vehicle queuing, idling and acceleration. The key inputs to this model included maximum hourly vehicular traffic (cars and trucks), plaza layout, vehicle sound levels, and locations of vehicles at plaza sites.

The methodology used for estimating vibration impacts consisted of the following key steps:

- Identify areas within the proximity to the crossing, plaza and access road alternatives that were potentially vulnerable to ground vibrations.
- Receptors within the potentially vulnerable areas were identified for vibration monitoring.
- Ground vibration levels were measured at two locations (side by side) at each of eight receptors. The traffic at each location was monitored over a period of 30 minutes. The monitoring was conducted over two different days to identify any differences in the vibration patterns. (Note: If traffic is busy, truck speed reduces considerably, thereby reducing the vibration levels).

PREDICTED NOISE AND VIBRATION IMPACTS

The following points summarize the noise and vibration impacts predicted at receptor locations near the Recommended Plan:

- In terms of construction related noise, additional details on construction equipment quantities, work schedules and duration will be available during subsequent design phases. However, based on past experience, it is anticipated that activities such as clearing, excavation, soil compaction, roadway construction, etc., would increase sound levels at receptor locations in close proximity to construction staging and work areas. A wide variety of mitigation measures can be employed to reduce construction noise at receptor locations.
- Without mitigation, noise exceedances of >5 dB were observed at many of the receptors along The Windsor-Essex Parkway when compared to the future "No-Build" sound levels. In several cases, an exceedance of >10 dB was predicted.
- Given their relative distances to sensitive receptors, the noise generated solely from the plaza location and crossing is not expected to cause a high noise impact. The noise modelling results show that a high noise impact (> 10 dB above future "No-Build" receptor sound levels) is predicted, without mitigation, for some of the receptors located in the Ojibway Parkway to Malden Road area.
- Baseline vibration levels were measured in 2006 at eight locations, including areas close to a church and houses. The Recommended Plan was reviewed to identify residences, hospitals and other potentially vulnerable receptors, within 25 m from the edge of the roadway. The results showed for the most part that, the levels measured were within the threshold of perception limit of 0.14 mm/sec. These levels decay slowly with distance at close proximities to the road edges and should the roadway contain an expansion joint, etc., these levels may increase to the threshold level of perception. Hence, as a precautionary measure, receptors within 25 m from the edge of the roadway were counted as potential locations where vibration levels could potentially reach the threshold value of 0.14 mm/sec.

MITIGATION RESULTS

While a number of specific mitigation measures are identified below, there will be an opportunity for refinement to these measures during the subsequent design phases of the project and through ongoing consultation with residents during the next stages of the project.

- The study determined that many locations adjacent to The Windsor-Essex Parkway, will realize reductions in noise levels and that most other locations will be below the threshold for hearing an increase in noise in comparison with the future "No-Build". The noise barrier locations are illustrated in the plan included in Appendix A Recommended Plan - Concept Design Plans.
- Vibration mitigation measures are not required for the Recommended Plan since vibration levels are not expected to approach 50 mm/sec which is the threshold for structural damage.

The following measures will be undertaken to mitigate noise during the construction phase of the Recommended Plan:

- Ensure that all construction equipment used are in good repair, fitted with functioning mufflers, and complies with the noise emission standards outlined in MOE guidelines.
- To the greatest extent possible, limit the most noisy construction activities to daytime hours.
- Where the sequencing of construction permits, permanent noise barriers and/or berms may be built during the early phases of construction in order to reduce construction noise levels at receptor locations.
- Maximize the distance between the construction staging areas and nearby receptors to the greatest extent possible.
- Maintain construction haul roads to prevent potholes and ruts to avoid the loud noise caused by construction vehicles travelling over uneven road surfaces.
- Develop a process for receiving, investigating and addressing construction noise complaints received from the public.

Consultation with communities will continue during the design and construction phases, to provide additional opportunities for input on noise mitigation measures during both the construction and operation stages.

CONCLUSIONS

Based on the noise and vibration analyses completed, the following key conclusions can be drawn:

- With a 5 m high barrier in place, the proposed project is predicted to result in no to a marginal noise impact for The Windsor-Essex Parkway It should also be noted that for many receptors, especially along the north side of the Windsor-Essex Parkway, a decrease in noise levels compared to future "No-Build" noise levels was predicted.
- For Plaza B1, a potential noise impact was identified for receptors in the Ojibway Parkway to Malden Road areas that are in the vicinity of the proposed approach roadway. However, the receptor sound levels can be reduced to within 5 dB above the future "No-Build" sound levels with a 5 m high acoustic barrier installed on the proposed approach roadway. Due to the relatively large distance between Crossing B and the closest receptors in Sandwich Towne, no noise mitigation measures are proposed for the Crossing.
- The Windsor-Essex Parkway is not expected to cause vibrations in the 50 mm/sec range; therefore, no structural damage is anticipated from vehicular traffic.
- Through the use of best practices, noise can be mitigated during the construction and operating phase.
- There will be opportunities for public input into specific noise mitigation measures during the next stages of design and construction.

10.2.2 Protection of Community and Neighbourhood Characteristics

Social impacts can be positive or negative but the goal within a specific undertaking is to produce an overall improved benefit to society (otherwise the project would have never been undertaken in the first place). However, with any project there remains the potential for parts of the population to be negatively impacted in particular those who work, live or recreate where an actual physical undertaking is to occur.

The Social Impact Assessment (SIA) examined the effects to the communities of South and West Windsor, LaSalle, and Tecumseh as a result of the proposed project activities. Within these larger communities a number of smaller neighbourhood communities were identified and studied as part of the SIA.

ASSESSMENT METHODOLOGY

The methodology and tools for predicting the social impacts of the Recommended Plan included both quantitative and qualitative data. Social data collection for this study included use of the social household questionnaire data, public consultation activities and comment forms, context sensitive solution workshops, and the review of information provided by the Ministry of Transportation (MTO) property agents. In addition, input from other disciplines was also incorporated.

The household questionnaire was initially administered to residents potentially displaced by one or more of the practical alternatives in July 2006. The household questionnaire was intended to capture information about the affected population, their sense of attachment (tenure, status of ownership), property usage, and the perceived effect of the Recommended Plan on their use and enjoyment of their property. Due to design refinements, including the addition of the green space buffer with The Windsor-Essex Parkway, additional households, not previously approached to complete a questionnaire, were identified. In addition, those households within the Recommended Plan that did not previously complete a questionnaire were also identified. For all of these households, residents were provided an opportunity to complete the questionnaire in August 2008.

A similar approach was taken in July 2006 for identifying and collecting data from social features displaced or potentially disrupted by the project. A facility-specific questionnaire was developed to collect data for potentially displaced or disrupted social features and was administered during an interview with the facility manager. The questionnaire and interviews collected information on programs, the service catchment area, number of users, and access to the facilities.

The Public Information Open Houses (PIOH) held June 18 & June 19, 2008 and the Context Sensitive Solution Workshop (CSS) held on June 24 & 25, 2008, regarding design features of the TEPA and mitigation measures to reduce impacts, provided the opportunity to obtain qualitative data from attendees. The PIOH and CSS were particularly helpful in gaining insight with respect to:

- Neighbourhood community character and cohesiveness;
- Satisfaction with the community as a place to live;
- Perceptions of the various components (tunnel locations, length, green space usage) of The Windsor-Essex Parkway alternative and related issues/concerns on how the proposed access road, may or may not effect residents and the community; and

- Unique features related to individual properties, and/or the neighbourhoods within the area of investigation.

Several neighbourhood meetings were also conducted at the request of residents (including two with Spring Garden/Bethlehem and Armanda Street residents, and one with Oliver Estates). These neighbourhood meetings were particularly helpful in gaining insight with respect to:

- Specific neighbourhood concerns;
- Specific neighbourhood design improvements, and
- Perceptions of how the Recommended Plan would impact residents and the neighbourhood.

PREDICTED SOCIAL IMPACTS

The Windsor-Essex Parkway

Key objectives of the community identified early in the study process included the removal of truck traffic from local streets and an overall improvement to the quality of life for residents living adjacent to the existing transportation corridor. In response to consultation input during the analysis and evaluation of practical alternatives, The Windsor-Essex Parkway was designed to help mitigate identified community concerns associated with the corridor. Benefits to the communities along the corridor provided by The Windsor-Essex Parkway include improving cross border traffic flow, separation of local and freeway traffic, the addition of over 300 acres of a green space buffer between the freeway/local service roads and adjacent residents, eleven tunnels providing greater connectivity between neighbourhood communities on both sides of the Highway 3/Huron Church Road corridor, and providing opportunities for 20 km of recreational trails.

The Windsor-Essex Parkway will result in displacement of approximately 360 homes, located along the periphery of neighbourhoods from Howard Avenue to Ojibway Parkway; changes to cohesion and character in some neighbourhood communities; the loss of 48 businesses; and, overall disruption and nuisance effects to both residents and the travelling public during the construction period.

The social features that are displaced by the project serve the broader community, and include the Montessori Pre-School, the Royal Canadian Legion, the Heritage Park Alliance Church, and Trillium Court Housing. In all cases, the Ministry of Transportation will assist these parties where possible to help ensure a seamless transition for the relocation of the facilities, programs and services offered by these social features.

The displacement of businesses along the proposed access road will have limited overall economic impact. Despite the immediate loss of revenue and employment, the loss of business will be offset by gains in other businesses, or the displaced businesses will relocate to other areas.

Noise attenuation for the effects of The Windsor-Essex Parkway have been addressed by locating much of the roadway below grade and through the construction of noise barriers or berms where necessary. Commitments are also being made to ensure that the construction noise is addressed through specific measures outlined in the Noise and Vibration Technical Report (*Noise and Vibration Assessment - Technically and Environmentally Preferred Alternative (December, 2008*) and in the *Noise and Vibration – The Recommended Plan Analysis – Technical Memorandum (December 2008).*

Emergency service providers have been consulted and are aware that they will need to reassess their resources, level of service and access routes for The Windsor-Essex Parkway, and in general, their ability to access their entire area of coverage, in order to ensure provincially mandated response times are met.

During construction, MTO has committed to maintaining traffic flow in the Highway 3/Huron Church Road corridor, and utilizing best practices for dust suppression and noise attenuation. Although by its very nature, the construction phase will result in disruption and nuisance effects to residents and the travelling public, the MTO commitment will minimize these impacts.

Plaza and Crossing

The plaza is located within the industrial lands along the Detroit River. Within the industrial park, there are only a small number of residents that did not move out with the creation of the industrial park. The five properties remaining will be displaced with the new plaza and crossing.

The only social feature to be displaced is the Erie Wildlife Rescue. This is a regional facility with unique requirements; however, its continued programming and services are not dependant on its existing location.

Generally, due to its location in industrially designated lands, the plaza will have limited social impacts. As discussed in the "*Draft Practical Alternatives Evaluation Working Paper – Economic Impact (May 2008)*" (Section 10.2.3), there are impacts associated with the loss of industrial park space; however, from a community perspective, the plaza will not change community character, and will impact few residents.

Nuisance impacts to residential areas associated with the operation of the plaza and crossing are not anticipated, given the significant distance from these areas.

MITIGATION MEASURES

The Windsor-Essex Parkway design was developed based on a combination of the practical below grade and tunnel alternatives. The alternative was developed to help mitigate identified community concerns including the need to provide and enhance community connections between neighbourhoods on either side of the freeway. The tunnel sections included as part of The Windsor-Essex Parkway have been strategically placed to maintain and enhance existing access across and along the corridor, as well as to provide new connections for roads, trails and wildlife linkages. In addition, the green space buffer along the corridor helps to protect adjacent residents from noise and dust affects associated with local and freeway traffic.

Other mitigation measures recommended to reduce the social impact on the broader and neighbourhood communities include those that are currently taking place and those actions that will take place during future design stages:

- Implementation of the "willing seller-willing buyer" property purchase program;
- Fair market value for properties required for the project;
- Develop and maintain regular communications with emergency services and the municipalities with regard to changes to the road network, municipal services, etc.
- Implement a communication process during construction to manage disruption effects experienced by residents;
- Assess the need for improvements to Montgomery Drive.

- For residents in the Spring Garden area, protect and maintain and landscape as much as possible to enhance the lands between the residences and the facility.
- For The Windsor-Essex Parkway, illumination will be designed to provide sufficient lighting for the roadways while limiting light trespass beyond the roadways, and full cut-off luminaires will be provided. Additional details of the illumination system will be determined during subsequent stages of design.
- Where practical, lighting used at the plaza should be designed to minimize light intrusion into surrounding areas, while ensuring adequate lighting for operational requirements. This may involve using full cut-off luminaires, shielding, if necessary, and investigating the use of conventional lighting in place of high mast lighting. Lighting should be focused downwards and shielded where necessary to prevent light spillage into nearby residential and community areas.

CONCLUSION

Despite the potential for impacts for a project of this magnitude, community consensus dating back to the time of the Planning/Need and Feasibility (P/NF) Study (2001 to 2004) supports the need for the project. For those who are directly impacted (businesses and residences displaced), strategies such as advance purchases have been offered as detailed in the mitigation measures. As detailed in Chapter 3, meetings with residents directly impacted by the Recommended Plan have occurred, leading to further analysis and refinements to the Recommended Plan and in some cases, additional property acquisition.

The extensive level of consultation associated with this project has provided MTO with strong insights into community impacts and, therefore, the ability to design and mitigate around those impacts to the extent that is feasible. With the commitments that MTO has made with regard to minimizing impacts to the neighbourhoods during construction, that is, maintaining access and traffic flow, implementing best practices for dust suppression and noise attenuation, residents will experience effects typical of highway construction projects.

It is recognized that the project will impact the adjacent neighbourhood communities to varying degrees. Through continued consultation with those impacted, residents can contribute to the management of the changes that affect them and their quality of life.

The operation of The Windsor-Essex Parkway will result in a number of benefits to the community and to the neighbourhoods along its route. Specific design features that collectively contribute to an improved quality of life for residents include:

- Placement of the highway below grade and the elimination of stop-and-go traffic.
- A 300 acre green space buffer protects adjacent neighbourhoods and residents from long term nuisance effects such as noise and dust generated by the freeway and service roads.
- Strategic placement of the 11 tunnels and noise barriers and earth berms
- Enhanced recreational opportunities as a result of the proposed trail network and green space.
- New and enhanced community linkages to neighbourhoods adjacent to and across the transportation corridor.

10.2.3 Economic Impacts

Individual business impacts were analyzed in terms of two categories: displaced businesses and disrupted businesses. Displaced businesses would cease to operate at their current location due to the physical alignment of The Windsor-Essex Parkway, plaza or crossing. These businesses will be financially compensated. A disruption to a business occurs when the proposed roadway, plaza or border crossing encroaches on a business' property, decreases the amount of passing traffic, or alters traffic access and/or visibility. When physical disruptions requiring property acquisition occur, financial compensation will be provided.

The positive and negative impacts of the alternatives on businesses beyond the ACA were also assessed. This included the impact of the alternatives on the businesses located along Huron Church Road north of the E.C. Row Expressway.

Through the property acquisition process, displaced businesses are offered fair market value for their businesses which will provide them an opportunity to relocate if they so choose. The *Draft Practical Alternatives Evaluation Working Paper – Economic Impact (May 2008)* documents that there are many opportunities for businesses to relocate.

PREDICTED ECONOMIC IMPACTS

The impacts associated with the Recommended Plan are summarized in Table 10.2.

TABLE 10.2 - SUMMARY OF ECONOMIC IMPACTS ASSOCIATED WITH THE RECOMMENDED PLAN

Segment	Businesses Displaced	Businesses Disrupted	Number of Jobs Displaced	Assessed Property Value Displaced ($Millions)[1]
W-E Parkway Highway 401 to Howard Avenue	8 Businesses • XTR Gas & Convenience • Vachon Bakery Outlet • Nature's Health Consulting Co. • The Sleep Factory • Autobon Car Wash • Phillips Tool & Mould Ltd. • Tyler Hard Chrome Inc. • Hellenic Banquet Halls	2 Businesses • Kentown Power Equipment • Weston Bakeries Ltd. Ontario	90	$4.4
W-E Parkway Howard Avenue to Cousineau Road	16 Businesses • Windsor Crossing Outlet Mall (15 businesses) • Alibis Sports Bar & Music	30 Businesses • Windsor Crossing Outlet Mall (30 businesses)	112	$11.3
W-E Parkway Cousineau Road	None	None	None	None

[1] The assessed property values provided in this column have been updated based on the latest assessment information and may differ slightly from the values used in the May 2008 Economic Impact Practical Alternative Working Paper.

Segment	Businesses Displaced	Businesses Disrupted	Number of Jobs Displaced	Assessed Property Value Displaced ($Millions)[1]
to Lennon Drain				
W-E Parkway Lennon Drain to Pulford Street	8 Businesses • L.A. Collision South Windsor Ltd. • Town & Country Animal Clinic • Mac's Convenience Stores • Sandcastle Recreation • Fred's Farm Fresh Ltd. • Joe's Woodcraft Of Windsor Ltd. • Tim Hortons • Best Western Continental Inn	None	120	$7.0
W-E Parkway Pulford Street to Malden Road	20 Businesses • Montessori Preschool (Lambton Plaza) • C.K. Havana Shop (Lambton Plaza) • Scholar's Choice (Lambton Plaza) • Outbreak Sportz (Lambton Plaza) • Second Edition (Lambton Plaza) • Worldsource Financial Management (Lambton Plaza) • First Choice Chinese Restaurant (Lambton Plaza) • Lily's Nail (Lambton Plaza) • Gino's Pizza (Lambton Plaza) • A.C. Soccer & Sports (Lambton Plaza) • Century Fire Equipment Ltd. • Blue Bell Motel • Feelgood's Billiard's Sports Pub Rhythm & Grill • Comfort Inn • Petro Canada • Golden Griddle Family Restaurants • King Kone Ice Cream • Garry St. John 1996 • Euro Tech Auto Service • Aqua Turf Lawn Sprinkler	None	120	$8.2

Segment	Businesses Displaced	Businesses Disrupted	Number of Jobs Displaced	Assessed Property Value Displaced ($Millions)[1]
Total W-E Parkway	52	32	442	$31.0
Plaza B1-Crossing B	1 Business • A&P Metals	3 Businesses • Southwestern Sales Corporation Ltd. • Nemak of Canada Corp. • West Windsor Power – Suez Energy Generation NA	5	$0.13
TOTAL	53	35	447	$31.1

MITIGATION MEASURES

Through the property acquisition process, displaced businesses are offered fair market value for their operation, which will provide them with an opportunity to relocate if they so choose.

In total, the Recommended Plan is expected to displace 53 businesses that employ 447 full-time equivalent staff. The combined assessed value of displaced business property is $31.1 million. A total of 35 businesses will be disrupted by the Recommended Plan.

For businesses that are physically disrupted, financial compensation will be offered. For businesses that are not physically disrupted but are affected through visibility, or reduced traffic volumes, several other forms of mitigation will be used:

- The service road network will allow for adequate access to existing commercial corridors;
- Signage will be considered at certain locations to make motorists aware of businesses/business clusters, as policies permit; and
- Efforts will be made during the construction phase to ensure access is maintained to operating businesses.

CONCLUSION

The Recommended Plan results in the displacement of 53 businesses and the disruption of 35 additional businesses. Displaced and physically disrupted businesses will be offered financial compensation. The mitigation measures summarized above will be used to assist the newly disrupted businesses.

As discussed in the "*Draft Practical Alternatives Evaluation Working Paper – Economic Impact (May 2008)*", it is estimated that construction of The Windsor-Essex Parkway (estimated to cost approximately $1.6 billion) could provide 12,000 project related jobs. When the crossing and plaza are included, the economic benefits are even greater. Given the current economic climate in Windsor, the jobs created through the project have added significance. Furthermore, the expanded transportation network and new border crossing will improve the speed and efficiency of goods and services crossing the border which will have a tremendous impact on the economies of both Ontario and the Windsor-Essex region.

10.2.4 Impacts to Existing and Planned Land Use

The Windsor-Essex Parkway with its provision for buffer space adjacent to the corridor, and the opportunities for various recreational land uses such as trails and greenspace is consistent with local municipal planning policies.

Potential impacts result from land use being changed from either residential, commercial, open space, industrial, or vacant to a transportation-related use.

When examining the various Official Plan policies, the Recommended Plan is consistent with the development strategy, healthy communities, environment, land use, infrastructure, urban design and heritage conservation policies of the *City of Windsor Official Plan* and greenway land use policies of the Town of LaSalle. The Recommended Plan provides opportunities to connect communities and provide new open space and parklands in areas that previously did not have such land uses. In addition, the Recommended Plan provides opportunities to create new recreation way land uses, as supported in the *Town of LaSalle Official Plan.*

The proposed plan will not have a significant impact on the development plans outlined in the Official Plans of the *City of Windsor, Town of Tecumseh, Town of LaSalle, and Essex County.* Opportunities to minimize potential property impacts associated with the Recommended Plan will be reviewed during future design stages in consultation with municipalities.

The international plaza on the Canadian side of the bridge crossing will be situated within the former Brighton Beach residential neighbourhood, which is currently zoned for industrial land uses. Over time, most of the residences have been acquired and removed so the area is generally vacant. Heavy industrial land uses surround these sites and are considered more compatible with the activities that are associated with a plaza. Government and institutional land use impacts for the plaza consist of less than one hectare of impacts. Additionally, there are no agricultural land uses in the vicinity of the plaza crossing alternatives.

The bridge crossing is also located in a predominately industrial area, and will impact water dependant industrial land uses. Water dependant industrial land uses are often hard to relocate, due to the lack of available industrial waterfront property.

The bridge approach traverses the eastern portion of Hydro One's Keith Transformer Station site. The bridge approach has been situated to avoid the need for physical relocation of the existing transformers. Although it is not currently scheduled, Hydro One has also indicated that at some point in the future there may be a need to expand the Keith Transformer Station. The location of the bridge approach structure will preclude the ability for expansion of the transformer station to the north. Studies to secure the necessary approvals to expand have not been initiated by Hydro One. Hydro One has also indicated that the use of salt as a de-icing agent on the bridge approach may have a negative impact to the operation of the existing transformers.

MITIGATION MEASURES

The bridge approach was situated to avoid the need for physical relocation of the existing Keith Transformer Station. Potential future expansion of the Keith Transformer Station will be considered during the property acquisition process. Further consultation with Hydro One will be conducted during future design phases to identify the need to mitigate impacts with respect to salt usage on the bridge approach (i.e. deck heating, use of other de-icing agents, shielding of certain transformer elements, etc.). Potential compensation regarding restrictions to future expansion plans will be dealt with by Transport Canada/Public Works Canada during the property acquisition process.

CONCLUSION

In summary, the Recommended Plan provides opportunities to develop new open spaces, natural areas and which can be made consistent with the existing and future the land use envisioned for the *City of Windsor, Town of Tecumseh, Town of LaSalle and Essex County* through the development of an integrated Urban Design and Landscape Plan during later design stages (refer to the *Urban Design and Landscape Planning Report – The Recommended Plan (December 2008).*

Further consultation between Hydro One and Transport Canada/Public Works Canada will be completed during future design phases.

10.2.5 Property Acquisition Process

In order to reduce uncertainty for property owners affected by the Recommended Plan, MTO and TC are proceeding with property acquisition on a willing buyer/willing seller basis. Compensation will be provided at fair market value, which is determined at the time of purchase by a property appraisal report forming the basis for negotiations. Other ancillary costs are negotiated on a case-by-case basis.

In some locations, it may be necessary to acquire property on a temporary basis, in order to facilitate a particular construction operation. Compensation will also be provided with respect to temporary property requirements. Upon completion of construction, temporary property will be returned to the owner. All reasonable attempts will be made to restore the land to its original condition.

If the Detroit River International Crossing environmental assessment study has been approved by the Minister of the Environment, MTO and TC will initiate purchase of all the remaining lands required for construction.

If an amicable agreement cannot be reached, MTO and TC will proceed in accordance with the provisions of the applicable Expropriations Act. MTO and TC respect owners rights under the laws of Ontario and Canada, and those rights will be fully explained to applicable residents.

CONCLUSION

The advance purchase process initiated by MTO and TC has been beneficial in reducing uncertainty for affected parties.

10.2.6 Waste and Waste Management

An area of investigation was established for the Waste and Waste Management report that encompasses directly impacted properties associated with the Recommended Plan. For the purposes of this discussion, "directly impacted" properties refers to those properties in which all or a portion is situated within the proposed land requirements of the crossing, plaza or The Windsor-Essex Parkway.

Neighbouring and adjacent properties that are not situated within the proposed property requirements have not been visited; however, as part of the evaluation of specific sites, adjacent properties were evaluated. This evaluation focused on the potential for the presence of pre-existing contaminants and wastes.

The MTO has established guidelines related to environmental protection, including "*Environmental Protection Requirements, for Transportation Planning and Highway Design, Construction, Operation and Maintenance, April 2004*" and the "*Environmental Standards and Practices User Guide, December 2006"* (ESP Guide). The ESP Guide is further divided into specific sections including Section 9, *Contaminated Property and Excess Materials Management* which covers the identification and management of contaminated property referred to as MTO's contaminated property process.

ASSESSMENT METHODOLOGY

MTO's contaminated property process has the following major stated goals:

- identify past and present site activities;
- evaluate the existing environmental liabilities, current environmental performance, and environmental risk of a property; and
- determine and undertake contamination management.

To achieve these goals, the MTO's process for evaluating contaminated property is divided into the following six (6) steps:

1) Contamination Overview Study (COS): is a general overview of the study area to identify properties/areas with the potential for site contamination.
2) Preliminary Site Screening (PSS) is a quick and broad review of a single property to determine the potential for contamination.
3) Phase I Environmental Site Assessment (ESA): is a detailed review and non-intrusive investigation to identify actual, or potential contamination on, in, or adjacent to, a property. The Phase I ESA must be prepared according to the *Canadian Standards Association Z768-01 Phase I Environmental Site Assessment.*
4) Phase II Environmental Site Assessment (ESA) is an intrusive site investigation to confirm and delineate the extent of suspected environmental liabilities and property contamination issues that have been identified in previous steps. The Phase II ESA is typically conducted as part of the detail design.
5) Site Management is the management of contamination at the site and can include preparing the Remedial Work Plan / Site Management Plan, conducting remedial work and carrying out confirmatory sampling, and it may involve both facilities and property.
6) Risk Assessment is the management of the site based on the risk associated with the contamination on that specific site; this is unlike the above assessments that compare results to contaminant criteria.

The Contamination Overview Study (COS) undertaken for this study involved record reviews and study area reconnaissance. Collected data (i.e., base land use, select environmental databases, aerial photographs, available technical reports, historical topographic maps and fire insurance plans) was analyzed to identify known contaminated sites. Data was further analyzed to evaluate the relative potential and severity for contamination. Ratings of Known, High, Moderate or Low potential for contamination were applied to properties impacted by the Recommended Plan. The assignment of ratings was based on the potential likelihood and severity of contamination based on land use and URS' estimate of relative risk. Properties that were rated Known, High or Medium were identified for further investigation using the PSS process.

RESULTS

Approximately 36 individual properties have been assessed based on PSS. To thoroughly evaluate each site, the review also included a review of historical aerial photographs, a review of available City directories, a request for fire insurance plans and inspection reports provided by Risk Management Services (RMS, formerly CGI) and a EcoLog ERIS database covering the TEPA (dated July 23, 2008) Additionally, materials were compiled and a review was conduction using additional historical aerial photographs, at scales ranging from 1:4,000 to 1:10,000, obtained from the City of Windsor and the National Air Photo Library.

The properties visited to date have primary been commercial/light industrial properties which were initially developed in the 1950s and 1960s. Based on site visits, interviews, and historical information, the Areas of Concern (AOC) identified to date are associated with:

- former gasoline service stations,
- former landfills,
- former vehicle repair facilities,
- former auto wreckers,
- facilities with on-site fuel storage,
- existing autobody shops,
- former coal and coal slag and coal ash storage facilities,
- industrial facilities with septic systems (which increase the likelihood of contaminants entering soil or groundwater), and
- potential for contaminated fill materials to have been imported to the sites during development.

No actual contamination has been noted on these properties; however the potential for contamination has been identified, based on previous usage. The types of contaminants that may have impacted soil or groundwater can cover a broad range, including, but not limited to:

- volatile organic compounds (VOCs),
- waste materials, including material legally and illegally deposited,
- chlorinated solvents,

- polyaromatic hydrocarbons (PAHs)
- petroleum hydrocarbons,
- polychlorinated biphenyls (PCBs), and
- heavy metals.

In addition, based on the date of construction of some of the structures on these sites, some may contain asbestos-containing materials (ACMs), lead-based paints (LBP), and polychlorinated biphenyls (PCBs) in electrical equipment.

MITIGATION

To reduce the uncertainty of whether contamination is present, Phase II ESAs are being conducted on properties identified as having contamination potential. The Phase II ESA is an intrusive investigation, involving sampling and analysis of soil, water or other components.

To assess the environmental quality of the soil and groundwater, the laboratory analytical results will be compared to applicable site restoration standards provided in *Soil, Groundwater and Sediment Standards for Use Under Part XV.1* of the *Environmental Protection Act* (EPA), dated March 9, 2004 (MOE SCS).

These standards are referred to in *Ontario Regulation 153* under the EPA called the *Record of Site Condition Regulation (O.Reg.153/04*). O. Reg. 153/04, which came into effect October 1, 2004, applies to properties that require the filing a Record of Site Condition (RSC) either due to a zoning bylaw change to a more sensitive use (e.g. industrial to residential) or for voluntary purposes. O.Reg.153/04 presents a methodology for the environmental assessment of properties in Ontario. Although O.Reg.153/04 does not apply to sites where an RSC is not filed, it is anticipated that the general requirements of the regulation will become the de facto guideline. It should be pointed out that the site restoration standards provided in Ontario Regulation 153/04 is currently under review and amendments are introduced which are expected to pass in the earlier part of 2009.

If contamination to soil and/or groundwater is identified, a Site Management Plan may be developed for further investigation, which may include a Phase III ESA. Phase III ESA generally defines the lateral and aerial extent of impacted zones and examines options for managing the contamination or cleaning up the site. This may include remediation activities which could include excavation and off-site disposal, or on site treatment, in-situ or ex-situ remediation or monitoring of natural attenuation (MNA) of contaminants.

Further evaluations could include risk assessments to determine whether the contamination represents a potential threat to human health or the environment, typically followed by MNA.

To evaluate the presence of ACMs, LBP and PCBs, in structures and equipment a Designated Substance Survey (DSS) may be required prior to demolition. A DSS will identify the type, location and concentration of any Designated Substances on-site so that applicable measures can be taken to ensure the safety of those working on the site and the general public during the removal.

CONCLUSION

These standard practices for assessing contamination will ensure the contamination risks associated with properties acquired by the ministry are identified and mitigated.

10.3 Cultural Resources (Built Heritage and Cultural Landscapes) and Archaeology

10.3.1 Archaeological Resources

Archaeological resources are considered to be elements of the environment as defined in both the *Ontario and Canadian Environmental Assessment Acts* as well as the *Ontario Planning and Heritage Act* and in the *Provincial Policy Statement (2005)*.

Archaeological sites are generally described as the physical remains of past human activity. They can take a range of forms from small scatters of artifacts to the remains of structures and can range in size from a single, isolated object to large and complex sites containing thousands of artifacts covering a hectare or more. The relative significance of any one site is measured on the basis of its temporal and cultural associations, information and contextual values and degree of integrity or disturbance.

Archaeological Assessment in the development process is conducted in four stages:

Stage 1: Background Research and Assessment of Archaeological Potential,

Stage 2: Field Survey to identify sites that may be present within the study area,

Stage 3: Site testing to evaluate the character, age and extent of sites identified at Stage 2 and,

Stage 4: Mitigation through either avoidance or excavation and documentation.

Each stage represents a distinct element in the overall process of archaeological assessment and each builds on the results of previous stages. To date, Stage 1 and 2 archaeological assessments have been conducted for a significant portion of the Recommended Plan.

ASSESSING IMPACTS TO ARCHAEOLOGICAL RESOURCES

In Ontario, the Ministry of Culture (MCL) acts as the regulatory body for the conduct of archaeological and heritage assessments and their concurrence with all work and reporting is a regulatory requirement under the *Ontario Heritage Act*. The identification and assessment of impacts to archaeological resources, including reporting, is conducted under archaeological licence issued by the Ministry of Culture (MCL). Standards for field methodology for work by archaeological consultants are described in two technical guidelines set out by MCL. *The Archaeological Assessment Technical Guidelines* (1993) describes the requirements that must be met in order to satisfy the Ministry of Culture that all work is completed appropriately. The Draft *Standards and Guidelines for Consulting Archaeologists* (2006) set out the standards and practices for archaeologists in greater detail. However, they have not been formally adopted by MCL. As a matter of policy, the Ministry of Transportation (MTO) mandates that consultants working on MTO projects adhere to the 2006 Draft standards. The 2006 Standards have been followed throughout the Detroit River International Crossing study.

ASSESSMENT METHODOLOGY

The methodology for the archaeological assessment consisted of the following key steps for evaluation of the Recommended Plan:

As part of the assessment of the illustrative and practical crossing, plaza and access road alternatives a Stage 1 Assessment of archaeological potential was completed for the original study area and Area of Continued Analysis (refer to Chapter 4 and Chapter 7, respectively). This required detailed research on known archaeological resources within these area as well as land-use history and physiographic conditions including drainage, soils, vegetation cover and land disturbance. This assessment included a detailed field review of the study area to verify the research results. From this research and field review, a determination was made regarding the potential for encountering archaeological resources within the study area.

Stage 2 Assessment was undertaken in those areas determined to have archaeological potential. Because the Recommended Plan passes through an area that is largely urbanized, the main determinant of overall survey coverage is access to individual properties.

Stage 2 assessment was conducted using two methods – Pedestrian and test-pit survey. In the case of the former, open lands that are suitable for cultivation are ploughed and allowed to weather for at least two weeks. Following weathering, the subject lands are surveyed at five metre intervals to identify any archaeological materials visible on the ground surface.

Test Pit Survey was used in areas that have forest, scrub, or other, heavy vegetation cover or are too small (*i.e.* less than one hectare) to allow for plough access. This form of survey consisted of digging small (30cm by 30 cm) test-holes at regular intervals across each property. The survey interval for most projects is five metres. All soils from the test-pits are screened through 6mm mesh to aid in the identification of archaeological materials.

In both pedestrian and test-pit surveys, all identified site locations are systematically recorded using hand-held GPS units and subsequently mapped at 1:5000 or larger scale.

Upon completion of Stage 2 Assessment, those sites considered to be of potential significance are recommended for Stage 3 Assessment. Stage 3 Assessment requires the excavation of a series of one metre by one metre test units across the site area to firmly establish its size, age, cultural affiliation, and whether there are intact subsurface features present across the site.

Upon completion of Stage 3, a determination is made as to whether the site warrants a further Stage 4 assessment, mitigation or can be considered free of further archaeological concerns. The main criteria for determining whether a site has archaeological significance are:

1. *Information potential for the site*. This includes evaluation of the site's integrity (extent of past disturbances to the site, extent of a multi-component mix to deposits, etc.), Rarity or Representativeness (locally, regionally and provincially), Cultural-Temporal Affiliations, (age, aboriginal/European pioneer associations, etc.), Potential Data Productivity (settlement and artifact distribution data, subsistence and ecological data, cultural behaviour, artifacts yields, etc.), Site Context (temporal and spatial, inter-site relationships, demonstrated relationship to known historic events, people, etc.), and potential for the presence of human remains.
2. *Perceived Value potential.* This is the value the site may have to a local community or specific groups. As noted in the 1993 Technical Guidelines, a site may have low information potential but still have a high value because of its significance to a particular cultural group or because it can be used for educational opportunities.

PREDICTED IMPACTS TO ARCHAEOLOGICAL RESOURCES

Stage 1 and preliminary Stage 2 archaeological assessments of areas with archaeological potential within or in close proximity to the Recommended Plan, and for which permission to enter had been obtained were undertaken for 503 parcels, or 49 per cent of the 973 parcels in The Windsor-Essex Parkway.

A Stage 2 assessment of the project area for the Recommended Plan was conducted and survey crews investigated 146 parcels (14 per cent of the 973 parcels in the project). There remain 260 parcels that await Stage 2 assessment, with 253 pending permissions to enter. There are currently 7 properties outstanding (incomplete or pending ploughing) for which permissions to enter have been granted.

Forty-three archaeological sites have been identified in this area (fourteen Aboriginal, seventeen Historic and six with both an aboriginal and historic component), and twenty-nine of these have been recommended for further Stage 3 assessment. Twenty-four of the twenty-nine sites lie within the Recommended Plan.

Mitigation of impacts to archaeological sites takes only two forms: Avoidance and Mitigative Excavation. Avoidance often includes measures to stabilize a site to protect against erosion and other passive impacts. Where a site is avoided it is often necessary to designate the site area as "off limits" for construction equipment to prevent against damage to artifacts and features.

Mitigative excavation involves the complete excavation and recording of all site areas to be disrupted or otherwise altered by an undertaking. Where only a portion of the site is subject to impacts protective measures will be required to ensure that remaining site areas are not damaged by construction and operational activities.

The mitigative requirements in advance of construction of the Recommended Plan are not known at this phase of the project because the archaeological assessment has not been completed to the extent that would allow for determination of all impacts and required mitigation alternatives.

For the construction phase the following measures apply:

- Should deeply buried archaeological remains be found on the property during construction activities, the Manager, Cultural Programs Unit, Ontario Ministry of Culture, should be notified immediately.
- In the event that human remains are encountered during construction, the proponent must immediately contact both the Ontario Ministry of Culture and Registrar or Deputy Registrar of the Cemeteries Regulation Unit of the Ontario Ministry of Small Business and Consumer Services.

CONCLUSIONS

Based on the archaeological assessment completed to date, the following key conclusions can be drawn:

- Archaeological resources have been identified within the Recommended Plan.
- The exact nature, extent and significance of these resources will not be known until the completion of the Stage 2 and 3 assessments within the Recommended Plan.
- Upon completion of Stage 2 & 3 assessment, determination of the extent of impacts to significant archaeological resources can be made.
- Where significant archaeological resources are encountered, mitigation will be required. This will entail either avoidance or mitigative excavation.
- The study team will continue to consult with Walpole Island First Nations (WIFN) throughout future phases of the project. Results of Stage 2 archaeological investigations will be presented at regular update meetings. WIFN will be afforded every opportunity to review and comment on this work its

associated reporting and to provide advice and comment on subsequent Stage 3 assessment work and any associated reporting. It is also understood that WIFN may wish to have monitors present during future Stage 3 or 4 fieldwork.

10.3.2 Cultural Resources

Cultural Heritage Resources are described under three broad headings: Built Heritage Features (BHF), Built Heritage Resources (BHR) and Cultural Landscape Units (CLU). Generally, a BHF is understood to be "an individual part of a cultural heritage landscape such as buildings or structures of various types, cemeteries, planting and landscaping structures, etc that contribute to the heritage character of the cultural heritage landscape". In other words the Term Built Heritage Feature acts as a catch-all term that includes individual BHR and CLU features.

A BHR is defined as "(O)ne or more significant buildings, structures, monuments, installations or remains associated with architectural, cultural, social, political, economic or military history and identified as being important to a community. These resources may be identified through designation or heritage conservation easement under the Ontario Heritage Act, or listed by local, provincial or federal jurisdictions".

Cultural landscapes are "(a) defined geographical area of heritage significance that has been modified by human activities and is valued by a community. It involves a grouping(s) of individual heritage features such as structures, spaces, archaeological sites and natural elements, which together form a significant type of heritage form, distinctive from that of its constituent elements or parts. Examples may include, but are not limited to, heritage conservation districts designated under the *Ontario Heritage Act*; and villages, parks, gardens, battlefields, main streets and neighborhoods, cemeteries, trail ways and industrial complexes of cultural heritage value".

The analysis of impacts to Built Heritage features within the Recommended Plan has included four major elements:

- The identification of BHF's within the Recommended Plan,
- Assessment of Cultural Heritage value or interest for all identified BHF's,
- Description of impacts; and,
- Identification of mitigation options and requirements.

ASSESSING IMPACTS TO CULTURAL HERITAGE FEATURES – BUILT HERITAGE

The Proposed undertaking may impact directly or indirectly Cultural Heritage Resources through:

- Destruction or alteration of all or part of a cultural heritage property
- Isolation of a cultural heritage property from its surrounding environment, or
- Introduction of physical, visual, audible or atmospheric elements that are not in character with a cultural heritage property or its setting

As described in the Ministry of Transportation's *Environmental Guide for Built Heritage and Cultural Landscapes* the assessment of impacts to identified Built Heritage Features (BHF) includes preparation of detailed documentary research for a historical review, determination of heritage value for individual BHF's, followed by the specific description of impacts.

The Practical Alternative Evaluation Working Paper, Cultural Heritage (March 2008, hereafter *Working Paper 2008*) has identified 13 Built Heritage Features within the Recommended Plan. A detailed documentary research was conducted for all features identified to be of potential interest within the Recommended Plan. This research included reference to Registry Plans and abstracts, local histories, archival maps, and secondary sources.

Based on these findings, a field review of these features, and the application of the Criteria listed in Regulation 9/06 of the *Ontario Heritage Act (R.S.O. 1990)*, seven Built Heritage Features have been rejected as potential Cultural Heritage Resources, while six (five residences and one institutional structure) are recommended for continuing analysis and determination of impacts. These include residential structures and a single CLU. All six features are considered to be of Cultural Heritage Value or Interest.

PREDICTED BUILT HERITAGE IMPACTS

Impacts to Built Heritage Resources are generally classed as direct or indirect. Direct impacts include loss or significant alteration of BHF's and loss of overall contextual integrity as a result of an undertaking. Indirect impacts are generally less severe and include, but are not limited to, encroachment of non-sympathetic elements in proximity to a feature and introduction of noise, dust, vibration and other elements that may affect the long-term stability and integrity of the resource. For the Recommended Plan, all of the impacts to identified BHF are direct. In all, there are six BHR's for which, removal of the structures will be required.

The following features have some potential as heritage resources according to the Criteria for determining Cultural Heritage Value or Interest for architectural, historical or community associative reasons. This is based on their application of Ontario Regulations 9/06 and 10/06. Further investigation is recommended for the following:

- BHR 1: 2746 Talbot Road, Windsor
- BHR 2: Legion Branch 594, 3920 Huron Church Line Road, La Salle
- BHR 7: 2310 Spring Garden Road, Windsor
- BHR 8: 2290 Spring Garden Road, Windsor
- BHR 9: 2284 Spring Garden Road, Windsor
- BHR 19: 2369 Spring Garden Road, Windsor

MITIGATION MEASURES

Mitigation measures were investigated for the six Built Heritage Features. All mitigation options will require a Built Heritage Resource Documentation Report. This report includes detailed photo-documentation of the structure and a plan of salvage for character contributing architectural elements.

Only two mitigation options are considered practical for the Recommended Plan as the single identified CLU does not have sufficient integrity to warrant further investigation, therefore, no mitigation measures have been identified:

1. Relocation of individual structures within the City of Windsor or,
2. Salvage of significant architectural elements followed by demolition.

Where relocation is recommended, the City of Windsor Heritage Committee should be consulted.

CONCLUSIONS

Based on the Built Heritage analyses completed for the Recommended Plan, the following key conclusions can be drawn:

- Without mitigation, there is a potential for the loss of six heritage features with cultural heritage value or interest within the Recommended Plan.
- A Built Heritage Documentation Report will be required for all six Built Heritage Features.
- Relocation of individual structures may be done through MTO's Heritage House Relocation programme.
- For those features not deemed sufficiently noteworthy for relocation, salvage and demolition will be recommended.

10.4 Natural Environment

The potential environmental impacts on fisheries, vegetation, wildlife and designated natural areas associated with the Recommended Plan as well as proposed mitigation measures have been assessed as described in the following sections.

10.4.1 Natural Heritage

Natural heritage is defined in Ontario as:

"features and areas, including significant wetlands, significant coastal wetlands, fish habitat, significant woodlands, significant valley lands, significant habitat of endangered and threatened species, significant wildlife habitat, and significant areas of natural and scientific interest, which are important for their environmental and social values as a legacy of the natural landscapes of an area" (OMMAH 2005).

The natural heritage investigation is guided by government legislation, regulations, policies and guidelines within federal, provincial and municipal jurisdictions. The primary source documents for the natural heritage investigation included:

Federal

- Canadian Biodiversity Strategy
- Fisheries Act
- Species at Risk Act
- Migratory Birds Convention Act
- Canada Wildlife Act
- Policy for the Management of Fish Habitat
- Canadian Federal Policy on Wetland Conservation

Provincial

- Ontario Biodiversity Strategy
- Endangered Species Act, 2007
- Fish and Wildlife Conservation Act
- Ontario Water Resources Act
- Lakes and Rivers Improvement Act
- Planning Act and the Provincial Policy Statement
- Conservation Authorities Act
- Forestry Act
- Implementation Strategy: Areas of Natural and Scientific Interest

In addition, the Ontario Ministry of Transportation (MTO) has adopted environmental practices and standards for highway design and construction. The environmental practices include environmental design criteria, stormwater management practices/best management practices, *Ontario Provincial Standards, Standard Special Provisions* and *Non-standard Special Provisions*. The environmental standards adopted by MTO involve a comprehensive, current and consistent end-results oriented approach to environmental compliance that encompasses all environmental factors for all highway activities from planning through to operation and maintenance.

ASSESSING NATURAL HERITAGE IMPACTS

MTO has developed a guidance document for assessing natural heritage impacts from transportation projects. The *Environmental Reference for Highway Design (MTO 2006)* provided a framework for natural heritage investigations including defining the study area, collecting data, determining significance, assessing environmental effects and identifying environmental protection measures. In addition, the *MTO/DFO/MNR Fisheries Protocol (2006)* establishes a procedure for addressing fisheries issues on MTO projects.

ASSESSMENT METHODOLOGY

A description of the methods for data collection and analysis and the results of the analysis for the Area of Investigation are summarized in Chapter 7 and presented in the *Practical Alternatives Evaluation Working Paper – Natural Heritage*. The natural heritage investigation conducted for the Recommended Plan served to update, verify and augment existing conditions information and to conduct effects assessment, including identification of mitigation and monitoring measures as it pertains to natural heritage.

The study area for the Recommended Plan includes the footprint of the Windsor-Essex Parkway, inspection plaza and crossing and adjacent lands located within 120 m of the footprint for the Recommended Plan.

The impact assessment is specific to each biological discipline (i.e. vegetation, fisheries, wildlife, etc.) and is based on two general categories of impacts: displacement and disturbance effects. Displacement effects include loss or destruction of natural heritage areas, attributes or functions located within the footprint of the Recommended Plan. Disturbance effects include disruption or disturbance to natural heritage areas, attributes or functions located on adjacent lands within 120 m of the footprint of the Recommended Plan. A summary of the results of the impact assessment for each biological discipline is presented in the sections below.

10.4.2 Vegetation and Vegetation Communities

ASSESSMENT METHODOLOGY

A rare vascular plant survey of all vegetation communities located within the study area was conducted to confirm the presence/absence of species at risk and to classify additional vegetation communities not inventoried in 2006. The survey was designed to investigate potential effects of displacement and disturbance by the Recommended Plan on species at risk and rare vegetation communities. The rare vascular plant survey examined the study area for species regulated by the *Species at Risk Act* (SARA) and the *Endangered Species Act, 2007* (ESA 2007). Field investigations were performed in June, July, August, September and October 2008, to provide reliable information on rare vascular plant species presence, location, population size and management concerns.

Descriptions, illustrations and photographs of all potentially rare vascular plant species present were collected and compiled for field use. A series of approximately parallel transects in a search unit was used to maximize coverage of the area. Spacing of the transects depended on the density of the vegetation cover, visibility and plant morphology.

The location and abundance of each specimen/colony was recorded in the field using a differential GPS unit. Points, lines and polygons were used to delineate the location of each rare vascular plant population. Lines were used when rare vascular plants were located in a linear pattern, while polygons were used when rare vascular plant species were situated in a non-linear pattern. UTM coordinates recorded on the hand-held data logger were downloaded and mapped on an orthorectified digital air photo using a geographical information system (GIS).

Floristic quality assessment was used to determine the quality of each vegetation community located in the study area. This information was then used to determine the significance of displacement/ disturbance effects and to prioritize vegetation communities for protection, enhancement or restoration.

RESULTS

Vegetation Communities

Nine types of ELC vegetation communities located in the study area are considered Provincially Extremely Rare (S1), Provincially Very Rare (S2) or Provincially Rare to Uncommon (S3), while others and/or the same communities are considered Globally Extremely Rare (G1) or Globally Very Rare (G2) (NHIC 1997). Notable communities include Fresh-Moist Tallgrass Prairie, Pin Oak Mineral Deciduous Swamp, Dry-Fresh Black Oak Deciduous Forest, Dry-Fresh Mixed Oak Deciduous Forest, Fresh-Moist Black Walnut Lowland Deciduous Forest, Fresh-Moist Black Oak-White Oak Tallgrass Woodland, Dry-Fresh Oak-Hickory Deciduous Forest, Fresh-Moist Pin Oak-Bur Oak Tallgrass Savannah and Fresh-Moist Pin Oak Tallgrass Woodland. An additional 11 vegetation community polygons have been added (BBA 18-23, NAR21, MAL 13, NSG16-18), four altered (BBA4M, BB4MB, BBA17, HWY1) and one removed from the AOI (HWY5) since 2006.

Vegetation

A total of 648 species of vascular plants were identified within the study area, 72 of which are considered Extremely Rare (S1), Very Rare (S2) and Rare to Uncommon (S3) according to the MNR Natural Heritage Information Centre (NHIC).

Species at Risk

Ten plant species are regulated as Endangered, Threatened or Special Concern in the schedules to SARA and ESA 2007. American chestnut is regulated as Endangered in Schedule 1 of SARA and Schedule 3 of ESA 2007. Colicroot, common hoptree, dense blazing star, dwarf hackberry, Kentucky coffee-tree and willowleaf aster are regulated as Threatened in Schedule 1 of SARA and Schedule 4 of ESA, 2007. Climbing prairie rose, Riddell's goldenrod and Shumard oak are regulated as Special Concern in Schedule 1 of SARA and Schedule 5 of ESA 2007.

POTENTIAL ENVIRONMENTAL EFFECTS

Site preparation activities will result in the displacement of vegetation, vegetation communities and species at risk located within the footprint of the Recommended Plan. Disturbance to vegetation, vegetation communities and species at risk may occur on adjacent lands located within 120 m of the footprint of the Recommended Plan.

Operation of the Recommended Plan will require winter maintenance activities such as sanding, which may introduce exotic invasive plant species into the nearby vegetation communities. Salting in the winter may affect salt intolerant plant species located adjacent to the footprint of the Recommended Plan.

A total of 134 vegetation communities (131.71 ha) will be partially or fully displaced by the footprint of the Recommended Plan, including eight high quality communities (3.62 ha), 45 moderate quality communities (40.72 ha) and 81 low quality communities (87.37 ha). Within these vegetation communities up to 648 vascular plant species could be displaced by the construction activities.

A total of 137 vegetation communities (88.61 ha) located on adjacent lands within 120 m of the footprint of the Recommended Plan 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 habitat units up to 648 known vascular plant species could be disturbed by the construction activities.

A total of eight species at risk regulated as Threatened or Special Concern under SARA and ESA 2007 are found within the footprint of the Recommended Plan. This total includes 418 climbing prairie rose, 929 colicroot, two planted common hoptree, one planted dwarf hackberry, 951 dense blazing star, 20 Kentucky coffee-tree, 1,285 Riddell's goldenrod and 11,676 willowleaf aster. No species at risk are located within the footprint of the crossing and five species at risk are located within the footprint of the inspection plaza.

A total of eight species at risk regulated as Endangered, Threatened or Special Concern are located on adjacent lands within 120 m of footprint of the Recommended Plan. This total includes one American chestnut, 511 climbing prairie rose, 14 colicroot, 2,114 dense blazing star, 21 Kentucky coffee-tree, 443 Riddell's goldenrod, 24 Shumard oak and 27,874 willowleaf aster.

MITIGATION MEASURES

The area for vegetation removals has been minimized to the extent possible based on the selection of the Recommended Plan. Areas that should be protected during construction will be delineated prior to construction start using construction fencing and no activities will be permitted in these areas.

Construction fencing should also be used around the perimeter of the inspection plaza to mark the limit of construction areas and sensitive off-site areas including the Black Oak Woods. Edge management measures should be identified during later design stages to reduce edge effects such as windthrow, increased light and wind penetration, drainage modifications and invasion by exotic or invasive plant species. Erosion and sedimentation control will be used on-site during construction to prevent the migration of sediments and stormwater from the work area. Rare, threatened and endangered plant species located within the footprint of the inspection plaza and The Windsor-Essex Parkway should be transplanted prior to vegetation removals. Landscape plantings within the plaza site should be limited to native, non-invasive species typical of the tallgrass prairies/Carolinian forest. Restoration, enhancement and land securement opportunities should be explored for lands such as the Black Oak Woods adjacent to the inspection plaza and The Windsor-Essex Parkway.

The detailed landscape plan to be prepared during later design stages will identify areas for protection, enhancement and restoration. The landscape plan will include detailed prescriptions for vegetation management including edge management plans, soil management plans, use of native and non-invasive plant materials, prairie disturbance regimes, control of exotic and invasive species and management of species at risk. The landscape plan will address restoration of several types of vegetation communities including tallgrass prairie, savannah and woodland, Carolinian forest and wetlands. A like-for-like approach will be taken where feasible and practical, with the default restoration target being tallgrass prairie, savannah and woodland.

Restoration and enhancement measures included in the landscape plan will be designed to off-set the loss of vegetation area, attributes or function as a result of the Recommended Plan. An array of restoration and enhancement techniques will be identified including seeding, planting (plugs and seedlings) or transplanting (sod) that includes only native species present within the study area. Appropriate locations for removal of invasive and exotic plant species through the use of possible measures such as herbicides, weed torches and prescribed burns will also be identified. The above mitigation techniques will also be employed with the objective of achieving a net benefit to all regulated species at risk populations located within the study area.

Opportunities to forge partnerships with parties to relocate plant material to lands in public ownership, to otherwise restore and enhance these lands with native plants and species at risk and to transfer lands within the Recommended Plan to parties that can best protect sensitive areas will be sought.

FOLLOW-UP AND MONITORING

During construction, an environmental inspector should schedule site visits during critical stages (such as prior to and during clearing operations) to ensure that construction activities are not causing any harm in areas that are to be protected. Post-construction monitoring should occur to ensure successful plant establishment and reproduction. Monitoring for species at risk should be conducted two times per year for up to five years following construction to ensure their sustainability. Prairie management should be an ongoing and long-term process that should involve the cooperation of appropriate parties to remove invasive exotics, burn as frequently as possible, protect high significance vegetation communities and species at risk.

CONCLUSIONS

A total of up to 131.7 ha of vegetation communities will be removed to implement the Recommended Plan. At the same time, the design of the Recommended Plan affords the opportunity to establish approximately 120 ha of green space using ecological restoration and enhancement principles. Active management in areas located adjacent to the footprint of the Recommended Plan can result in a substantial improvement to the quality of these natural heritage areas. As a result, opportunities are available to offset the loss of vegetation and vegetation communities and to naturalize lands located within the Recommended Plan and on adjacent lands. In addition, partnership opportunities for naturalization of other lands in public ownership will be explored to offset vegetation losses. MTO will consider entering into agreements with organizations for the transfer and long-term management of surplus lands.

Permits and approvals under SARA and ESA 2007 will be obtained prior to construction. A SARA permit will be required for the inspection plaza for threatened species including dense blazing star, Kentucky coffee-tree and willowleaf aster. An ESA 2007 permit will be required for The Windsor-Essex Parkway for threatened species including colicroot, common hoptree, dense blazing star, dwarf hackberry, Kentucky coffee-tree and willowleaf aster. Detailed mitigation strategies will be developed in order to obtain the permits Consideration of these options would be done in consultation with appropriate regulatory agencies (e.g. DFO, MNR) and with other authorities who may have a role in environmental stewardship, including municipalities, ERCA and WIFN.

10.4.3 Molluscs and Insects

ASSESSMENT METHODOLOGY

During the evaluation of practical alternatives stage secondary source data on molluscs and insects was reviewed and compiled into two databases (molluscs and insects). For the assessment of the Recommended Plan, the scope of the investigation was limited to provincially and federally regulated species present within the study area.

RESULTS

Based on a review of secondary sources of information and discussions with regulatory agencies and experts on aquatic invertebrates, no provincially or federally regulated mollusc species at risk are known to occur in the study area, including the Detroit River. Investigations by the U.S. team have determined that no mollusc species at risk persist in the Detroit River in the vicinity of the bridge crossing. As a result, no impacts to mollusc species at risk are anticipated.

One provincially and federally regulated species of insect is known to occur in the study area: the Monarch butterfly (*Danaus plexippus*). The Monarch is regulated as Special Concern in Schedule 1 of SARA and Schedule 5 of ESA 2007.

POTENTIAL ENVIRONMENTAL EFFECTS

Site preparation activities during construction have the potential to impact Monarchs, since the larval stage feeds exclusively on milkweed and the adults feed upon nectar flowers, which are found in prairies, meadows and gardens, as well as more disturbed areas. Not only will clearing activities remove host plants, they may also kill juveniles and adults. Contaminants from emissions and spills, as well as those used for highway and roadside maintenance have the potential to poison host plants and the Monarchs themselves. Mowing of vegetation, if conducted from late spring to early fall, can remove larval feeding plants (milkweeds) and adult nectar plants as well.

MITIGATION MEASURES

Impacts to Monarchs cannot be avoided entirely given the scope and nature of the Recommended Plan and the cosmopolitan nature of this species. The area for vegetation removals has been minimized to the extent possible, and areas that should be protected during construction will be delineated prior to construction start. To avoid impacts to species at risk and their critical habitat, vegetation removals will be avoided in the vicinity of species at risk and their habitat during the growing season.

The areas for restoration and enhancement will result in the creation of new Monarch habitat as those areas will be intentionally or naturally seeded by host plants. Following construction other disturbed areas that revegetate are also likely to self-seed with host plants and create additional Monarch habitat.

The construction limits will be delineated with sensitive areas identified prior to the start of construction. Good housekeeping practices will be employed to prevent the contamination of habitat adjacent to the work area. In the event of an upset or spill, a quick and effective response to contain the spill and clean up the area will be employed. No follow-up or monitoring programs specific to Monarchs are recommended.

CONCLUSION

No significant adverse effects to Monarchs are anticipated as a result of this project. The mitigation measures prescribed for Monarchs will also reduce potential impacts to other insect species.

10.4.4 Fish and Fish Habitat

ASSESSMENT METHODOLOGY

In addition to the detailed fisheries investigations conducted during 2006, a detailed field investigation of fish habitat and fish presence was conducted in areas of known or potential northern pike (*Esox lucius*) spawning in April 2008. Detailed air photos were used to record fish habitat and northern pike presence within Cahill, Wolfe and Collins Drains, Lennon Drain, Youngstown Drain, Basin Drain, Titcombe Drain and McKee Drain/Creek. Other, smaller drains were investigated for fish habitat presence, specifically for potential Northern Pike habitat, during the spring spawning period for this species.

RESULTS

Northern pike presence, and the presence of spawning habitat, was identified in Cahill and Wolfe Drains, Lennon Drain, Titcombe Drain and McKee Creek (the portion nearest the Detroit River). Northern pike were absent from Collins Drain, Wolfe Drain upstream of Talbot Road/Highway 3, Cahill Drain upstream of Talbot Road/Highway 3, Youngstown Drain, Basin Drain and McKee Drain, although all of these watercourses/drains are connected to downstream northern pike habitat.

Most habitat located within the study area can be categorized as having low overall sensitivity and significance with few having moderate to high sensitivity. All watercourses, with the exception of the Detroit River, are classified as municipal drains.

POTENTIAL EFFECTS TO FISH AND FISH HABITAT

Since no piers, abutments or other bridge components will be located in the Detroit River, a detailed assessment of potential impacts on fish and fish habitat was not conducted at the Detroit River. If it is necessary to undertake construction activities within the Detroit River, an assessment of potential impacts will be completed, subject to approval from the relevant regulatory agencies.

Impacts to fish and fish habitat have the potential to occur as a result of the construction and operation of the Recommended Plan.

Permanent loss and/or impacts to fish habitat may result from the following:

- Barriers to fish passage: The construction of submerged culverts at Cahill and Lennon Drains may cause barriers to fish passage that will be permanent in nature.
- Loss of fish habitat: The loss of habitat through enclosure or physical destruction will likely occur in 10 of the 15 watercourses/drains within the study area (excluding the Detroit River). The enclosures may result from five culvert extensions and three new crossings. Physical destruction may occur at four watercourses/drains where realignment may be required. A realignment of Broadway Drain located at the inspection plaza will be required. Although occurring within the construction phase of the project, these effects will be permanent.
- Effects to water quality and quantity: The Recommended Plan will increase the overall impervious area and vehicle emission loadings. This may potentially have a negative impact on the recipient watercourses by increasing the peak flows and the pollutant loadings. This will lead to negative watercourse impacts such as degraded fish habitat, increased floodlines upstream and increased erosion downstream.

Details of stormwater quantity and quality assessment are outlined in Section 10.4.9.

Construction related impacts associated with the Recommended Plan may result in the following:

- Changes to water quality and quantity: Water quality may be affected through activities associated with general construction and site preparation, which could release sediments to the watercourses/drains. The refueling of construction vehicles and the oils, greases and other lubricants used in their maintenance have the potential to affect water quality. In-water work, and associated damming and unwatering have the potential to alter water quantity. These effects are temporary in nature.
- Alterations to baseflow: These effects are consistent with those listed for water quantity above. Groundwater drawdown may be required to construct below grade sections of The Windsor-Essex Parkway. This may result in temporary reductions in baseflow within watercourses.
- Mortality of fish species: During construction, the direct mortality of fish is possible in areas where unwatering occurs. Fish could become entrained or impinged on pump intakes or stranded in unwatered areas. Increased sedimentation and the discharge of deleterious substances from spills also have the potential to cause mortality of fish.

Impacts associated with the operations phase of the Recommended Plan include the following:

- Changes to water quality and quantity: Winter maintenance activities (sanding, salting) have the potential to affect water quality through release into the watercourses/drains. The increased imperviousness of the drainage area for the watercourses/drains has the potential to alter water quantity through increased run-off and decreased infiltration.

- Alterations to baseflow: These effects are consistent with those listed for water quantity above.
- Changes in water temperature: The thermal regime of the receiving watercourses/drains may be altered by stormwater run-off or removal of riparian vegetation that provides shading, especially during summer, when run-off can become superheated through contact with paved surfaces resulting in thermal shock when it reaches fish habitat.

MITIGATION OF POTENTIAL EFFECTS TO FISH AND FISH HABITAT

The following mitigation measures can be employed to address the above noted impacts of the construction and operation of the Recommended Plan.

Permanent loss and/or impacts to fish habitat may be mitigated by the following:

- Barriers to fish passage: Culverts, designed using fish-friendly methods, and channels, designed using natural channel design principles, should not form barriers to fish passage. At Cahill and Lennon Drains, where a deep submerged culvert is required, fish passage options, including mechanical systems such as fish locks/lifts and manual systems such as the capture, physical transport and release of fish across the potential barrier, will be considered to maintain fish access to upstream reaches. If the feasibility of maintaining fish passage in Cahill and Lennon Drains is found to be impractical due to costs, maintenance, hazards to roadway, etc., additional habitat creation areas within the Recommended Plan area will be examined, in addition to the possibility of off-site compensation for the potential loss of productivity in the form of financial contributions to fund, or help to fund, nearby fish habitat restoration/enhancement projects. Consideration of these options would be done in consultation with appropriate regulatory/environmental agencies (e.g., DFO, ERCA, MNR, and municipalities). Walpole Island First Nations have also expressed an interest in the development of solutions to address possible fisheries impacts.
- Loss of fish habitat: The extent of fish habitat affected can be minimized through engineering structures to fit within the smallest possible footprint areas. Culvert lengths and extensions can be minimized through the use of headwalls, wingwalls and guide rails and extensions should match the inverts of the existing culverts and streambeds. New crossing structures should be constructed using fish-friendly designs including appropriate horizontal and vertical clearances, open bottoms, countersinking, etc. Realigned channels should be designed using natural design principles to enhance new habitat over existing habitat. Riparian vegetation should be maintained where possible. A fish habitat compensation plan will be prepared during later design stages to ensure no net loss of the productive capacity of fish habitat.
- Effects to Water Quality and Quantity: Stormwater runoff from roads and highways located within the study area does not currently receive quality or quantity treatment. Stormwater runoff associated with the Windsor-Essex Parkway and the inspection plaza will be treated in stormwater management wet ponds designed in accordance to the MOE document “Stormwater Management Planning and Design Manual” for Enhanced Protection Level. This will require the removal of 80 per cent of total suspended solids (TSS), as well as providing erosion attenuation of the 25 mm storm for 24 hours. In addition, the stormwater management ponds will provide quantity storage to control peak flows from the Windsor-Essex Parkway and inspection plaza to pre-development rates. This approach will lead to overall enhancements to water quality and net benefits to fish and fish habitat for receiving watercourses along The Windsor-Essex Parkway and will prevent water quality impacts to the Detroit River associated with operation of the inspection plaza. In addition, deck drains are not proposed on the crossing and runoff from the crossing will be collected and conveyed for quality treatment on land prior to discharging to the Detroit River.

  The removal of 30 entrance culverts and the plan to provide a natural channel configuration for a significant area of the Wolfe Drain will result in a net gain of fish habitat.

Construction related impacts associated with the Recommended Plan may be mitigated by the following:

- Changes to water quality and quantity: Best construction practices should be employed to reduce the potential for spills and materials/equipment from entering water. Maintenance, fuelling and storage should occur at least 30 m from watercourses/drains. Debris should be prevented from entering watercourses/drains and a spill response plan should be developed. Sediments should be prevented from reaching sensitive areas through erosion and sediment controls and exposed soils stabilized as soon as possible. A stormwater management plan should be developed and implemented to treat run-off during operations.
- Alterations to baseflow: The increases in impervious surfaces and areas of soil compaction should be minimized to facilitate as much infiltration of surface water as possible. Management of stormwater through the development and implementation of a stormwater management plan will address potential reductions in baseflow. Methods that encourage infiltration will be investigated. Flows in watercourses will be monitored during dewatering activities and measures will be implemented in the event that baseflow is significantly affected. If required, a Permit to Take Water will be secured from the Ontario Ministry of the Environment during later design phases.
- Barriers to fish passage: Water flow should be maintained during construction.
- Mortality of fish species: The magnitude of effects should be minimized through the employment of timing windows for in-water work, commencing work only when all materials are present and staging of work to minimize duration. Work should be performed in the dry and isolated fish should be captured and relocated by qualified personnel. The in-water construction timing restriction should reflect the warmwater fish communities present (April 1 to June 30) with an extension to March 16 to account for northern pike migration.

Impacts as a result of operations phase on fish and fish habitat can be mitigated by the following:

- Changes to water quality and quantity: In general, stormwater management throughout the Recommended Plan will improve water quality and quantity (through attenuation of peak run-off flows) over what exists currently. Run-off from the crossing and plaza will be collected and conveyed to stormwater detention facilities for treatment. No deck drains will be provided on the bridge.
- Alterations to baseflow: A stormwater management plan will be developed and implemented to ensure that reductions in baseflow do not occur.
- Changes to water temperature: A stormwater management plan will be developed which will address the treatment of run-off and investigate methods to reduce its temperature prior to discharge into receiving watercourses/drains.
- Barriers to fish passage: Culverts, designed using fish-friendly methods, and channels, designed using natural channel design principles, should not form barriers to fish passage during operations.

Fish passage systems should be implemented if feasible at Cahill and Lennon Drains to provide safe fish passage across The Windsor-Essex Parkway.

MONITORING

An environmental inspector will be present on site during critical in-water work activities. Post-construction monitoring is typically prescribed in the *Fisheries Act* authorization. The terms and conditions of the *Fisheries Act* authorization will be met. Post-construction monitoring, if prescribed, will determine the effectiveness of environmental protection and compensation measures, identify problem areas and recommend corrective measures.

The performance of any fish passage system (mechanical or manual lifts) should be monitored for at least two years after construction to ensure that they are passing fish as designed. The target species for passage systems is northern pike. During spring migration (March/April), a fish passage study using mark-recapture or radio-telemetry could assist in determining the effectiveness of fish passage. Both techniques apply in the assessment of passage success. In order to assess downstream passage, similar studies should be repeated later in the spring (late April/May) to see if fish are successfully migrating back to summer habitats.

CONCLUSIONS

A Letter of Intent and Application for Works will be prepared during later design stages to secure a *Fisheries Act* authorization for this project. Watercourse reaches will be restored and enhanced using natural channel design principles to maintain no net loss of the productive capacity of fish habitat as a result of this project. Options have been identified that will maintain fish access to upstream reaches in Cahill and Lennon Drains. Further mitigation and compensation measures, including financial contributions to nearby restoration/enhancement projects if required, will be considered during later design stages in consultation with regulatory agencies. Enhancements to realigned reaches and the removal of entrance culverts along Wolfe Drain will augment the productive capacities of these systems and will result in an overall net gain of habitat area. Stormwater management practices will result in an overall improvement in water quality within the study area, including the Detroit River.

10.4.5 Wildlife and Wildlife Habitat

ASSESSMENT METHODOLOGY

In 2008 the spring and summer wildlife investigations concentrated on the four wildlife species at risk identified during the 2006 detailed wildlife investigations for the practical alternatives stage: Golden-winged Warbler (*Vermivora chrysoptera*), Red-headed Woodpecker (*Melanerpes erythrocephalus*), Butler's gartersnake (*Thamnophis butleri*) and eastern foxsnake (*Elaphe gloydi*).Field observations were undertaken throughout the spring and summer months in areas where the two bird species at risk had been recorded in 2006 and in potentially new habitats in the study area. A mark-recapture population study was initiated for Butler's gartersnake and a radio-telemetry study to track eastern foxsnake movements was also initiated to determine locations of their hibernacula.

RESULTS

The Golden-winged Warbler was observed in the Brighton Beach area in 2006, while the Red-headed Woodpecker was observed in the Black Oak Woods in 2006. Intensive observations during the 2008 spring migration and breeding season failed to confirm the presence of these species in the study area for the Recommended Plan.

The Butler's gartersnake population study determined that approximately 150 adult snakes inhabit the study area. Over 50 neonates were also discovered in August confirming that the population is reproducing successfully. A number of hibernacula locations for this species were found in the same area.

One eastern foxsnake was tracked and its movements in the fall led to areas of potential hibernacula which will be further investigated next spring. Based on anecdotal evidence, numerous easterm foxsnake hibernacula exist within the proposed area of The Windsor-Essex Parkway. Butler's gartersnake and eastern foxsnake were not recorded at or in the vicinity of the inspection plaza or crossing.

POTENTIAL ENVIRONMENTAL EFFECTS

Site preparation activities within the footprint of the Recommended Plan will result in the displacement of wildlife and wildlife habitat and potential mortality to species at risk. Portions of provincially significant wildlife habitat will be lost. Areas located adjacent to the footprint of the Recommended Plan the right-of-way may be affected by light trespass, noise and human intrusion during the construction and operation phases. The Windsor-Essex Parkway and inspection plaza may also create barriers to wildlife movement.

Portions of the habitat of the Butler's gartersnake and eastern foxsnake may be displaced by construction of The Windsor-Essex Parkway. It is possible that a new crossing of the Detroit River may result in migratory and resident bird mortality along the Detroit River, given that the Detroit River is host to large bird migrations and resident bird populations. Studies indicate that avian mortalities at tall structures have been found to be a function of structure size, visibility, migration times, weather conditions, and lighting.[2] The degree to which the new crossing may result in bird mortality depends on these factors, as well as the species, population size and the behaviour of the migratory and resident birds present. It is recognized that lighting and illumination of the bridge structure and bridge facility may pose a hazard to nocturnal bird species, with the degree of hazard also being a function of the bridge type (cable-stayed or suspension). Bridge lighting, including the need and treatment of showcase lighting to highlight the architectural amenities of the bridge, will be reduced while still satisfying the principal needs of lighting as a safety enhancement. Architectural lighting to highlight the aesthetics of the bridge should be developed with consideration for its effect on migratory birds. Site-specific mitigation measures will be developed during future design phases.

MITIGATION MEASURES

Vegetation removals should occur outside of the growing season to avoid loss of wildlife and wildlife habitat to the extent possible. The growing season in Windsor extends from April 1 to October 31. A construction timing restriction extending from May 1 to July 23 has been recommended by Environment Canada to avoid the incidental take of migratory birds. If vegetation removals are required during this period, a nest survey should be conducted by a qualified avian biologist immediately prior to commencement of construction to identify and locate active nests of migratory birds and to develop a mitigation plan.

Extensive efforts have been made to avoid and minimize impacts to Butler's gartersnake and Eastern foxsnake populations including refinements to the alignment of The Windsor-Essex Parkway. Habitat

[2] Manville, A.M. II. 2000. *The ABCs of Avoiding Bird Collisions at Communications Towers: The Next Steps*. Proceedings of the Avian Interactions Workshop, December 2, 1999. Charleston S.C., Electric Power Research Institute.

restoration and enhancement will be implemented to create new and higher quality habitat for these species. A snake barrier will be installed along side portions of the construction area to prevent snakes from entering the work zone and redirect snake movements to safer areas. Permanent snake barriers will also be installed to prevent snake mortality during facility operation. Options for permanent protection of critical Butler's gartersnake habitat will be developed in later consultation phases.

The presence/absence of Eastern foxsnake hibernacula within the study area will be investigated during the subsequent design stages to determine the potential for impacts. The creation of new snake nesting areas and hibernacula will occur to compensate for any losses of habitat. Snakes will be captured and relocated prior to construction to avoid mortality.

Habitat restoration and enhancement will be used to replace habitat lost during construction. Areas of habitat to be retained will be clearly marked in the field and protected from construction activities. Wildlife salvage will be carried out prior to clearing/grubbing to reduce the risk of wildlife mortality. Restoration and enhancement of habitat located along The Windsor-Essex Parkway including the tunnel sections, will be used at strategic locations to reconnect significant wildlife habitat located on both sides. The site plan for the inspection plaza incorporates several mitigation measures including: landscaping and the establishment of setbacks and a stormwater detention pond. On the south side of the inspection plaza, a stormwater detention pond is proposed in association with a vegetative buffer. The stormwater detention pond also provides buffer width between the plaza and the Black Oak Woods to the south.

Wildlife salvage should be performed on-site prior to vegetation removals. Vegetation removals will be avoided in the vicinity of species at risk and their habitat during the growing season.

Disturbance to wildlife during the operations phase will be mitigated through fencing berming, light shielding and prohibiting access to significant wildlife habitat by humans. Measures to mitigate potential bird mortality from the crossing will be investigated in greater detail during later design phases. Final bridge design and lighting will need to take appropriate safety measures into account, in consideration of marine navigation on the Detroit River, the needs of motorists using the bridge and the aviation warning systems.

Consideration should be given to conducting a migratory bird survey at the location of the crossing to ascertain the species, population size and behaviour of birds migrating through and residing along the Detroit River. The investigations should include mobile radar studies in association with acoustical recordings and point count surveys during peak spring and fall migration periods. Further discussion will be undertaken with Canadian and U.S. wildlife authorities to determine the need and level of assessment required.

A continued study of the Butler's garter snake population and the restoration area should be carried out once the Recommended Plan is constructed. The effects of The Windsor-Essex Parkway's proximity to the remaining Butler's gartersnake population and their hibernacula should be monitored. A strategy should be developed to ensure permanent protection of the Butler's garter snake population and their habitat.

Eastern foxsnake tracking should continue to determine their egg laying sites and hibernacula sites. Knowing these locations could assist in preventing future conflicts with this species. Man-made structures that are known to provide hibernacula for eastern foxsnake should be inspected by a qualified biologist prior to demolition. Education programs to inform the public of the benefits and harmlessness of snakes should be promoted.

CONCLUSIONS

The population of Butler's gartersnake and Eastern foxsnake are anticipated to remain stable following construction of this project.

The bridge design will be developed during later design phases. The selection of the bridge type (suspension or cable-stayed) should take into consideration the potential impact of bridge design on migratory birds.

Enhancement and restoration of habitat located 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 movement.

Permits and approvals under SARA and the ESA 2007 will be obtained prior to construction. An ESA 2007 permit will be required for Butler's gartersnake and eastern foxsnake which are located along The Windsor-Essex Parkway. Detailed mitigation strategies will be developed in order to obtain the permits. On-going consultation with regulatory agencies such as ERCA, MNR, CWS in addition to continuing discussions with First Nations will occur during future design stages.

10.4.6 Designated Natural Areas

Designated natural areas or environmental policy areas are identified by regulatory agencies or municipalities for conservation purposes. These areas include: Areas of Natural and Scientific Interest (ANSIs); Provincially Significant Wetlands (PSWs); Environmentally Sensitive Areas (ESAs); Candidate Natural Heritage Sites (CNHS) and areas designated for protection in municipal official plans.

ASSESSMENT METHODOLOGY

Secondary source information on designated natural areas was collected and reviewed to identify the geographical extent and major ecological functions for which the area was designated. Field investigations were used to confirm and reconcile the boundaries of the designated natural areas where encroachment may occur. The *Ontario Wetland Evaluation System* (OMNR 2002) was also used to evaluate the significance of several wetland units located in the study area.

RESULTS

Numerous designated natural areas are located in the study area for the Recommended Plan including:

- Detroit River Canadian Heritage River;
- Black Oak Woods ANSI, ESA and CNHS;
- Ojibway Park ANSI, ESA and CNHS;
- Spring Garden Forest ANSI, ESA and CNHS;
- St. Clair College Prairie ESA and CNHS;
- Oakwood Bush CNHS;
- Canada Malden Park CNHS;
- Candidate Natural Heritage Site TC2; and,
- Potential Provincially Significant Wetlands (PSWs) to be determined.

Additional designated natural areas identified during the practical alternatives stage are located beyond the vicinity of the Recommended Plan.

POTENTIAL ENVIRONMENTAL EFFECTS

The potential environmental effects on designated natural areas are similar to the effects on vegetation and wildlife. Construction of the Recommended Plan may result in the loss of area or ecological function for which an area is identified. Operation of the Recommended Plan is not anticipated to result in significant impacts.

The crossing is not anticipated to have an effect on the natural heritage attributes of the Detroit River Canadian Heritage River.

A total of 5.47 ha of designated natural area will be displaced by the footprint of the Recommended Plan including the Black Oak Woods (1.68 ha of a total area of 46 ha), Ojibway Park (0.51 ha of a total area of 64 ha) and TC2 (3.28 ha of a total area of 9.0 ha). No encroachment will occur at the St. Clair College Prairie.

A total of 27.06 ha of designated natural area may be disturbed on adjacent lands located within 120 m of the footprint of the Recommended Plan. The major ecological functions for which these areas are identified will be maintained, enhanced or restored following construction.

MITIGATION MEASURES

Mitigation measures for the loss of area or ecological function of designated natural areas are similar to the mitigation measures identified for vegetation and wildlife. In addition, MTO will discuss the dedication of protected, enhanced or restored lands with appropriate agencies to ensure permanent protection and conservation.

FOLLOW-UP AND MONITORING

Monitoring requirements are similar to those identified for vegetation and wildlife. Further discussions with conservation organizations including local municipalities, ERCA, MNR, as well as further consultation with First Nations will occur during future design stages. Once the geographical extent and functions of PSWs are identified, measures will be investigated to mitigate potential impacts on these designated natural areas.

CONCLUSIONS

The landscape plan prepared for the Recommended Plan identifies up to 120 ha of MTO-owned lands that are available for protection, enhancement and restoration. Opportunities to dedicate portions of these lands to appropriate parties for protection will be discussed at later design stages. Lands will be available to be dedicated for protection including provincially rare vegetation communities, habitat for species at risk, wildlife corridors and other ecological functions.

10.4.7 Landscape Plan

The Landscape Plan represents an overall mitigation strategy to help ensure the Recommended Plan is designed and constructed in a manner that is sensitive to community expectations. The plan sets out guidelines that will direct the planning and design of the open spaces, natural areas and trails associated with the Recommended Plan. This plan also outlines a strategy for including aesthetic and design considerations in all new construction, including, but not limited to, structural elements, landscaping, barriers, wayfinding, and lighting. Refer to the "*Urban Design and Landscape Planning Report – The Recommended Plan (December 2008)* report and to Appendix B *Recommended Plan – Landscape Plan of* this report.

A key focus of the Recommended Plan is to provide additional greenspace and recreational opportunities for surrounding communities. The plan includes over 300 acres of greenspace / parklands. The types of greenspaces will be consistent with community goals and landscaping concept.

The Recommended Plan is unique from an urban design and landscape standpoint in several ways:

- its integration into the adjacent communities through the inclusion of significant open space buffer areas accessible by pedestrians with landscaped tunnels and open spaces adjacent to the community;
- the opportunity that it provides for ecological protection, restoration and enhancement, including linking existing natural heritage areas;
- its inclusion of a multi-use trail system;
- the opportunities to incorporate gateway features into the landscape plan.

The Recommended Plan will be experienced both by drivers on The Windsor-Essex Parkway and by adjacent residents. The Recommended Plan will not simply be understood as a transportation facility, but also as an integral part of the urban fabric of the adjacent communities. This unique project requires a specialized approach to urban design and the design of the associated open spaces, natural areas and multi-use trail system. As a major international gateway, the Recommended Plan will be designed as a landmark that will be known not only for its function but its form and presence within the landscape.

Elements of the plaza must also be designed in recognition of its importance as a gateway and to buffer its presence in the vicinity of sensitive natural area.

CONTEXT-SENSITIVE SOLUTIONS

"Context sensitive solutions (CSS) is a collaborative, interdisciplinary approach that involves all stakeholders to develop a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic and environmental resources, while maintaining safety and mobility. CSS is an approach that considers the total context within which a transportation improvement project will exist."[3]

The Detroit River International Crossing Study has included an extensive consultation process that has incorporated several CSS events designed to inform stakeholders about the study and to generate feedback and input on the study. Landscape and urban design issues were introduced and discussed with stakeholders within a CSS approach.

Through events such as bus tours, Public Information Open Houses, and workshops concepts were developed to help formulate the urban design and landscape plan for the Recommended Plan. A variety of visualization tools including three-dimensional models, precedent images, photo-simulations and videos, allowed stakeholders to clearly understand the landscape, aesthetic and urban design implications of the practical alternatives and the Recommended Plan.

[3] US Federal Highway Administration (USFHWA) on www.contextsensitivesolutions.org

Introducing Landscape Principles and Themes

At public workshops in June 2006, landscape and urban design issues were introduced and broadly discussed in relation to the practical alternatives.

Opportunities for mitigation were discussed and precedent images were presented illustrating Ontarian, Canadian and International examples of mitigation solutions. Images shown included examples of noise barriers, vegetation, landforming and berms, land bridges, stormwater management facilities, and theming and gateways.

Landscape Impacts and Visualizations

At public workshops in October 2006 a series of themes was introduced as possible landscape and urban design treatments for the Recommended Plan. Each theme was applied to representative areas within each of the practical alternatives through the use of photo-simulations and sketch images.

The three themes were created in order to gauge interest in different approaches to design. The "Motor City" theme showed an approach to landscape and urban design that, while historically sensitive to the local history of automotive production, was at the same time focused on contemporary design. The "Rose City" theme showed an approach to design that was highly ornate, higher-maintenance and included design references from the late 19th and early 20th century. Public reaction was strongly in favour of "Carolinian", the theme that reflected the least ornate, most ecologically sensitive, and maintenance conscious design, but that remained contemporary in its approach

From these workshops, it was clear that landscape, environmental and urban design for the Recommended Plan should respect local natural heritage, focus on connections between human and natural communities and should consider maintenance of large open spaces as part of the design.

In August 2007, a PIOH was held that included high-resolution photo-simulations of the tunnels and a series of views of the facility from adjacent areas.

Moving Forward with Landscape Solutions

Following the establishment of The Windsor Essex Parkway as part of the preferred alternative, consultation regarding landscape and urban design solutions turned towards the establishment of the urban design, aesthetic and landscape guidelines that are outlined in the *Urban Design and Landscape Planning Report – The Recommended Plan (December 2008)*.

In July 2008, a draft landscape plan was discussed at public workshops. It was clear from the workshops that stakeholders remained focused on ecological principles and a green facility. Additionally, it was clear that the open spaces associated with the Recommended Plan should be focused primarily on providing a passive rather than active recreation function and that the most ecologically sensitive solutions should be pursued.

FUTURE CSS PROCESS

Future design phases should include a CSS-based consultation process to establish appropriate site-specific landscape treatments.

URBAN DESIGN

As a major international gateway, the Recommended Plan will be a landmark and a cultural symbol. As such, the aesthetic impact of the Recommended Plan and its integration into the landscape will be the subject of a more detailed Urban Design and Landscape Plan during subsequent design stages. This plan will build upon the concepts and principles established at this stage. The Urban Design Plan will address the visual aspects of the form, finish and materials used in the landscape and open spaces as well as in proposed structures (e.g. bridges, abutments, retaining walls, noise attenuation and safety barriers). It will also be closely coordinated with the future Landscape Design Plan. The Urban Design Plan should be developed as part of a consultation process with local stakeholders. The planning process will also seek opportunities to establish partnerships with First Nations, federal, provincial and local stakeholders to provide for the curation and funding of public art associated with potential gateway features.

AESTHETIC DESIGN PRINCIPLES

The Landscape Plan will form part of the Urban Design and Landscape Plan and will be composed of two parts: the elaboration of a theme or motif to be applied to the Recommended Plan; and a plan for incorporating public art in The Windsor-Essex Parkway corridor. The central principles of the Landscape Design Plan are unity of aesthetic experience and the creation of a gateway. The Landscape Plan will refer to the MTO Aesthetic Guidelines for Bridges 4 and will need to consider coordination with bridge and plaza designs to ensure a unified experience from one end of the proposed facility to the other. The landscape plan will consider the experience of the proposed facility from the point of view of:

- Drivers on The Windsor-Essex Parkway,
- Pedestrians utilizing the open spaces within The Windsor-Essex Parkway; and
- People viewing the Recommended Plan from adjacent residences, parks, streets, or businesses

The theme or motif will consider a palette of colours, forms and materials that may be used in the design of structural elements and in landscape design. The following elements will be subject to the aesthetic design plan:

- Barriers (including sound barriers, safety barriers, fencing)
- Retaining walls
- Tunnel abutments, parapets and columns
- Bridges and overpass structures
- Pedestrian and service road lighting
- Multi-use Trail crossing structures
- Landscaping
- Pedestrian signage and facilities.

Open spaces that are associated with The Windsor-Essex Parkway will be designed according to the following principles:

UNIFIED: The open spaces associated with the Recommended Plan will be considered as a unified whole. These spaces will be planned to function in an integrated manner and to present a unified aesthetic and visual environment for drivers and community users.

4 Aesthetic Guidelines for Bridges, Ontario Ministry of Transportation, Queen's Printer for Ontario, 2004.

GREEN: The vision for the Recommended Plan is to create a green corridor that supports new, viable natural communities and links existing natural areas.

CONNECTION: The tunnels provide an opportunity to create connections between communities on either side of The Windsor-Essex Parkway and along its length.

INTEGRATION: The Windsor-Essex Parkway travels through three municipalities, Tecumseh, LaSalle and Windsor, Ontario. The Windsor-Essex Parkway open spaces should integrate with the urban design, parks and recreation plans for these three municipalities as well as local and regional natural heritage systems.

GATEWAY: The Recommended Plan will be designed as a gateway to Canada, Ontario and Windsor-Essex.

Future design phases should include a CSS-based consultation process with local stakeholders to establish appropriate site-specific landscape treatments.

LANDSCAPE TYPES

The landscape plan divides the proposed landscape into different types that perform specific functions. Each of these landscape types employs a different combination of landscape elements such as grading, vegetation, multi-use trails and landscape amenities to create site-appropriate features:

- Gateway Landscapes function to provide an aesthetic, sculptural and memorable gateway to Canada, Ontario and Windsor-Essex. They will integrate a gateway and welcome feature into the highway design and, by creating monumental landforms, serve to accommodate some of the fill generated by highway construction.
- Screening Landscapes create a visual and noise screen / barrier between residences and road infrastructure. The screening landscape is a combination of one or more screening methods (sound barrier, vegetation, berming, fence), depending on the site characteristics and safety and engineering requirements.
- Stormwater Management Landscapes combine stormwater management with landscape amenity and are located in areas where stormwater management ponds are planned for technical design.
- Ecological Landscapes are the predominant landscape type within the Recommended Plan. Ecological landscapes will provide natural open spaces that knit the Recommended Plan into the natural landscape of the city, and provide the setting for the multi-use trail system. There are three main types: ecological protection landscapes, where existing sensitive habitat and vegetation are protected; ecological enhancement landscapes, where the ecological function and complexity of existing habitat and open spaces is improved; and ecological restoration landscapes, where new habitat will be created to extend and connect habitat within and around the Recommended Plan.
- Roadside Landscapes are located on the embankments of the freeway portion of The Windsor-Essex Parkway as well as between ramps and access roads and other areas inaccessible to pedestrians. This landscape type includes geometrically strong plantings and structural elements that provide a green, aesthetic driving experience for users of the freeway portion of The Windsor-Essex Parkway.
- The Multi-Use Trail travels through the various landscape types and allows pedestrians and cyclists to experience the landscape of The Windsor-Essex Parkway. Construction materials and alignments of the multi-use trail will vary depending on site and landscape type.

CONCLUSION

CSS workshops using visualizations, photography, and three-dimensional modelling have helped establish a suitable approach to the urban, landscape and aesthetic design of the Recommended Plan. Mitigation measures to reduce or improve visual and landscape impacts will include:

- the development of clear urban design and aesthetic guidelines to guide all aspects of future design
- the use of landforming and vegetation strategies to improve views, aesthetics, ecological function and screening
- the inclusion of a multi-use trail system and pedestrian-accessible open space within the facility

These mitigation measures will improve the visual character, aesthetic presence and landscape impact of The Windsor-Essex Parkway and thereby help to address the overall goal of improving the quality of life for residents achieved through buffering the communities from the roadway. The result of the landscape and visual impact mitigation will be a landscape that is unified, green, connected, integrated, and functions as a culturally significant gateway.

10.4.8 Groundwater

Groundwater pressure head levels within the granular soils and bedrock (near the soil-bedrock interface) range from about Elevation 182 m near the intersection of Highway 401 and Highway 3 (about 3.5 to 4 m below ground surface), to about Elevation 179 to 180 m near E.C. Row Expressway and Ojibway Parkway (about 1.2 m above ground surface). Artesian groundwater containing hydrogen sulphide was encountered during investigations near the intersection of Ojibway Parkway and E.C. Row Expressway. Similar groundwater conditions were encountered during drilling for the potential bridge crossing sites along and west of Sandwich Street.

The groundwater conditions within the bedrock or overlying granular soil aquifer could affect the feasibility of constructing deep excavations (greater than about 10 m) unless other excavation stability enhancement measures are implemented. In addition, temporary depressurization or dewatering of either granular soils near the bedrock interface or the bedrock could induce measurable consolidation settlements within the overlying silty clay soils. The need for such dewatering or depressurization will depend on the depth and size of specific excavations.

Creating permanent, open, and below-grade roadways within the native clays using slopes or supported with retaining walls (that do not cut off groundwater pressure gradients from adjacent higher grades) will result in a permanent lowering of the groundwater pressures within the clay soils surrounding the permanent cuts. Based on the estimated variation in vertical and horizontal permeability, and for preliminary planning purposes, it is anticipated that the zone of influence of such groundwater lowering within the silty clay should be assumed to be a distance up to about 5 times the depth of cut. Such groundwater lowering will induce settlement within the silty clay subsoils within this zone. It is anticipated that if low permeability in situ walls (e.g. contiguous caisson walls or concrete diaphragm walls) are used for excavation support or for permanent below grade structures, the influence of the excavation on near-surface groundwater would be much less. Further refinement of this zone of influence and the magnitude of potential settlement requires additional site-specific investigation and analyses.

At the time this report was prepared, no detailed dewatering assessments had been completed as the locations and dimensions of the potential areas requiring groundwater control had not been defined. Based on the anticipated condition of the soil and bedrock near the bedrock interface and the likely overall dimensions of construction, it is likely that significant volumes of water would require extraction in order to have measurable effects on the groundwater pressures. The natural groundwater contains hydrogen sulphide that must be managed and may require treatment during any extraction, collection, and disposal process. Disposal of the volumes that might be generated by construction dewatering may be impractical or prohibitively costly and will certainly require that a Permit to Take Water be obtained from the MOE for the project.

The need for dewatering should be minimized by limiting the depths of temporary and permanent excavations to the extent practicable. It is anticipated that limiting the maximum depth for the approach highway permanent cuts to depths on the order of about 9 m, generally east of the intersection of Huron Church Road and E.C. Row Expressway, should be sufficient to minimize the need for temporary construction dewatering that might otherwise induce settlements, impractical dewatering rates, treatment of groundwater and the need for MOE Permits to Take Water. In areas with artesian groundwater pressures, generally west of Malden Road, groundwater pressure mitigation measures may include use of controlled density drilling fluids for installation of deep foundations (e.g. drilled shafts or caissons) so as to minimize or avoid the need for dewatering.

Where contaminated soils and material are encountered, the procedures outlined in Section 10.2.6 should be followed to minimize the risk of mobilizing contaminants due to dewatering activities. In the event that hydrogen sulphide and any other contaminants are present in the groundwater, an *Ontario Water Resources Act*-approved treatment system may be required before discharging to a watercourse.

CONCLUSION

Due to the current groundwater conditions in the corridor, based on geotechnical investigations and analysis completed as part of this study, it is likely that in the event that deep excavations are undertaken requiring temporary depressurization of groundwater, significant volumes of water would require extraction in order to have measurable effects on the groundwater pressures. As such, the need for dewatering should be minimized by limiting the depths of temporary and permanent excavations to the extent practicable.

In general, south and east of the Huron Church Road/E.C. Row Expressway interchange, it is anticipated that limiting the maximum depth of the freeway to approximately 9 m below-grade would be sufficient to minimize the need for temporary construction dewatering that might otherwise induce settlements, impractical dewatering rates, treatment of groundwater and the need for MOE Permits to Take Water.

Also, generally west of Malden Road, where artesian groundwater pressures are present, measures to minimize or avoid the need for dewatering during construction may include use of controlled density drilling fluids for installation of deep foundations.

In the event that contaminated soils are encountered, the procedures outlined in Section 10.2.6 should be followed to minimize the risk of mobilizing contaminants due to dewatering activities. Where dewatering is necessary, if hydrogen sulphide or any other contaminants are encountered in the groundwater, an *Ontario Water Resources Act*-approved treatment system may be required before discharging to a watercourse.

10.4.9 Drainage and Stormwater Management

A Stormwater Management Plan has been developed for the purpose of mitigating potential effects to stormwater quantity and quality as a result of the proposed undertaking. The Stormwater Management Plan is described in the following paragraphs. Additional information on the stormwater management plans for the crossing, plaza and The Windsor-Essex Parkway is presented in Sections 9.1.5, 9.2.6 and 9.3.7, respectively.

STORMWATER MANAGEMENT ALTERNATIVES

A list of stormwater management practices (SWMP's) was screened, along with the "do nothing" alternative, with consideration of the general advantages and disadvantages, experience, and practical feasibility for the site specific conditions, such as:

- Integration with the standard type of drainage (storm sewers and outside ditches);
- Space available (within the proposed right-of-way), and practical outlet points;
- Functionality of using small orifice sizes to control peak outflow.

Although the "do nothing" alternative was initially considered, it was determined that this is not an acceptable course of action. The proposed increase in pavement area and the associated potential increase in pollutant loading to the receiving watercourses would result in negative effects such as reduced stream water quality, degraded aquatic habitat, flooding, and in-stream erosion, which necessitates provision of appropriate mitigation measures.

The list of SWMP's reviewed for appropriateness included:

- Storage SWMP's such as wet ponds, dry ponds, constructed wetlands and underground storage tanks;
- Infiltration SWMP's such as infiltration basins, infiltration trenches, sand filters and porous pavement;
- Vegetative SWMP's such as buffer strips, grassed swales and filter strips;
- Soft SWMP's such as conservation/restoration and source controls; and
- Special purpose SWMP's such as oil/grit separators and filter devices.

Based on an initial screening of SWMP's, it was concluded that:

- Storage SWMP's can be effective in providing combined quality/quantity control where drainage areas are sufficient and space is available.
- SWMP's based on infiltration can be effective in treating stormwater runoff, but their effectiveness is limited with respect to flooding and erosion control. Disadvantages include the high level of maintenance required and the potential for clogging. It should also be noted that the relatively high salt concentration associated with a highway would be infiltrated directly into the groundwater, which is not considered acceptable.
- Vegetative SWMP's such as grassed swales provide water quality treatment primarily by filtering out fine sediments and promoting infiltration, but can also be used to provide secondary erosion control. Filtering of highway runoff can also be accomplished with vegetative buffers and filter strips. Grassed swales are primarily designed to provide water quality control by limiting flow

velocities and increasing the wetted perimeter, while enhanced grass swales have permanent rock check dams to detain water during small events and/or flat bottoms to increase storage and contact. Vegetative SWMP's can be readily applied to highway situations, and are relatively inexpensive and particularly effective for small catchment areas.

- The implementation of soft SWMP's such as conservation/restoration and source control of pollutants such as de-icing salt are beyond the scope of this study and are addressed through MTO's policies and guidelines for roadway maintenance.
- Special purpose SWMP's, such as oil/grit separators, have limited application in highway runoff control.

Based on the results of the screening process, the solutions retained for further analysis were storage SWMP's and those based on the filtering effect of grass, namely, conventional and enhanced grassed swales.

According to research, for grassed swales to be very effective for quality control, it is desirable to limit:

- The maximum grade to 1.5 per cent;
- The maximum velocity to 0.5 m/s; and
- The maximum water depth to 0.5 m.

Due to the high groundwater level of associated with the study area, clay or impermeable liners will be required for swales in areas of high aquifer vulnerability. This will help prevent grit and roadway contaminants from infiltrating into the groundwater.

ASSESSING DRAINAGE AND STORMWATER MANAGEMENT IMPACTS

The Ontario Ministries of Transportation (MTO) and the Environment (MOE) have developed specific protocols for assessing drainage impacts which must be applied to all transportation projects in the province. In general terms, the drainage impact is determined by comparing the existing condition runoff effects within the study area to the proposed condition runoff effects.

For all development projects, quality and quantity treatment of runoff is necessary. Stormwater quality is degraded by increased pollutant loadings (oil, gravel, garbage, etc.), measured based on the total impervious percentage increase over the existing condition. The MOE document "*Stormwater Management Planning and Design Manual*" outlines the increase in pollutants over the development area, as well as providing guidelines for potential mitigations. Increases to surface runoff which exceed the existing peak flows to the watercourse will negatively impact the watercourse floodline and erosion condition. This can be mitigated by providing stormwater management practices which provide quantity control and erosion treatment to runoff from the study area, or resizing impacted crossing structures in order to prevent increases in floodlines. However, additional mitigation may also be required in specific circumstances.

Roadway drainage impact is determined by the number and frequency of flooding within the travel lanes. Flooding of the travel lanes can result in lane closures, traffic delays, or even accidents associated with hydroplaning.

POTENTIAL IMPACTS

Within the study area, runoff from the highway will discharge to a combination of intermittent and permanent watercourses via highway ditches. In order to assess the potential impacts of the Recommended Plan on the water quality and quantity of downstream watercourses, as well as the potential for erosion and fish habitat impacts, two types of critical areas were identified:

- Highway areas draining to watercourses that support fish habitat adjacent to the highway; and
- Highway areas that result in a large increase in pavement area relative to their total upstream drainage area, either because the upstream drainage area is relatively small or because the drainage area includes a large section of the highway. These result in a larger potential for erosion, flood risk, and water quality degradation in these watercourses.

As indicated previously, the proposed improvements will result in an increase in pavement area. The receiving watercourses for the Recommended Plan are all classified as Warm Water Fishery habitat, and thus proper stormwater management controls should be implemented throughout the site.

MITIGATION MEASURES

The proposed stormwater management strategy consists of utilizing flat-bottomed grassed swales in all locations for surface drainage and stormwater management wetponds to provide *Enhanced Protection Level* treatment, as outlined in the Ministry of the Environment (MOE) document entitled *Stormwater Management Planning and Design Manual*, for quality, quantity and erosion control to runoff. In addition, vegetative SWMP's such as enhanced ditches, bio-swales and plunge pools are to be utilized along critical highway areas where access to a Stormwater management pond is limited, as well as to provide localized erosion control measures. Furthermore, due to the high groundwater level associated with the study area, clay or impermeable liners will be required for swales in areas of high aquifer vulnerability.

Deck drains are not recommended for drainage of the bridge deck, as direct discharge to the Detroit River without out providing quality control would occur. Possible alternatives may utilize pipe systems integrated within the crossing to convey stormwater off of the structure. If determined to be feasible, the runoff could be conveyed to a treatment facility (wetpond or grassed swales) where quality, quantity and erosion treatments could be provided. The feasiblilty, sizing and location of the treatment facility will be confirmed during future design stages.

To account for potential contaminant spills (e.g. oil, chemical, etc.) on the crossing structure and within the plaza area, design details will be developed during future design stages in accordance with applicable standards. For the plaza area, a shut-off valve or other alternative damming procedures may be proposed for the adjacent stormwater management ponds. The preferred treatment will be determined during future design stages.

Under existing conditions, surface water runoff is not controlled. As such the level of quality treatment provided for surface water runoff discharging to receiving watercourses in the study area with the proposed stormwater management plan in place will be improved. However, the need for measurement of baseline conditions in watercourses will be investigated during future design stages in consultation with the appropriate regulatory agencies.

MTO employs and recognizes the importance of best salt management practices and has developed a Salt Management Plan in accordance with *Environment Canada's Code of Practice for the Environmental Management of Road Salts (Environment Canada, 2004)*. MTO follows best management practices for road salt management, which are consistent with the best practices in North America. MTO partners with stakeholders using the latest technology, tools and methods to keep roads safe for winter driving and to minimize salt usage. Best management practices include advanced weather forecasting, electronic spreader equipment, the use of brines in pre-wetted salt, and varying application rates of road maintenance materials to match weather conditions. MTO will continue to investigate de-icing alternatives to control and reduce salt usage while ensuring highway safety.

A monitoring plan may be required to confirm that the construction and operation of the project will not degrade water quality. This requirement will be investigated during future design stages. If required, elements of the plan would include inspections by an Environmental Monitor. Elements of a possible monitoring plan are summarized below:

- Minimum weekly inspections of all erosion and sediment control (ESC) measures, including all siltation fencing;
- Mandatory inspections of all ESC measures following a rainfall event;
- Inspections after significant snow-melts;
- Daily inspections during extended rain or snowmelt periods;
- High-risk areas (soil stockpiles, dewatering locations, etc) may require more frequent inspections;
- An ESC report will be required after each inspection, citing all deficient measures (broken/torn silt fence, siltation entering watercourse, etc);
- All damaged/deficient ESC measures should be repaired or replaced within 48-hours of the inspection.

These elements will be subject to further refinement during subsequent design stages based on the availability of more detailed information. In addition, the monitoring plan will include specific contingency measures to rectify degradation that is identified based on monitoring data.

CONCLUSION

A Stormwater Management Plan has been developed for the purpose of mitigating potential effects on the quantity and quality of stormwater runoff being discharged to local watercourses as a result of the proposed undertaking.

To achieve an *Enhanced Protection Level* of treatment, as outlined in the Ministry of the Environment (MOE) document entitled *Stormwater Management Planning and Design Manual*, the proposed stormwater management strategy consists of the use of flat-bottomed grassed swales, stormwater management wetponds as well as provision of localized erosion control measures and localized use of vegetative SWMP's such as enhanced ditches, bio-swales and plunge pools along critical highway areas where access to a Stormwater management pond is limited.

In addition, due to the high groundwater level associated with the study area, clay or impermeable liners will be required for swales in areas of high aquifer vulnerability. This will help prevent grit and roadway contaminants from infiltrating into the groundwater.

Stormwater management for runoff treatments for the crossing structure will be investigated during future design stages. Alternative methods for providing quantity and quality treatment will be examined, all in accordance with the latest applicable MOE design standards and guidelines.

To account for potential contaminant spills (e.g. oil, chemical, etc.) on the crossing structure and within the plaza area, design details will be developed during future design stages in accordance with applicable standards. For the plaza area, a shut-off valve or other alternative damming procedures may be proposed for the adjacent stormwater management ponds, however, the preferred treatment will be determined during future design stages.

With the proposed stormwater management plan in place, the level of quality treatment provided for surface water runoff discharging to receiving watercourses in the study area will be improved. However, the need for measurement of baseline conditions in watercourses will be investigated during future design stages in consultation with the appropriate regulatory agencies.

In addition, MTO employs and recognizes the importance of best salt management practices and will continue to investigate de-icing alternatives to control and reduce salt usage while ensuring highway safety

A monitoring plan may be required to confirm that the construction and operation of the project will not degrade water quality in watercourses receiving runoff. This requirement will be investigated during future design stages. If required, elements of the plan would include inspections by an Environmental Monitor and specific contingency measures to rectify degradation that is identified based on monitoring data. The need for, and design of, a monitoring plan will be determined during subsequent design stages based on the availability of more detailed information.

10.5 Commitments to Future Work

The following outlines commitments to future environmental work to be undertaken during subsequent design stages of this project.

10.5.1 Air Quality

The air quality modelling demonstrates that overall, implementation of the Recommended Plan will reduce future transportation related air quality impacts within the study area. Therefore, the Recommended Plan will act as a small mitigation measure for future transportation related air quality impacts within Windsor Region.

Best practices for maintenance will be employed to minimize dust levels from operation of The Windsor-Essex Parkway and thereby minimizing the risk of localized elevated fine particulate matter levels.

10.5.2 Socio – Economic Environment

NOISE

Final recommendations with respect to the location, height, etc. of noise barriers, berms or a combination of both will be reviewed during future design stages.

Consultation with communities will continue during the design and construction stages, to provide additional opportunities for input on noise mitigation measures during both the construction and operation stage.

PROTECTION OF COMMUNITY AND NEIGHBOURHOOD CHARACTERISTICS

In addition, a communication process will be implemented during construction to manage disruption effects experienced by residents, and regular communications will be maintained with emergency services and the municipalities with regard to changes to the road network, municipal services, etc.

EXISTING AND FUTURE LAND USE

Opportunities to minimize potential property impacts associated with the Recommended Plan will be reviewed during future design stages in consultation with municipalities and property owners.

PROPERTY AND WASTE CONTAMINATION

To reduce the uncertainty of whether contamination is present, a Phase II ESA should be conducted during future design phases. Phase III work will be undertaken as necessary to further investigate and mitigate possible contamination as necessary.

10.5.3 Natural Environment

Follow-up work, including field investigations will be undertaken as required to facilitate the development of mitigation measures, compensation plans, and to obtain necessary permits and approvals.

WILDLIFE AND WILDLIFE HABITAT

The following measures will be employed during future design stages:

- Options for permanent protection of critical Butler's gartersnake habitat will be developed in later consultation phases.
- The presence/absence of Eastern foxsnake hibernacula within the vicinity of the Recommended Plan will be investigated during subsequent design stages to determine the potential for impacts.
- A continued study of the Butler's garter snake population and the restoration area is necessary once the proposed highway is completed.

MIGRATORY BIRDS

Migratory bird species have been identified. However, populations and behaviours of migratory and resident bird species should be further studied in the vicinity of the Detroit River crossing. Radar studies, acoustic studies and point count surveys may be carried out to provide input to bridge design.

VEGETATION

Effective techniques for mitigating impacts for individual species at risk and significant plant communities will be further investigated in discussion with agencies, First Nations and other interested parties toward the achievement of overall net benefits and permitting under the *Ontario Endangered Species Act, 2007* and the federal *Species At Risk Act.*

MOLLUSCS AND INSECTS

The following measures will be employed during subsequent design stages to protect Monarch populations and habitat:

- Opportunities to minimize vegetation removals will continue to be examined in future design stages, and areas that should be protected during construction will be delineated prior to construction start.
- Following construction other disturbed areas that revegetate are also likely to self-seed with host plants and create additional Monarch habitat.
- The construction limits will be delineated with sensitive areas identified prior to the start of construction.

FISHERIES

Measures to mitigate impacts to fish habitat and fish passage at the submerged culvert locations will be developed in the subsequent design phase in consultation with Fisheries and Oceans Canada. A Letter of Intent and Application will be prepared during subsequent design stages to secure the required federal *Fisheries Act* authorizations for this project.

DESIGNATED NATURAL AREAS

MTO will discuss the dedication of protected, enhanced or restored lands located within the right-of-way for The Windsor-Essex Parkway to appropriate agencies, First Nations and other stakeholders to ensure permanent protection, conservation and research.

LANDSCAPE PLAN

The overall Landscape Plan for the Recommended Plan will be developed through ongoing consultation with the adjacent communities. The multi-use trail is part of an active transportation network for the neighbouring municipalities and as such will be integrated to the extent possible into existing and planned regional and local cycling and active transportation networks.

EMERGENCY SERVICE

Emergency service providers have been consulted and are aware that they will need to reassess their resources, level of service, access routes for the freeway, and in general, their ability to access their entire area of coverage, in order to ensure provincially mandated response times are met. Future consultation with emergency services will take place.

10.5.4 Cultural Environment

Assessments of Archaeological Resources and Cultural Heritage Resources will continue during subsequent design stages. The archaeological assessment will consist of completion of Stage 2 for all properties that have not yet been evaluated. Stage 3 Assessment will be completed for all sites identified to date within the Recommended Plan and for those sites identified during the remaining Stage 2 testing. The study team will continue to consult with WIFN regarding archaeology work.

Assessment for Cultural Heritage resources will consist of completion of Cultural Heritage evaluation reports for three structures (BHR's 1, 8 and 19) and Detailed Documentation reports for three others (BHR's 2, 7 and 9).

10.5.5 Groundwater

Detailed investigations, testing, and analyses will be required during final design to adequately assess the feasibility of dewatering or groundwater depressurization within the bedrock or overlying granular soils, and to minimize the risk of mobilizing contaminants due to dewatering activities.

In addition, if a Permit to Take Water is required, Ministry of the Environment (MOE) approval, under the *Ontario Water Resources Act*, will be sought.

10.5.6 Stormwater Management

Design details will be developed during future design stages in accordance with applicable standards to treat stormwater runoff from the crossing and to account for potential contaminant spills (e.g. oil, chemical, etc.) on the crossing structure and within the plaza area.

In addition, the need for measurement of baseline conditions in watercourses will be investigated during future design stages in consultation with the appropriate regulatory agencies.

The need for a monitoring plan to confirm that the construction and operation of the project will not degrade water quality will also be investigated during future design stages

MTO will continue to investigate de-icing alternatives to control and reduce salt usage while ensuring highway safety.

10.6 Project Monitoring

PROJECT SPECIFIC TECHNICAL MONITORING

During construction, MTO or its agent will ensure that the implementation of the mitigating measures and key design features are consistent with the approvals of the EA and in accordance with the contract. In addition, MTO or its agent will assess the effectiveness of its environmental mitigating measures to ensure the following:

- Individual mitigating measures are providing the expected control and/or protection;
- Composite control and/or protection provided by mitigating measure is adequate;
- Additional mitigating measures are provided as required for any unanticipated environmental conditions which may develop during construction;
- Information is available for the overview assessment of mitigating measures; and,
- Environmental monitoring, after a project is completed, may involve follow-up monitoring of significant measures and /or significant concerns.

10.6.1 Implementation of Environmental Monitoring Framework

INSPECTION BY CONSTRUCTION ADMINISTRATION STAFF

Construction is subject to daily general on-site inspection to ensure the execution of the environmental component of the work and to deal with environmental problems that develop during construction. This is the primary method for compliance monitoring.

SITE VISITS BY ENVIRONMENTAL STAFF

Regular site visits by well qualified and experienced construction administration environmental staff to ensure mitigation elements are being carried out. The timing and frequency of such site visits will be determined by the schedule of construction operations, the sensitivity of environmental concerns and the development of any unforeseen environmental problems during construction.

10.7 Summary of Environmental Mitigation and Commitments to Future Work

ID #	Environmental Element/Concern and Potential Impact	Reference Section	Anticipated Timeframe	Concerned Agencies	Summary of Environmental Mitigation and Commitments to Future Work
1.0	AIR QUALITY	10.1	Construction / Operation	MOE/ EC/ MTO	*Air Quality Mitigation During Construction and Operation* Various mitigation measures will be employed during construction to minimize adverse air quality effects such as dust impacts through the use of proper controls, such as: • periodic watering of unpaved (unvegetated) areas; • periodic watering of stockpiles; • limiting speed of vehicular travel; • use of water sprays during the loading, unloading of materials; • sweeping and/or water flushing of the entrances to the construction zones; and, • use of calcium chloride. Road sweeping practices in accordance with maintenance standards will be employed to reduce silt loading on The Windsor-Essex Parkway during the operations phase.
2.0	NOISE & VIBRATION	10.2.1	Construction / Operation	MOE/ MTO	*Noise Mitigation During Construction and Operation* The following measures will be undertaken to reduce noise during the operating phase: • Mitigation measures were identified to address operation effects for the Recommended Plan as outlined below: In all cases, for receptors located in areas along The Windsor-Essex Parkway, the proposed 5 m high noise barrier where required was effective in reducing the predicted project noise to within 5 dB of the estimated baseline noise levels. • In many cases, especially for receptors on the north side of the Windsor-Essex Parkway a decrease in noise levels compared to future “No-Build” noise levels was predicted. The following measures will be undertaken to mitigate noise during the construction phase of the Recommended Plan: • Ensure that all construction equipment used is in good repair, fitted with functioning mufflers, and complies with the noise emission standards outlined in MOE guidelines; • To the greatest extent possible, limit the most noisy construction activities to daytime hours; • Where the sequencing of construction permits, permanent noise barriers and/or berms may be built during the early phases of construction in order to reduce construction noise levels at receptor locations; • Maximize the distance between the construction staging areas and nearby receptors to the greatest extent possible; • Maintain construction haul roads to prevent potholes and ruts to avoid the loud noise caused by construction vehicles travelling over uneven road surfaces; and • Develop a process for receiving, investigating and addressing construction noise complaints received from the public.

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					Consultation with communities during the design and construction phases will provide additional opportunities for input on noise mitigation measures during both the construction and operation stages. The pavement design shall consider the generation of noise from roadway elements does not exceed the noise levels assumed within the acoustic modelling carried out within this Environmental Assessment for the purposes of identifying impacts to surrounding communities and mitigation strategies. Based on the field monitoring results, it is expected that the vibration levels as a result of implementation of the Recommended Plan will comply with MOE criteria. For this reason, no measures are being proposed to mitigate vibration levels.
3.0	PROTECTION OF COMMUNITY AND NEIGHBOURHOOD CHARACTERISTICS	10.2.2	Construction / Operation	MTO/ MOE	***Protection of Community and Neighbourhood Characteristics*** Mitigation measures recommended to reduce the social impact on the broader and neighbourhood communities include: • Implementation of the "willing seller-willing buyer" property purchase program; • Fair market value for properties required for the project; • Implement a communication process during construction to manage disruption effects experienced by residents; • Develop and maintain regular communications with emergency services and the municipalities with regard to changes to the road network, municipal services, etc.; • For residents in the Spring Garden area, protect and maintain and landscape as much as possible to enhance the lands between the residences and the facility; • Assess the need for improvements to Montgomery Drive; and, • For The Windsor-Essex Parkway, illumination will be designed to provide sufficient lighting for the roadways while limiting light trespass beyond the roadways, and full cut-off luminaires will be provided. Additional details of the illumination system will be determined during subsequent stages of design. • Where practical, lighting used at the plaza should be designed to minimize light intrusion into surrounding areas, while ensuring adequate lighting for operational requirements. This may involve using full cut-off luminaires, shielding, if necessary, and investigating the use of conventional lighting in place of high mast lighting. Lighting should be focused downwards and shielded where necessary to prevent light spillage into nearby residential and community areas.

4.0	ECONOMIC IMPACTS	10.2.3	Construction/ Operation	MTO	***Economic Impacts***
					Construction of the Recommended Plan will lead to 12,000 project related jobs. Mitigation measures recommended to reduce economic impacts are identified below.
					• For businesses that are physically disrupted, financial compensation will be offered.
					• For businesses that are not physically disrupted but are affected through visibility, or reduced traffic volumes, several other forms of mitigation will be used:
					    • The service road network will allow for adequate access to existing commercial corridors;
					    • Signage will be considered at certain locations to make motorists aware of businesses/business clusters, as policies permit; and

ID #	Environmental Element/Concern and Potential Impact	Reference Section	Anticipated Timeframe	Concerned Agencies	Summary of Environmental Mitigation and Commitments to Future Work
					• Efforts will be made during the construction phase to ensure access is maintained to operating businesses.
5.0	EXISTING AND PLANNED LAND USE	10.2.4	Operation	MTO/ MUNICIPALITIES	*Existing and Planned Land Use* Mitigation measures and commitment to future consultation recommended to reduce existing and planned use impacts are identified below. • The following municipalities will be consulted; City of Windsor, Town of Tecumseh, Town of LaSalle and Essex County through the development of an integrated Urban Design and Landscape Plan during later design stages. • Further consultation between Hydro One and Transport Canada/Public Works Canada will be completed during future design phases.
6.0	WASTE AND WASTE MANAGEMENT	10.2.6	Construction	MTO/ MOE	*Waste and Waste Management* Mitigation measures recommended for waste and waste management to reduce impacts are identified below. • If contamination to soil and/or groundwater is identified, a Site Management Plan may be developed for further investigation, which may include a Phase III ESA. • Further evaluations could include risk assessments to determine whether the contamination represents a potential threat to human health or the environment, typically followed by monitoring of natural attenuation (MNA). • Should any contaminated materials be encountered during construction, caution will be exercised while handling and disposing of contaminated materials. Excess materials will be managed in accordance with normal MTO practices (as governed by OPSS 180, or the most current standard at the time of construction). • To evaluate the presence of ACMs, LBP and PCBs, in structures and equipment a Designated Substance Survey (DSS) may be required prior to demolition.
7.0	ARCHAEOLOGICAL RESOURCES	10.3.1	Construction	MCL / MTO	*Archaeological Resources* Mitigation measures required for Archaeology Resources prior to and during construction are identified below. • Should deeply buried archaeological remains be found on the property during construction activities, the Manager, Cultural Programs unit, Ontario Ministry of Culture, should be notified immediately; and, • In the event that human remains are encountered during construction, the proponent should immediately contact both the Ontario Ministry of Culture and Registrar or Deputy Registrar of the Cemeteries Regulation Unit of the Ontario Ministry of Small Business and Consumer Services. The study team will continue to consult with WIFN regarding archaeology work.
8.0	CULTURAL HERITAGE RESOURCES	10.3.2	Construction	MCL / MTO	*Built Heritage Resources* Mitigation measures recommended for Cultural Resources to reduce any impacts are identified below. • A Cultural Heritage Resource Documentation Report will be prepared for applicable features. • Relocation of individual structures within the region; or

ID #	Environmental Element/Concern and Potential Impact	Reference Section	Anticipated Timeframe	Concerned Agencies	Summary of Environmental Mitigation and Commitments to Future Work
					• Salvage of significant architectural elements followed by demolition. Where relocation is recommended, the City of Windsor Heritage Committee should be consulted.
9.0	VEGETATION AND VEGETATION COMMUNITITES	10.4.3	Construction / Operation	MNR / MTO / MUNICIPALITIES	**Vegetation and Vegetation Communities** The following mitigation measures can be employed to address impacts to Vegetation and Vegetation Communities as a result of the construction and operation of the Recommended Plan. • Areas that should be protected during construction will be delineated prior to construction start and no activities will be permitted in these areas. • The Urban Design and Landscape Plan will include detailed prescriptions for vegetation management including edge management plans, soil management plans, use of native and non-invasive plant materials, prairie disturbance regimes, control of exotic and invasive species and management of species at risk. The landscaping plan will be prepared in later design stages. • Permits and approvals required under SARA and ESA 2007 will be obtained prior to construction. Detailed mitigation strategies will be developed in order to obtain the permits. • Vegetation removals will be avoided in the vicinity of species at risk and their habitat during the growing season. • Opportunities will be sought to forge partnerships with parties to relocate species to lands in public ownership, to otherwise restore and enhance these lands with native plants and species at risk and to transfer lands within The Windsor-Essex Parkway to parties that can best protect sensitive areas. • Consideration of these strategies would be done in consultation with appropriate regulatory agencies (e.g. CWS, MNR) and with other authorities who may have a role in environmental stewardship, including municipalities, ERCA and WIFN. *Monitoring Activities* • During construction, an environmental inspector will make frequent random site visits to ensure that construction activities are not causing any harm in areas that are to be protected. • Post-construction monitoring should occur to ensure successful plant establishment and reproduction.
10.0	MOLLUSCS AND INSECTS	10.4.4	Construction / Operation	MNR / MTO	**Molluscs and Insects** The following mitigation measures can be employed to address impacts to Molluscs and Insects as a result of the construction and operation of the Recommended Plan. • The area for vegetation removals has been minimized to the extent possible, and areas that should be protected during construction will be delineated prior to construction start. The mitigation measures prescribed for Monarchs will also reduce potential impacts to other insect species. • To avoid impacts to species at risk and their critical habitat, vegetation removals will be avoided in the vicinity of species at risk and their habitat during the growing season. • The areas for restoration and enhancement will result in the creation of new Monarch habitat, as those areas will be intentionally or naturally seeded by host plants.

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					• Following construction other disturbed areas that re-vegetate are also likely to self-seed with host plants and create additional Monarch habitat. The construction limits will be delineated with sensitive areas identified prior to the start of construction. • Good housekeeping practices will be employed to prevent the contamination of habitat adjacent to the work area. In the event of an upset or spill, a quick and effective response to contain the spill and clean up the area will be employed.
11.0	FISH AND FISH HABITAT	10.4.5	Construction / Operation	MTO/ MNR/ DFO	**Fish and Fish Habitat** ***The following mitigation measures can be employed during construction to avoid or reduce impacts of the Recommended Plan:*** *Changes to water quality and quantity:* • Best construction practices should be employed to reduce the potential for spills and materials/equipment from entering water. • Maintenance, fuelling and storage should occur at least 30 m from watercourses/drains. • Debris should be prevented from entering watercourses/drains and a spill response plan should be developed. • Sediments should be prevented from reaching sensitive areas through erosion and sediment controls and exposed soils stabilized as soon as possible. • A stormwater management plan should be developed and implemented to treat run-off during operations. • If it is necessary to undertake construction activities within the Detroit River, an assessment of potential impacts will be completed, subject to approval from the relevant regulatory agencies. *Alterations to baseflow:* • The increases in impervious surfaces and areas of soil compaction should be minimized to facilitate as much infiltration of surface water as possible. • Management of stormwater through the development and implementation of a stormwater management plan will address potential reductions in baseflow. • Methods that encourage infiltration will be investigated. • Flows in watercourses will be monitored during dewatering activities and measures will be implemented in the event that baseflow is significantly affected. *Barriers to fish passage:* • Water flow should be maintained during construction. *Mortality of fish species:* • The magnitude of effects should be minimized through the employment of timing windows for in-water work, commencing work only when all materials are present and staging of work to minimize duration. • Work should be performed in the dry and isolated fish should be captured and relocated by qualified personnel.

ID #	Environmental Element/Concern and Potential Impact	Reference Section	Anticipated Timeframe	Concerned Agencies	Summary of Environmental Mitigation and Commitments to Future Work
					Impacts associated with the operations phase for the Recommended Plan on fish and fish habitat can be mitigated by the following: *Barriers to fish passage:* • Culverts, designed using fish-friendly methods, and channels, designed using natural channel design principles, should not form barriers to fish passage during operations. • Fish passage options (including mechanical and manual lifts) will be considered at Cahill and Lennon Drains to provide safe fish passage across the Windsor-Essex Parkway. • If the feasibility of maintaining fish passage in Cahill and Lennon Drains is found to be impractical due to costs, maintenance, hazards to roadway, etc., additional habitat creation areas within the Recommended Plan area will be examined, in addition to the possibility of off-site compensation for the potential loss of productivity in the form of financial contributions to fund, or help to fund, nearby fish habitat restoration/enhancement projects • Consideration for project funding regarding fish passage options should be done in consultation with appropriate regulatory/environmental agencies (e.g., DFO, ERCA, MNR, municipalities). Walpole Island First Nations have also expressed an interest in the development of solutions to address possible fisheries impacts *Loss of fish habitat:* • The extent of fish habitat affected can be minimized through engineering structures to fit within the smallest possible footprint areas. • Culvert lengths and extensions can be minimized through the use of headwalls, wingwalls and guide rails and extensions should match the inverts of the existing culverts and streambeds. • New crossing structures should be constructed using fish-friendly designs including appropriate horizontal and vertical clearances, open bottoms, countersinking, etc. • Realigned channels should be designed using natural design principles to enhance new habitat over existing habitat. • Riparian vegetation should be maintained where possible. • A fish habitat compensation plan will be prepared during later design stages to ensure no net loss of the productive capacity of fish habitat. *Effects on Water Quality and Quantity:* • Stormwater quality control that will be provided with the Windsor-Essex Parkway will lead to an overall enhancement to water quality and a net benefit to fisheries. • Stormwater runoff associated with The Windsor-Essex Parkway and the plaza will be treated in stormwater management wet ponds designed in accordance to the MOE document "Stormwater Management Planning and Design Manual" for Enhanced Protection Level. This will require the removal of 80 per cent of total suspended solids (TSS), 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 from The Windsor-Essex Parkway to pre-development rates. • Deck drains are not proposed on the crossing and runoff will be collected to stormwater detention facilities for quality treatment prior to discharging to the river, as necessary and feasible.

ID #	Environmental Element/Concern and Potential Impact	Reference Section	Anticipated Timeframe	Concerned Agencies	Summary of Environmental Mitigation and Commitments to Future Work
					• In addition, the removal of 30 entrance culverts and the plan to provide a natural channel configuration for a significant area of the Wolfe Drain will result in a gain of fish habitat. *Alterations to baseflow:* • A stormwater management plan should be developed and implemented to ensure that reductions in baseflow do not occur. *Changes to water temperature:* • A stormwater management plan will be developed which will address the treatment of run-off. *Monitoring Activities* • An environmental inspector should be present on site during critical in-water work activities. • Post-construction monitoring is typically prescribed in the federal Fisheries Act authorization. The terms and conditions of the federal Fisheries Act authorization will be met. • Post-construction monitoring, if prescribed, will determine the effectiveness of environmental protection and compensation measures, identify problem areas and recommend corrective measures. • The performance of any fish passage system (mechanical or manual lifts) should be monitored for at least two years after construction to ensure that they are passing fish as designed. • During spring migration (March/April), a fish passage study using mark-recapture or radio-telemetry could assist in determining the effectiveness of fish passage.
12.0	WILDLIFE AND WILDLIFE HABITAT		Construction / Operation	MNR/ MTO	**Wildlife and Wildlife Habitat Mitigation Measures** The following mitigation measures may be employed to address impacts to Butler's gartersnake and eastern foxsnake populations and other wildlife as a result of the construction and operation of The Windsor-Essex Parkway. • Permits and approvals under SARA and ESA 2007 will be obtained prior to construction. Detailed mitigation strategies will be developed in order to obtain the permits. On-going consultation with regulatory agencies such as ERCA, MNR, CWS as well as on-going consultation with First Nations will occur during future design stages. • To avoid impacts to species at risk and their critical habitat, vegetation removals should not occur during the growing season in specified areas. • Habitat restoration and enhancement will be implemented to create new and higher quality habitat. • Areas of habitat to be retained will be clearly marked in the field and protected from construction activities. • Wildlife salvage will be carried out prior to clearing/grubbing to reduce the risk of wildlife mortality. • Enhancement and restoration of habitat located along The Windsor-Essex Parkway will offset habitat loss and will establish connections between designated natural areas. • A snake barrier will be installed along side portions of the construction area to prevent snakes from entering the work zone and redirect snake movements to safer areas, like the restored habitat.

ID #	Environmental Element/Concern and Potential Impact	Reference Section	Anticipated Timeframe	Concerned Agencies	Summary of Environmental Mitigation and Commitments to Future Work
					• Options for permanent protection of critical Butler's gartersnake habitat will be developed in later consultation phases. • The creation of new snake nesting areas and hibernacula will occur to compensate for any losses of habitat. • Snakes will be captured and relocated prior to construction as necessary, to avoid mortality. • Disturbance to wildlife during the operations phase will be mitigated through berming, light shielding and prohibiting access to significant wildlife habitat by humans. • Measures to mitigate potential bird mortality from the Detroit River crossing such as bridge design and lighting will be investigated in greater detail during future design phases. • The Ministry of Transportation will consult with relevant agencies and authorities with regard to future lighting requirements for the proposed crossing. • Architectural lighting to highlight the aesthetics of the bridge should be developed in consideration with the effect of the migrating birds. • Monitoring of the remaining Butler's garter snake population and their hibernacula should be undertaken in order to provide for long-term protection of the Butler's gartersnake population and their habitat. • Eastern foxsnake tracking should continue to determine their egg laying sites and hibernacula sites. The following mitigation measures can be employed to address impacts to these species and others as a result of the construction and operation of the plaza and crossing. • The site plan for the inspection plaza incorporates several mitigation measures including: berming, landscaping, the establishment of buffer areas/setbacks and a stormwater detention pond. • On the south side of the inspection plaza, a stormwater detention pond is proposed in association with a vegetative buffer. The stormwater detention pond enhances the buffer width between the inspection plaza and the Black Oak Woods to the south. • Lighting used at the inspection plaza should be designed to minimize light intrusion into surrounding areas, while ensuring adequate lighting for operational requirements. This may involve using full cut-off luminaires, shielding, if necessary, and investigating the use of conventional lighting in place of high mast lighting. Lighting should be focused downwards and shielded where necessary to prevent light spillage into nearby natural areas such as the Black Oak Woods. • Wildlife salvage should be performed on-site prior to vegetation removals. Vegetation removals should be avoided in the vicinity of species at risk and their habitat during the growing season.
13.0	DESIGNATED NATURAL AREAS	10.4.6	Construction / Operation	MNR/ MTO	**Designated Natural Areas** Mitigation measures and consultation recommended to reduce impacts on designated natural areas include: • Opportunities to dedicate portions of these lands to appropriate parties for protection will be discussed at later design stages. Lands will be available to be dedicated for protection including provincially rare vegetation communities, habitat for species at risk, wildlife corridors and other ecological functions. • Mitigation measures for the loss of area or ecological function of designated natural areas are similar to the mitigation measures identified for vegetation and wildlife.

ID #	Environmental Element/Concern and Potential Impact	Reference Section	Anticipated Timeframe	Concerned Agencies	Summary of Environmental Mitigation and Commitments to Future Work
					Monitoring Activities • Consideration of these options would be done in consultation with appropriate regulatory agencies (e.g. DFO, MNR) and with other authorities who may have a role in environmental stewardship, including municipalities, ERCA and WIFN.
14.0	URBAN DESIGN AND LANDSCAPE PLAN	10.4.7	Operation	MTO / MUNICIPALITIES	**Urban Design and Landscape Plan** Commitments for future consultation and work with regard to the Urban Design and Landscape Plan. • This plan will build upon the concepts and principles established at this stage. • The Urban Design Plan will address the visual aspects of the form, finish and materials used in the landscape and open spaces as well as in proposed structures (e.g. bridges, abutments, retaining walls, noise attenuation and safety barriers). • The Urban Design Plan will also be closely coordinated with the future Landscape Plan. The Urban Design Plan should be developed as part of a consultation process with local stakeholders. • Partnerships will be developed with First Nations, federal, provincial and local stakeholders to provide for the curation of public art associated with potential gateway features. Mitigation measures to reduce or improve visual and landscape impacts will include: • The development of clear urban design and aesthetic guidelines to guide future design. • The use of landforming and vegetation strategies to improve views, aesthetics, ecological function and screening. • The inclusion of a multi-use trail system and pedestrian-accessible open space within the facility.
15.0	GROUNDWATER	10.4.8	Construction/ Operation	MTO	**Groundwater** Mitigation measures recommended to reduce groundwater impacts include: • In areas with artesian groundwater pressures, generally west of Malden Road, groundwater pressure mitigation measures may include use of controlled density drilling fluids for installation of deep foundations (e.g. drilled shafts or caissons) so as to minimize or avoid the need for dewatering. • Detailed investigations, testing, and analyses will be required during final design to adequately assess the feasibility of dewatering or groundwater depressurization within the bedrock or overlying granular soils, the consequent effects of dewatering/depressurization (if any), and any mitigation measures needed to minimize or avoid the influence of such work on the surrounding area. • If a Permit to Take Water is required, Ministry of the Environment (MOE) approval, under the Ontario Water Resources Act, will be sought. • As discussed in Section 10.2.6, there are potential contaminated sites within the corridor. Where contaminated soils and material are encountered, the procedures outlined in Section 10.2.6 should be followed to minimize the risk of mobilizing contaminants due to dewatering activities. In the event that hydrogen sulphide and any other contaminants are present in the groundwater, an Ontario Water Resources Act approved treatment system may be required before discharging to a watercourse.

ID #	Environmental Element/Concern and Potential Impact	Reference Section	Anticipated Timeframe	Concerned Agencies	Summary of Environmental Mitigation and Commitments to Future Work
16.0	DRAINAGE AND STORMWATER MANAGMENT	10.4.9	Construction/ Operation	MTO	**Drainage and Stormwater** Mitigation measures recommended to reduce drainage and stormwater impacts include: • Stormwater quality control that will be provided with the Windsor-Essex Parkway will lead to an overall enhancement to water quality. • The proposed stormwater management strategy consists of utilizing flat-bottomed grassed swales where feasible for surface drainage and stormwater management wetponds to provide Enhanced Protection Level quality, quantity and erosion control to runoff. • Vegetative SWMP's such as enhanced ditches, bio-swales and plunge pools are to be utilized along critical highway areas where access to a Stormwater management pond is limited, as well as to provide localized erosion control measures. • Due to the high groundwater level of associated with the study area, clay or impermeable liners will be required for swales in areas of high aquifer vulnerability. • To account for potential contaminant spills (e.g. oil, chemical, etc.) on the crossing structure and within the plaza area, design details will be developed during future design stages in accordance with applicable standards. • For the plaza area, a shut-off valve or other alternative damming procedures may be proposed for the adjacent stormwater management ponds. The preferred treatment will be determined during future design stages. • Stormwater management for runoff treatments for the crossing structure will be investigated during future design stages. Alternative methods for providing quantity and quality treatment will be examined, all in accordance with the latest applicable MOE design standards and guidelines. Deck drains are not recommended for drainage of the bridge deck, as this would release discharge directly to Detroit River without providing quality control. Possible alternatives may utilize pipe systems integrated within the crossing to convey stormwater off of the structure. However this will be subject to an assessment of technical feasibility during future design stages. If determined to be feasible, the runoff will be conveyed to a treatment facility (wetpond or grassed swales) where quality, quantity and erosion treatments can be provided as per the MOE requirements. The sizing and location of the treatment facility will be confirmed during future design stages. • The need for measurement of baseline conditions in watercourses will be investigated during future design stages in consultation with the appropriate regulatory agencies. • Alternative stormwater solutions for the plaza that may be considered include permeable pavers, perforated storm sewer pipes, Green Roof systems, and infiltration basins. These alternative solutions will be designed to provide additional upstream quality and quantity control of runoff prior to reaching the stormwater management ponds. Additional analysis will be performed during subsequent design stages to assess the effectiveness and feasibility of these solutions at the plaza location. Measures to reduce the area of impervious surface associated with the new plaza will also be investigated during future design phases. • A Salt Management Plan has been developed in accordance with Environment Canada's *Code of Practice for the Environmental Management of Road Salts (Environment Canada, 2004)*. MTO follows best management practices for road salt management, which are consistent with the best practices in North America. MTO partners with stakeholders using the latest technology, tools and methods to keep roads safe for winter driving and to minimize salt usage. Best management practices include advanced weather forecasting, electronic spreader equipment, the use of brines in pre-wetted salt, and varying application rates of road maintenance materials to match weather conditions. MTO will continue to investigate de-icing alternatives to control and reduce salt usage while ensuring highway safety. • A monitoring plan may be required to confirm that the construction and operation of the project will not degrade water quality. This requirement will be investigated during future design stages.

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18.0	TRANSPORTATION FACTORS FOR THE RECOMMENDED PLAN	9.1 – 9.3	Construction	MTO / TC / MUNICIPALITIES / COAST GUARD	**General Transportation Commitments** • Construction of the crossing, plaza and The Windsor-Essex Parkway will be completed in such a manner so as to minimize disruption to the surrounding community and local traffic patterns as much as possible, and to maintain local access to residences and businesses. In order to ensure minimal disruption, maintaining four lanes of traffic in the Highway 3/Huron Church Road corridor as well as the E.C. Row Expressway corridor has been established as a principle for development of the staging concept of The Windsor-Essex Parkway. This principle will be a key requirement in the development of detailed staging plans in future design phases. • Temporary assumptions of portions of municipal roads will be required to facilitate construction. Assumed portions not required for highway purposes will be transferred back to municipalities upon completion of construction. • The relocation of existing utilities and other municipal services will be required to facilitate construction of the Recommended Plan. • Relocations and approvals will generally take place in the early stages of construction to minimize risk to construction schedules, but may be included within a design-build contract. • Complete details and a utility relocation strategy will be prepared during future design stages of the project. • Future stages of design will include the consideration of renewable energy sources to power portions of the illumination system, including the use of solar panels to power lighting along the trail system. **Specific Transportation Commitments – Crossing X-10B** • A navigation clearance envelope of adequate size will be provided at the international crossing so as not to restrict marine traffic along the Detroit River. • The proposed crossing will avoid the placement of piers in the Detroit River for both the suspension bridge and cable-stayed bridge options. • Specific access requirements for delivery of prefabricated deck units by barge will be quantified and included in the future permit applications. • Subsequent stages of the main bridge design will consider the visual quality and aesthetic development of the design. A series of Context Sensitive Design Workshops have been conducted in parallel with the development of the bridge concepts and the results of those workshops should be reasonably factored into the visual development of the bridge. • Full illumination will be provided along the approach to the main bridge and along the main bridge itself. Bridge lighting should be designed with considerations for mitigating potential bird mortality while still satisfying the principle needs of lighting as a safety enhancement. **Specific Transportation Commitments – Plaza B1** • The international customs plaza will be designed to accommodate projected border traffic to beyond the 2035 design year. Although the precise layout of the various facilities within the plaza may be modified during future design stages of the plaza, the type and function of the major facilities within the plaza will remain generally unchanged. The final layout of the plaza will be based on consultation with the Canada Border Services Agency (CBSA). Ultimate ownership and operation of the plaza will be under the direction of the Government of Canada. • Full illumination of the plaza will be provided. Lighting of the plaza should be designed to minimize light intrusion into surrounding areas, while ensuring adequate lighting for operational requirements. This may involve using full cut-off luminaires, shielding, and investigating the use of conventional lighting in place of high mast lighting.

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					Specific Transportation Commitments – The Windsor-Essex Parkway • The vertical alignment of the proposed freeway will adhere to general principles as outlined in **Section 9.3.1** of the report. From the plaza to the Huron Church Road corridor, the Windsor-Essex Parkway will be constructed to match the existing profile of E.C. Row Expressway and will be grade separated over Matchette Road, Ojibway Parkway and the Essex Terminal Railway. The freeway will generally be constructed between 4 and 7 m below-grade along the Highway 3/Huron Church Road corridor, except for a stretch at Turkey Creek where the freeway will be between zero and 2m below grade. • Additional study will be completed during future design stages to determine the layout and general feasibility of providing a carpool lot on the Howard Avenue diversion, south of the proposed roundabout at realigned Highway 3. • Additional consultation with the public and local municipalities will guide future decisions regarding the proposed trail network. Future design and consultation stages will include a consideration of issues such as winter maintenance of the trail system, illumination, potential connections to the Chrysler Greenway, and the surface treatment to be provided along the trail. • Full illumination will also be provided along the freeway portion of The Windsor-Essex Parkway. Lighting should be designed to minimize light intrusion into surrounding areas, while ensuring adequate lighting for operational requirements. This may involve using full cut-off luminaires, shielding, if necessary, and investigating the use of conventional lighting in place of high mast lighting. • Illumination within the tunnel sections of the freeway will be designed to ensure driver's eyes can adjust to the changing lighting conditions between the tunnel and open sections of the freeway. Adaptive lighting will be provided that varies the strength of illumination depending on the time of day and lighting conditions outside the tunnel. • In keeping with the concept of creating an Intelligent Border Crossing, The Windsor-Essex Parkway will include an Advanced Traffic Management System (ATMS). The ATMS will help to reduce travel delay and travel time uncertainty, enhance safety, reduce the costs associated with cross-border travel, and reduce the negative impacts of the border crossing to surrounding communities. • Utilities that must be maintained parallel to The Windsor-Essex Parkway will be relocated to utility corridors, where possible and as required.

11 COMMITMENTS TO CONSULTATION, COMPLIANCE MONITORING AND PERMITS/ APPROVALS

The Ministry of Transportation (MTO) is committed to maintaining consultation efforts to keep interested parties informed of activities, future design phases and project implementation. In addition, MTO is committed to ensuring that compliance monitoring is conducted relative to the commitments made during the EA and subsequent phases. The section below describes the approach that will be used to achieve successful consultation, ensure compliance monitoring, obtain required permits and approvals, and provide environmental management.

11.1 Consultation

The Ministry of Transportation is committed to the development of consultation plans that will assist future design phases of the project.

Generally these consultation plans will involve an outline of committed communications with agencies, municipalities, the public, property owners and other stakeholders as deemed necessary. Consultation plans will also involve an outline of committed communications with First Nations.

These consultation plans will be made available for public input at the outset of the future design phase to ensure they outline appropriate commitments made during the EA including changes as described in the amending procedure (refer to Chapter A). Components that outline specific consultation requirements will be consistent with commitments made throughout the EA.

Examples of components of the future consultation plan can include:

- Commitments outlined in Chapters 9 and 10 relative to commitments to further work with public and external agency stakeholders etc. in addressing environmental impacts. Specific environmental commitments are outlined in Sections 10.5, 10.6 and Table 10.7;
- Landscape plan elements for The Windsor-Essex Parkway;
- Noise mitigation design;
- Construction staging and associated mitigation elements;
- Future discussion concerning property; and
- First Nations consultation during future design stages.

Under the terms of the amending procedure outlined in Chapter A, there is the opportunity for consultation with affected parties on issues of minor and major changes throughout the study.

All background study files and documentation including the study mailing list will be provided to future design teams.

11.2 Compliance Monitoring Plan

The purpose of compliance monitoring is to ensure compliance with the provisions of the EA. Compliance monitoring can be achieved through a Compliance Monitoring Plan (CMP), which is used as a tool to document, track and record compliance and monitoring efforts on a project. Future provisions that are subject to compliance monitoring are:

- Mitigation measures;
- Ongoing consultation;
- Additional studies and work to be carried out;
- Obtaining necessary Conditions of Approval (CoA) from MOE; and
- All other commitments made during the preparation and review of the EA.

The CMP will describe the actions required to address the commitments of MTO and to provide the indicators to be used to verify compliance and the schedule to be followed for completion of the commitments. The CMP will include, but is not limited to, the commitments outlined in Chapters 9 and 10.

A specific requirement to conduct the monitoring and timing to document the results will be identified. It is the commitment that the CMP will be made available to the MOE, or its' designate upon request, in a timely manner during an on-site inspection, audit (independent environmental audit of the CMP will be considered) or in response to a pollution control incident or otherwise.

This CMP will be structured to identify the parties responsible, provide the program scope and actions required during each phase, outline the consultation methods to be used and the schedule to be followed to confirm compliance and the submission of the report.

11.3 Permits / Approvals Required

The following is a list of permits and approvals that may be required during the design and construction phases of the EA:

- A Letter of Intent and Application will be prepared during later design stages to secure federal *Fisheries Act* approval;
- Permit under clause 17(2)(d) of the *Ontario Endangered Species Act, 2007;*
- Permit under the federal *Species At Risk Act;*
- MOE Permit To Take Water;
- Lakes and Rivers Improvement Act;
- Navigable Waters Protection Act; and
- Municipal Noise By-Law Exemption.

11.4 Environmental Management Systems

An Environmental Management System (EMS) is the part of the overall management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining a proponent's environmental policy and Sustainable Development Strategy.

MTO is committed to ensure that an EMS is in place to guide the operation and maintenance of The Windsor-Essex Parkway. The system will be designed to ensure that the facility is operated and maintained in a manner that is consistent with the principles that were derived in the EA process relative to environmental sustainability and sensitivity to community expectations. The system will ensure that the operation and maintenance of the facility is subject to continual review and improvement and is adaptive to new practices and technologies which help to meet overall objectives.

11.5 Summary of Commitments to Consultation, Commitments to Compliance Monitoring and Permits/Approvals Required

During future design phases, commitments made in the EA regarding design works and environmental analysis and impact assessment; development and incorporation of mitigation measures; obtaining of regulatory agency approvals and permits; and consultation with interested and potentially affected stakeholders will be monitored. The monitoring activities will be integrated with the design schedule for each segment to ensure timely verification that the commitments have been met by appropriate design solutions before construction activities commence.

In addition, environmental protection measures will be stipulated in all appropriate construction specifications that will form the contractual basis for carrying out the project works.

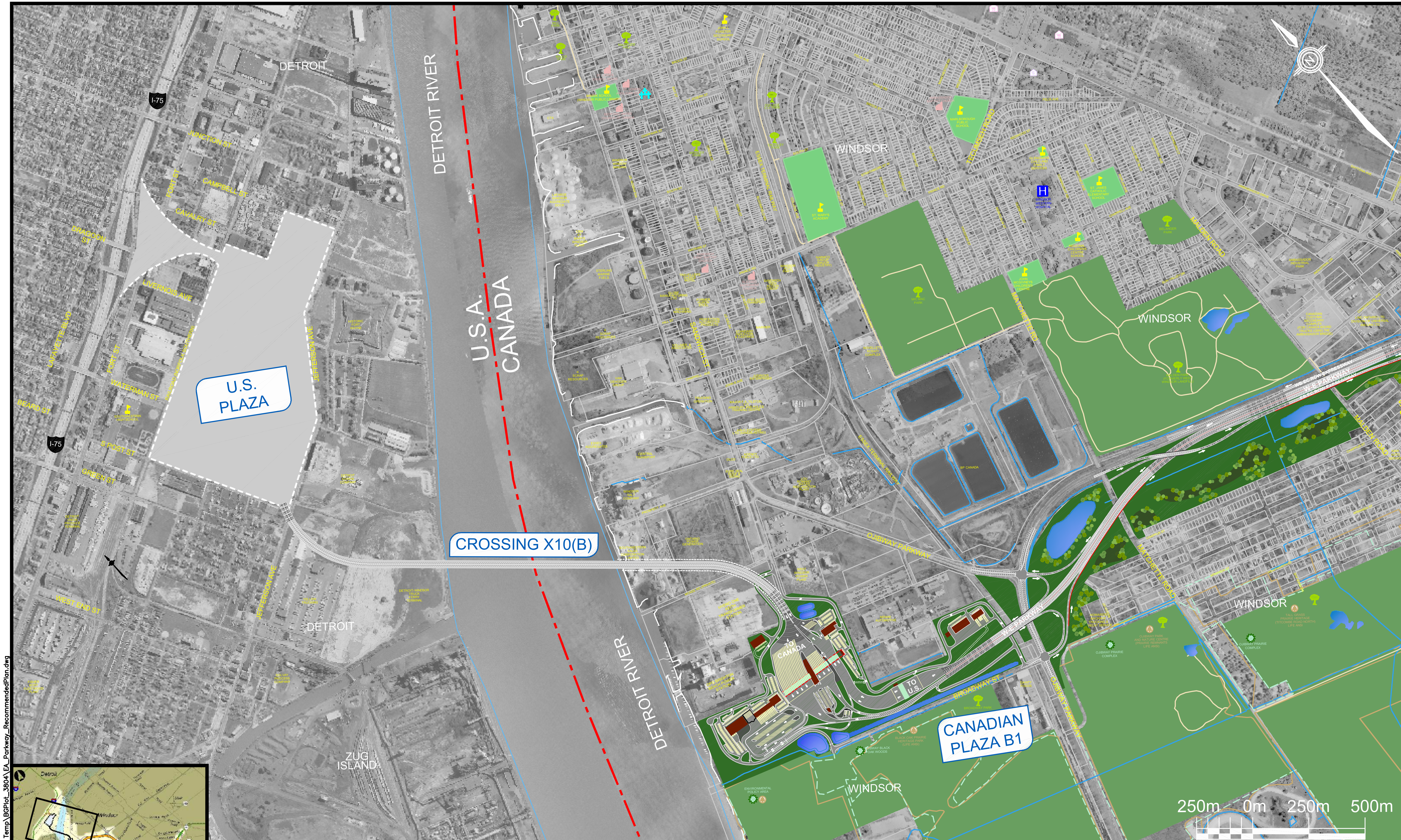
APPENDIX A

Recommended Plan – Concept Design Plates

LEGEND

- REQUIRED RIGHT-OF-WAY
- HIGHWAY AT GRADE
- HIGHWAY AT GRADE
- HIGHWAY ABOVE GRADE
- HIGHWAY BELOW GRADE (LESS THAN 4m)
- HIGHWAY BELOW GRADE (GREATER THAN 4m)
- MUNICIPAL ROAD
- HIGHWAY / MUNICIPAL ROAD GRADE TRANSITION
- FUTURE EXTENSION
- MULTI-USE TRAIL
- MULTI-USE TRAIL STRUCTURE
- PROPOSED STRUCTURE
- PROPOSED TUNNEL
- RETAINING WALL
- EXISTING NOISE WALL
- PROPOSED NOISE WALL
- BERM OR BERM/NOISE WALL COMBINATION
- TRAIL EMBANKMENT PROVIDES NOISE BENEFIT
- AQUATIC HABITAT
- MUNICIPAL BOUNDARIES
- ANSI AREA
- ENVIRONMENTALLY SENSITIVE AREA

- EXISTING PARKS AND GREEN SPACE
- SCHOOLS
- LIMIT OF PROPOSED LANDSCAPED AREA
- STORM WATER MANAGEMENT POND
- SCHOOL
- PLACE OF WORSHIP
- PARK OR RECREATIONAL AREA
- TRAIL
- CEMETERY
- ENVIRONMENTALLY SENSITIVE AREA
- ANSI
- SENIORS RESIDENCE/ EXTENDED CARE FACILITY
- SHOPPING FACILITY



US PLAZA - CROSSING X10(B) - CANADIAN PLAZA B1

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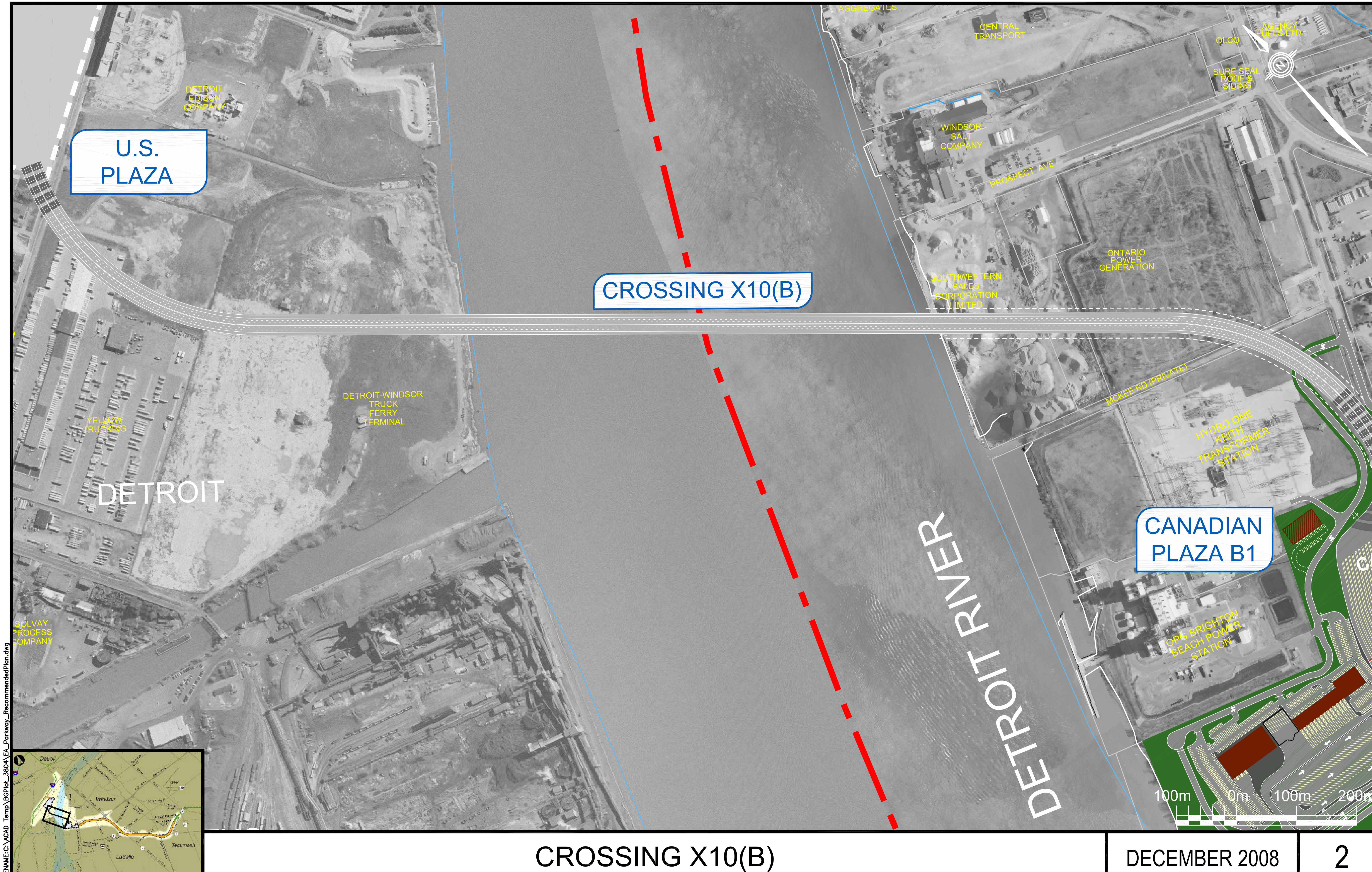

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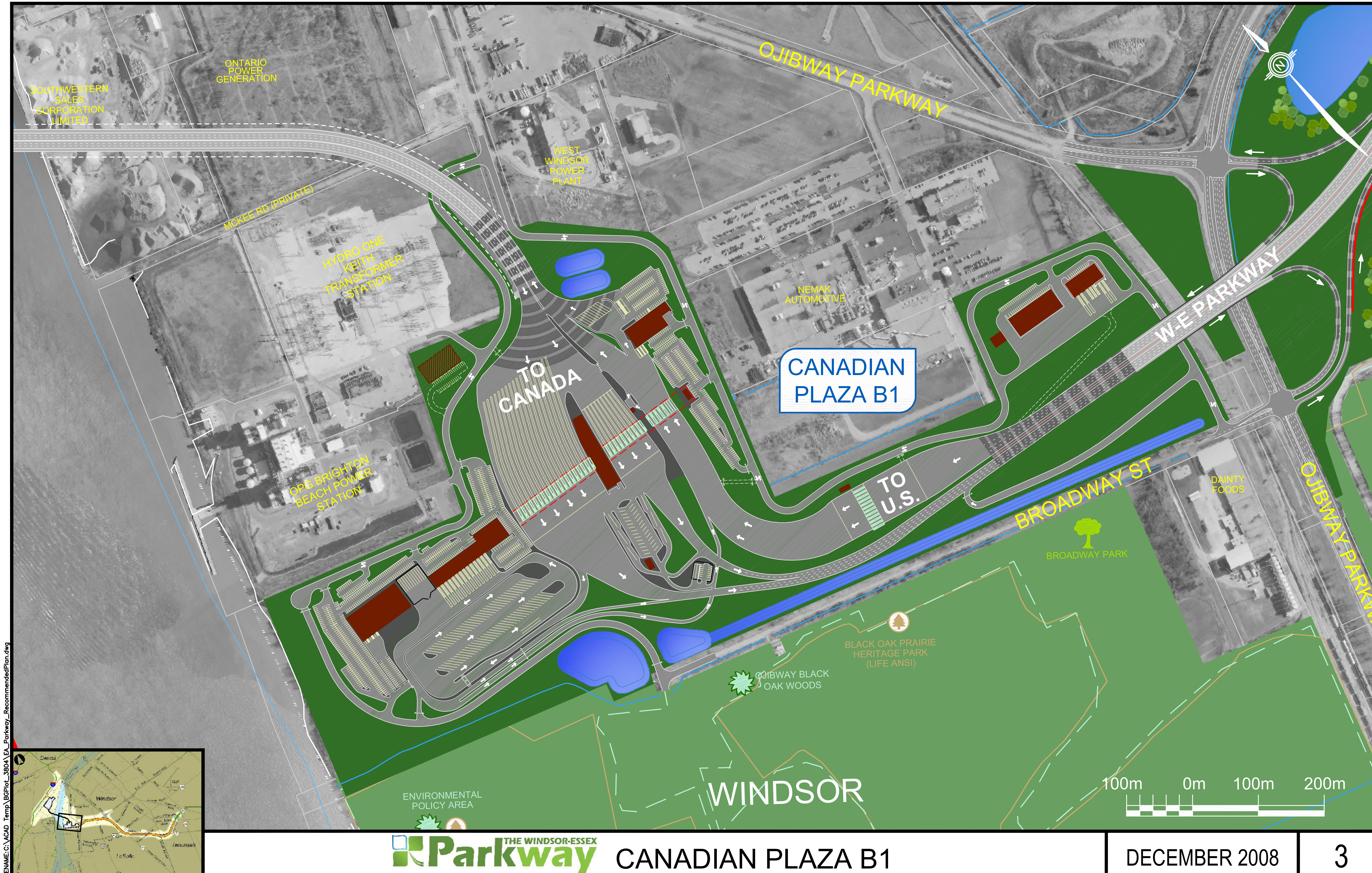

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THE WINDSOR-ESSEX Parkway

CANADIAN PLAZA B1

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THE WINDSOR-ESSEX Parkway

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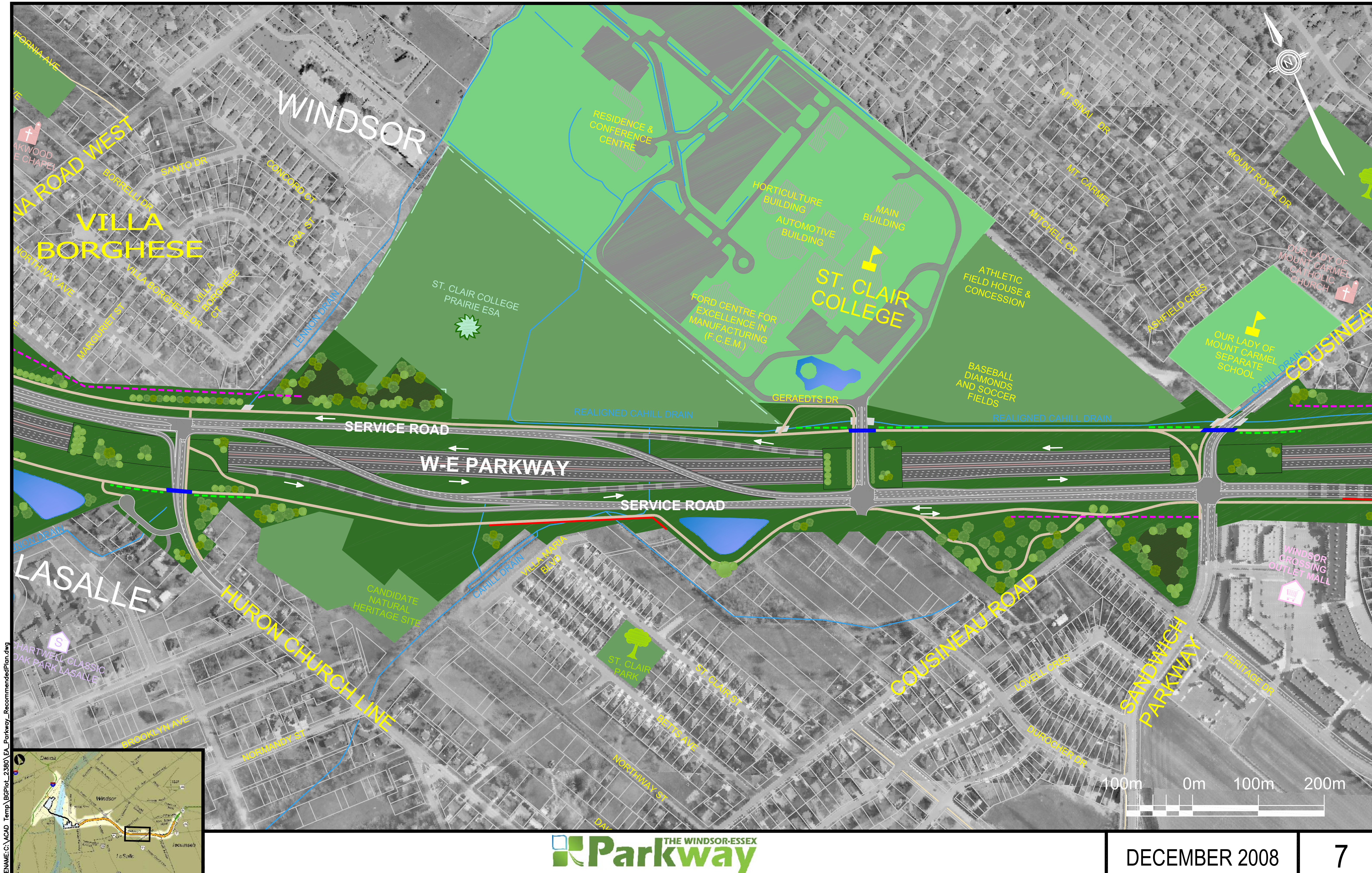

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THE WINDSOR-ESSEX Parkway

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THE WINDSOR-ESSEX Parkway

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US PLAZA

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Existing Property Lines Visible

LEGEND

REQUIRED RIGHT-OF-WAY
HIGHWAY AT GRADE
HIGHWAY AT GRADE
HIGHWAY ABOVE GRADE
HIGHWAY BELOW GRADE (LESS THAN 4m)
HIGHWAY BELOW GRADE (GREATER THAN 4m)
MUNICIPAL ROAD
HIGHWAY / MUNICIPAL ROAD GRADE TRANSITION
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RETAINING WALL
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BERM OR BERM/NOISE WALL COMBINATION
TRAIL EMBANKMENT PROVIDES NOISE BENEFIT
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LIMIT OF PROPOSED LANDSCAPED AREA
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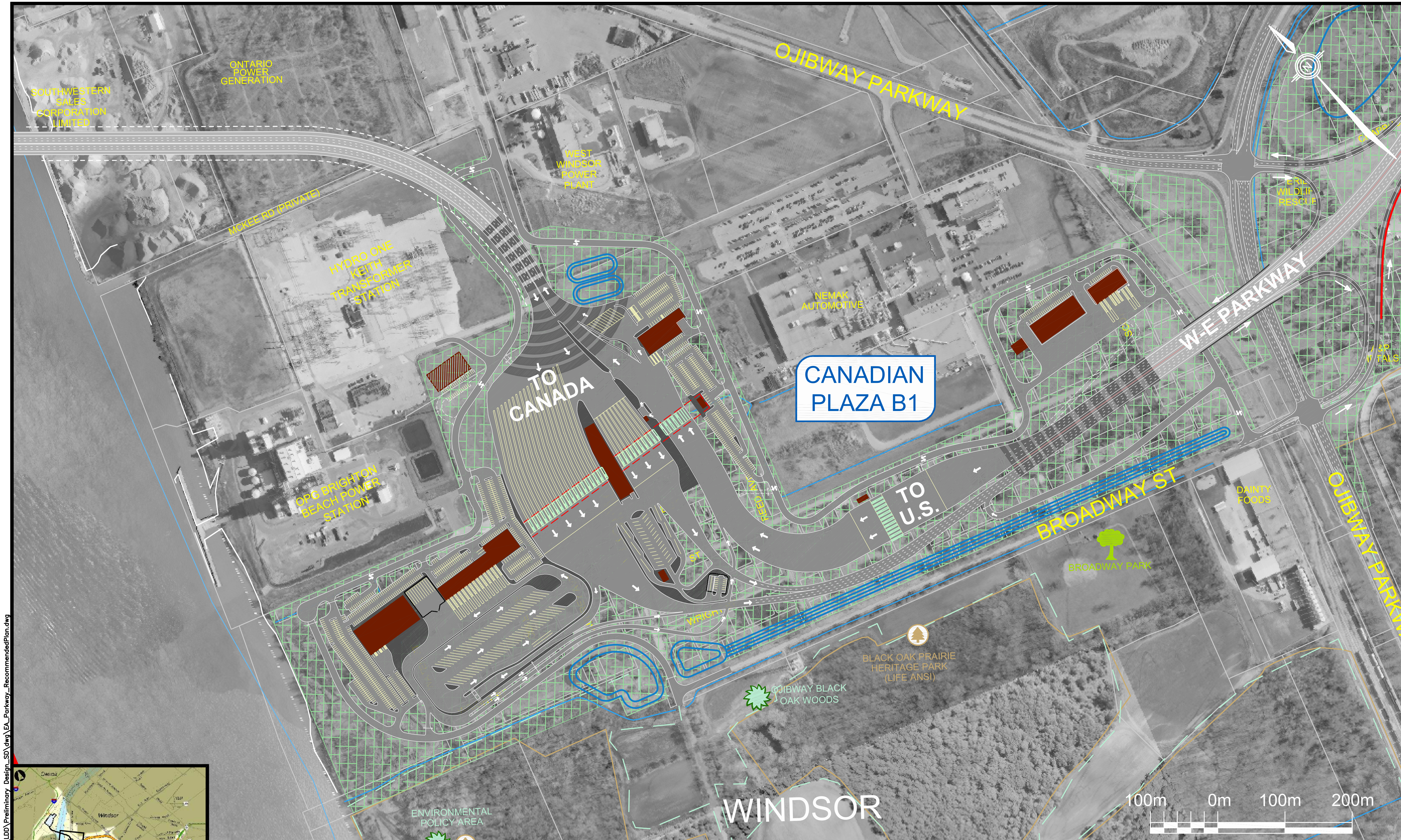

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THE WINDSOR-ESSEX Parkway

CANADIAN PLAZA B1

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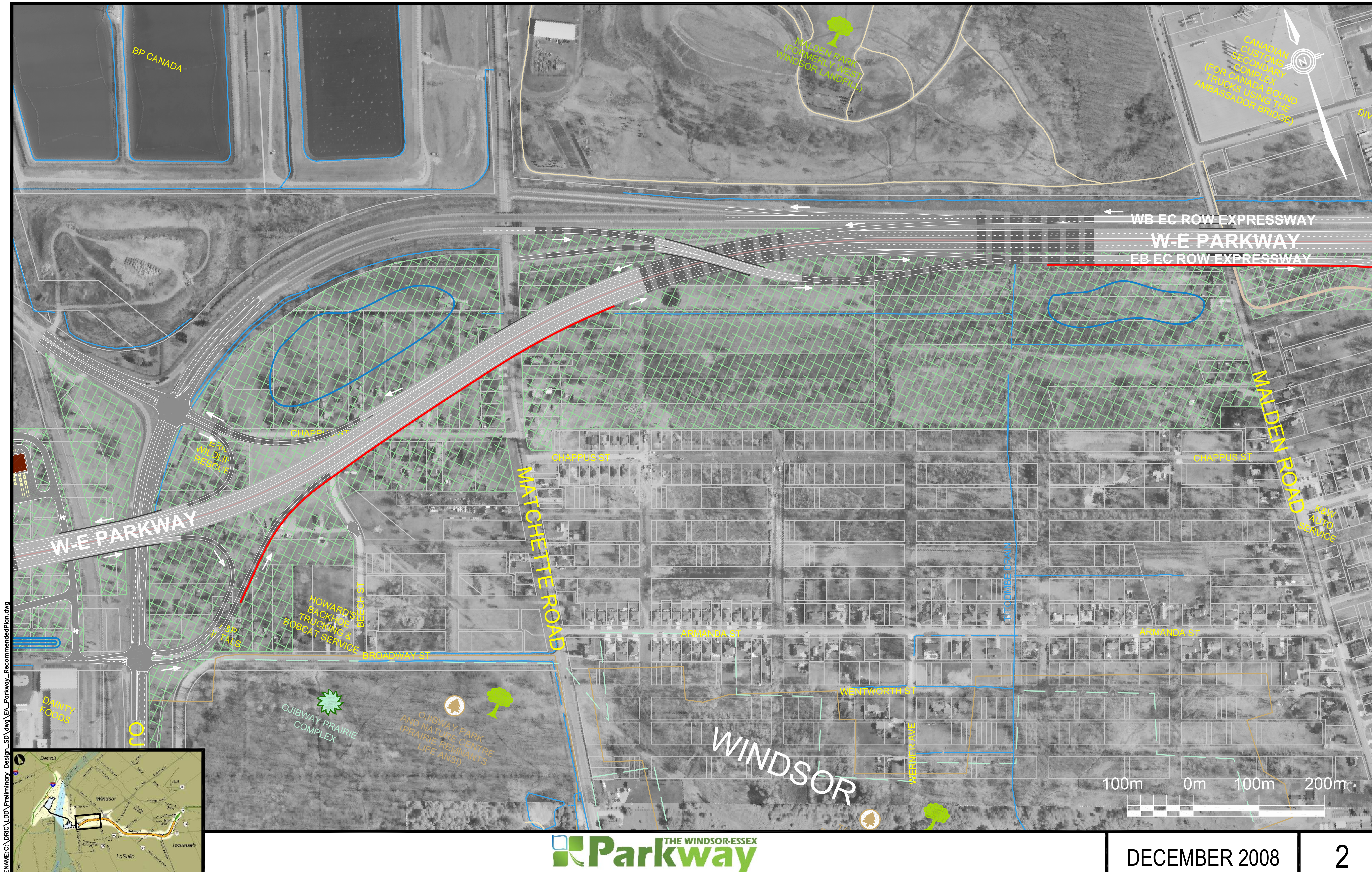

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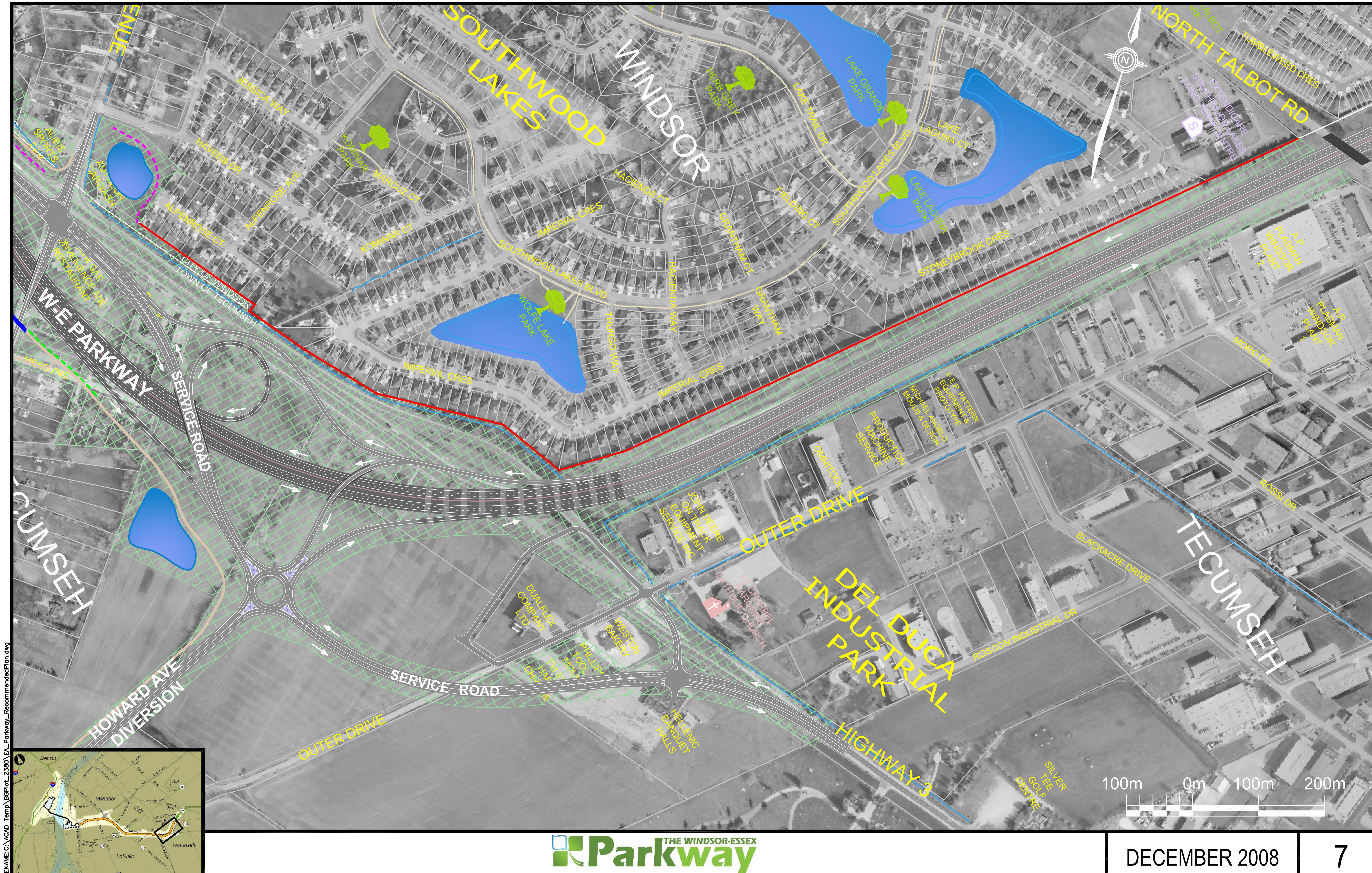

THE WINDSOR-ESSEX Parkway

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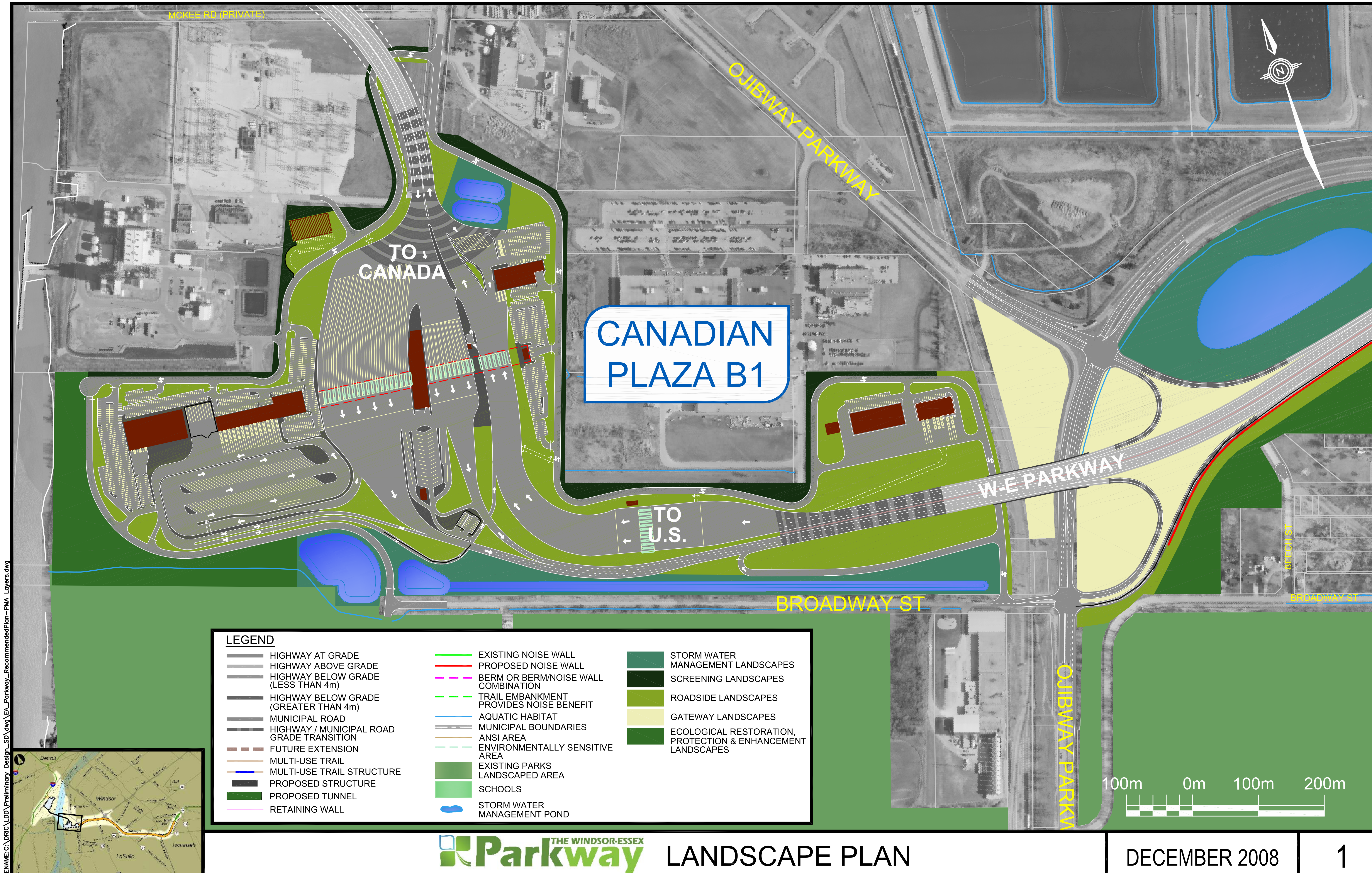
THE WINDSOR-ESSEX Parkway

DECEMBER 2008

APPENDIX B

Recommended Plan – Landscape Plan



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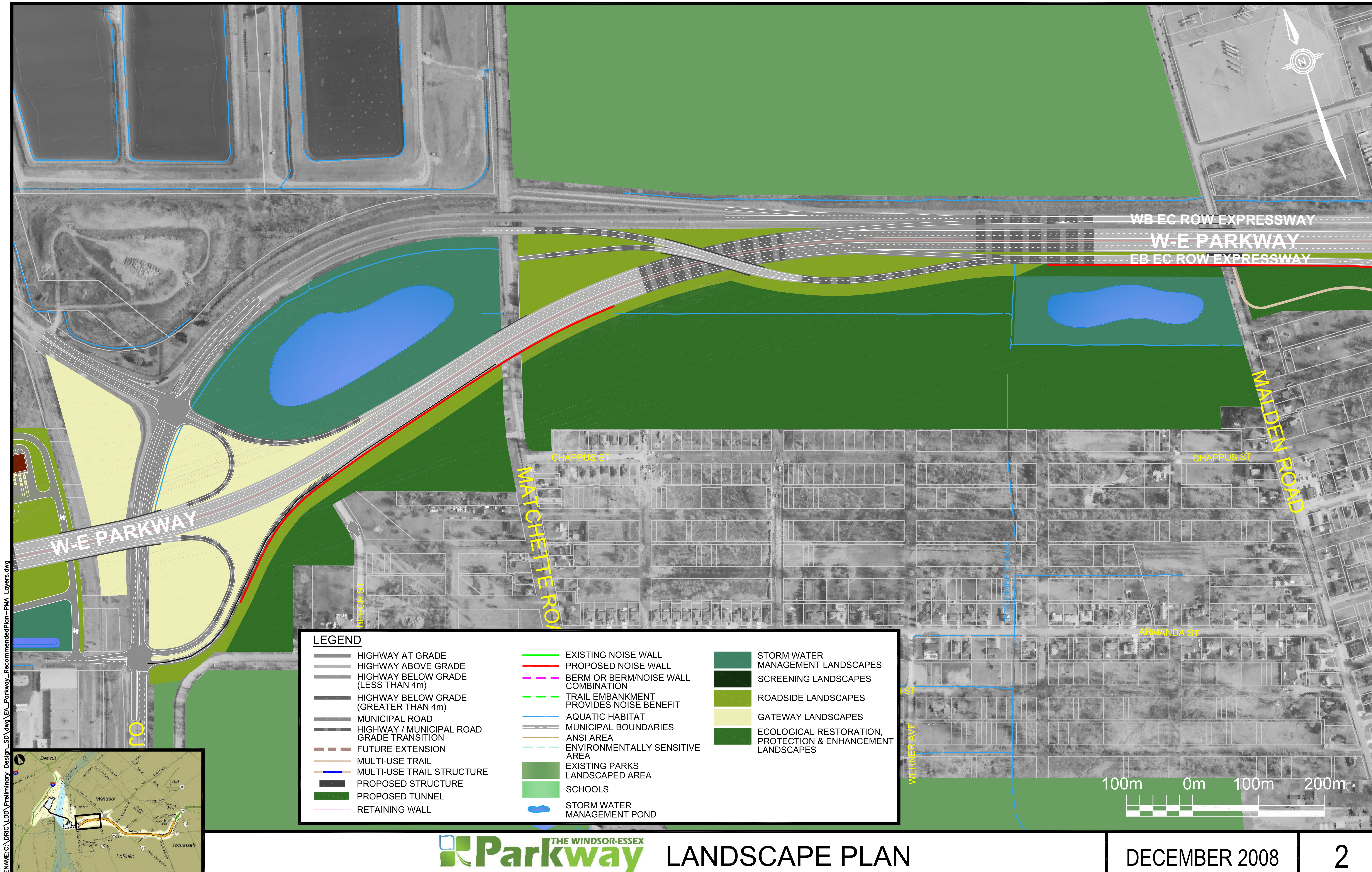
THE WINDSOR-ESSEX Parkway

LANDSCAPE PLAN

DECEMBER 2008



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THE WINDSOR-ESSEX Parkway

LANDSCAPE PLAN

DECEMBER 2008

THE WINDSOR-ESSEX Parkway

LANDSCAPE PLAN

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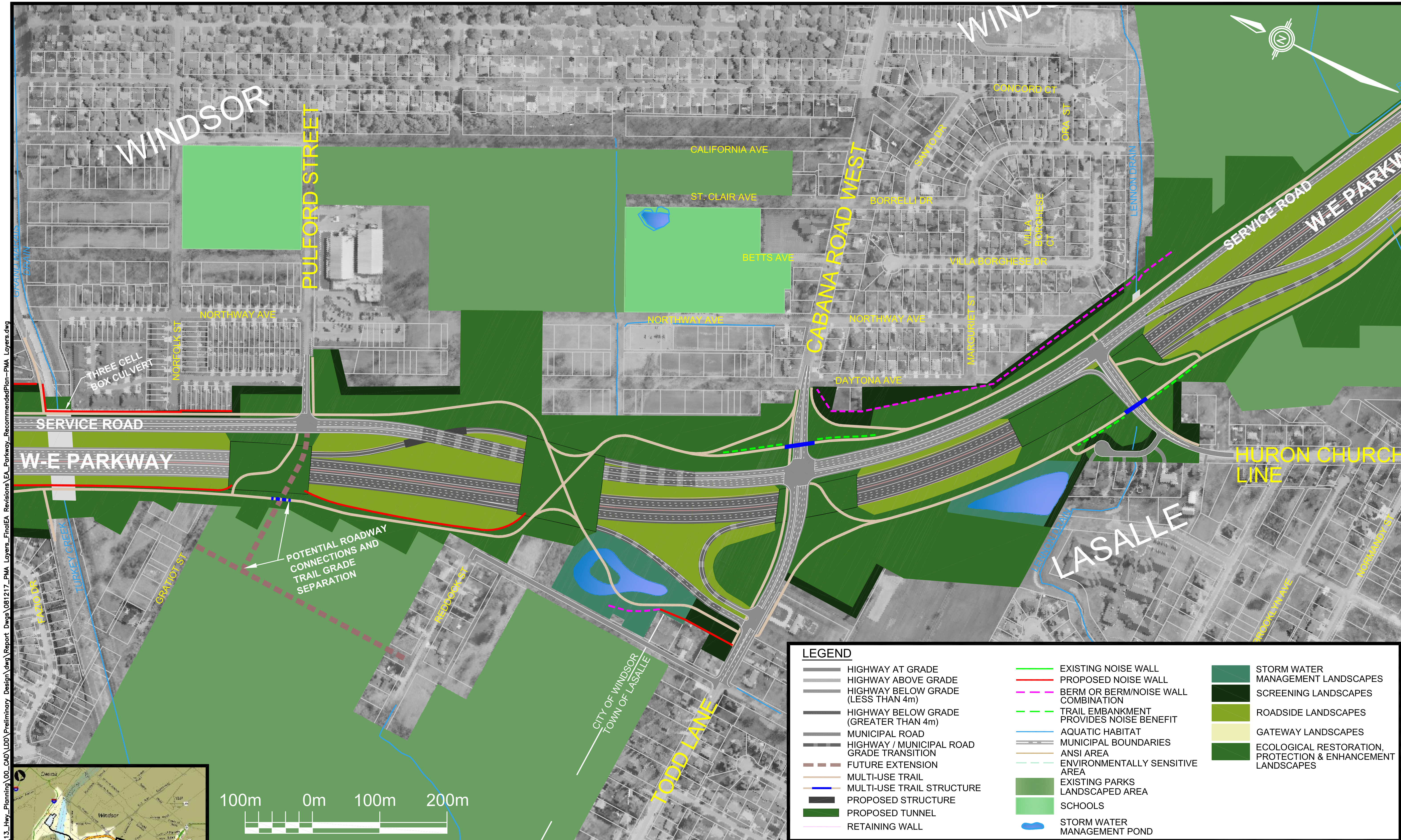

THE WINDSOR-ESSEX Parkway

LANDSCAPE PLAN

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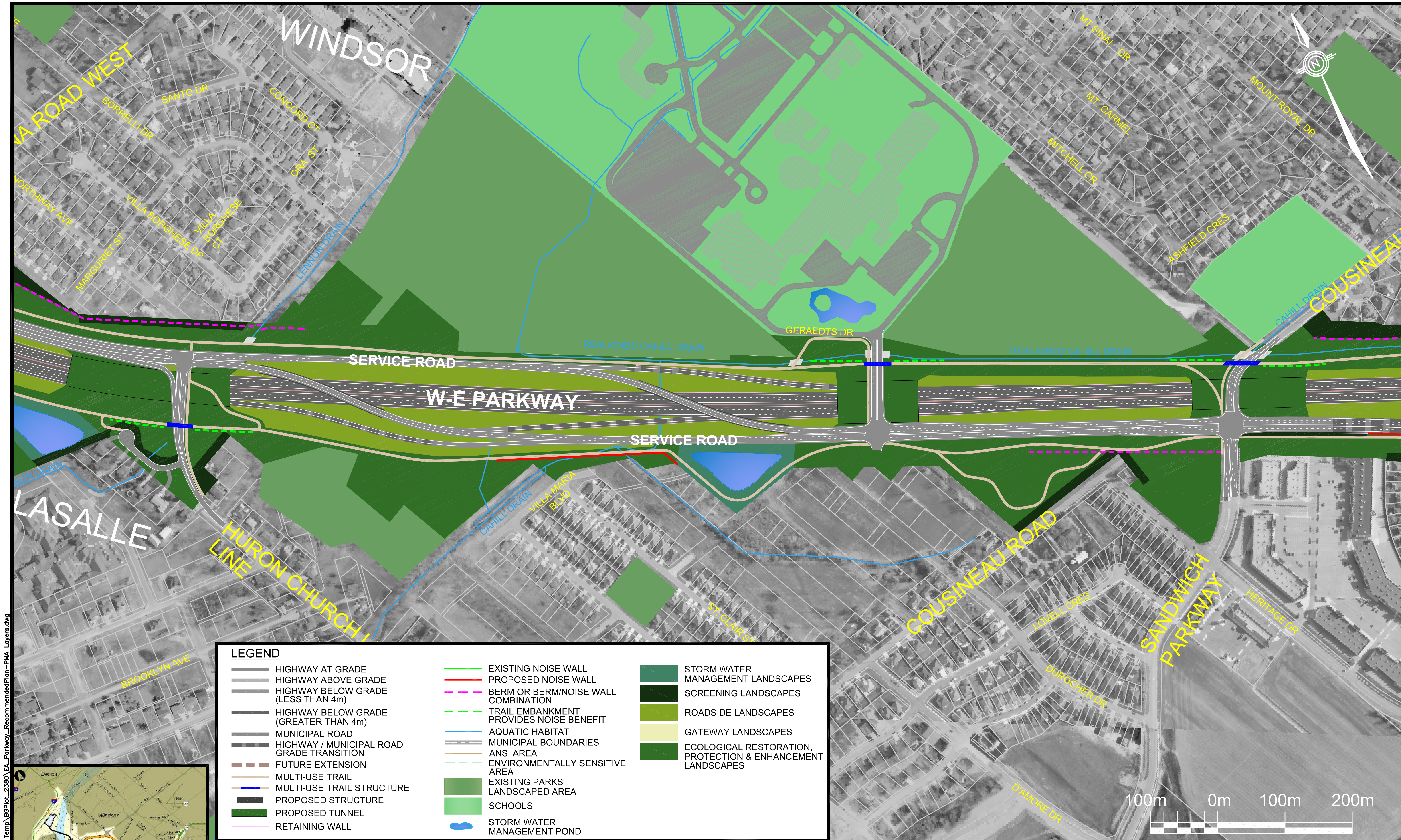

THE WINDSOR-ESSEX Parkway

LANDSCAPE PLAN

DECEMBER 2008

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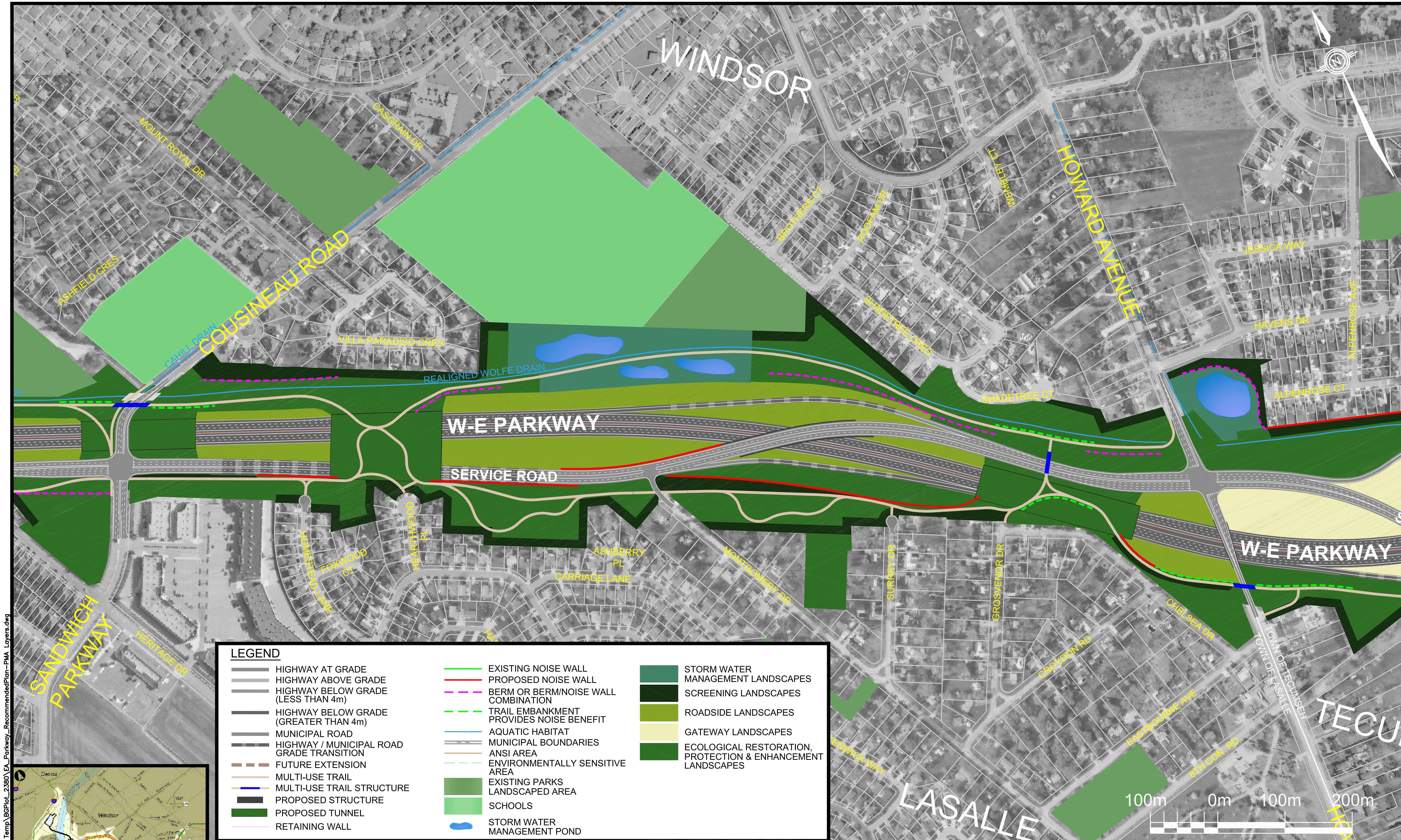

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LANDSCAPE PLAN

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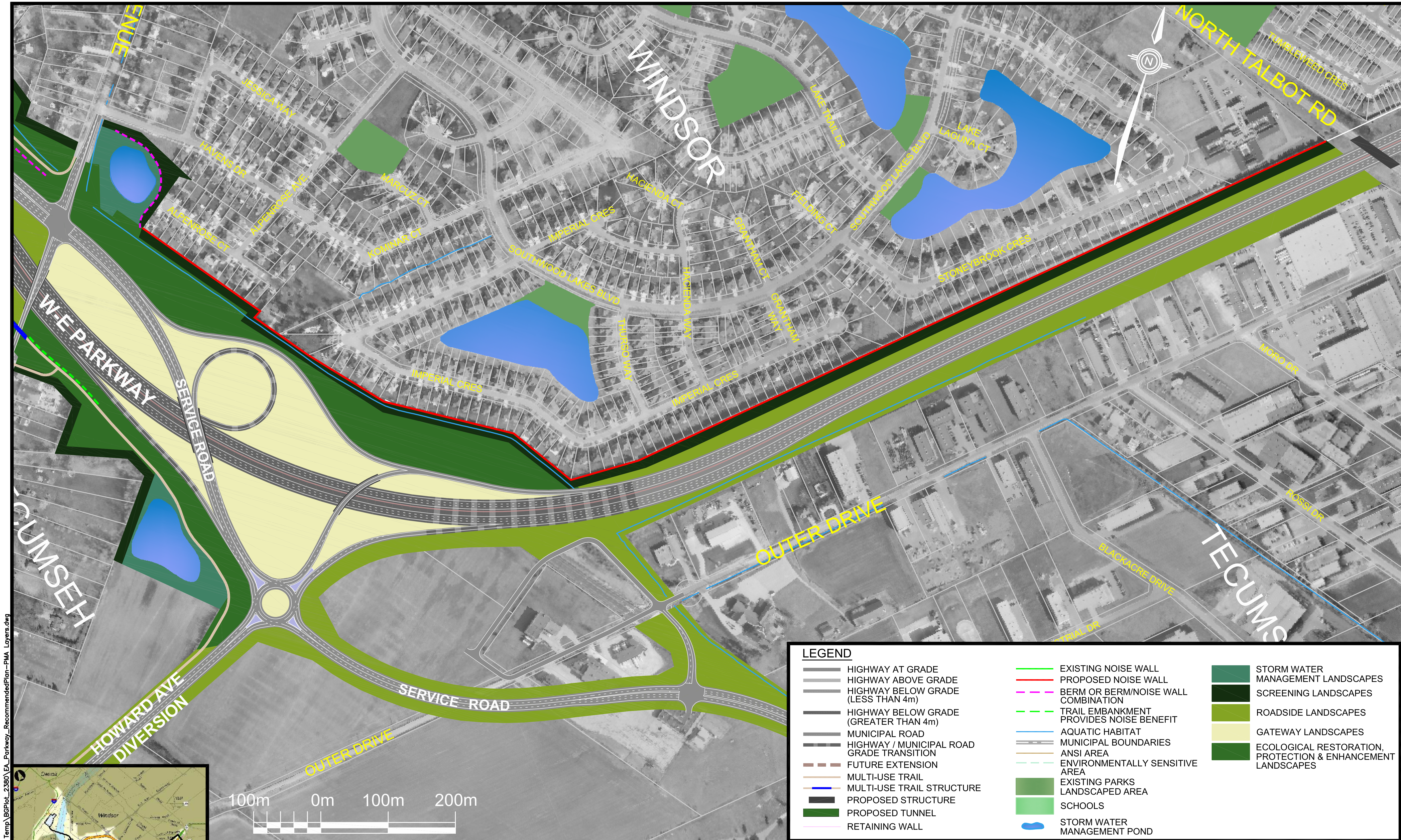

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THE WINDSOR-ESSEX Parkway

LANDSCAPE PLAN

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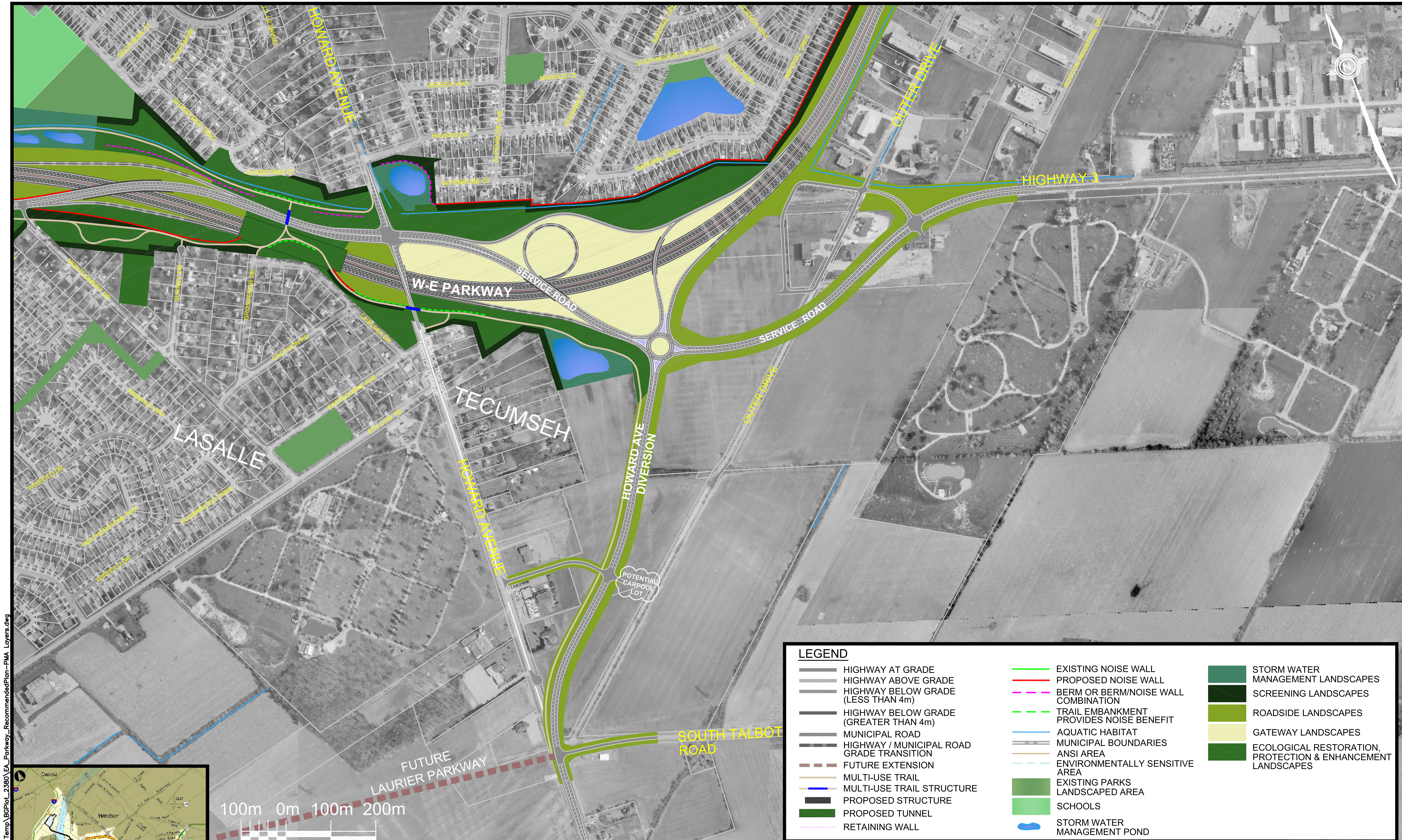

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THE WINDSOR-ESSEX Parkway

LANDSCAPE PLAN

DECEMBER 2008

APPENDIX C

Detroit River International Crossing Environmental Assessment Terms of Reference (May 2004) and MOE Notice of Approval (September 2004)

Canada | U.S. Department of Transportation Federal Highway Administration | Ontario | MDOT Michigan Department of Transportation

Detroit River International Crossing

Ontario

Environmental Assessment Terms of Reference

May 2004

Preface

The Detroit River International Crossing Environmental Terms of Reference (TOR) reflects recent changes in approaches at the Ontario Ministry of Transportation (MTO) and the Ministry of the Environment (MOE) to the preparation of Terms of Reference. These changes are in response to a recent court decision with respect to the interpretation of Section 6.2(c) of the Ontario Environmental Assessment Act 1997 (OEAA). The court's interpretation of the wording and intent of the OEAA does not provide for any scoping of the work to be completed during the environmental assessment. Consequently, MOE has indicated that a TOR which is considered by MOE to have scoped any aspects of the work to be completed in the environmental assessment, will not be approved.

The Detroit River International Crossing TOR provides a framework to guide the preparation of the Environmental Assessment (EA). This framework will apply to the definition of the purpose of the undertaking, the development and assessment of alternatives, the development of a study area, consultation during the preparation of the EA and monitoring. As such, the Detroit River TOR is distinguished from previous TOR's in that it does not identify the undertaking or the study area, nor does it provide work plans to guide the activities to be undertaken during the OEA.

MTO is committed to meeting the requirements of the OEAA (as well as Canadian Environmental Assessment Act and U.S. NEPA requirements) as it conducts the EA. The definition of the purpose of the undertaking, the alternatives to be considered, and work plans describing how the benefits and impacts of the project will be assessed will be provided as the EA is conducted.

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Glossary iv

Supporting Documents (Under Separate Cover)

Glossary

CEA – Canadian Environmental Assessment

CEAA – Canadian Environmental Assessment Act

EA – Environmental Assessment

EIS – Environmental Impact Statement

FHWA – Federal Highway Administration

MDOT – Michigan Department of Transportation

MTO – Ontario Ministry of Transportation

NEPA – U.S. National Environmental Policy Act

OEA – Ontario Environmental Assessment

OEAA – Ontario Environmental Assessment Act

P/NF – Planning/Need and Feasibility Study

RA – Responsible Authority

TC – Transport Canada

TOR – OEAA Terms of Reference

1. Introduction and Background

1.1. Background

The Canada-U.S.-Ontario-Michigan Border Transportation Partnership includes the transportation authorities from two federal governments and two provincial/state governments. The Federal Highway Administration (FHWA) is an arm of the U.S. Department of Transportation and Transport Canada (TC) is the corresponding federal level agency in Canada. The Ontario Ministry of Transportation (MTO) and the Michigan Department of Transportation (MDOT) are the provincial and state agencies that have roadway jurisdiction on each side of the border between Ontario and Michigan.

The purpose of the Partnership is to improve the movement of people, goods and services across the United States and Canadian border within the region of Southeast Michigan and Southwest Ontario. The overall objectives of the Partnership in support of this purpose are the following:

a) To improve the movement of people, goods and services in a safe and efficient manner across the U.S./Canadian border at the Detroit and St. Clair Rivers to connect with existing national, provincial and regional transportation systems, such as I-75 and Highway 401;

b) To enhance the regional economic vitality and Canadian/U.S. trade;

c) To meet the long term needs of the U.S. and Canadian border inspection agencies;

d) To expedite the planning and environmental study process to ensure that future travel demands in this region can be accommodated in a timely manner;

e) To ensure that all modes of surface transportation including road, rail and marine will be considered;

f) To use a single integrated planning and environmental study process, resulting in a single product, which will meet the requirements of all members of the Partnership;

g) To ensure that any solutions which are developed as a result of the above integrated planning and environmental study process comply with all relevant and applicable federal, provincial, state and/or municipal laws, regulations, bylaws, ordinances or other binding enactments validly created by bodies with legislative or rule-making authority;

h) To ensure that the process is conducted in a financially responsible and prudent manner; and

i) To ensure that intelligent transportation systems/state-of-the-art facilities be provided to enhance border crossing efficiency.

The Partnership jointly commissioned a Planning/Need and Feasibility Study (P/NF), which identified a long-term strategy to address the safe and efficient movement of people and goods between Southeast Michigan and Southwest Ontario. Although conducted in a manner consistent with the environmental study processes in both countries, the P/NF Study was not completed within the formal environmental study framework. The findings of the P/NF Study, however, serve as an important basis for governments to move forward in the development and improvement of cross-border transportation services, including proceeding with the environmental study processes in the U.S. and Canada for major transportation improvements at the Detroit River international crossing. The process relating the Planning/Need and Feasibility Study to implementation of border crossing improvements is illustrated schematically in Exhibit 1.1.

A consultation component was incorporated in the P/NF Study process. Canadian and U.S. government departments, ministries and agencies, local municipalities, First Nations groups, private sector stakeholders in border transportation issues, as well as the general public were engaged in the course of the study. Throughout the P/NF Study, the Partnership affirmed that the findings of the P/NF Study may be used to initiate environmental studies in accordance with the requirements of the U.S. National Environmental Policy Act (NEPA), Canadian Environmental Assessment Act (CEAA) and Ontario Environmental Assessment Act (OEAA). This step would be followed by completion of the appropriate environmental impact/assessment studies, design of the approved improvements and ultimately, construction. Recommendations considered to be minor infrastructure or operational improvements could be implemented more directly, in accordance with the appropriate legislation. It is important to note that the Partnership is committed to implementing effective consultation programs throughout the study process.

The transportation problems and opportunities identified during the P/NF Study provide the basis for the Partnership to initiate the environmental study processes for the development and assessment of transportation alternatives at the Detroit River international crossing. A key map is provided in Exhibit 1.2.

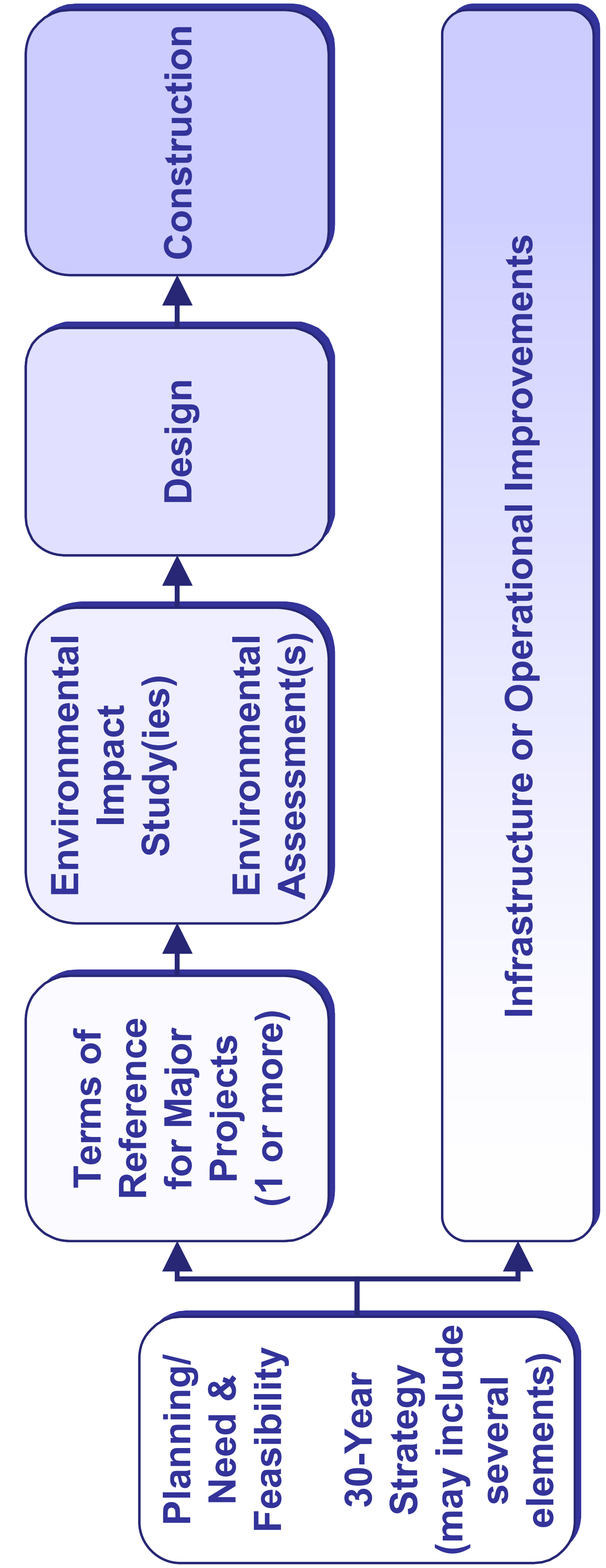
In Ontario, the environmental study process requires that major transportation improvements be carried forward as an environmental assessment. The first step in completing an environmental assessment in Ontario is the preparation of this Environmental Assessment Terms of Reference (TOR), which is hereby submitted to the Ontario Minister of the Environment for approval.

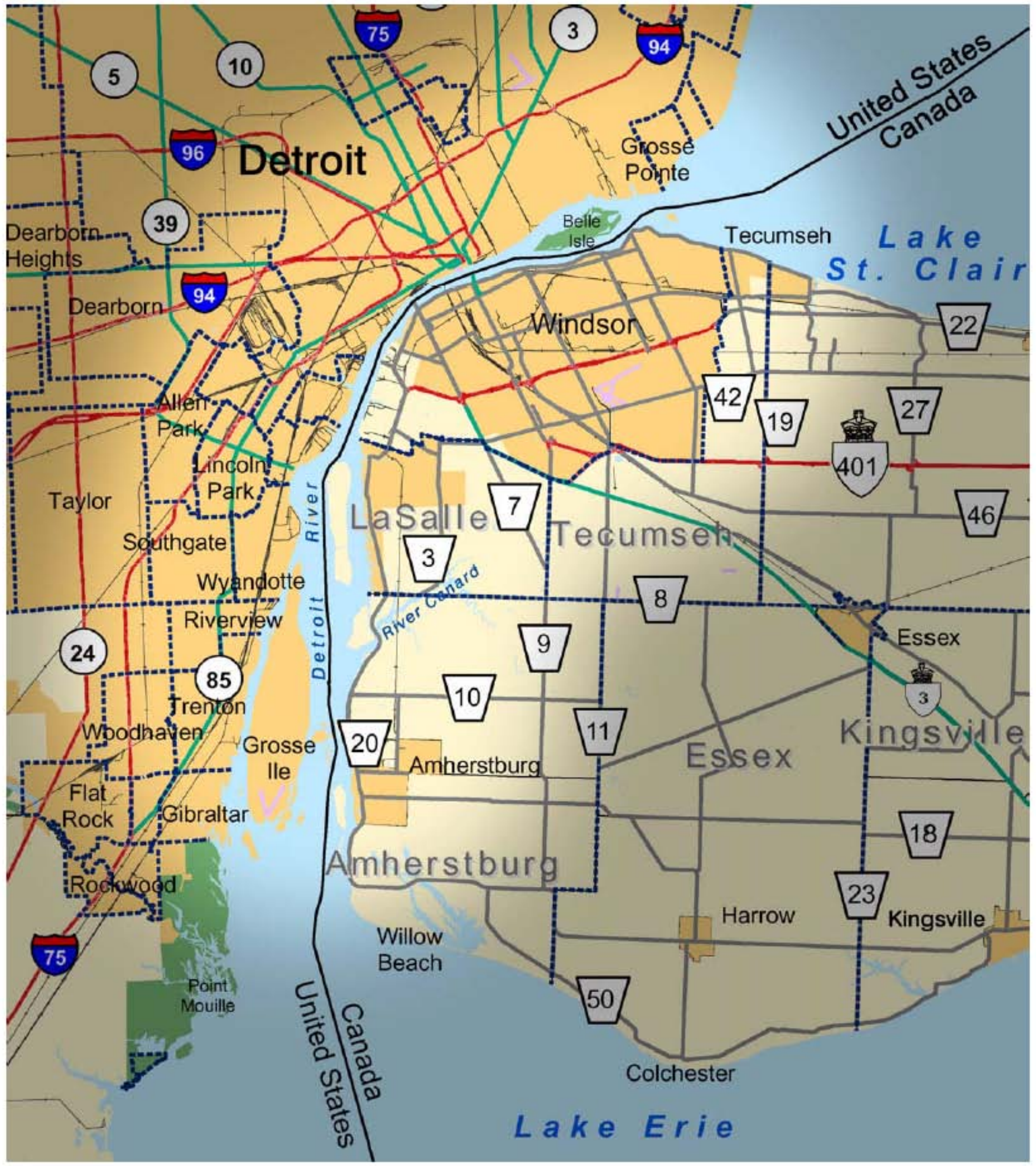
For clarity, 'OEA' will be used to refer to the Ontario Environmental Assessment, which is distinct from the NEPA and CEAA references to 'environmental assessment.'

The findings of the P/NF Study will be brought forward into the formal environmental study process for consultation. The work completed under the P/NF Study, may therefore, be modified and/or refined to reflect comments received and work carried out under the formal environmental study processes.

The Detroit River International Crossing Project is being undertaken to address the long-term needs of the border transportation network. Recognizing the timeframe required to plan and implement major transportation infrastructure (i.e. 8-10 years), the environmental study processes for a Detroit River International Crossing have been initiated. Infrastructure and operational improvements have been initiated that address the frequent and extended truck traffic delays and current congestion on approaches to existing border crossings in both the U.S. and Canada, including:

EXHIBIT 1.1 – BI-NATIONAL PLANNING AND ENVIRONMENTAL PROCESS





Canada / Ontario / MDOT		N 0 2.5 5 Miles 0 4 8 Kilometres	
Ontario	DETROIT RIVER INTERNATIONAL CROSSING ENVIRONMENTAL ASSESSMENT TERMS OF REFERENCE	KEY MAP	Exhibit 1.2

- Efforts by border processing agencies to provide additional staff at the border and promote use of the NEXUS and FAST programs;
- FHWA and MDOT, together with other government agencies, the City of Detroit and the Ambassador Bridge, are proceeding with plaza and freeway connection improvements on the U.S. side of the Ambassador Bridge;
- Transport Canada, MTO and City of Windsor have agreed to a Let's Get Windsor-Essex Moving Strategy. The first phase of the strategy includes projects to speed up the flow of cross-border traffic, improve road safety, protect and strengthen local jobs and beautify the existing transportation network.

The Partnership will continue to liaise with local municipalities, other government agencies and private sector proponents regarding on-going improvements to the local transportation network for consideration in the generation and assessment of alternatives in the Detroit River International Crossing Project.

1.2. Purpose of the OEAA Terms of Reference

One of the features of the OEAA, January 1, 1997, is the requirement for the preparation, submission and approval of a TOR before work begins on an OEA. Once approved by the Ontario Minister of the Environment, the TOR provides the framework that will guide the preparation of the OEA. The approval of the TOR is the first statutory decision by the Ontario Minister of the Environment in the OEA planning and approval process. This TOR is being submitted under 6.2 (a) of OEAA.

The bi-national aspect of the border transportation improvements will require several environmental assessment studies to be completed and submitted for approvals to the various Canadian and U.S. authorities, including:

- Environmental Assessment, under OEAA;
- Environmental Impact Study, under NEPA; and,
- Environmental Assessment Screening Report under CEAA.

In order to provide some flexibility as to how the OEA will be carried out, it should be noted that the Terms of Reference set out <u>at a minimum</u>, what the proponent will do during the preparation of the subsequent OEA. MTO, as a member of the Canada-U.S.-Ontario-Michigan Border Transportation Partnership, will consider enhancements to the process and work tasks, as required over the course of the OEA study, based on consultation input, changes to provincial/state/federal (both U.S. and Canada) policies and the availability of new environmental information. The process outlined in this TOR is consistent with, and will be enhanced in accordance with, requirements of NEPA and CEAA processes, as appropriate. MTO, as a member of the Canada-U.S.-Ontario-Michigan Border Transportation Partnership will undertake this OEA based on the legislative requirements, policies, procedures and protocols that are in place at the time the work is done.

The subsequent OEA will be prepared in accordance with this Terms of Reference approved for this proposed undertaking.

1.3. Ontario, Canadian and U.S. Planning and Environmental Assessment Processes

An objective of the Border Transportation Partnership is to develop the appropriate integrated environmental planning process that incorporates the requirements of OEAA, CEAA and the NEPA processes as well as any other applicable Ontario, Canadian and U.S. legislation. Other applicable government policies and agreements will be considered in the integrated study process.

Overall, the three processes are similar, and their purposes are to:

- Identify purpose and need for the proposed action;
- Identify alternatives to the undertaking and alternative methods of carrying out the undertaking;
- Identify and evaluate social, economic and environmental impacts (note: the main focus of the CEAA is to identify if the undertaking will cause any adverse environmental effect);
- Analyze preliminary alternatives and identify practical alternatives;
- Select recommended alternatives;
- Conduct public consultation as part of the process;
- Seek approvals and endorsement from statutory authorities; and
- Provide a structured framework to assist public officials in making sound decisions.

1.3.1. Ontario Environmental Assessment Act Requirements

At the outset of an OEA, proponents must develop and obtain approval of a Terms of Reference (TOR) prior to commencing an environmental assessment. A TOR is a document that identifies the framework the proponent must follow in completing the environmental assessment.

The TOR is made available for public and agency review and is submitted to the Ontario Minister of the Environment for approval. Upon completion of the review period, the Minister can approve, reject or approve the TOR with amendments. Once approval has been received, the proponent can proceed with the Environmental Assessment in accordance with the TOR. The supporting documentation is not subject to the decision of the Minister.

1.3.2. Canadian Environmental Assessment Act (CEAA) Requirements

CEAA applies to certain projects that involve a decision or planned action by a federal authority, which enables the project to proceed in whole or in part. Specifically, section 5(1) of CEAA, applies to projects where a federal authority:

- Is the proponent of the project;
- Provides funding to the project;
- Provides land for the project; or
- Issues a permit, license or authorization as prescribed in the Law List Regulations.

These decisions or planned actions of federal authorities are commonly called “triggers.”

The requirements under CEAA are somewhat different from the OEAA. With respect to the federal EA process, federal authorities require certain information to determine if they have a trigger. Federal authorities often wish to know what funding or federal land is being sought and may need more information on the location and extent of the project in order to determine whether they need to issue any permit or authorization. Where project information is not specific enough for a federal authority to know whether it has a responsibility to conduct an environmental assessment, the federal authority will participate until the uncertainty is resolved (an “in-until-out approach). This allows information needs to be satisfied throughout the EA process. For transportation projects, such information has generally not been available until the end of the provincial EA study or even into preliminary or detail design. This has resulted in proponents having to go through a second EA process to meet federal EA requirements, which has had program delivery implications (i.e. timing and cost) for MTO.

It is anticipated that work to be carried out during the EA/EIS will provide sufficient information to support a decision to trigger the federal EA process and to make a decision regarding likely significance of adverse environmental effects under CEAA. In recognition of federal interests and information requirements, concept design of the preferred practical alternative(s) will be undertaken during the OEA. This information will assist federal and provincial EA processes to move forward in an integrated manner.

The initial steps in CEAA pertain to preparation of a Project Description. Once the Project Description has been prepared and circulated to federal authorities, it will be used to identify responsible authorities (RA), expert federal authorities (FA) as well as a Federal Environmental Assessment Coordinator (FEAC) other possible RA’s and participating agencies. Subsequent decisions made after the OEA has been initiated will be used to prepare Scope of Project and Scope of Assessment documents. It is recognized that ongoing dialogue between the Partnership and federal authorities, including the Canadian Environmental Assessment Agency will be required throughout the integrated study process as details of the project unfold.

1.3.3. U.S. National Environmental Policy Act (NEPA) Requirements

The objectives and processes of NEPA are similar to those of OEAA, although the documents and approval processes are different. An illustration of the NEPA process is provided in support documentation, for information purposes.

The National Environmental Policy Act of 1969 established a national environmental policy intentionally focused on Federal activities and the desire for a sustainable environment balanced with other essential needs of present and future generations of Americans.

NEPA requires, to the fullest extent possible, that the policies, regulations, and laws of the U.S. federal government be interpreted and administered in accordance with its environmental protection goals. NEPA also requires federal agencies to use an interdisciplinary approach in planning and decision-making for any action that adversely impacts the environment.

As a member of the Partnership, FHWA initiated the NEPA process with the publication of a Notice of Intent to prepare an Environmental Impact Statement (EIS) in the Federal Register in March 2003.

There is no NEPA process equivalent of the OEA TOR, however, the Purpose of the Undertaking discussion in an OEA TOR is comparable to the Purpose and Need Statement under NEPA. The Purpose and Need Statement provides a basis for future environmental study activities in the U.S.

The draft Purpose and Need Statement is circulated to U.S. federal agencies with responsibility for approvals and permits related to the project. The agencies are requested to indicate any concerns regarding the purpose of the project or the process to be followed in completing the EIS. FHWA considers these concerns in finalizing the Purpose and Need Statement. Once the Purpose and Need Statement is finalized, scoping of the project can begin.

The preparation of a draft Purpose and Need Statement for the Detroit River International Crossing is being carried out in parallel to the preparation of the OEA TOR. Consultation with federal environmental and cooperating agencies on the draft Purpose and Need Statement to initiate discussions on the project will take place during the preparation and review of the OEA TOR. Upon approval of the OEA TOR and finalizing the Purpose and Need Statement, the Partnership will move forward together in scoping the Detroit River International Crossing project.

1.3.4. Integrated Environmental Study Process

Recognizing that this international transportation improvement project will require approvals from governments on both sides of the border, the Partnership is proposing to follow an integrated study process which meets the requirements of the respective environmental study legislation for Canada, U.S., Ontario and Michigan. This integrated process is schematically illustrated in Exhibit 1.3.

A key principle of the process is that government ministries / departments / agencies, as well as non-government agencies, interest groups, community groups and interested members of the public are provided the opportunity to participate and offer input throughout the study. The Partnership will proactively seek input from all stakeholders at key points in the decision-making process.

Another key principle of the integrated process is that, where two or more processes specify different requirements in conducting the study, the Partnership will seek to incorporate the most rigorous requirement as much as possible. However, there are certain unique requirements among Canadian, Ontario and U.S. planning processes (e.g. environmental justice), which may be directly incorporated. The Partnership will appropriately coordinate / address these issues as they arise during the integrated study process.

The intent of the Partnership is to conduct one body of work pertaining to alternative generation, analysis and evaluation, and document the project findings in format(s) suitable for circulation and review by the bi-national government agencies/ministries/departments and the general public.

In addition, throughout the environmental study process, the Partnership will coordinate meetings between Canadian and U.S. federal and state/provincial agencies of common/shared interests so that, as much as possible, a bi-national approach to identifying and addressing issues can be developed.

1.4. Statement of Proponency

The Ontario Ministry of Transportation, as a member of the Canada-U.S.-Ontario-Michigan Border Transportation Partnership, is the proponent for this Environmental Assessment Terms of Reference for the Detroit River International Crossing.

1.5. Submission Statement

An OEA prepared in accordance with this Terms of Reference will meet the requirements of Section 6(2)(a) of the OEAA and will specifically addresses the following:

- Identification of the Proponent (Section 1 of this document);
- The purpose and need for the undertaking (Section 2);
- The process for selecting preferred transportation planning alternatives (Section 3);
- The process for generating the study area (Section 3);

- The process for selecting preferred practical alternatives (Section 3);
- The process for selecting preferred concept design alternatives (Section 3);
- A Monitoring Strategy and Schedule (Section 4);
- A description of the Consultation Plan proposed for the OEA (Section 5); and

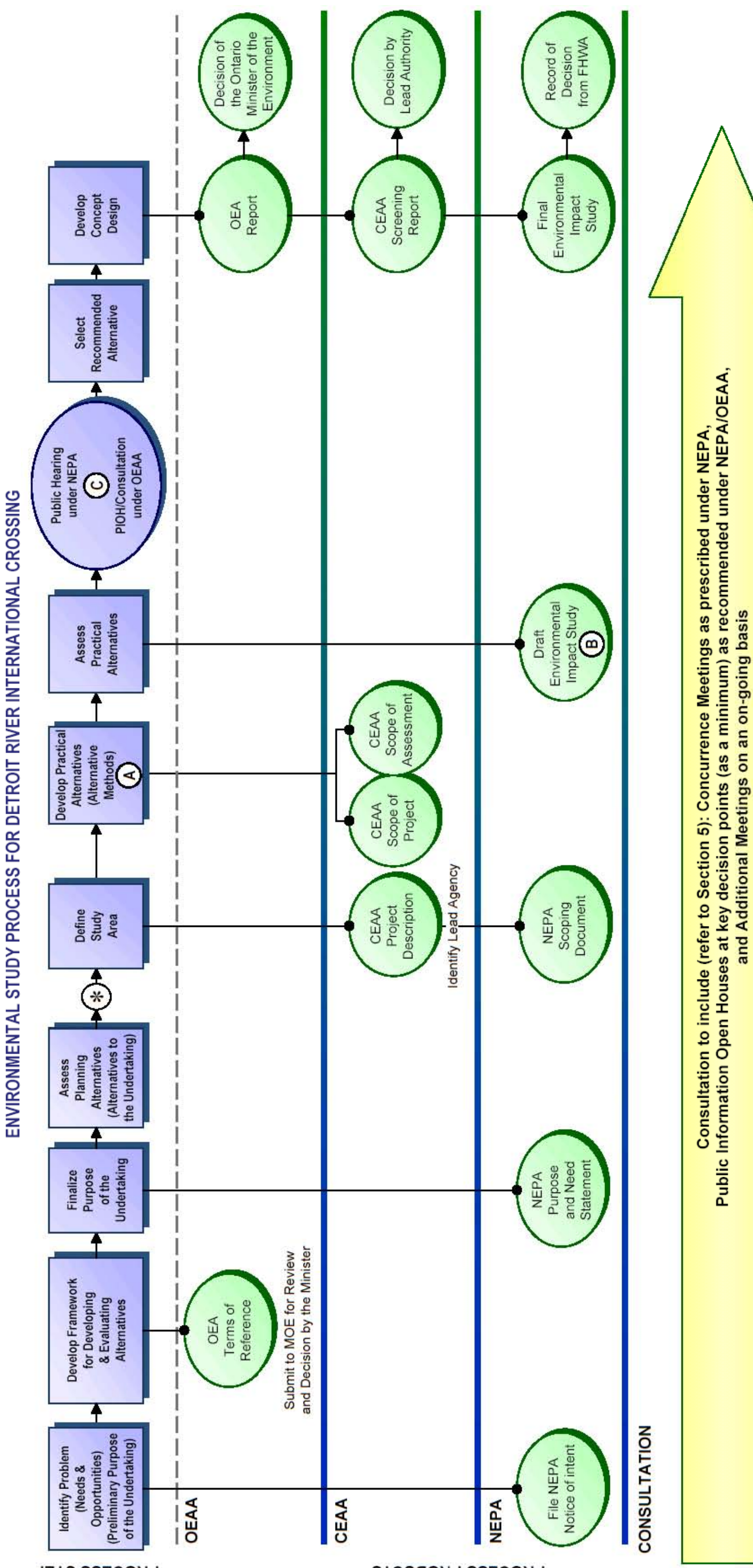
The additional documentation submitted with this TOR, for which approval is not being sought, includes:

a) Record of Consultation During Preparation of the TOR

b) Supporting documentation

- *Canada-U.S.-Ontario-Michigan Border Transportation Partnership Transportation Problems and Opportunities Report (January 2004)*;
- The FHWA/NEPA Planning and Approval Process;
- Preliminary Description of Existing Environment and Potential Effects;
- Proposed Factors to Assess Feasibility of the Opportunity Corridors;
- Environmental Components to be Considered During the Generation of Alternatives;
- Criteria for Evaluating Illustrative and Practical Alternatives;
- Typical Elements of Concept Design;
- Federal / Provincial EA Coordination Process; and
- Activities Following Approval of the EA.

EXHIBIT 1.3 - SCHEMATIC ILLUSTRATION OF THE INTEGRATED NEPA/OEAA/CEAA PROCESS ENVIRONMENTAL STUDY PROCESS FOR DETROIT RIVER INTERNATIONAL CROSSING



* Following the assessment of planning alternatives, the process for identifying a recommended linear transportation facility, for which MTO would serve as the proponent, is illustrated. If the assessment of planning alternatives recommends other/additional alternatives, appropriate planning/implementation processes may be initiated by other proponents. MTO will meet with MOE at this point of the integrated environmental study process to obtain guidance/comment on future actions.

A In developing practical alternatives, the Project Team will first identify Illustrative Alternatives. The preferred Illustrative Alternatives will be carried forward as Practical Alternatives (See Section 3.3).

B Under NEPA, the Draft EIS is typically prepared and circulated prior to any selection of a recommended alternative.

C The Public Hearing following the circulation of the Draft EIS is mandatory under NEPA.

2. Purpose of the Undertaking

The purpose of the undertaking is to provide for the safe, efficient and secure movement of people and goods across the Canadian-U.S. border in the Detroit River area to support the economies of Ontario, Michigan, Canada and the U.S.

Given the importance of this trade corridor to the local, regional and national economies and recognizing the negative effects associated with poor traffic operations and congestion already occurring at existing crossings, the partnering governments must take all responsible steps to reduce the likelihood of disruption to transportation service in this corridor.

In following the requirements of OEAA, CEAA and NEPA, the purpose of the undertaking will be revisited during the integrated environmental study process and the description of the proposed undertaking (e.g. a new or expanded international crossing) may evolve or change as the project proceeds. The final purpose of the undertaking, therefore, will be defined and included in the environmental assessment study documents for this project.

2.1. Overview and Outlook

Consideration of the Purpose of the Undertaking for a transportation project requires a clear understanding of the problems and opportunities that exist within the region and within the planning horizon timeframe (30 years). The *Canada-U.S.-Ontario-Michigan Border Transportation Partnership Transportation Problems and Opportunities Report (January 2004)*, documents the work completed in identifying the transportation problems and opportunities in Southeastern Michigan-Southwestern Ontario. This section of the Terms of Reference includes the key findings related to border crossings documented in that report; the complete report is available under separate cover in Supporting Documents.

2.1.1. Trade

Canada and the United States are the largest bilateral trade partners in the world. The North American Free Trade Agreement (NAFTA) has had significant impact on trade between the two nations, solidifying/reinforcing access to bilateral trade for both markets.

In year 2000, total U.S. trade with Ontario was U.S.$243 billion (CAN$365 billion[1]), which is larger than total U.S. trade with Japan. Recent statistics from U.S. International Trade Administration identify that Canada is the largest export market for a number of U.S. states, including Michigan, Ohio, Indiana and Illinois.

Approximately 23 percent of surface trade between Canada and the United States passed through the Detroit-Windsor corridor, signifying the importance of this border crossing to the national economies of both the United States and Canada.

[1] Unless otherwise indicated, a currency conversion rate of 1.6:1 Canadian to U.S., is used throughout this document.

Two-way trade between the U.S. and Canada through the Windsor/Detroit corridor continues to increase. Over the long term, the prospects for continued bilateral trade growth between Canada and the U.S. remain strong. As evident over the past thirty years, bilateral trade in goods and services has grown faster than GDP, increasing at an annual rate of approximately 11 percent. Moreover, in recent years, trade between Border States and provinces has grown significantly faster than national bilateral trade.

The conclusion of a report commissioned by Industry Canada on North American Integration[2] is that over the next 25 years, the economic integration between Canada and the U.S. will advance markedly, two-way trade flows will continue to expand sharply and that trade will play an even greater role in both economies. This report cites that "free trade forces will bring about a further increase in Canada-U.S. trade, which by 2005 or 2010 could be 20 to 30 percent above what it would have been in the absence of the recent trade agreements."

The Detroit River frontier represents the busiest corridor for trade between Canada and the United States. The benefits of such trade to the local, regional and national economies is represented in the prosperity, opportunities and high standards of living each country enjoys, and the prospect of continued increased trade passing through this corridor must be encouraged as well as protected. The governments of Canada, United States, Ontario and Michigan each have a duty and responsibility to provide for and reduce the likelihood of disruption to the safe, continuous transport of people and goods across the Detroit River.

2.1.2. Travel Demand

As represented in Exhibit 2.1, the vast majority of international trips in the Windsor/ Essex County - Detroit/Wayne County area are road-based. The modal shares depicted in this exhibit are expected to remain relatively constant over the long term, with the exception of a slight shift from truck to inter-modal rail.

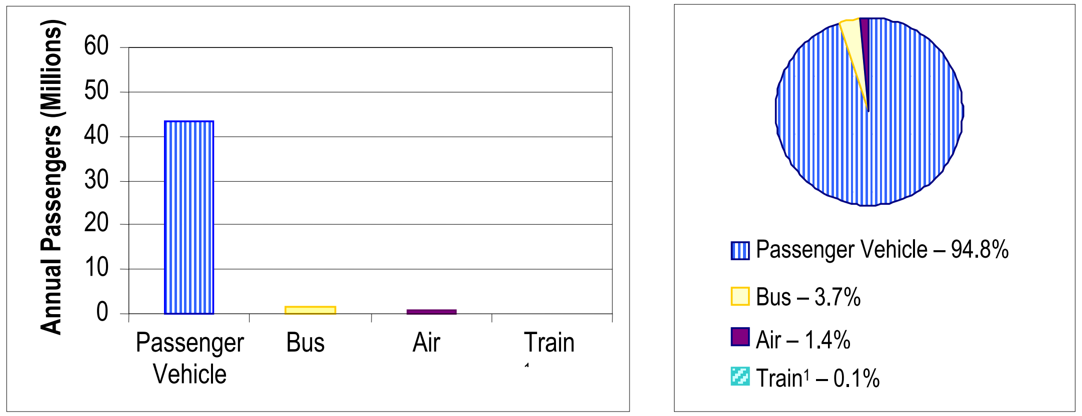
The most common trip purposes are recreational/shopping and work/business/school (refer to Exhibit 2.2). Peak travel periods for work/business/school trips do not coincide with peak recreational/shopping trips. Recreational/shopping trips are generally at lower levels during the morning and afternoon peak periods and higher in mid-day, evening and weekend periods.

Table 2.1 provides additional information as to the vehicle and trip type (by origin-destination) of these road-based trips. The vast majority of passenger trips are local, defined as beginning and ending in the Windsor/Essex County-Detroit/Wayne County area. A sizable amount of commercial trips are passing entirely through the Windsor/Essex County-Detroit/Wayne County area.

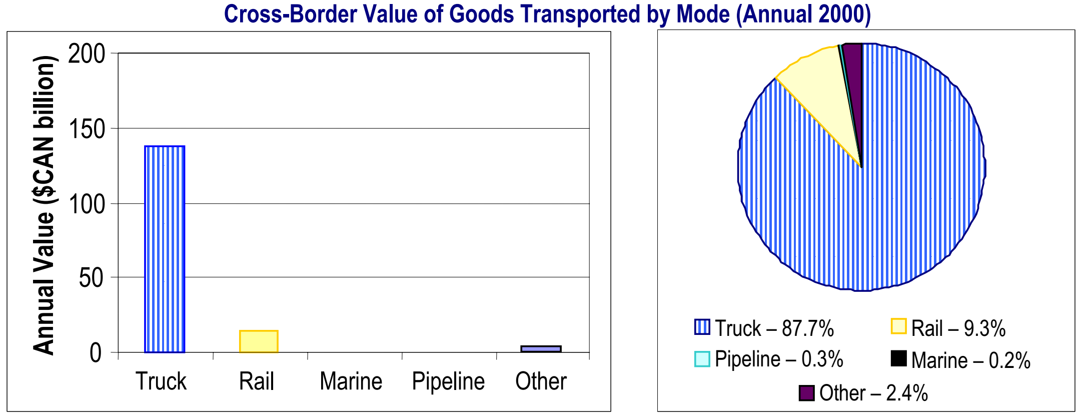
[2] *North American Integration: 25 Years Backward and Forward*, by Gary C. Hufbauer and Jeffrey J. Schott, Institute for International Economics, 1998.

EXHIBIT 2.1 – CROSS-BORDER TRIPS BY MODE (2000)

Cross-Border Person Trips by Mode (Annual 2000)



Cross-Border Value of Goods Transported by Mode (Annual 2000)



Note 1: There is no through passenger rail service provided between Windsor and Detroit.
Train trips reported here are deemed to have used the rail service operating between Sarnia-Port Huron.

EXHIBIT 2.2 – CROSS-BORDER PASSENGER CAR TRIPS BY TRIP PURPOSE, 2000 WEEKDAY

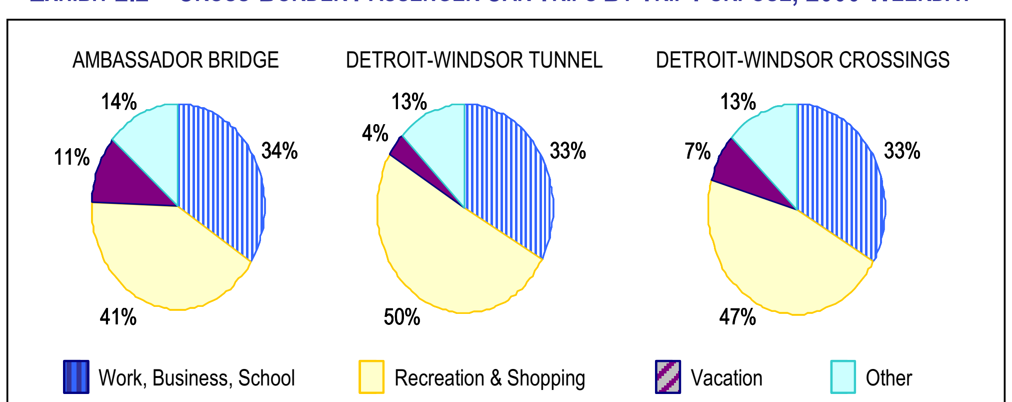


TABLE 2.1 – 2000 DAILY INTERNATIONAL TRAFFIC CROSSING AT WINDSOR-DETROIT BY VEHICLE AND TRIP TYPE

Type of Traffic	Passenger	%	Commercial	%
International Local to Local	40,561	79%	3,083	24%
Local (U.S. side) to Long Distance (Canadian Side)	3,145	6%	1,983	16%
Local (Canadian side) to Long Distance (U.S. Side)	4,882	9%	2,113	16%
International Long Distance to Long Distance	3,003	6%	5,589	44%
Total	51,591	100%	12,769	100%

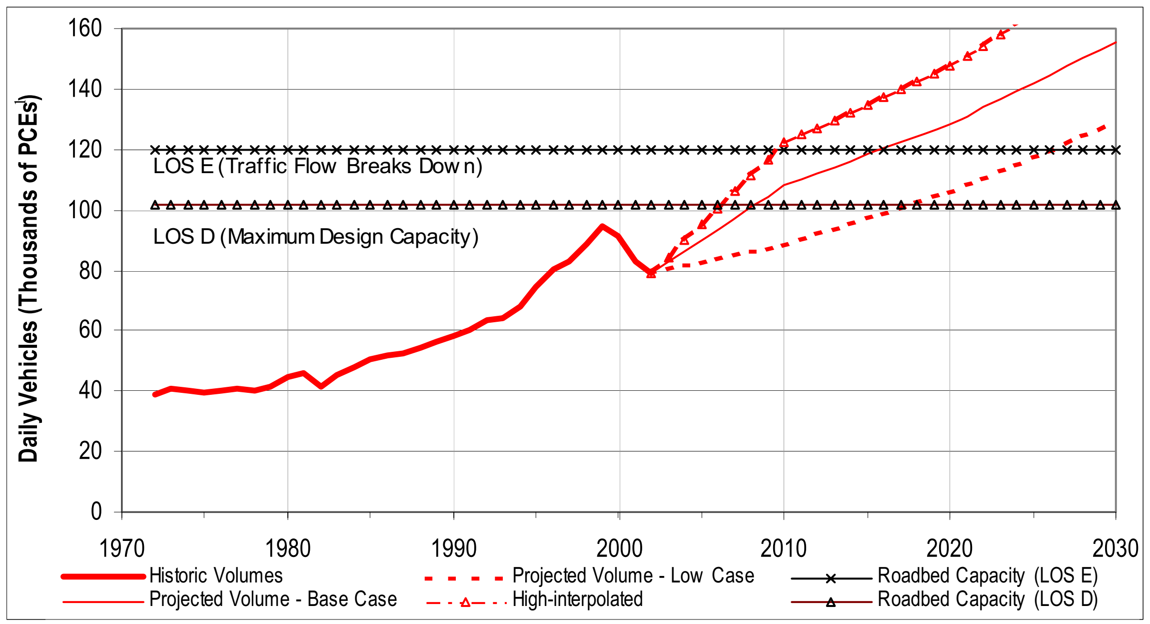
The travel demand analyses carried out during the P/NF Study involved the development of a comprehensive process to estimate future demand on the existing and currently committed future transportation network. The process included the development of a regional travel demand forecasting model. The regional model developed for this study built on extensive work already carried out by Southeastern Michigan Council of Governments (SEMCOG), MDOT, MTO and the City of Windsor. All of the models developed by these agencies were developed primarily for purposes other than examining cross-border movements. Recent economic, statistical and transport data and trends were incorporated into the regional model. Transportation planning representatives from SEMCOG, MDOT, MTO and the City of Windsor were involved in the development of the demand analysis process and calibration of the regional model.

Border traffic projections were developed based on the Partnership's understanding of the trends in goods movement, as well as the documented population and employment growth for the region, under high and low growth scenarios. In addition, a base case projection of future traffic volumes within the high and low growth projections was developed for use in analysis of border crossing performance. Over the 30-year horizon for this study, the cross-border traffic forecasts prepared for this study project an approximate 40% increase in car and 120% increase in truck traffic at the Windsor-Detroit Gateway. This corresponds to an increase in daily cross-border car trips from 52,000 to 70,000 trips and an increase in daily truck trips from 13,000 to 28,000 trips.

Transportation agencies consider the need for improvements to transportation facilities or networks based on the level of transportation service provided. The level of service (LOS) is generally a function of the volume of traffic and the roadway or network capacity. For the purposes of this study, the existing border crossing facilities are considered to be at capacity at level of service (LOS) E. (For more discussion on LOS, refer to the P/NF Study documents.) Projections of future traffic volumes were developed for three different trade scenarios: 1) high growth in Canada-U.S. trade; 2) low growth in such trade, and 3) what the Partnership believes to be the most likely scenario for trade growth, given the available data about Canada-U.S. trade trends – referred to as the Base Case.

Under either a high growth or low growth scenario, the roadway capacity of the existing border crossings will be exceeded within the timeframe of this planning study (refer to Exhibit 2.3). This will result in a deterioration of operations, increased congestion and unacceptable delays to the movement of people and goods in this strategic international corridor. Details of the border crossings and the effect of increased border traffic volumes are provided in the following section.

EXHIBIT 2.3 – WINDSOR-DETROIT CROSS-BORDER TRAFFIC, HISTORIC AND PROJECTED

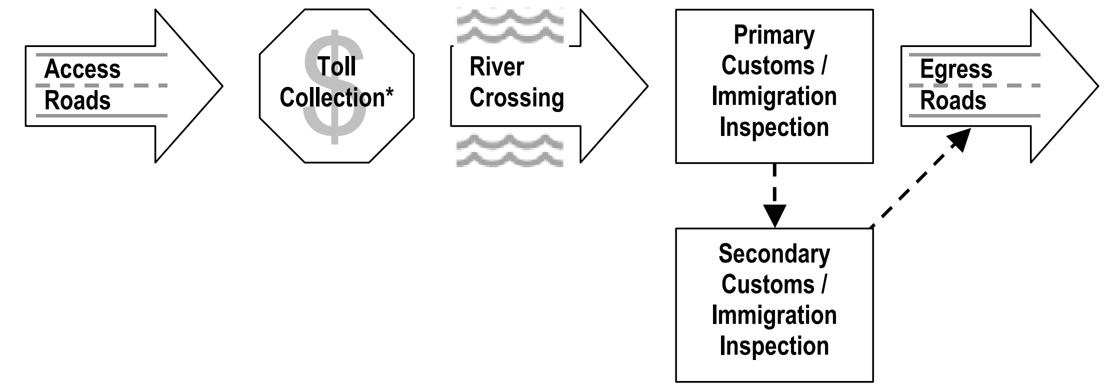


Note 1: PCE = Passenger Car Equivalent, used to express passenger cars and commercial vehicles in a single unit (e.g. one tractor trailer unit is equivalent to 3 passenger cars).

2.1.3. Existing Windsor-Detroit Border Crossings

International border crossings must be considered as a system made up of individual components. The movement of vehicles across the Canada-U.S. border involves a series of sequential activities. As illustrated in Exhibit 2.4, the border crossing system includes access roads leading to the border crossing, toll collection, the bridge span or road bed itself, customs inspection (primary and secondary), and egress roads. Border capacity is governed by all of these components with the component with the lowest capacity governing the overall effective capacity of the crossing. Consequently, the ultimate capacity of a bridge or tunnel will not be realized if the customs capacity or road access capacity is the limitation or bottleneck in the system.

EXHIBIT 2.4 – TYPICAL BORDER CROSSING SYSTEM



**Note: Toll collection may occur at or subsequent to clearing inspection.*

The two fixed links in the Windsor/Essex County-Detroit/Wayne County area connecting the roadway system in Canada to that of the U.S. are the Ambassador Bridge and the Detroit-Windsor Tunnel.

a) Ambassador Bridge Corridor

The Ambassador Bridge Corridor is considered to consist of the Highway 401 connection to Highway 3, the arterial road designated as Highway 3, Talbot Road and Huron Church Road connecting Highway 401 to the Ambassador Bridge Canadian plaza (this arterial road is herein referred to as Huron Church Road), the Ambassador Bridge and related Canada/U.S. border processing facilities, and the U.S. plaza connections to I-75/I-96.

The Ambassador Bridge, opened in 1929, is the world's longest international suspension bridge. With a total length of 2.8 km (9200 ft) and spanning some 560 m (1850 ft) across the Detroit River, this structure connects the local road network in west Windsor to the interstate freeway system in southwest Detroit. The structure features four lanes on a 17 m (55 ft) wide deck at a maximum grade of 5%. The maximum height of the bridge over the Detroit River is 45 m (152 ft). Both U.S. and Canadian plazas conduct a variety of border crossing functions, including toll collection, border processing, duty free shopping and currency exchange. In terms of total vehicle crossings, the Ambassador Bridge is the busiest border crossing in North America.

Although there are presently periods when travel demand exceeds capacity in this corridor, in general this crossing has sufficient infrastructure capacity to process existing auto and truck demands. Queues for border crossing facilities frequently extend well back onto the access roads and cross-border travelers experience significant delays. However, many of the existing queues and delays are related to various border processing issues (e.g. staffing, facilities and processing requirements), and in the last year, border security issues have resulted in increased vehicle inspection times.

The areas operating at or near capacity during peak periods in this corridor are the connections between the interstate freeway system and the U.S. plaza, primary inspection of Canada–bound automobile traffic and secondary inspection of U.S.-bound trucks.

At present, most of the signalized intersections along Huron Church Road are approaching capacity with several movements at critical levels. Under these conditions and with the large percentage of commercial vehicles using this facility, traffic flow can be unstable, with periods of congestion occurring unpredictably along the corridor.

Operational deficiencies at the Ambassador Bridge connections to the U.S. Interstate system are being addressed through large scale improvements being implemented over the next several years. The Ambassador Bridge Gateway Project, currently under construction and scheduled for completion in 2006, addresses the current deficiencies in this component of the border crossing.

An assessment of future traffic operations identifies a number of problems in this corridor. Travel demand at almost all the various components of this corridor is expected to exceed the practical capacities, resulting in severe traffic congestion and extensive delays.

MTO has planned provisions for improvements to the section of Highway 401 east of Windsor from Highway 3 easterly to Tilbury. Therefore, this component of the corridor is expected to have sufficient capacity beyond the 30 year planning horizon.

Anticipated increases in border crossing traffic, combined with modest growth in background traffic, will mean that Huron Church Road will likely exceed capacity within 5 years. As the traffic volumes approach the capacity of the facility, congestion, queuing and infiltration of traffic onto other parallel roads will become more frequent. (City of Windsor Traffic Engineering is already observing such conditions during periods of excessive delay at the border.) The effects of this problem can extend beyond the traffic and direct economic impacts associated with delays to the movement of people and goods. The local communities around the border crossings have expressed concerns with disruption to local access and impacts to air quality and noise levels during periods of congestion on the border crossing approach roadways.

No significant problems are anticipated in the future due to constraints at toll collection at the Ambassador Bridge. For U.S.-bound passenger vehicle traffic, toll collection currently occurs after vehicles have cleared U.S. Customs/Immigration inspection. The use of improved toll collection technology and frequent user programs are expected to help this component keep pace with increasing traffic demand.

Travel demand at border processing facilities on both the American and Canadian sides of the bridge is anticipated to reach available capacity within five years. It is recognized that border crossing programs, such as NEXUS and FAST, may be somewhat successful in deferring the need for additional border processing resources. However, additional staffing and facilities will be required to meet travel demand. Border processing agencies in both countries are working to address this need.

As noted earlier, operational deficiencies at the Ambassador Bridge connections to the U.S. Interstate system are being addressed through large scale improvements being implemented over the next several years. Once completed, the Ambassador Bridge Gateway Project will provide sufficient facilities to address access to the bridge plaza/freeway system and U.S. border processing requirements over the long term.

Based on the assumed roadway capacity of the Ambassador Bridge, travel demand is expected to reach capacity within 10 to 15 years. At that point, the bridge will be physically constrained from addressing increases in travel demand. It should also be noted that maintenance operations on the Ambassador Bridge structure generally require the partial closure of at least one lane. These ongoing periodic maintenance operations reduce the capacity of the facility and generate queues and delays. As with the effects of delays on Huron Church, delays due to capacity constraints on the Ambassador Bridge reach beyond the limits of the bridge and its plazas. As the busiest border crossing in North America, the impacts to the local, regional and national economies are significant. It can be anticipated that the road network leading to the structure on both sides of the border will experience similar delay, access and traffic infiltration problems as noted previously, as border crossing volumes continue to increase.

The timeframes by which travel demand is anticipated to meet capacity on the Ambassador Bridge Corridor are summarized as follows:

U.S. Interstate Connections (with gateway)	U.S. Border Processing	Ambassador Bridge	Canadian Border Processing	Huron Church Road	Highway 401 (6 lanes)
At or near capacity beyond 30 years	At or near capacity within 5 years	At or near capacity within 10 – 15 years	At or near capacity within 5 years	At or near capacity within 5 years	At or near capacity beyond 30 years

b) Detroit-Windsor Tunnel Corridor

The Detroit-Windsor Tunnel Corridor is considered to include the tunnel and related border processing facilities as well as the connections from the plaza to the downtown road networks in Windsor and Detroit. The tunnel's Canadian plaza is located at the corner of Goyeau and Park Streets, approximately four blocks south of the Detroit River in downtown Windsor. The American plaza is located on the Detroit waterfront, at the foot of Randolph Street.

Opened in 1930, the tunnel is 1,573 m (5,160 ft) long with a height clearance of 4 m (13 ft, 2 inches). The roadway is 6.7 m (22 ft) wide and allows for two lanes of traffic in opposite directions. The maximum depth from the roadbed to the river surface is 22.8 m (75 ft). The plazas at either end of the tunnel provide for a variety of border crossing functions, including toll collection, border processing, duty free shopping and currency exchange. The Detroit - Windsor Tunnel is among the busiest border crossings in North America.

The current limiting capacity constraint at this crossing is at the border processing components. The critical area operating at or near capacity during peak periods at this crossing is primary inspection of Canada-bound automobile and bus traffic and primary inspection of U.S.-bound autos. As with the Ambassador Bridge crossing, it is recognized that frequently, queues at the border crossing extend onto the downtown road networks. Many of these queues and delays result from a lack of available staffing and border security issues, which increase vehicle inspection times.

As travel demand continues to increase, these capacity constraints will increase delay at the crossing, leading to extensive queuing on the adjacent downtown road network of both Windsor and Detroit. The tunnel operator has identified initiatives for plaza improvements on both sides of the border. These improvements address current operating deficiencies and the need for additional/improved border processing facilities at this crossing.

Due to their downtown locations, both plazas are constrained by adjacent development and the municipal street network. Short-term measures (e.g. temporary turning restrictions and lane closures during peak periods) are being implemented in both Windsor and Detroit to reduce the congestion effects on city streets caused by extensive queuing. In addition, plans are proposed for further operational improvements and improvements to border processing facilities.

The tunnel itself has sufficient capacity to meet the travel demands over the next 10 to 15 years. After that point, the tunnel will be physically constrained from addressing increases in travel demand. Similar to the issues noted for the Ambassador Bridge, the impacts to the local and regional economies will be significant. It can be anticipated that the downtown road networks leading to the tunnel on both sides of the border will experience similar delay, access and traffic infiltration problems as noted previously with the Ambassador Bridge.

The timeframes by which travel demand is anticipated to meet capacity in the Detroit-Windsor Tunnel Corridor are summarized as follows:

Downtown Detroit Road Connections to Tunnel Plaza	U.S. Border Processing	Detroit-Windsor Tunnel	Canadian Border Processing	Downtown Windsor Road Connections to Tunnel Plaza
At or near capacity within 5 years	At or near capacity within 5 years	At or near capacity within 10 - 15 years	At or near capacity within 5 years	At or near capacity within 5 years

c) Other Crossings

The Detroit River rail tunnel is situated approximately midway between the Ambassador Bridge and the Detroit-Windsor Tunnel. Opened in 1910, the rail tunnel has twin tubes with each tube accommodating a single track. One of these tubes was subsequently enlarged to take larger size equipment, while the other one is still in its original size. The larger one still cannot handle full double-stack dimension cars, however. The larger tube is the only tube currently in operation and operates well below capacity, handling approximately 25 cross-border trains per day. The owners of the rail tunnel (CP Rail and Borealis Transportation Infrastructure Trust) have a proposal for a new rail tunnel, which would accommodate rail cars of the maximum size. This proposal is coordinated with a plan to convert the two existing rail tunnels to carry trucks.

Based on publicly available industry data, the rail network in southwestern Ontario-southeastern Michigan is assumed to be operating currently at about one-third of its capacity. Future growth scenarios assuming increased diversion from truck transport to rail/intermodal were assessed to determine the likely future effects on rail operations. These scenarios acknowledge that rail has been successful at capturing a greater share of truck traffic for longer distance shipments (i.e. greater than 400 km (250 mi). Upon consideration of a range of growth scenarios, the capacity of the rail network was determined to be sufficient to meet the long-term needs of rail transport.

The Detroit-Windsor Truck Ferry was started on the Detroit River in 1990 for the purpose of handling trucks carrying dangerous goods (Classes 1, 3, 7 and 8), which are banned from the Ambassador Bridge and tunnel crossings in accordance with Michigan State law. The ferry also handles over-sized loads that cannot use the bridge or tunnel, but in no way restricts its use to these two markets. The Canadian ferry terminal is situated off of Maplewood Drive in west Windsor. The American terminal is in southwest Detroit, at the mouth of River Rouge.

The ferry can provide a significant distance savings to trucks carrying dangerous goods or heavy loads by allowing them to cross at Windsor-Detroit as opposed to having to travel to alternate ports that support this market. The alternative for vehicles with dangerous goods within the study area is Port Huron-Sarnia; very heavy vehicles must cross much further away by land between Minnesota and Ontario. It is estimated that more than 50% of the ferry crossing trips are from London (i.e. the point at which travel distances across the corridor via Port Huron-Sarnia and Detroit-Windsor are similar) inward, with a similar market range on the Michigan side.

Future travel demand of vehicles is expected to exceed the capacity of the existing road network. This will create more opportunity for other modes and other crossings to serve the excess demand. Currently, the truck ferry operates with one-hour headways for 10-hour days and can shuttle 8 trucks per crossing. As the ferry currently handles about 40 trucks per day on average, it is operating at about 25% of capacity. It is understood that the ferry service could operate two barges, providing a daily capacity of 320 trucks and that there are proposals for additional truck ferry services on the Detroit River. Given that the current commercial vehicle travel demand at the Ambassador Bridge is approximately 12,800 trucks per day and growing, it would appear that there is sufficient market to enable marine services to continue to play a role in serving travel demand at the border but will have little effect in managing the excess demand.

2.1.4. Border Processing

Addressing issues related to border processing facilities, resources and procedures is not within direct control of the transportation agencies sponsoring this study. This responsibility lies primarily with agencies such as Canada Customs and Revenue Agency (CCRA), U.S. Department of Homeland Security (DHS) and U.S. General Services Agency (GSA). However it is recognized that delays at border processing result in congestion and delays at the Ambassador Bridge border crossing. Similarly, delays at border processing and lack of capacity at the connections to the plazas at the Detroit-Windsor tunnel results in congestion and delays at the Detroit Windsor Tunnel.

Border processing agencies have been working with the Partnership to identify issues and concerns related to border processing at the existing crossings, as well as identify the proposed increases to staffing, improvements to border processing facilities to increase capacity and programs to facilitate border processing procedures.

As a result of the terrorist attacks on the U.S. on September 11, 2001, and of ongoing national security concerns, heightened border security is a new reality facing all border crossings. Security priorities affect border crossing operations; periods of rigorous inspection of all passengers and goods using border crossings effectively reduce border crossing capacity, and lead to congestion on the road network in the vicinity of the border crossings. Transportation agencies must develop solutions to accommodate the capacity requirements of international traffic, while ensuring security concerns are also addressed.

The border processing agencies are moving forward on implementing improvements to the border crossings, to increase capacity and reduce congestion, while maintaining their objectives related to having a safe and secure border. Initiatives such as the Ambassador Bridge Gateway Project and the proposed improvements to the Detroit-Windsor Tunnel are intended to increase capacity of border processing facilities at these crossings.

Similarly, programs such as NEXUS and FAST are intended to reduce processing times for vehicles crossing the border, thereby increasing capacity and potentially lessening the need for additional staffing at the crossings. The ability of these improvements and programs to meet future travel demand is not certain. Staffing at the border crossings will continue to be an issue that will limit border processing capacity in the short term. The presently low, but increasing, participation rate in the various border crossing programs will have a direct effect on the success of these programs to increase capacity of border processing.

Transportation agencies will need to continue to coordinate border processing capacity and security issues with border processing agencies. In the short to medium term, however, the lack of adequate border processing capacity will be an issue that transportation agencies must address from a transportation perspective.

2.2. Summary of Transportation Problems

The transportation problems in the Detroit River area to be addressed by this study (which will be further defined during the OEA) are as follows:

- The lack of reasonable options for maintaining the movement of people and goods in cases of major incidents, maintenance operations, congestion or other disruptions at any of the existing border crossings;
- Lack of sufficient capacity to meet the long-term (i.e. 30-year) travel demand at the Windsor-Detroit border crossings; and
- Increased security requirements creating impacts on the movement of people and goods at border crossings.

Future traffic volumes are expected to exceed the capacity of the existing border crossings sometime within the next 30 years. Significant growth in truck traffic

associated with growing trade between Canada and the U.S. will lead to increased traffic volumes at the existing border crossings.

The Ambassador Bridge and Detroit-Windsor Tunnel represent two of the busiest border crossings in North America. They carry over 16 million passenger vehicles and 3.7 million commercial vehicles annually and handle 23% of the total surface trade between Canada and the U.S. The delays and resultant queuing already occurring at these crossings have several negative effects associated with poor transportation network operations, including the following:

- Increased highway safety concerns, including higher potential for collisions at intersections, entrances and queue ends;
- Lost economic opportunity costs;
- Increased air pollution;
- Impacts to access and adjacent land uses in the vicinity of the border crossings;
- Infiltration of cross-border traffic onto local roads;
- Impacts to incident/emergency response;
- Increased vehicle operating costs and fuel consumption; and
- Increased driver frustration.

Given the importance of these border crossings to the local, regional and national economies of Canada and the U.S., the effects of poor traffic operations at these border crossings extend beyond the immediate areas where traffic congestion occurs. Further, as travel demand continues to increase, the effects of increased congestion and delays will continue to worsen.

Border processing agencies are currently pursuing improvements, including additional staffing, improvements to facilities and implementation of border crossing programs. However, it is unlikely that any individual or collective improvements made will provide sufficient capacity to meet travel demand in the medium- to long-term or during periods of heightened security.

The existing roadway crossings of the Detroit River are more than 70 years old. As the structures age, the need for significant maintenance inevitably increases. Significant maintenance activities often have the potential to partially or completely close such structures to traffic.

2.3. Transportation Opportunities

In addressing the stated Transportation Problems, the OEA/EIS will consider opportunities to reduce impacts and enhance benefits to the border region. As such, this study provides the opportunity to consider the following:

- Development of a multi-modal strategy for a balanced transportation system that provides more transportation choices;
- Protection of future required right-of-way;
- Optimization of existing infrastructure;

- Facility rehabilitation to avoid or delay replacement;
- Partnerships with other proponents to co-operatively address common problems and/or shared objectives;
- Revenue generation and/or cost reduction; and
- Support for provincial, state and national economic and planning objectives.

Consideration of these transportation opportunities will not be restricted to roadway improvements. The assessment of travel demand identified a number of aspects of the transportation system that are currently operating well below capacity, and will likely continue to operate below capacity in the future under the current travel patterns. As part of the generation and assessment of transportation alternatives, the opportunity to divert excess demand to under-utilized crossings or modes will be considered.

3. Assessment and Evaluation

As noted in Section 1.3.4, the bi-national aspect of the Detroit River International Crossing project is a distinguishing characteristic for this study. The intent of the Partnership is to conduct one body of work pertaining to alternative generation, analysis and evaluation, and document the project findings in a format(s) suitable for circulation and review by the bi-national government agencies/ministries/departments and the general public.

The assessment and evaluation of alternatives will require applying the requirements of OEAA, CEAA and NEPA. Where two or more processes specify different requirements in conducting the study, the Partnership will seek to integrate the most rigorous requirement as much as possible. However, it must be recognized that, the processes can vary in many ways, such as what is considered an impact, how an impact is measured, the level of detail required to be provided, etc. The Partnership will meet all requirements of OEAA, CEAA and the NEPA processes as well as any other applicable Ontario, Canadian and U.S. legislation. Other applicable government policies and agreements will also be considered in the integrated study process.. It must be recognized, however, that it may not be possible in all cases, to integrate all requirements of NEPA, for example, into the OEAA and CEAA processes.

3.1. Process for Identifying and Assessing Transportation Planning Alternatives (Alternatives to the Undertaking)

The Ontario Environmental Assessment Act requires that a proponent provide a description of and a statement of rationale for alternatives to the undertaking. Transportation planning alternatives (i.e. alternatives to the undertaking) represent reasonable means of addressing the stated transportation problems and opportunities, as well as meeting the purpose of the undertaking as defined in this document. In addition to 'doing nothing', alternatives to address deficiencies in the transportation network capacity typically include those that increase network capacity, reduce transportation demand or combinations thereof. It is understood that such alternatives can also address the need by reducing dependency on the current crossings by reducing demand or shifting demand to other border crossings, or enhancing the role of other crossings in the network.

A unique feature of the international transportation network to be considered in the assessment of planning alternatives is border processing, which, as discussed in Chapter 2 of this document, can significantly impact the overall capacity of the network, but is not under the direct control of the Partnership. In addition to the planning process identified in this document, the Partnership will continue to work with border processing agencies in an effort to coordinate improvements to facilities, resources and procedures with planned improvements to the transportation network, as appropriate.

The Canada-U.S-Ontario-Michigan P/NF Study identified several transportation planning alternatives, which will be revisited in the EA under the integrated environmental study process. The alternatives to be considered in the OEA/EIS will include, but are not limited to:

- Do nothing;
- Improvements to border processing;
- Transportation demand management;
- New and/or improved rail alternatives with new and/or expanded international rail crossing;
- New and/or improved transit services;
- New and/or improved marine services;
- New and/or improved road alternatives with new or expanded international road crossing; and
- Combinations of the above.

During the Environmental Assessment, MTO will provide opportunity for interested parties, agencies, stakeholders, etc. to review and comment upon the range of planning alternatives to be considered.

The assessment of transportation planning alternatives provides an opportunity to examine fundamentally different ways of addressing transportation problems. In recognition of these fundamental differences among the planning alternatives, it is appropriate to assess the effectiveness of each type of alternative in addressing the problems and taking advantage of opportunities at a functional level.

The assessment of planning alternatives at a functional level will consider broad factors and criteria that reflect the objectives of the Partnership in addressing the stated transportation problems. Table 3.1 identifies a listing of proposed factors and criteria to be considered for evaluating the practicality and feasibility of transportation alternatives.

It should be noted that Table 3.1 represents the minimum considerations concerning the identification and assessment of transportation planning alternatives. This listing is subject to refinement and modifications based on input received and study findings.

During the integrated environmental study process, MTO will provide the opportunity for interested parties, agencies, stakeholders, etc. to review and provide comments on the factors and criteria used to identify a preferred transportation planning alternative. Comments on the factors and criteria will be incorporated in the identification and assessment of planning alternatives, as appropriate.

The assessment of planning alternatives will consider work completed as part of the P/NF study, and will be based primarily on secondary source data and consultation. The basis for the assessment will include:

- Government legislation, policies and guidelines;
- Municipal policy (i.e. Official Plans);

- Public, Agencies, Consultation Groups, and other stakeholder's issues and concerns; and
- Project Team expertise.

TABLE 3.1 – PROPOSED FACTORS AND CRITERIA FOR IDENTIFYING AND ASSESSING TRANSPORTATION PLANNING ALTERNATIVES

FACTORS	CRITERIA
Transportation Network Improvement	Ability to address congestion on the transportation network by improving travel time and reliability for international passenger and freight movement
Transportation Opportunities	Ability to optimize use of existing transportation corridors or planned network improvements
Government, Land Use, Transportation Planning and Tourism Objectives	Consistency with established municipal, provincial and federal objectives and plans
Border Processing	Ability to meet the long-term needs of border processing agencies
Environmental Feasibility (Natural Environment, Socio-Economic Environment and Cultural Environment considerations);	Potential impacts to environmental factor areas (Natural Environment, Socio-Economic Environment and Cultural Environment)
Technical Feasibility	Ability to achieve minimum technical requirements at a reasonable construction/implementation cost.

The assessment will be documented clearly and concisely in a format that can be easily understood by all stakeholders.

The assessment of planning alternatives will identify the recommended planning alternative(s) to be carried forward for further consideration in the integrated environmental study process.

The remainder of this TOR describes the process to be followed for generating a study area and generating, assessing and evaluating alternatives for a linear transportation facility (i.e. alternative methods of carrying out the undertaking). A linear transportation facility is a land based linear transportation solution, which could be accommodated in existing corridors (i.e. rail, road or utility corridors) or within a new corridor. Linear transportation facilities would, for example, include bridge and tunnel options. It is understood that three scenarios can emerge at the end of the assessment of transportation planning alternatives, namely:

1) The Partnership finds that the recommended transportation planning alternative is one or more linear transportation facilities for which MTO would serve as the proponent, whereby the TOR will remain in effect and MTO will continue with the OEA process in accordance therein;
2) The Partnership finds that the recommended transportation planning alternative is not a linear transportation facility, whereby the OEA process prescribed in this TOR may be halted, and other processes may be initiated by MTO and/or other proponents, as appropriate; and,

3) The Partnership finds that the recommended transportation planning alternative is one or more linear transportation facilities in combination with other alternatives. In this case, the TOR will remain in effect and MTO will continue with the OEA process in accordance therein and other processes may be initiated by MTO and/or other proponents, as appropriate.

Subsequent to the assessment of transportation planning alternatives, MTO will meet with MOE to seek guidance on the intended course of action, as appropriate. .

3.2. Process for Generating a Study Area

The process for generating the study area, within which the stated problems and opportunities can be addressed, will reflect the need to provide for a range of feasible alternatives. In generating the Study area, the degree of effectiveness in addressing the stated problems and opportunities must be considered.

For information purposes, a description of the Detroit River area identified in Exhibit 1.2 and a preliminary description of potential effects related to a linear transportation facility are provided in the Supporting Documents.

On the basis of the transportation problems and opportunities, and the purpose of the undertaking as stated in this document, the following process for generating a Study Area is proposed:

- Identify significant physical constraints that may preclude the development of feasible alternatives (e.g. large waterbodies, severe changes in terrain) as well as sensitive land uses (current and future planned land use). For example, the width of the water body between Canada and the U.S. beyond the Detroit River area generally precludes any reasonable fixed link linear facility alternatives.
- Establish study area limits that provide continuous corridors of sufficient area to generate a range of linear transportation facility alternatives.
- Verify that the study area will accommodate the generation of alternatives that can reasonably address the stated problems and take advantage of opportunities. Alternatives generated must be effective in serving the existing and future travel demand on the transportation network and provide sufficient level of traffic service.

Throughout the course of the integrated environmental study, if required, the study area limits can be refined or modified to accommodate any reasonable alternatives that may be developed and for the purpose of assessing impacts. In addition, during the integrated environmental study process, MTO will provide opportunity for interested parties to review and comment on the study area limits.

Upon completion of the assessment of planning alternatives, and the generation of a study area, the NEPA Scoping Document will be prepared. This document will consider the supporting documentation provided with this TOR.

3.3. Process for the Generation and Evaluation of Alternatives (Alternative Methods)

The integrated environmental study process includes a multi-step process for the development of practical alternatives. The process outlined in this section is applicable to linear transportation solutions that fall within the mandates of the proponents of this study. Should the assessment of transportation planning alternatives identify other/additional solutions, an appropriate study process would be pursued by the pertinent agency/proponent(s).

The Ontario Ministry of Transportation and the other transportation partners are committed to planning, designing, implementing and maintaining a transportation solution in an environmentally sensitive manner. As such, an integrated study process has been developed to aid in developing alternatives that minimize adverse environmental impacts, and address the identified transportation problems.

The underlying principle regarding the alternatives generation process is to start with a broad perspective and narrow to the more focused as the project progresses. The starting point will be the Study Area to be developed as described in Section 3.2 and environmental information based largely on secondary source research and consultation.

This principle will be applied to the Detroit River International Crossing project as follows:

- Upon establishing the Study Area, Opportunity Corridors will be generated. These opportunity corridors will be of sufficient width to allow for flexibility in generating alternatives for linear transportation facilities to avoid or otherwise reduce impacts to significant environmental features which may be identified in later planning stages;
- Opportunity Corridors will be assessed to identify the preferred corridors for the generation of illustrative alternatives;
- Illustrative alternatives[3] will be assessed to determine practical alternatives[4];
- Practical alternatives will be assessed to determine the preferred practical alternative; and
- Concept Design for the preferred practical alternative will be developed.

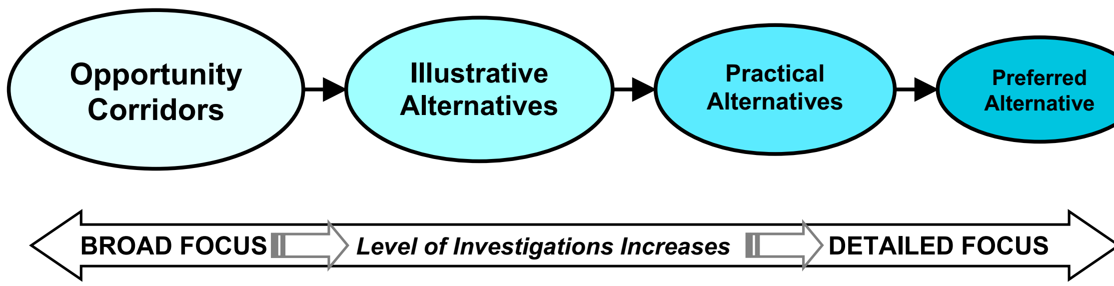
Under this process, as corridor, illustrative and practical alternatives are developed, study area information is supplemented with field data and additional research as required. When a preferred alternative is selected, concept design proceeds with even more focused data that will include detailed field surveys. This process continues on into later design stages and processes. The process of collecting additional environmental data as the project becomes more focused ensures that current information is sought and used throughout planning and design.

[3] Illustrative alternatives represent the full set of alternative alignments/crossing locations to be considered.

[4] Practical alternatives represent the set of illustrative alternatives that, upon an evaluation of impacts and benefits, are carried forward for further consideration.

The concept of focusing the range of alternatives and increasing the level of environmental and technical investigations as the project progresses is schematically illustrated as follows:

EXHIBIT 3.1 – FOCUSING THE RANGE OF ALTERNATIVES GENERATED AS THE PROJECT PROCEEDS



This approach is based on MTO's existing policies and protocols and has been used on many similar EA studies in Ontario, and is also consistent with FHWA and MDOT practices under NEPA. During the OEA, work plans will be developed to outline specific environmental inputs, investigations and methods of data collection and impact assessment at the respective study stages. Details of the process are provided in the following sections.

3.3.1. Illustrative Alternatives (Alternative Methods)

The development of illustrative alternatives will include:

a) Identifying broad areas for generating linear transportation facility alternatives (Opportunity Corridors), and

b) Generating route alternatives within Opportunity Corridors.

a) Opportunity Corridors

The process to develop Opportunity Corridors will consist of the following steps:

Step 1 – Identify design requirements for linear transportation facility alternatives;

Design requirements for the alternatives could include such characteristics as width of the facility, design speed, right-of-way requirements, access controls; navigational clearances, security considerations; and other design requirements that will be determined during the integrated planning process.

Step 2 – Establish constraint areas in the study area;

Constraint areas are those environmental and built features / areas that are to be avoided as much as practical to reduce the overall impacts associated with the project.

Step 3 – Establish guiding principles for the development of opportunity corridors for illustrative alternatives

The guiding principles reflect the objectives of the Partnership to address transportation needs and take advantage of transportation opportunities in the Study Area, and avoid as much as possible, generating unacceptable impacts related to a transportation solution.

The proposed guiding principles for the generation of the opportunity corridors are as follows:

- **Utilize existing infrastructure to the maximum extent** - Taking advantage of existing transportation and other linear corridors (i.e. road, rail, utility corridors) may improve usage of the transportation network and/or reduce impacts to other land uses.
- **Seek areas or land uses that are compatible, or areas in transition to compatible land uses, with transportation corridors -** Compatible areas are those that are less impacted by transportation alternatives than other land uses; areas in transition allow the opportunity to incorporate new transportation facilities in the area planning.
- **Minimize impacts to significant natural features** - Such features are usually regionally unique, protected by legislation/designations and may preclude a transportation facility.
- **Minimize impacts to city centres** - Such areas generally provide a focus for cultural, social and economic activities.

Consultation activities, including Public Information Open Houses, will be arranged to provide an opportunity for interested parties to review and comment upon these guiding principles as well as the proposed opportunity corridors.

Step 4 – Assess the feasibility of the alternative opportunity corridors and identify preferred opportunity corridors for the generation of illustrative alternatives

The assessment of opportunity corridors will be based on factors consistent with the environmental study processes in Canada and the U.S. The factors will reflect the objectives of the Partnership to address transportation and border processing needs and take advantage of transportation opportunities in the Study Area, and avoid as much as possible, generating unacceptable impacts related to a new/improved international transportation corridor.

The P/NF Study identified a set of factors to be used to assess the feasibility of opportunity corridors. These factors are outlined in Table 3.2. The rationale and proposed method of assessment of these criteria are provided in the supporting documentation. It should be noted that Table 3.2 represents the minimum considerations concerning the assessment of opportunity corridors; this listing is subject to refinement and modifications based on input received and study findings. Consultation activities, including Public Information Open Houses, will provide an opportunity for interested parties to review, and provide input regarding these corridor assessment factors.The assessment of corridors will be carried out initially using primarily secondary sources data on Study Area features, consultation with public and private sector stakeholders and travel demand modelling work. Corridor mapping will identify the various types of land uses and features potentially affected. Travel demand modelling work will be used to assess transportation network performance with each of the corridors.

The assessment is intended to confirm the feasibility of the various opportunity corridors and identify, if possible, which corridors are to be carried forward for the generation of illustrative route alternatives.

Consultation activities, including Public Information Open Houses, will provide an opportunity for interested parties to review and comment upon the assessment of opportunity corridors.

TABLE 3.2 – PROPOSED FACTORS AND CRITERIA TO ASSESS FEASIBILITY OF THE OPPORTUNITY CORRIDORS

FACTOR	CRITERIA
Transportation Network Improvement	• Support local international traffic
	• Support long distance freight travel
	• Support long distance passenger travel
	• Limit negative impacts to access and mobility on local road networks (address international truck and/or vehicle congestion)
Transportation Opportunities	• Optimize use of the existing infrastructure
Government, Land Use, Transportation Planning, and Tourism Objectives	• Support existing land use and future plans
	• Support the transportation system
	• Maintain security and protect against system vulnerability
Border Processing	• Meet the long term needs for inspection and processing of commercial and passenger traffic
Environmental Feasibility	• Avoid as much as possible impacts to constraint areas associated with natural, social, cultural and economic features in the study area
Technical Feasibility	• Technical Considerations (i.e. length of corridor, length of river crossing, geotechnical conditions)
	• Constructability and Related Impacts

b) Generation of Illustrative Alternatives

Within the opportunity corridors that are carried forward, alternatives will be generated considering the connections/relationships between the transportation systems in both Michigan and Ontario.

Secondary sources data, such as aerial photography, constraint mapping (e.g. G.I.S. data) compiled during the preparation of the TOR and from external agencies and municipal Official Plans, will serve as a starting point to assist in the generation of

alternatives. More detailed mapping will be prepared and additional secondary source data will be compiled prior to the generation of illustrative alternatives. Detailed data collection, including limited field investigations, air photo interpretation, meetings with interested groups and individuals and discussions with ministries, agencies and the public, will then be conducted to obtain input into the generation of alternatives and to gain an appreciation of potential impacts to environmental features.

Illustrative alternatives will be developed based on technical and environmental objectives to avoid the most significant/sensitive environmental resource areas and study area features to the extent possible.

The objectives for generating alternatives will be to develop alternatives that are efficient/direct, meet objectives and design requirements of Partnership agencies, reflect the needs of border agencies, and minimize/avoid impacts to significant environmental and study area features to the extent possible. Table 3.3 outlines the environmental components that will be considered in addressing the objective to minimize/avoid impacts to the extent possible. It should be noted that these represent the minimum environmental considerations concerning generating alternatives and are subject to refinement and modification during the Integrated Environmental Study Process based on study findings and input received from stakeholders.

TABLE 3.3 – ENVIRONMENTAL COMPONENTS AND FEATURES TO BE CONSIDERED DURING THE GENERATION OF ALTERNATIVES

COMPONENT	FEATURE
Natural Environment	• Groundwater Quality and Quantity • Surface Water Quality and Quantity • Agricultural Lands • Wetlands • Areas of Natural and Scientific Interest (ANSI's) • Environmentally Sensitive Areas (ESA's) • Woodlands • Wildlife Preserves • Species at Risk / Endangered Species
Cultural Environment	• Historical, Archaeological and Cultural Sites • National, State, and Provincial Parks, and Conservation/Recreational Areas
Social Environment	• Landfills and Hazardous Waste Sites • Areas of Residential Development • Areas of Commercial / Institutional Development

Additional details regarding the rationale for using the above noted objectives and data sources are included in the supporting documents.

The alternatives will then be reviewed with agencies and the public through the consultation process and Public Information Open Houses. Consultation activities, such as Public Information Open Houses, will provide an opportunity for interested parties to review and comment upon the objectives used to develop illustrative alternatives as well as the alternatives themselves. This consultation phase is critical to developing a reasonable set of illustrative alternatives. Local residents can add very valuable information to the database gathered by the Project Team.

It is anticipated that during the consultation events, comments and suggestions will be submitted regarding modifying/refining illustrative alternatives. The process for assessing the refinements suggested during these consultation events is based on the factor specific environmental inputs.

The criteria employed for generating alternatives will form the basis for determining whether suggested refinements should be carried forward. Refinements will be examined based on consideration of the natural, socio-economic, cultural environments and technical generation criteria and integrated where warranted.

The preferred illustrative alternatives will be identified through the evaluation process described later in this section and brought forward for further analysis. This set of preferred alternatives are deemed the practical alternatives.

Consultation activities, such as Public Information Open Houses, will provide opportunity for interested parties to review and comment upon the evaluation of illustrative alternatives.

c) Evaluation of Illustrative Alternatives

After the various illustrative alternatives are generated based on the generation criteria and refined based on consultation, the evaluation of the alternatives will commence. The evaluation of illustrative alternatives will identify the practical alternative(s) to be carried forward for further consideration during the integrated environmental study process.

The Partnership recognizes that the evaluation of alternatives for the Detroit River International Crossing Project may be complex due to the diverse nature of the project area and the inherent differences in cultures, values, objectives and priorities of the Canadian and American communities potentially impacted by the project. The evaluation will strive to incorporate the commonalities among the bi-national communities and objectively address their differences.

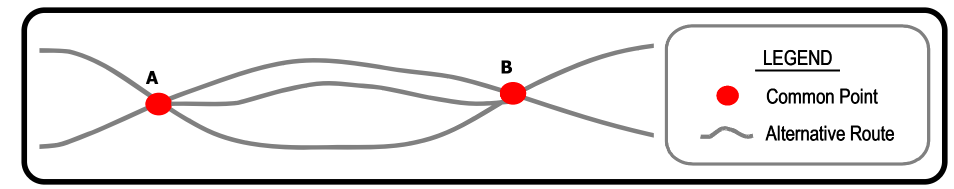
The evaluation of illustrative alternatives is a two-step process. The first step entails an assessment of the impacts of the various alternatives under consideration. At this stage, each environmental feature is examined to determine the extent of impact. Net impacts will be identified; these refer to the effects on the environment that remain after standard mitigation measures have been applied to reduce the extent of the impact. It is recognized that for some factor areas, impacts will occur outside of the Study Area. The assessment of impacts will also include an examination of the significance of effects as required under CEAA.

The second stage is the evaluation itself. This stage builds upon the information obtained from the impact assessment stage and involves a comparative analysis of the advantages and disadvantages of the alternatives considered to select a preferred alternative. At this stage, the relative importance of the environmental features is determined. A "Do Nothing" scenario will be carried forward to represent a

base case for comparison to the preferred alternative.

Throughout the study area, it is expected that during the generation and evaluation of alternatives, various linear alternatives may have common points where they intersect. In such cases, an analysis will be undertaken to determine preferred alternatives for portions of the study area rather than comprehensively examining all combinations of alternatives for the entire corridor. For example, alternatives between common points "A" and "B" would be compared to select a preferred alternative route for that segment of the corridor prior to assessing alternatives beyond common point "B" (refer to Exhibit 3.1).

Exhibit 3.1 – Common Point Analysis



d) Evaluation Methods

The evaluation of alternatives is an integral component of the integrated environmental study. A sound evaluation process is based on five key principles:

1) Comprehensive;
2) Understandable;
3) Replicable;
4) Traceable; and
5) Participatory.

The Ontario Ministry of Environment recommends that the evaluation approach should be clearly described and government ministries, agencies and the public should be asked for their comments early in the study process. The method(s) used to predict net environmental effects and evaluate advantages and disadvantages must, according to the Guidelines, clearly identify the relative differences and key impact trade-offs.

The Partnership is proposing two complementary evaluation approaches to assist in the selection of a recommended alternative for the proposed Detroit River International Crossing. A Reasoned Argument (or Trade-off) method will be the primary tool used to identify a preferred alternative. An Arithmetic (weighting-scoring) method will be the secondary tool and will be used to verify the results of the trade-off method.

The Reasoned Argument (trade-off) evaluation component will provide a clear presentation to stakeholders of the key trade-offs between the various evaluation factors and the reasons why one alternative is preferred over another. The Arithmetic evaluation provides a means to compare the alternatives based on a numerical scaling with weights assigned by the Partnership and other stakeholders as determined through the environmental study consultation. A numerical approach is a good sensitivity analysis tool to determine if the conclusions of the reasoned argument approach are valid and appropriate. During the integrated environmental study, the decision making process will be clearly documented in support of a traceable process and to ensure it is understandable to those who may be affected by the decisions. Details on the Reasoned Argument (trade-off) and Arithmetic evaluation methodologies are outlined as follows:

Reasoned Argument (Trade-off) Method

This method will be the primary evaluation method employed to select a preferred alternative. This method highlights the differences in net impacts associated with the various alternatives. Based on these differences, the advantages and disadvantages of each alternative are identified. The relative significance of the impacts are examined to provide a clear rationale for the selection of a preferred alternative. The rationale that favours the selection of one alternative over all others will be derived from the following sources:

- Government legislation, policies and guidelines;
- Existing Land Use and Municipal policy (i.e., Official Plans);
- Technical Considerations (i.e. degree to which the identified transportation problems are solved);
- Issues and concerns identified during consultation with ministries, departments and agencies, municipalities, ratepayer and interest groups and the general public (including input obtained through the weighting of the relative level of importance of evaluation criteria); and
- Project Team expertise.

Arithmetic Evaluation Component

The Arithmetic Evaluation component will be the secondary method of evaluation and will incorporate both the level of importance of each environmental attribute (referred to as the weight) and the magnitude of the impact (or benefit) associated with an alternative (referred to as the score). Numerical values are derived for both the level of importance (weight), and the magnitude of the impact (score) associated with each alternative.

The weight is multiplied by the score to obtain a total. The totals for each alternative are compared to determine the preferred alternative. The Arithmetic Evaluation Method also allows for sensitivity testing as numerous weighting scenarios can be developed.

Weighting (level of importance)

Generally, more weight is assigned to those features, which are felt to be more important in assessing impacts generated by alternatives, and less weight is given to those features, which are considered to be less important.

Weighting scenarios will be used for this evaluation component. One weighting scenario will be developed by the Partnership Project Team, other weighting scenarios will be developed by the general public. Additional weighting scenarios can be developed in consultation with regulatory agencies and municipalities. Weighting

scenarios reflect the diverse range of views as to what features are held to be more important. As such, it is possible that weighting scenarios may vary by stakeholder group as well as by region. The Partnership will consider all weighting scenarios in selecting a preferred alternative. In addition, numerous sensitivity tests can be run to reflect input from other stakeholders. Questionnaires focused on establishing the relative weights that participants feel should be given to each environmental attribute will be distributed at the appropriate round of consultation activities. This range of views represented in the weighting scenarios and questionnaires will provide the Project Team with an understanding of community values with respect to the relative importance of each environmental feature which will be considered in coming to any recommendation.

The results of the weighting scenarios will be reviewed and compared to the results of the Reasoned Argument component.

Scoring (degree of impact)

Qualified Project Team specialists with expertise in impact assessment will assess the degree of impact and assign a score. The score assigned to each environmental attribute by the qualified specialist is relative to the impact generated. Relative impacts can range from those that are positive (benefit the environment) to negative (detrimental to the environment).

The assessment of impacts will be derived from field measurements, results of prediction models, secondary data sources (as appropriate) and other means as described in the supporting documentation.

Implementation of Evaluation Approaches

As previously noted, the Reasoned Argument (trade-off) method is the primary evaluation tool to select a preferred alternative with the Arithmetic approach used to substantiate the findings of the Reasoned Argument (trade-off) evaluation. The two evaluation approaches will be implemented concurrently. For example, the Project Team's assumptions and rationale behind its assessment of the level of importance of environmental attributes will be documented along with the corresponding arithmetic value assigned to the impact. In addition, input from stakeholders and the public will be coordinated through public information centres and other public consultation activities (e.g. meetings, workshops) to ensure issues, concerns and the magnitude of potential impacts are properly identified and understood by the Project Team.

The results of the Reasoned Argument (trade-off) evaluation component will be compared to the results from the Arithmetic Evaluation component. If the two components result in the identification of different preferred alternatives, the differences between the two alternatives will be identified. The results of the Arithmetic Method will be analyzed to determine the key weight-score combinations in the Arithmetic Evaluation. Similarly, the rationale for each trade-off decision will be revisited, to determine if the Project Team decision was appropriate. If the rationale supporting the trade-off decisions is valid and appropriate, the preferred alternative identified by the Reasoned Argument (trade-off) method will stand. However, if the results of the Arithmetic Evaluation lead to modifications to the trade-off decision rationale, the Reasoned Argument (trade-off) method preferred alternative may be revised. The decision making process will be clearly documented and presented for stakeholder comment.

e) Factor Specific Environmental Inputs to the Evaluation of Illustrative Alternatives

The data collected on the study area (once established) will assist in identifying the types of impacts each alternative will result in, on each component of the environment. Environmental components include:

- Natural Environment
- Socio-economic Environment
- Cultural Environment

In addition to the above noted environmental considerations, technical requirements / considerations (i.e. effective transportation solutions, constructability, cost) will also be examined in the evaluation of illustrative alternatives.

Each of these components will be defined by a set of evaluation criteria, which group the environmental aspects considered in the analysis of impacts for this project. Impacts will be quantified according to the list of indicators shown in Table 3.4. It is recognized that for some factor areas, impacts will occur outside of the Study Area. The rationale for proposing these evaluation criteria, as well as proposed data sources, are outlined in the supporting documentation. The evaluation criteria listed represent the minimum requirements in the process of evaluating alternatives and are subject to refinement and modification during the integrated environmental study process based on study findings, government policy and input received from the various stakeholder groups, including the public.

TABLE 3.4 – CRITERIA FOR EVALUATING ILLUSTRATIVE AND PRACTICAL ALTERNATIVES

FACTOR	CRITERIA
Socio-Economic Environment	
Property and Access	1) Impacts to residential areas (i.e. property, access impacts) 2) Impacts to commercial/industrial areas (i.e. property, access impacts) 3) Impacts to agricultural operations
Community Effects	4) Nuisance impacts (e.g.. noise, lighting) 5) Impacts to cemeteries, schools, places of worship, unique community features 6) Effects on community activity / mobility 7) Effects on aesthetics / community character
Governmental Land Use Strategies	8) Compatibility with government goals / objectives / policies 9) Effects on approved private development proposals
Cultural Environment	
Archaeology	10) Impacts to historic/archaeological sites
Heritage and Recreation	11) Impacts to built heritage features and cultural landscape units 12) Impacts to National, State/Provincial and local parks/recreation sites

TABLE 3.4 - CRITERIA FOR EVALUATING ILLUSTRATIVE AND PRACTICAL ALTERNATIVES CON'T

FACTOR	CRITERIA
Natural Environment	
Groundwater	13) Impacts to groundwater recharge and discharge areas, as well as identified wellhead and source protection areas and areas susceptible to groundwater contamination
Aquatic Habitat, Fisheries, and Surface Water	14) Impacts to critical fish habitat features (spawning, rearing, nursery, important feeding areas) 15) Number of watercourse crossings required 16) Impacts to water bodies, including channel realignments and fill
Agricultural	17) Impacts to prime agricultural areas
Wetlands	18) Impacts to Provincially Significant Wetlands and wetland function 19) Impacts to evaluated and unevaluated wetlands
Wildlife	20) Effects on species at risk / endangered species (vegetation, fish and wildlife) 21) Effects on ecologically functional areas such as connective corridors or travel ways
Special Areas	22) Impacts to important wildlife areas such as deeryards, heronries, waterfowl areas, important bird areas (IBA). Other areas to be considered are any identified wildlife management, rehabilitation and research program sites. 23) Impacts to environmentally significant features such as Environmentally Sensitive Areas (ESAs), Areas of Natural and Scientific Interest (ANSIs) or other areas of provincial, regional or local significance and the functions of these features 24) Impacts to special spaces including the Detroit River, Conservation Authority Lands and NEPA 4(f) lands including the function of these features
Air Quality	25) Effects on sensitive receptors to air quality 26) Air pollutants and GHG emissions
Woodlands	27) Impacts to significant forest stands and woodlots (including interior forest habitat)
Resources	28) Impacts to mineral, petroleum and mineral aggregate resources
Property Waste & Contamination	29) Effect on operating and closed waste disposal sites 30) Impacts to other known contaminated sites
Technical Considerations	
Transportation	31) Transportation Operations 32) Network Compatibility 33) Border Processing
Engineering	34) Constructability Issues
Cost	35) Cost

Note: Table 3.4 represents the minimum criteria to be considered during the evaluation of alternatives (practical and illustrative alternatives) and are subject to refinement and modification during the Integrated Environmental Study Process based on study findings and input received from stakeholders.

3.3.2. Practical Alternatives

a) Development of Practical Alternatives

As noted in Section 3.3.1 b), the evaluation of illustrative alternatives will identify the practical alternative(s) to be carried forward for further consideration. It is anticipated that, due to the nature of this project, more than one practical alternative will be brought forward for further study. During the consultation events, comments and suggestions will be submitted regarding modifying/refining the illustrative alternatives being carried forward (i.e. practical alternatives). The process for assessing the refinements suggested during these consultation events is based on the factor specific environmental inputs, as discussed previously in Section 3.3.1 b).

The criteria employed for generating illustrative alternatives will form the basis for determining whether suggested refinements should be carried forward. Refinements will be examined based on consideration of the natural, socio-economic, cultural environments and technical generation criteria.

After the selected illustrative alternatives are refined based on consultation and the generation criteria, the practical alternatives will be developed. Practical alternatives are developed through more detailed design (although still at a preliminary level) to better identify property requirements, infrastructural implications, construction staging impacts and mitigation measures. More detailed mapping of the practical alternatives will be prepared based on additional secondary sources data, field surveys and investigations and additional consultation. This data is used to increase and enhance the level of information used in the evaluation to select the technically preferred alternative.

b) Evaluation of Practical Alternatives

Depending on the nature of the practical alternatives, the evaluation will implement the same two-step process used to evaluate illustrative alternatives.

Net impacts will be identified based on the additional information provided about the practical alternative. As with illustrative alternatives, it is recognized that for some factor areas, impacts may occur outside of the defined Study Area.

As with the evaluation of illustrative alternatives, the evaluation will build upon the information obtained from the impacts assessment stage and will involve a comparative analysis of the advantages and disadvantages of the alternatives considered. The relative importance of the factors, as identified during the evaluation of illustrative alternatives, will be used in the evaluation of practical alternatives. A "Do Nothing" scenario will be carried forward to represent a base case for comparison to the practical alternative.

Prior to selecting a preferred practical alternative(s), in accordance with NEPA requirements, a draft EIS will be prepared and circulated to U.S. government agencies and other stakeholders. The draft EIS will provide the information used to generate the study area, the evaluation of illustrative alternatives, as well as the analysis of practical alternatives. A formal Public Hearing will be arranged in the U.S. to provide interested parties the opportunity to comment upon the work documented

in the draft EIS.

The third round of Public Information Open Houses (PIOH) will be arranged in conjunction with the U.S. Public Hearing to provide stakeholders a similar opportunity to comment on the analysis of practical alternatives. The consultation activities associated with the third round of PIOH will include meetings with Canadian ministries/agencies (both federal and provincial) to provide an opportunity to input to the generation and analysis of practical alternatives.

Upon completion of the formal Public Hearing and third round of Public Information Open Houses, the Partnership will consider the comments received, refine the alternatives and analysis as required, and undertake the evaluation of the practical alternatives.

As with the illustrative alternatives, two evaluation methods will be used. The decision making and rationalizing of the results of the two methods will be conducted as identified in Section 3.3.1 d).

The fourth round of Public Information Open Houses will provide interested parties the opportunity to comment on the selected preferred practical alternative(s).

3.4. Process for Assessing and Evaluating Concept Design Alternative(s)

3.4.1. Development of the Concept Design

Concept Design will be prepared for only those alternatives that are recommended subsequent to the generation and evaluation of practical alternatives (described in Section 3.3.2). Concept Design includes the consideration and development of specific engineering and environmental issues to further understand very particular implications of the recommended alternative. The Concept Design plan will be undertaken to a level of engineering detail necessary to support:

- The development of mitigation measures in consultation with the appropriate agencies;
- A decision under CEAA by each Federal Regulatory Authority (RA) on whether adverse environmental effects (after mitigation) are significant or not;
- OEA approval under OEAA; and
- FHWA approval under NEPA.

This Concept Design process includes the consideration of concept design alternatives, assessment of the concept design alternatives and selection of the preferred concept design alternative. In addition to the continuing public and private sector consultation, a fifth round of Public Information Open Houses will be held to seek stakeholder input to the concept Design alternatives.

Concept Design alternatives are assessed based on consideration of natural, socio-economic and cultural impacts as well as technical considerations. Mitigating measures will be developed during the concept design phase and, upon selection of the preferred Concept Design, these measures will be incorporated to alleviate the anticipated environmental effects.

3.4.2. Factor Specific Environmental Inputs to the Generation and Assessment of Concept Design Alternatives

There are three underlying principles for generating concept design alternatives:

- Take advantage of engineering opportunities and avoid environmental impacts, where possible;
- Minimize design-related impacts caused where environmental features cannot be avoided; and
- Provide sufficient design details to reach agreements with federal and provincial regulatory agencies and permit a CEA screening if necessary during the planning and concept design stage of the project.

3.4.3. Selection of the Preferred Concept Design Alternative(s)

The selection process shall include but not be limited to:

- Concept design alternatives that have significant environmental impacts (natural environment, socio-economic environment and cultural environment) but offer no significant transportation engineering advantages will be screened out first;
- Remaining alternatives will be assessed to determine their ability to address the study transportation objectives and to identify their environmental impacts after application of reasonable mitigating measures; and
- The net environmental effects (i.e. after applying conceptual mitigation measures for significant effects) will be used as a basis to compare alternatives.

The Concept Design stage concludes with the selection of the technically preferred concept design alternative(s). The selected alternative(s) represents an aggregate of all design alternatives that achieve the best overall balance of transportation engineering, individual factor area impacts and overall environmental impacts, including input that has been received through consultation on those issues.

Concept Design plans will be prepared for the preferred concept alternative(s) at an appropriate level of detail. Typical elements of Concept Design can be viewed in supporting documentation.

4. Monitoring Strategy

During the integrated environmental study process, MTO will commit to developing a monitoring program for the implementation (construction) of the proposed design for the Detroit River International Crossing in cooperation with MDOT, FHWA and TC. The OEA Report will include a comprehensive list of all commitments made during the study to guide future environmental work and consultation as well as effects and compliance monitoring.

4.1. Project Technical Monitoring

During the study, a monitoring strategy will be developed to reflect how the Partnership proposes to ensure that the implementation of proposed mitigating measures and key design features are consistent with project commitments outlined in the OEA Report and any subsequent environmental study documentation (prepared as part of the detail design process).

An environmental effects and compliance monitoring program is necessary to identify potential non-conformance with environmental design, and environmental protection requirements (as identified during the OEA) and to initiate corrective action to bring the work into compliance with environmental requirements committed to in the OEA Report and any subsequent environmental documentation for this undertaking.

Monitoring and any necessary follow-up programs may continue beyond the end of the construction phase. The duration of the monitoring and follow-up programs will vary and will depend on the conditions of permits and approvals granted by regulatory agencies.

4.2. OEA Process Monitoring

During the planning and design processes, the proponent will ensure compliance with OEA process commitments prior to project implementation. During construction, the proponent ensures that external notification and consultations are consistent with any commitments that may have been made earlier in the OEA Report, TESRs and Design and Construction Reports. For some sections of the corridor, the content of the TESR and the Design and Construction Report may be combined in a Transportation Environmental Study Report prepared during Detail Design. Following construction, monitoring will ensure that any follow-up information is provided to external agencies as per any outstanding environmental commitments.

5. Consultation for the Integrated Environmental Study Process

Consultation with affected parties is an essential part of the planning process and provides a mechanism for the proponent to define and respond to issues.

The following outlines a proposed plan for consulting with agencies, departments, ministries, First Nations, Public and Private Sector Consultation Groups, Municipalities and the public during the integrated environmental planning process.

Consultation activities undertaken during the study will focus on the following seven stages of the planning process:

1. **Purpose and Need / Assessment of Planning Alternatives**

   External agencies and ministries, municipalities and the public will have the opportunity to review and comment on the defined purpose and need as well as the development and assessment of the planning alternatives.

2. **Development of Illustrative Alternatives**

   External agencies and ministries, municipalities and the public will be asked to comment on the development of the illustrative alternatives and the criteria to evaluate the illustrative alternatives and select practical alternatives

3. **Refinement and Evaluation of Illustrative Alternatives**

   External agencies and ministries, municipalities and the public will have the opportunity to provide input on refining illustrative alternatives to minimize environmental impacts. The evaluation criteria will be applied to allow the selection of alternatives. External agencies and ministries, municipalities and the public will be asked to comment on the evaluation and the rationale for the selection of the practical alternatives.

4. **Analysis of Practical Alternatives**

   External agencies and ministries, municipalities and the public will have the opportunity to provide input on the analysis of practical alternatives.

5. **Evaluation and Selection of a Preferred Practical Alternative**

   The evaluation criteria will be applied to allow the selection of preferred alternative. External agencies and ministries, municipalities and the public will be asked to comment on the evaluation and the rationale for the selection of the preferred alternative.

6. **Concept Design and Mitigation of the Preferred Alternative**

   This step will be to consider Concept Design details and refinements and address specific impacts of the preferred alternative that will require mitigation during design, construction and post construction. External agencies and ministries, municipalities and the public will be asked to comment on the evaluation and the rationale for the selection of the preferred Concept Design alternative.

7. **Environmental Assessment Documentation Submission**

   The Partnership will prepare the environmental study reports under NEPA, OEAA and the Screening Report under CEAA for submission to their respective approval authorities. External agencies, ministries and municipalities will be asked to comment on the reports prior to their submission, as appropriate.

A consultation record will be maintained throughout the integrated environmental study process to document project issues raised and Project Team responses to those issues.

5.1. Public Consultation During the Integrated Environmental Study Process

The public has a major role and responsibility in determining the success of a public consultation program. The extent to which the public participates, the issues they raise and how such issues are resolved all influence the effectiveness of the consultation process.

Within the integrated environmental study process, public consultation will involve reviewing, commenting and providing input to the technical and environmental work undertaken and to provide input to the public consultation process. The proposed consultation plan encourages proactive consultation, which will allow comments and views of the public to assist in influencing the study and recommendations thereof.

5.1.1. Public Information Open Houses and Follow-up Activities

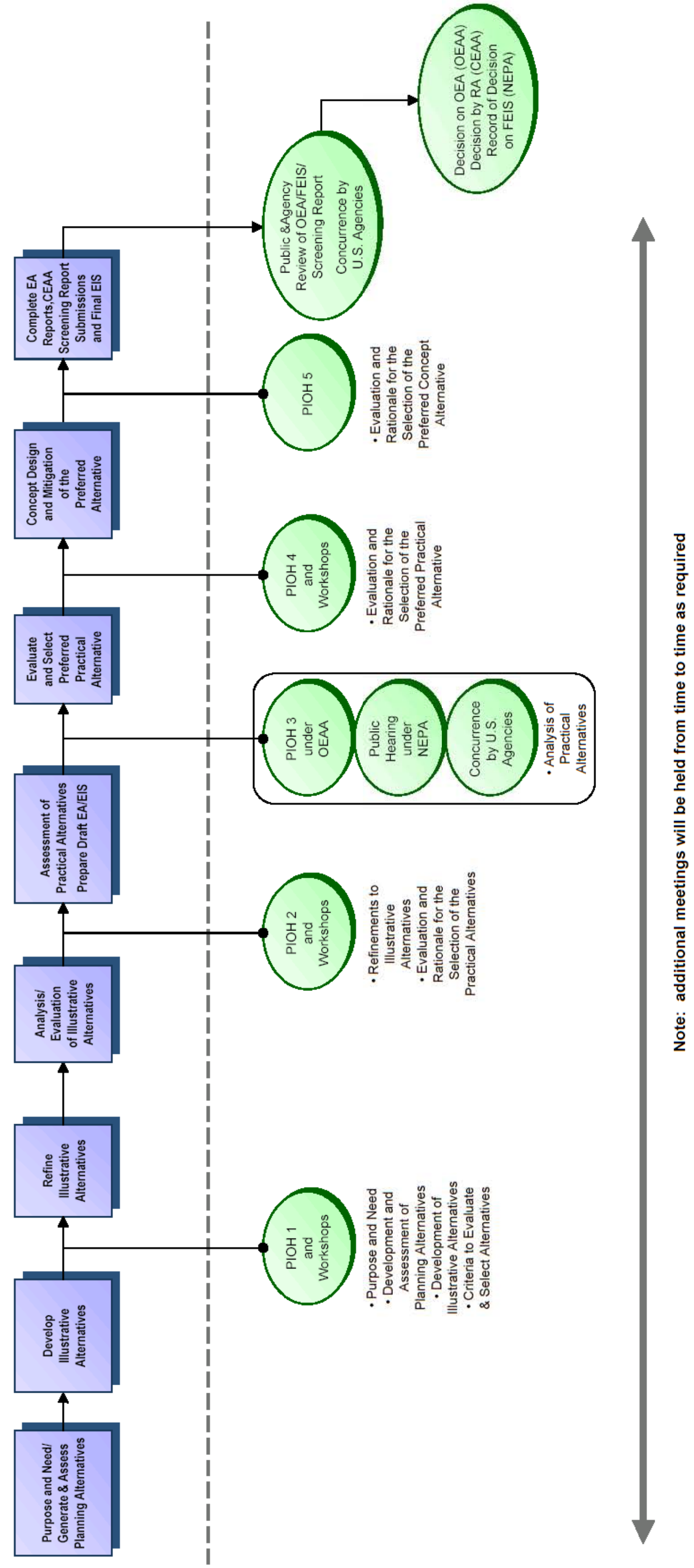
It is proposed that five rounds of Public Information Open Houses (PIOHs) and follow-up activities will be held during the environmental study process to generally coincide with the above noted planning stages (refer to Exhibit 5.1). It is intended that Stages 1 and 2 will be addressed at the first PIOH.

Each round of PIOHs will include as a minimum four individual meetings held throughout the Windsor/Essex County-Detroit/Wayne County areas. The precise locations/venues of each PIOH will be determined during the study based on project needs/issues, input from municipalities and the availability of venues; however, it is expected that meetings will be held as follows: Windsor, LaSalle, southwest Detroit/ east Dearborn, and Wyandotte. The PIOHs will be arranged as drop-in centres (open house format) to allow the public to see results, exchange information, and ask one-on-one questions of the Project Team. The PIOHs also serve an important function in providing an opportunity for members of the Project Team to ask questions of the public to gain further understanding of specific conditions, issues and concerns regarding the study. The public will also have an opportunity to have questions answered.

The third PIOH on the Canadian side will coincide with a formal Public Hearing in the U.S. The Public Hearing is required to be held under NEPA, and provides an opportunity for the public to submit their comments on the draft EIS, including the analysis of practical alternatives.

Follow-up activities will be held as necessary throughout the project; however, it is expected these activities will be required as follows:

EXHIBIT 5.1 - PROPOSED PUBLIC CONSULTATION DURING INTEGRATED ENVIRONMENTAL STUDY PROCESS



- Following PIOH 1 to address any outstanding concerns and issues regarding purpose and need, and the generation of illustrative alternatives;
- Following PIOH 2 to identify issues regarding the selection of the practical alternatives and possible refinements; and
- Following PIOH 4 to identify issues regarding the selection of the preferred practical alternative and possible refinements.

The first two rounds of PIOHs, as well as the first two rounds of follow-up activities will focus on the development, refinement and evaluation of illustrative alternatives. The third and fourth round of PIOHs as well as the third round of follow-up activities are intended to allow the public to comment on the evaluation and selection of the preferred practical alternative, refinements, environmental impacts and proposed mitigation measures.

The focus of the follow-up activities held following PIOH 1 and PIOH 2 are to provide the opportunity to bring stakeholders together to develop an understanding of the potential impacts of the illustrative alternatives to be considered. The focus of follow-up activities held following PIOH 4 is to provide the opportunity to bring stakeholders together to develop an understanding of the potential impacts of the selected practical alternative. Follow-up activities will be arranged to address specific project issues and concerns as they arise. The format of these activities will be flexible to reflect the type of Project Team - stakeholder interaction required to address a particular issue(s) but could include workshops, kitchen table meetings, etc.

5.1.2. Public Notification

The first component of the Public Consultation Plan will be to develop contact lists which will include ratepayer and community groups, recreational groups, agricultural groups, etc. located on both sides of the border in the study area. The mailing list developed during the OEA TOR will be the starting point for this stakeholder list. These groups will be notified of project activities including study start-up, PIOHs, and follow-up activities (as appropriate). Notification methods include newspaper advertisements (for study commencement, each round of PIOHs and Environmental Assessment report submission), press releases, brochure distribution and mailing letters to those groups/ individuals on the Project Team's mailing list(s). In addition, a website will be maintained for this project. The website will host pertinent information regarding the project including notices of study commencement and project activities.

Once a preferred practical alternative has been identified, letters will be sent directly to all potentially affected landowners.

The OEA Report and NEPA EIS will be made available for public review prior to finalizing and submission (see Section 5.3).

5.1.3. Private Sector Advisory Group

A Private Sector Advisory Group was established during the P/NF Study. The group was comprised of selected private sector businesses on both sides of the border (e.g. border crossing owner/operators, proponents, automotive industry representatives) with an interest in the functioning of the border crossings. These participants can offer valuable input and professional expertise with regard to the operations and issues associated with border crossings, and are often knowledgeable regarding local issues, border issues and can assist in the identification of other private sector groups that should be consulted. As a minimum, meetings with the Private Sector Advisory Group will be held at key points in the study.

5.2. Approach for Consulting External Agencies, Ministries and First Nations during the Integrated Environmental Study Process

External agencies provide valuable support by identifying compliance issues (laws, regulations, policies and programs) and other areas of concern within their jurisdiction. These groups can offer valuable input and professional expertise and are often knowledgeable regarding local issues and can assist in the identification of local interest groups that should be consulted. The following section discusses consultation with Provincial Ministries/Agencies, State Departments/Agencies, U.S. and Canadian Federal Agencies, Municipalities and First Nation Groups.

5.2.1. Ministries/Departments/Agencies

A Regulatory Agency Advisory Group will be assembled which includes potentially affected provincial and state departments, ministries, agencies and federal departments. Notification letters distributed early on the study process will canvass participation in the advisory group. Ministries, departments and agencies will be kept apprised of project activities and be sent notices regarding principal consultation activities.

Consultation with ministries, department and agencies will involve reviewing, commenting and providing input to the environmental assessment studies, the technical analysis and the ongoing comment/input to the consultation process. Liaison with representatives of ministries, departments and agencies will be arranged to:

- obtain information on study area features;
- exchange pertinent study information; and
- obtain input on project issues pertaining to each agency's mandate.

In developing a bi-national approach to identify and address project issues, the Partnership will coordinate meetings with Canada, U.S., Ontario and Michigan ministries, departments and agencies which share common interests.

A minimum of six rounds of Regulatory Agency Advisory Group Meetings will be held. These meetings will be held to coincide with the following study phases:

1) Assessment of planning alternatives/generation of illustrative alternatives
2) Refinement and evaluation of illustrative alternatives
3) Refinement and assessment of practical alternatives
4) Selection of the preferred practical alternatives

5) Concept design and mitigation of the preferred alternative
6) OEA/EIS Report Submission

The proposed meetings will provide the opportunity for two-way communication between the Project Team and government agencies to identify issues and gain a better understanding of environmental conditions that should be factored into the alternative generation process, gain input on the process and criteria (including their relative level of significance) to be used in the evaluation of alternatives, gain input on potential impacts associated with the preferred alternative and potential design refinements to minimize adverse environmental impacts, and receive direction on proposed mitigation measures. The purpose of the final agency advisory group meeting will be to present a draft OEA/EIS Report for review prior to submission for formal review and approval. The purpose of the pre-submission review is to ensure accuracy of the report and to gain support for recommendations, mitigation and commitments.

It is recognized that certain agencies will have more interest in this project than others. In Ontario, these agencies primarily include Ministry of the Environment, Ontario Ministry of Natural Resources and Conservation Authorities, while in Michigan, these agencies include Department of Environmental Quality, Department of Natural Resources, and the State Historic Preservation Office. Additional meetings will be held with these agencies as required to ensure the latest data is available and that the Project Team has a good understanding of potentially significant and sensitive issues early in the study process to resolve concerns and to develop appropriate mitigation measures. In addition, a meeting likely will be required prior to the OEA/EIS Report submission to finalize conceptual fisheries compensation plans.

5.2.2. Federal Agencies

The participation of federal agencies will be sought in the same manner as provincial ministries and agencies. These agencies will be included in the Regulatory Agency Advisory Group.

Involvement with federal agencies in this project is expected to occur early in the study process to coordinate Canadian Environmental Assessment Act (CEAA) requirements (Scope of Project and Scope of Assessment) and address the requirements for approval/permits from Regulatory Agencies (such as the Canadian Coast Guard for Navigable Waters Protection Act approval and the Federal Department of Fisheries and Oceans for Fisheries Act approval). Other federal agencies to be engaged during the study include, but are not limited to the Canadian Transportation Agency (CTA), Windsor Port Authority, Foreign Affairs Canada and Environment Canada. Similarly, consultation with key U.S. federal review agencies such as Army Corps of Engineers, Environmental Protection Agency and Coast Guard will be initiated early on in the study process. Federal agencies will also be consulted to determine potential implications to federally owned lands.

The Canadian Environmental Assessment Agency, Ontario Region will be contacted early in the study to assist in the coordination of federal and provincial EA approvals. The agency will be involved in consultation activities involving federal agencies, as appropriate.

The International Joint Commission will be contacted early in the study process to determine their role in the environmental study process and identify any issues and concerns, as well as requirements for approval of the project.

Border processing agencies, including Canada Customs and Revenue, Canadian Immigration Office, Ministry of Agriculture, Department of Homeland Security and U.S. Food and Drug Administration will be consulted throughout the project to obtain input on alternatives generation and analysis, as well as to obtain comments on the evaluation of alternatives.

5.2.3. Municipalities

A Municipal Advisory Group will be assembled which will include representatives from potentially affected municipalities within Windsor/Essex County-Detroit/Wayne County, including SEMCOG. It is assumed that the representatives on the Public Sector Consultation Group established for the preparation of this OEA TOR will continue their role during the environmental study.

During the environmental study process, consultation with municipalities will involve reviewing, commenting and providing input to the environmental studies, the technical analysis and the ongoing comment/input to the consultation process. Generally, consultation with municipal representatives will be sought throughout the study process. Liaison with municipal representatives will be arranged to obtain information on study area features, exchange pertinent study information and obtain input on project issues pertaining to each municipality. In addition, input from municipal representatives will be sought as to the appropriate methods for consultation with their respective councils.

Bi-national Municipal Advisory Group meetings will be required at key stages of the study process and to address broader study area co-ordination issues. However, it is also proposed that separate meetings with regional and local municipal representatives be undertaken during the study process to effectively and specifically address municipal issues. Additional individual meetings with municipal representatives will be held as required.

Municipalities will be kept apprised of project activities and be sent notices regarding all publicly advertised consultation activities. A minimum of six rounds of Municipal Advisory Group Meetings will be held. These meetings will be held to coincide with the following study phases:

1. Assessment of planning alternatives/generation of illustrative alternatives
2. Refinement and evaluation of illustrative alternatives
3. Refinement and assessment of practical alternatives
4. Selection of the preferred practical alternatives
5. Concept design and mitigation of the preferred alternative
6. OEA/EIS/CEA Screening Report Submission

The composition of the Municipal Advisory Group (i.e. local, regional or bi-national based) for each round of meetings will be determined during the study process;

however, it is expected that bi-national based meetings will be required for the generation and refinement of illustrative alternatives, evaluation of illustrative alternatives, assessment of practical alternatives, selection of the preferred practical alternatives and the development of concept design alternatives.

The proposed meetings will provide the opportunity for effective two-way communication between the Project Team and local/regional municipalities to identify issues and gain a better understanding of environmental conditions to factor into the alternative generation process, gain input on the process and criteria (including their relative level of significance) to be used in the evaluation of alternatives, gain input on potential impacts associated with the preferred alternative and potential design refinements to minimize adverse environmental impacts, and receive direction on proposed mitigation measures. The purpose of the final Municipal Advisory Group meeting will be to present a OEA/EIS Report for review prior to submission for formal review and approval. The purpose of the pre-submission review is to ensure accuracy of the report and to gain support for recommendations, mitigation and commitments.

5.2.4. Municipal Councils

Municipal councils are key stakeholders within the integrated environmental study process and municipal representatives from the Municipal Advisory Group (identified in Section 5.2.3) will be considered the main link between the Project Team to their respective councils. Council presentations to SEMCOG, Windsor, Detroit, LaSalle, Tecumseh, Wyandotte, Essex County (and others upon request) are proposed prior to each round of Public Information Open Houses. Council support will be sought for the preferred alternative prior to the fifth round of Public Information Open Houses. At the request of any Council, the Partnership will attend additional Council meetings to discuss project related issues.

5.2.5. First Nations

It is recognized that there may be a range of First Nation issues associated with this project. As such, establishing and maintaining affective communications with First Nation groups will enable the identification and resolution of key issues. First Nations will be consulted throughout the integrated environmental study as necessary.

Potential issues for First Nations include:

- Effects on land used for traditional hunting or fishing
- Impacts to areas used for the harvesting of country foods
- Impacts to locations of medicinal plants
- Impacts to sacred grounds
- Impacts to known burial sites
- Implications to Land Claim areas

It is recognized that the above noted issues are more suitably addressed at different stages of the environmental study process. As such, proactive communication with

First Nations early in the study process will be required to augment existing conditions information and to identify First Nation interests. Meetings with First Nations will be held early in the study process to collect data. The input received regarding conditions within the study will assist in the process of generating alternatives. Based on dialogue with First Nations, specific issues will be identified and appropriate factors / criteria will be developed to ensure that the issues raised are given appropriate consideration in the generation and evaluation of alternatives.

Effective two-way communication with First Nations will continue as the study proceeds into the Assessment and Evaluation stages to determine the relative significance of identified features and into the Concept Design process to ensure that appropriate mitigation measures (as necessary) are developed to appropriately address the environmental effects of the preferred alternative. Meetings will be held, if required, with Elected and Confederacy Councils prior to each round of Public Information Open Houses. First Nations will be provided the opportunity to review an OEA/EIS Report prior to submission for formal review and approval. The purpose of the pre-submission review is to ensure accuracy of the report and to gain support for recommendations, mitigation and commitments.

5.3. Pre-Submission Review of the Environmental Assessment Report/Environmental Impact Statement

The OEA/EIS Report will be available for a municipal/agency/public/First Nations review prior to finalizing for formal submission. The final Municipal Advisory Group, Private Sector Advisory Group and Regulatory Agency Advisory Group meetings will be used to present an OEA/EIS Report for review prior to submission for formal review and approval. The purpose of the pre-submission review is to ensure accuracy of the report and to explain the rationale and gain support for recommendations, mitigation and commitments. The documentation will be available at government offices, public libraries and on the project web site.

5.4. Submission of the EA/EIS/CEA Screening Report

Once finalized, the OEA Report will be submitted to MOE. The submission will be in accordance with Reg. 334, including:

- The OEA Report will include an Executive Summary and a list of studies and reports done in connection with the undertaking or matters related to the undertaking.
- Unbound maps showing the location of the undertaking and the area affected by it will be included in the submission.

The OEA Report will document all pertinent aspects of the study concerning both sides of the border (i.e. existing conditions, consultation activities, environmental effects, mitigation and commitments. This Terms of Reference (TOR) document and the Minister's "Notice of Approval" of the TOR will also be included in the appendices of the OEA Report. As part of the MOE review process, the Report will be circulated

to all pertinent government agencies for review, and will also be made available for public review. Upon consideration of all comments received, the Minister will make a decision on the OEA.

Under CEAA, a Screening Report(s) is prepared and circulated to the Screening Committee (federal government review team). The Screening Report(s) is then circulated to all pertinent federal regulatory authorities (RAs) for review. The OEA Report will be appended to the Screening Report(s) as part of this circulation. The RA responsible for the preparation of the respective Screening Report(s) will determine if further agency or stakeholder review is required/appropriate. The RAs will decide whether to exercise any power or perform any duty or function that would permit the project to proceed. As delegated by the RAs, Screening Reports may be carried out by the Partnership (or their consultants) with direction from the RAs in consultation with expert federal authorities (FAs).

In the U.S., the Final EIS (FEIS) will be submitted to FHWA. FHWA will circulate the FEIS to government agencies and members of the public that have made substantive comments. Upon consideration of all comments received, FHWA will issue a Record of Decision.

5.5. Consultation in Preparation of the OEA Terms of Reference

A consultation record has been prepared to outline the consultation activities undertaken in preparation of this Terms of reference and how stakeholder comments have been considered. The Consultation Record is provided in the supporting documents (available under separate cover).

6. Other Approvals Required

It is recognized that a number of approvals may be required for this project. Consultation with approval agencies will continue during the EA to coordinate timing of approvals, approval requirements and to ensure that approvals are ultimately obtainable. Potential permits/approvals/authorizations and agreements required from Canadian Ministries/Agencies/Authorities include but are not limited to the following:

- Navigable Waters Protection Act Approval (Federal Government)
- Fisheries Act Approval (Federal Government)
- International Boundary Waters Treaty Act Authorization (Federal Government)
- Determination of Significance of Adverse Environmental Effects under Section 20 of the Canadian Environmental Assessment Act (if not determined during the provincial EA approval stage)
- Agreements with local utilities
- Railway Crossing Agreement
- Hydro Construction Agreements (Hydro One Networks)
- TransCanada Pipeline Crossing Permit
- International Joint Commission Permit
- Other agency approvals as required.

Potential permits/approvals/authorizations and agreements required from U.S. Departments/Agencies/ Authorities include but are not limited to the following:

- State Department Presidential Permit
- U.S. Coast Guard Bridge Permit
- U.S. Army Corps of Engineers Section 404 Permit
- U.S. Fisheries and Wildlife Service Threatened and Endangered Species Act
- Michigan Natural Resources and Environmental Protection Act (all administered by the MDEQ):
  - Part 31 – Floodplain Encroachment
  - Part 91 – Soil Erosion and Sedimentation Control
  - Part 301 – Inland Lakes and Streams
  - Part 303 – Wetlands
  - Part 365 – Threatened and Endangered Species
- Federal Clean Water Act Section 401 certification from MDEQ may be required.

Errata Sheet
July 7, 2004

for the document titled:
Detroit River International Crossing Environmental Assessment Terms of Reference

Section	Page	Erratum
1.2 Purpose of the OEAA Terms of Reference	5	At the end of the first paragraph in this section, the reference to "section 6.2 (a) of [the Ontario Environmental Assessment Act] OEAA" should refer to "section 6(2)(a) of OEAA"
1.5 Submission Statement	9	In the first sentence of this section, the reference to "section 6(2)(a) of the OEAA" should refer to "section 6.1(2) of the OEAA"

Ministry of the Environment

Office of the Minister

135 St. Clair Ave. West
12th Floor
Toronto ON M4V 1P5
Tel (416) 314-6790
Fax (416) 314-6748

Ministère de l'Environnement

Bureau du ministre

135, avenue St. Clair ouest
12e étage
Toronto ON M4V 1P5
Tél (416) 314-6790
Téléc (416) 314-6748

Ontario

ENV1283MC-2004-4446

SEP 17 2004

The Honourable Harinder Takhar
Minister of Transportation
Ferguson Block, 3rd Floor
77 Wellesley Street West
Toronto ON M7A 1Z8

Dear Minister Takhar:

Thank you for submitting a Terms of Reference (ToR) for the proposed Detroit River International Crossing on May 20, 2004. The Ministry has completed its review and I wish to inform you that I have approved the ToR for the preparation of an Environmental Assessment (EA).

As required by subsection 6.1(1) of the *Environmental Assessment Act*, your EA must now be prepared in accordance with the approved ToR. The ToR sets out the framework for preparation of the EA, including the completion of planning and technical studies and consultation with the public and government agencies. Consultation activities should continue throughout the preparation of the EA with all of the stakeholder groups identified in the ToR. The City of Windsor, County of Essex and Town of LaSalle are among the stakeholders that should be directly involved in the consultation process.

While the approval of your ToR provides additional certainty to your EA preparation process, it does not guarantee that the undertaking will be approved. It simply sets out the framework for preparing the EA. The proponent is responsible for fulfilling the commitments outlined in the ToR and providing the appropriate level of detail regarding the future work to be completed.

... 2

Should you wish to vary significantly from your approved ToR, in preparing your EA, you will have to submit a new ToR for my approval. In the event of any uncertainty in this regard, you should consult with Rob Nadolny of the Environmental Assessment & Approvals Branch at (416) 314-7106.

Sincerely,

Leona Dombrowsky

Leona Dombrowsky
Minister of the Environment

Attachment

c. Mr. Dave Wake, MTO

ENVIRONMENTAL ASSESSMENT ACT

SUBSECTION 6(4)

APPROVAL OF TERMS OF REFERENCE

FOR

THE PREPARATION OF AN ENVIRONMENTAL ASSESSMENT

RE: Proponent: Ministry of Transportation

Undertaking: The Detroit River International Crossing Environmental Assessment Terms of Reference

EA File No.: EA-02-07

As provided for by subsection 6(4) of the *Environmental Assessment Act*, Terms of Reference, as submitted for approval to the Ministry of the Environment on May 20, 2004, including the Errata Sheet submitted on July 7, 2004, to govern the preparation of an environmental assessment for the above-noted undertaking, is hereby approved.

Reasons

I am satisfied that an environmental assessment prepared in accordance with the Terms of Reference will be consistent with the purpose of the *Environmental Assessment Act* and the public interest for the following reasons:

1. The Terms of Reference requires that the proponent meet the intent of the *Environmental Assessment Act* by providing for the identification of issues and concerns, and the preferred means of addressing them with

due regard to adoption of environmental management, protection and mitigation measures.

2. The Terms of Reference has been reviewed by the public and the Government Review Team. There are no outstanding concerns that cannot be addressed in the environmental assessment.

3. The Terms of Reference requires the proponent to implement a comprehensive consultation plan during the preparation of the environmental assessment. In addition, the *Environmental Assessment Act* requires continued consultation and documentation of the consultation during the preparation of the environmental assessment. As well, there will be additional opportunities for public and agency consultation when the environmental assessment is submitted to the ministry.

Pursuant to subsection 6(4) of the *Environmental Assessment Act*, any environmental assessment, submitted to the Ministry of the Environment pursuant to subsection 6.2(1) of the *Environmental Assessment Act*, must be prepared in accordance with the Terms of Reference as hereby approved.

Dated the 17th day of September, 2004 at TORONTO.

Minister of the Environment
135 St. Clair Avenue West
12th Floor
Toronto, Ontario
M4V 1P5

APPENDIX D

Comments Received During Pre-Submission Review

SISKINDS | THE LAW FIRM

680 Waterloo Street, London, ON N6A 3V8

EMAIL paula.lombardi@siskinds.com

FILE NO. 810750/PL/pl

DELIVERED BY EMAIL AND FACSIMILE (1-519-973-7367)

November 17, 2008

Mr. Roger Ward
Senior Project Manager
Ministry of Transportation
Windsor Border Initiatives Implementation Group
949 McDougall Avenue, Suite 200
Windsor ON N9A 1L9

Dear Mr. Ward:

Re: Detroit River International Crossing Study ("DRIC")
Draft Environmental Assessment Report - Public Comment Period

We have been retained to act on behalf of The Canadian Transit Company and have been following the preparation of the environmental assessment as it relates to the Detroit River International Crossing Study ("DRIC"). The advertisement in the Windsor Star on November 10, 2008 requests that comments on the Draft Environmental Assessment Report be submitted no later than December 12, 2008.

Please confirm that the last date to submit comments on the Draft Environmental assessment is **December 12, 2008** as indicated in the Windsor Star advertisement. Taking into account the length of the comment period, approximately four (4) weeks, we are assuming that this does not represent the initial comment period statutorily required under section 6.4 of the Ontario *Environmental Assessment Act* ("OEAA").

The prescribed deadline for the initial comment period is set out in the OEAA, specifically Ontario Regulation 616/98 which provides for a seven (7) week public comment period. Provided all public comments are received within the statutorily required seven (7) week period, the Ministry of the Environment is required to consider all comments received during its review of the environmental assessment. In the event you are treating this advertisement as the initial comment period then the appropriate statutory deadline for comments would be **December 29, 2008**.

We would ask that you clarify this matter as soon as possible and advise us of the deadline for comments. Further, if this is not considered the initial comment period on the environmental assessment we would ask that you advise as to when you anticipate giving public notice of the seven week comment period.

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At this time we also request notification of any and all comment periods, meetings, open houses as they relate to the DRIC environmental assessment process.

Yours very truly,

Siskinds LLP

Per: Paula Lombardi
Paula Lombardi

c: Mr. Murray Thompson, (via facsimile 519-969-5012)

SISKINDS THE LAW FIRM

680 Waterloo Street, London, ON N6A 3V8

EMAIL paula.lombardi@siskinds.com

FILE NO. 810750/PL/pl

DELIVERED BY EMAIL AND FACSIMILE (1-519-973-7367)

December 12, 2008

Mr. Roger Ward
Senior Project Manager
Ministry of Transportation
Windsor Border Initiatives Implementation Group
949 McDougall Avenue, Suite 200
Windsor ON N9A 1L9

Dear Mr. Ward:

Re: **Detroit River International Crossing Study ("DRIC")**
Draft Environmental Assessment Report - Public Comment Period

As you are aware, we have been retained to act on behalf of The Canadian Transit Company and have been following the Detroit River International Crossing Study ("DRIC") and the preparation of the environmental assessment. The advertisement in the Windsor Star on November 10, 2008 requests that comments on the Draft Environmental Assessment Report W.O. 04-33-002 dated November 2008 ("Draft EA") be submitted no later than December 12, 2008.

Due to the deficiencies in the Draft EA, the release of new reports[1] dated December 2008 and the failure to provide a copy of the federal screening report for review, The Canadian Transit Company is reserving its right to provide more detailed comments once it has had the opportunity to review all of the documents.

FEDERAL SCREENING REPORT

The DRIC project represents a complex undertaking that requires both federal and provincial approval and involves a myriad of complex technical and legal issues. The Draft EA refers to a separate federal screening report that has been prepared pursuant to the *Canada-Ontario Agreement on Environmental Assessment Cooperation.*

1 Air Quality Impact Assessment (December 2008) - Technically and Environmentally Preferred Alternative (updated Preface Dec. 8/08), Human Health Risk Assessment (December 2008) Technically and Environmentally Preferred Alternative, Built Heritage Impact Assessment (December 2008)- Technically and Environmentally Preferred Alternative

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The Draft EA at page 2-2 indicates that a separate federal screening report was prepared to support federal decision-making. As of December 10, 2008 the Canadian Environmental Assessment Registry[2] has neither posted nor requested public comments on the screening report. There appears to be a disconnect between the federal and provincial environmental assessment processes. The Draft EA indicates a federal screening report was prepared, however, this report is not yet posted for comment on the public registry. It appears that the federal environmental assessment process is lagging behind the provincial process for some unexplained reason.

We fail to understand how the federal and provincial government can expect fulsome and comprehensive comments on the proposed DRIC project when all of the information legislatively required has not been provided for review and comment at the same time. We further note that cumulative effects are not taken into account in the provincial Draft EA as this is a federal requirement as indicated by the Draft EA Guidelines, issued under the *Canadian Environmental Assessment Act* dated November 2006. The disconnect between the two processes has put our client at a considerable disadvantage by forcing a review and comment on these documents one at a time.

ADDITIONAL REPORTS DECEMBER 2008

In addition, the technically and environmentally preferred alternative reports relating to air quality, human health risk assessment and built heritage were released in December 2008, approximately two weeks after the open houses held to review the Draft EA and two weeks prior to comments being due on the reports. Two weeks hardly provides enough time to review these reports and provide comprehensive comments.

As indicated above, The Canadian Transit Company is reserving its right to provide comprehensive comments once all of the documents, including the federal screening report, are available for review and comment.

AMBASSADOR BRIDGE

The Draft EA recognizes the importance of the Windsor-Detroit border crossing as an important trade corridor between the United States and Canada.[3] The Ambassador Bridge began operation on November 11, 1929, was built with private sector funds and functions as one of the busiest international crossings.

The Canadian Transit Company, on December 4, 2007 submitted a Screening-Level Environmental Assessment for the construction and operation of a new international bridge across the Detroit River parallel to the existing Ambassador Bridge that connects into the

2 See www.ceaa.gc.ca, CEAR Reference Number 08-01-18170
3 Draft Environmental Assessment Report – W.O. 04-33-002, November 2008, p. 1-2

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existing plazas and infrastructure in both Canada and the United States. The proposed new span is referred to as the Ambassador Bridge Enhancement Project or the Ambassador Bridge Replacement Span ("Replacement Span"), and uses existing infrastructure to provide additional crossing capacity.

The six-lane, cable-stayed design of the proposed Replacement Span will allow for the efficient and smooth flow of vehicles across the Ambassador Bridge corridor. What the Draft EA ignores throughout the document and fails to take into account is that traffic levels at the Ambassador Bridge crossing are lower today by 24.6% than traffic levels in 1999. This means that the crossing capacity available at the Ambassador Bridge corridor to accommodate future growth is greater than what is stated in the Draft EA. In addition, the proposed Replacement Span increases future crossing capacity at the Ambassador Bridge corridor. The implementation of the proposed FAST/NEXUS lanes along with freer flow of traffic offered by the proposed Replacement Span will reduce travel time significantly at the Ambassador Bridge corridor.

THE ENVIRONMENTAL ASSESSMENT TERMS OF REFERENCE

The Draft EA has neglected to follow the Environmental Assessment Terms of Reference dated May 2004 ("terms of reference"). The approved terms of reference established the framework for the preparation and review of the environmental assessment. The Draft EA must be prepared in accordance with the approved terms of reference. We note that the terms of reference indicate that the Detroit River International Crossing Project ("DRIC") *"is being undertaken to address the long-term needs of the border transportation network."*[4]

The Ontario *Environmental Assessment Act* ("OEAA") does not specify what is to be included in the terms of reference. The terms of reference must meet the requirements of section 6 of the OEAA and should include the following elements, among others: description of the existing environment and flexibility to accommodate new circumstances. We are surprised that the Draft EA has relied on outdated traffic projections that are unrealistic and overly inflate current traffic levels. The Draft EA has failed to accommodate revised traffic projects to develop more realistic options that would meet the long-term needs of the Windsor-Detroit border transportation network.

Section 2 of the terms of reference deals with the purpose of the undertaking and specifically subsection 2.1.3.(a) Existing-Windsor Detroit Border Crossings relies on the outdated traffic information to justify its statement that the Ambassador Bridge will reach available capacity within five years. In addition, several statements in the Draft EA incorrectly suggest that there are problems associated with the Ambassador Bridge corridor and neglect to rely on accurate and current data to support such a bald statement. The terms of reference should have been

4 Detroit River International Crossing, Environmental Assessment Terms of Reference, p. 2

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drafted in such a manner as to be flexible in dealing with traffic projections and the impact of such projections on existing border crossing capacity.

We also note that the terms of reference in section 2.3 Transportation Opportunities indicates that optimization of existing infrastructure will be considered as an opportunity to enhance benefits to the existing border region.[5] The use of the existing infrastructure of the United States and Canada plazas to accommodate an improved crossing with the construction of the Replacement Span has not been appropriately considered. Instead, the Draft EA relies on a "cookie cutter" approach for the land requirements for a new Point of Entry in Canada as a means of inappropriately eliminating the existing Ambassador Bridge crossing from the alternatives to be considered. Notwithstanding that, upon closer review and consideration, it is clear that The Canadian Transit Company well exceeds the requirement that approximately 80 to 100 acres (30 – 40 hectares) of land be dedicated to Canadian customs processing facilities for the Ambassador Bridge crossing. In addition, to promote the use of existing infrastructure it should be recognized that the Canadian Plaza currently serving the Ambassador Bridge is not a generic Point of Entry, it has been operational and modified over time as requested by Canada Border Services Agency for the last eighty (80) years.

TRAFFIC PROJECTIONS

The Draft EA neglects to revise the terms of reference to reflect the existing data to indicate a decrease in border crossing traffic the Ambassador Bridge corridor and the Windsor-Detroit Tunnel. The actual data indicates that traffic volumes to date are lower than their peak in 1999. The statistics outlined below clearly show, contrary to the statements in the Draft EA, the ongoing decline in the number of vehicles using the Ambassador Bridge to cross the Canada – United States border. The Draft EA has a responsibility and an obligation to present accurate information and should be required to rely on current statistics that show the continuing decline in cross-border traffic in the Windsor-Detroit corridor.

[illegible]	[illegible]	[illegible]
1999	12,436,066	4.17%
2000	12,301,001	- 2.14%
2001	11,131,751	- 10.53%
2002	10,454,922	- 9.76%
2003	9,464,086	- 12.94%

5 Detroit River International Crossing, Environmental Assessment Terms of Reference, p. 23

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[illegible]	[illegible]	[illegible]
2004	9,607,404	0.29%
2005	9,384,390	4.72%
2006	9,393,872	- 0.84%

Vehicles using the Windsor-Detroit tunnel crossing have declined 43.03% since 1999, while there has been a 24.46% decline in vehicles using the Ambassador Bridge. As indicated by the actual statistics, the Draft EA is based on numbers that are artificially inflated and incorrectly states higher volumes than what actually has been experienced. Notwithstanding that the actual statistics were readily available and the Draft EA could easily have been updated to reflect more realistic traffic patterns.

The ongoing decline in cross border traffic is not only being experienced in the Windsor-Detroit corridor, the Blue Water Bridge in Sarnia has also experienced a similar drop in traffic patterns. In 1997, the second span to the Blue Water Bridge opened, and the result has been that the projected traffic from 1991 through to 2031 grossly exceeds the actual traffic flow using the Blue Water Bridge. Projected traffic patterns must be based on the actual data that shows an ongoing and continued decline of vehicles using the Windsor-Detroit corridor.

The Draft EA also neglects to take into consideration that the Ambassador Bridge has, and continues to work jointly with the CBSA to reduce congestion, increase safety and facilitate processing of all vehicles in an efficient manner.

ALTERNATIVES ANALYSIS

The Ambassador Bridge Replacement Span was identified as one of the top overall performers on the United States side in terms of effectiveness and cost-effectiveness. More importantly, the Replacement Span was considered the top performer on the United States side in terms of community/neighbourhood impacts, consistency with local planning and protecting natural features including a top performer in terms of constructability. The Replacement Span also had better performance in terms of improvement to regional mobility.[6]

The United States team recommended that the Ambassador Bridge crossing and the proposed Replacement Span be carried forward for consideration on the short list of practical alternatives. However, without any consideration for the existing facilities and use of existing infrastructure, the Draft EA applied a generic point of entry criteria to the existing Ambassador

6 Draft Environmental Assessment Report – W.O. 04-33-002, November 2008 p. 6-43

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Bridge plaza as a means of removing the Ambassador Bridge corridor from the alternatives assessment. There is no rationale whatsoever to require generic point of entry facilities at an existing crossing. The Draft EA completely misrepresents the requirements of the Canada Border Services Agency for the Ambassador Bridge crossing, identified as crossing X12 and Plaza CT1. The Draft EA alleges the disruption of 3,490 household and 25 or more businesses. This is a complete misrepresentation of what is required to operate the Windsor Plaza to accommodate the existing Ambassador Bridge and/or the Replacement Span.

The Ambassador Bridge Replacement Span uses existing infrastructure and has been inappropriately and without any rationale excluded from the alternatives analysis without further consideration. The Draft EA fails to acknowledge the use of existing infrastructure as a means of decreasing the environmental impacts associated with the construction of a new crossing and plaza.

The Draft EA projects that the proposed new crossing will divert traffic away from the Ambassador Bridge, Windsor-Detroit Tunnel and Blue Water Bridge. The proposed new crossing appears to be nothing more than the federal and provincial governments' desire to compete with the existing crossings. Unfortunately, such competitiveness diminishes the environmental considerations and analysis in the Draft EA.

OEAA AND CEAA

The Draft EA fails to take into consideration and reflect the purpose of the OEAA and the *Canadian Environmental Assessment Act* ("CEAA").

The purpose of the OEAA is set out in section 2 and states:

> The purpose of this Act is the betterment of the people of the whole or any part of Ontario by providing for the protection, conservation and wise management in Ontario of the environment. R.S.O. 1990, c. E.18, s. 2.

The preamble of the CEAA reflects the federal government's intent to play a leadership role both domestically and internationally in environmental assessment and sustainable development. It also recognizes the importance that all Canadians place on environmental quality. CEAA commits the federal government to fostering economic development in a way that will not compromise environmental quality.

We encourage the DRIC team to reflect on the purpose and principles of CEAA and OEAA and address the inadequacies that are identified in the Draft EA.

CONCLUSION

Based on our preliminary assessment the Draft EA dated November 2008: fails to rely on accurate traffic projections for its Transportation Needs Assessment; misrepresents the

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impacts of the Ambassador Bridge Replacement Span; incorrectly states the impacts of the Ambassador Bridge plaza on the community and neighbourhood; inappropriately applies the criteria for a new generic Point of Entry to the existing Ambassador Bridge Point of Entry; misrepresents the impacts of the Ambassador Bridge Replacement Span and plaza on the cultural resources in the area; neglects to consider the cumulative impacts associated with the proposed DRIC crossing; fails to take into account the cross-border effects of the proposed DRIC project on the Windsor area; overlooks the impacts of the proposed DRIC project on existing archaeological and heritage resources; and, appears to have provided technical studies that are based on false or misleading assumptions.

At this time, The Canadian Transit Company is reserving its right to provide a comprehensive review of the DRIC proposal once all of the documents, including federal, provincial, and the associated technical studies, are available for review and comment.

We would ask that you notify us of any and all upcoming comment periods, meetings, open houses as they relate to the DRIC environmental assessment process, including notification of the submission of the Draft EA to the Ministry of the Environment for approval and submission of the screening report to the federal government.

Yours very truly,

Siskinds LLP

Per: Paula Lombardi
Paula Lombardi

c: Mr. Murray Thompson, (via facsimile 519-969-5012)

*Comments to CEAA

SISKINDS | THE LAW FIRM

680 Waterloo Street, London ON N6A 3V8

EMAIL paula.lombardi@siskinds.com **FILE NO. 810750/PL/pl**

DELIVERED BY EMAIL (CEAA.Ontario@ceaa-acee.gc.ca)
AND FACSIMILE (1-416-952-1573)

December 12, 2008

Canadian Environmental Assessment Agency
Toronto Office
55 St-Clair Avenue East
Room 907
Toronto ON M4T 1M2

Re: **Detroit River International Crossing**
CEAR reference number 06-01-18170

We have been retained to act on behalf of The Canadian Transit Company and have been following the preparation of the provincial and federal environmental assessment documents as they relate to the Detroit River International Crossing Study ("DRIC"). It is our understanding that the federal and provincial environmental assessment processes were coordinated pursuant to the *Canada-Ontario Agreement on Environmental Assessment Cooperation* ("the Agreement").

The Agreement states that federal and provincial governments:

> Will coordinate the environmental assessment processes whenever projects are subject to review by both jurisdictions ... The agreement maintains the current level of environmental standards and the legislative and decision-making responsibilities of both governments. **While projects requiring both provincial and federal environmental assessment approvals will still require separate approvals**, decisions will be based on the same body of information and there will be an ability to make decisions concurrently.

The Draft Environmental Assessment Report, Individual Environmental Assessment W.O. 04-33-002 ("Draft EA") dated November 2008 at page 2-2 indicates that a separate federal screening report was prepared to support federal decision-making. However, it appears that the screening report referred to has not been subject to public comment. We note that as of December 10, 2008 the Canadian Environmental Assessment Registry has neither posted the screening report nor requested any public comment on the screening report.

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SISKINDS | THE LAW FIRM

There appears to be a disconnect between the federal and provincial environmental assessment processes. The Draft EA indicates a federal screening report was prepared, however, this report is not yet posted for comment on the public registry. It appears that the federal environmental assessment process is lagging behind the provincial process.

We fail to understand how the federal and provincial government can expect fulsome and comprehensive comments on the proposed DRIC project when all of the information legislatively required has not been provided for review and comment at the same time. We further note that cumulative effects are not taken into account in the provincial Draft EA as this is a federal requirement as indicated by the Draft EA Guidelines, issued under the *Canadian Environmental Assessment Act* dated November 2006. The disconnect between the two processes has put our client at a considerable disadvantage by forcing us to review and comment on these documents one at a time.

At this time, we request copies of any and all documents submitted by the DRIC in support of the screening report, including any draft screening documents, work plans and federal agency comments associated with any documents. In addition we request notification of any and all comment periods relating to the federal screening report.

Should you have any questions, please do not hesitate to contact the undersigned.

Yours very truly,

Siskinds LLP

Per: Paula Lombardi

Paula Lombardi

c: Mr. Roger Ward, Senior Project Manager

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Assistant 416-862-4360
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December 1, 2008

By e-mail

Mr. Dave Wake
Manager, Planning Office
Windsor Border Initiatives Implementation Group
Ministry of Transportation
659 Exeter Road
LONDON, Ontario
N6E 1L3

Dear Mr. Wake:

Re: Missing DRIC Reports – Windsor Essex Parkway

I am writing in response to your letter of December 1, 2008 responding to my e-mail of November 27th in which we, on behalf of the City of Windsor, requested specific information regarding the DRIC air quality investigations. A copy of that e-mail is attached as Appendix A to this letter.

As we advised you in that e-mail, the lack of any measured/modelled values in the DRIC air quality alternatives assessment reports that are available to the public presents a fundamental problem for the objective review of your decision-making process and gives rise to problems in terms of replicability and traceability.

Your response letter, indicating that this information would be available "in a few days" is prejudicial to the City's ability to fairly and meaningfully comment on this issue especially in light of your unilateral December 12 deadline.

This problem is exacerbated in respect of approximately 12 other studies which DRIC has omitted to publish which are also reference documents to the DRIC decision-making process results presented in the draft Environmental Assessment Report. The missing reports include such other critical ones as the following: Human Health Risk Assessment, Social Impact Assessment, Noise and Vibration Assessment and Draft Generation of Practical Access Road Alternatives Report.

Given that you state DRIC will be publishing air quality data in "a few days" I repeat my request to make it available to us immediately electronically or by courier. Obviously this data has existed for many months and is available to DRIC/SENES. To the extent that you do not wish to further prejudice the City of Windsor, we suggest it is in your interest to provide it to us immediately.

Finally, your response does not indicate that the report you will be publishing will provide all elements of the important information requested in my e-mail e.g. "the distance from the travelled portion of the Parkway to each receptor should be indicated". Please ensure that and other specific information requested in the e-mail is included in what I anticipate will be your immediate further response.

Yours sincerely,

GOWLING LAFLEUR HENDERSON LLP

David Estrin
Certified Environmental Law Specialist

DE:tp

cc: Mayor Eddie Frances

Appendix "A"
E-mail to Dave Wake from
David Estrin, Sent November 27, 2008, 3:12 p.m.

Dear Mr. Wake.

We are attempting to assist the City of Windsor in reviewing the draft EAR.

Unfortunately the air quality analysis DRIC chose to provide is almost entirely based on percentages; no measured and modelled output, in actual values, such as ug/m3 are provided See for example Table 5.1 in the Practical Alternatives Evaluation Working paper, Air Quality Impact Assessment, May 2008 which provides no measured/modelled values for exceedances; and the draft EAR contains no further actual data.

This presents issues for objective review and also gives rise to problems in terms of replicability and traceability of your decision making process.

1) Please provide to me a disk or by other electronic means all air quality modelling results for Pm 2.5 (in ug/m3)
at least for the no build alternative, Alternative 3, Alternative 2B and the Parkway.

2) Please provide on aerial photos or on a map the exact location of all receptors used in the modelling for each of the above alternatives re PM 2.5 and the measured/modelled values at each of these receptors. The distance from the travelled portion of the Parkway to each receptor should be indicated.

3) Please provide Table 5.1 in the Practical Alternatives Evaluation Working paper, Air Quality Impact Assessment, May 2008 populated in ug/m3 rather than % for each of the alternatives.

Please acknowledge receipt of this request and advise when we can expect to receive this data. We would like to have what is available by Friday and the remainder by Monday. Obviously if there is a SENES unpublished report which has this and other air quality modelling results that would also be helpful . Please call if you have any questions.

David Estrin
Environmental Law Specialist
Gowling Lafleur Henderson LLP
Suite 1600, 1 First Canadian Place
100 King Street West
Toronto, Ontario M5X 1G5

Tel: 416-862-4301
Fax: 416-863-3401
www.envirolawcan.com

TOR_LAW 7071839 1

"Wake, Dave (MTO)"
<Dave Wake@ontario.ca>
06/12/2008 04 52 PM

To "Ward, Roger (MTO)" <Roger.A.Ward@ontario.ca>, "Foster, Joel (MTO)" <Joel Foster@ontario.ca>
cc <Jacquie Dallon@URSCorp.com>, <Holly_Wright@URSCorp.com>, "Sandy Willis - SENES Consultants Limited" <swillis@senes.ca>, "Murray Thompson (E-mail)" <murray_thompson@urscorp.com>
bcc
Subject FW. DRIC Air report and Requested information (email to D Estrin)

fyi

From: Wake, Dave (MTO)
Sent: December 6, 2008 4:52 PM
To: 'Estrin, David'
Cc: Murray Thompson (E-mail)
Subject: RE: DRIC Air report and Requested information

Dear Mr Estrin:

I am writing in response to your recent email messages, in which you requested specific information regarding the air quality investigations.

The *Air Quality Assessment Report-Technically and Environmentally Preferred Alternative was* posted to the website late Friday. This paper reports the modelling results in $\mu g/m^3$. Table 3.3 in this report specifies the distance from the roadway to the sensitive receptors.

In addition, we will send to your office, by courier, a CD containing three electronic files:

- The first file contains the receptor numbers, the UTM coordinates and descriptions of receptors if applicable.
- The second file contains $PM_{2.5}$ modeled results for No Build All modelled results include a 90^{th} percentile background as agreed to by various Canadian regulatory agencies in the original Air Quality Work Plan. Results include the maximum, annual average, and varying percentiles for modeled results.
- The third file contains $PM_{2.5}$ modeled results for The Windsor-Essex Parkway. This has the same file format as for the No Build Files. Receptors that were located within the Right of Way limits and on service roads have been removed from this file.

If you have further questions after reviewing this report, please let me know.

Yours truly,

Dave Wake
Manager, Planning Office
Windsor Border Initiatives Implementation Group
Ministry of Transportation
659 Exeter Road
London ON N6E 1L3
Tel: 519-873-4559

Fax: 519 873-4789
Email: dave.wake@ontario.ca

From: Estrin, David [mailto:David.Estrin@gowlings.com]
Sent: December 3, 2008 3:23 PM
To: Wake, Dave (MTO)
Cc: Murray Thompson (E-mail)
Subject: DRIC Air report and Requested information

Dear Mr. Wake, you have not acknowledged receipt of my emailed letter of Dec. 1 to you responding to your letter of that date, not has DRIC provided any of the information requested on air issues requested in my email of November 27.

Your December 1 letter indciated that the new Air report would be available "in a few days". While we still request that it be made available to us immediately, I would also like to understand how long we are required to wait under your definition of a "few days" - when will it be posted? It has been almost one week since we made our request.

Further, you will appreciate that as that missing report "Technically and Environmentally Preferred Alternative - Air Quality Impact Assessment Report" is by its title apparently limited to the Parkway as DRIC's preferred altertemalive, even when that report is made available it will most likely NOT contain any of the information requested in my November 27 email on this topic for other alternative access route options.

DRIC's refual to provide or even commit to the provision of the requested information in my email of November 27 as well as the fact DRIC has chosen to not publish other critical data by which the alternative access routes can be meaningfully compared, such as exactly where the variously changed rights of way limits are and were measured from in evaluating impacts in the evaluation of each of alternative access routes, as well as DRIC's continuing failure to publish a number of key critical reports vital to your EAR is creating further prejudice to the EA process and to key stakeholders such as Windsor.

We again invite you to provide the requested information immediately and to call me if you have any questions.

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December 8, 2008

By e-mail

Mr. Dave Wake
Manager, Planning Office
Windsor Border Initiatives Implementation Group
Ministry of Transportation
659 Exeter Road
LONDON, Ontario
N6E 1L3

Dear Mr. Wake:

Re: DRIC Air Contaminant Assessment Data and Reports – Windsor Essex Parkway – Further Major Issues

Dear Mr. Wake:

I hope DRIC will consider and act immediately on this letter sent in response to your email of Saturday in which you indicate DRIC just posted its Air Analysis of the Parkway late Friday, December 5th and in which you also indicate DRIC will finally send some of the air data not included in that report which we requested on behalf of the City of Windsor on November 27th.

1) Concern that significant air impact data for the Parkway greenspace is being kept secret

While we understand from your email that we will receive a disk with some of the specific air analysis data we requested, we are very concerned with the following statement as to what DRIC has chosen to delete from one of the files:

"Receptors that were located within the Right of Way limits and on service roads have been removed from this file."

Unlike other DRIC access road alternatives, the Parkway has a very wide ROW in which DRIC proposes to provide greenspace, much of which will be accessible to the public. We expected and require with the disk air impact analysis for the Parkway greenspace. DRIC is promoting its Parkway choice very substantially based on the greenspace it states will be created and its value as healthy recreational areas and linkages.

Provision of this data is essential. DRIC has not publicly published data on the high levels of harmful air contaminants that will be present in accessible areas of the Parkway greenspace, despite the statement in DRIC's latest report that "Potential air quality effects from the roadway decrease with increasing distance from the roadway. Therefore, the greatest effects will occur adjacent to the roadway."

The fact that DRIC has chosen to keep that data secret is consistent with our concern that the DRIC air contaminant analysis supporting selection of the Parkway has left out important data, and that DRIC's EA conclusions about the Parkway's benefits are misleading and not supported by the data that you have had for many months, but continue to hide from the public.

I presume your apparent rationale for proposing to delete data which your model does produce on receptors close to the road is premised on the statements made in the DRIC Air Quality reports that "the models do not accurately predict air pollutant concentrations at locations on a source (i.e., on the roadway)."

That may indeed be a limitation of the model DRIC has used, but it does not excuse DRIC not assessing and evaluating by other means the extent of the harmful air contaminant levels that members of the public will be exposed to directly above the Parkway, specifically while they are on the short Parkway overpasses/land-bridges.

And while the model may have limitations "at locations on a source (i.e. on the roadway)", greenspace situated beyond the edge of the roadway is not "on a source" and is not "on the roadway"; and the models therefore do predict concentrations on such greenspace.

As the modelling DRIC has carried out does predict air impacts beyond the travelled portion of the roadway, i.e., on the Parkway jogging and walking trails that will be near to the roadways and other areas of accessible Parkway greenspace in the ROW, there is no rational excuse not to provide it.

In short, that the model may not be accurate for the roadway itself cannot be used as a valid rationale to avoid providing modelling results for the air contaminant levels that will occur on the vast areas of the Parkway greenspace that lie beyond the travelled portion of the roadway. The DRIC air model can be used (and no doubt has been used) to obtain results for these areas, and we request it be provided, particularly as DRIC has claimed its new Parkway "greenspace" is a major rationale for selecting the Parkway. Your own reports indicate and indeed show receptor grid locations for air modelling results that are as close as 50 metres from the current and proposed roadways. Further, it is clear that modelling results DRIC obtained for Alternatives other than the Parkway, all of which had significantly narrower ROW width than the Parkway ROW, would include air contaminant concentrations that would occur within the Parkway ROW. See for example the statement at pg. 39 of DRIC's most recent Air report which states "...the edges of the proposed right-of-way (ROW) limits differ for many of the access road alternatives...a receptor that was located within 50 m from the ROW for one Alternative could have been within the ROW for another Alternative." All of this

confirms DRIC has the data which predicts the levels of contaminant impacts to which users of the Parkway greenspace will be subjected.

It is incumbent on DRIC to provide an analysis demonstrating that the one hour and 24 hour average concentrations of contaminants, particularly the very health impactive contaminant PM 2.5, will not be exceeded by people trying to use the Parkway land bridge greenspace as well as Parkway trails and other Parkway lands DRIC is promoting at Parkway attributes.

DRIC's failure to provide that data is a fundamental impact assessment failure which appears intended to hide the significant public health impacts that will be associated with the Parkway designed greenspace.

DRIC's failure to provide that data also prevents the public and the Ministry of Environment understanding how longer tunnelled sections, such as those proposed by GreenLink, would prevent the public being exposed to harmful air contaminants as they use greenspace above and around the GreenLink longer tunnels.

Your email refers to the recently released December 5, 2008 DRIC Air Quality report and states that "Table 3.3 specifies the distance from the roadway to the sensitive receptors", with the inference the public and Windsor should take some comfort from the fact that DRIC's choice of "sensitive receptors" has been modelled.

However, these modelling results provide no comfort whatsoever to members of the public who would expect to be able to safely use the DRIC Parkway greenspace.

There are 64 DRIC "sensitive receptors" in that Table. However, as can be seen from a summary of that table which we prepared from your report and data:

- none of the "sensitive receptors" appear to be within the DRIC ROW, in which the Parkway greenspace is located;[1]
- indeed, 50% of these "sensitive receptors" are at least 300 metres or more distant from the new 401 roadway; 15 are 500 m or more distant, and at least five are more than 1 kilometre from the new 401;
- the average distance between the new 401 and your "sensitive receptors" is over 400 metres;
- the average distance between the closest service road and "sensitive receptors" is over 300 metres.

Summary of DRIC Table 3.3 – Sensitive Receptors

Total No. of Receptors	**64**
Receptors within 0-99m of 401	**5**
Receptors within 100-199m of 401	**11**
Receptors within 200-299m of 401	**16**
Receptors 300m or more from 401	**32**

[1] DRIC Figure 3.3. "Sensitive Receptor Locations" as provided on the DRIC web site does not provide a clear image as to exactly where these locations are. Locating the "sensitive receptors" from Table 3.3. as carefully as is possible given the limitation of the Figure, none appear to be within the DRIC ROW.

Receptors within 0-99m of Road	10
Receptors within 100-199m of Road	10
Receptors within 200-299m of Road	20
Receptors 300m or more from Road	24
Avg distance to 401 (m)	418.5
Avg distance to Road (m)	304.1

As you say in the lastest DRIC Air Quality report, "Potential air quality effects from the roadway decrease with increasing distance from the roadway. <u>Therefore, the greatest effects will occur adjacent to the roadway</u>."

2) We are at a loss to understand the following fundamental issues which arise from the preceding matters:

a) how, on the one hand, DRIC can claim the Parkway is preferred because it is creating useable, healthy greenspace within the Parkway ROW, and on the other hand DRIC can avoid considering Parkway greenspace users as "sensitive receptors" and thereby avoid providing any analysis, let along any facts, regarding the unhealthy air impacts such users will encounter?;

(b) how can DRIC be acting in the public interest and be fair in its process when it has selected the Parkway as its preferred alternative access route based on the benefits of the greenspace while avoiding assessing and evaluating the higher and unhealthy levels of air impacts that will occur in the Parkway greenspace -- particularly in light of DRIC's own knowledge and admission that "the greatest effects will occur adjacent to the roadway"?

c) how can DRIC have acted fairly in preferring the Parkway over GreenLink when DRIC failed to assess GreenLink using the EA criteria and Terms of Reference -- yet had that been done the analysis would clearly show GreenLink's longer tunnels will protect the public using GreenLink parkland from unhealthy traffic contaminants while the Parkway will cause users of Parkway greenspace to suffer unhealthy levels of air contaminants?

3) DRIC's delivery of some, but not all required air quality data, days before the DRIC self-created December 12 comment deadline, creates further fundamental prejudice to the DRIC EA process and to the City of Windsor

Our email request for DRIC air quality data included the following very specific request: "all air quality modelling results for PM 2.5 (in ug/m3) at least for the no build alternative, Alternative 3 (tunnel), Alternative 2B and the Parkway." Although your email of December 6 commits to send PM 2.5 data for the no build and the Parkway, it omits to

commit to provide similar data for Alternative 3 and Alternative 2B. We require that data and again repeat our request to have it sent immediately.

DRIC's strategic decision to delay making critical air quality data available until barely one week before your self-imposed Dec 12 deadline for stakeholder comments (the report posted on your web site late in the day on Friday Dec 5), and DRIC's further decision to delay delivery by almost two weeks of some other air impact data requested by the City of Windsor on November 27, together with the omission to commit to provide all of the data requested by the City together with DRIC's decision to keep secret other critical aspects of that information, are unfortunate examples of the disregard, and indeed what appears to be the contempt, DRIC has for its legal obligations under the EA Act.

DRIC was required to publish all such information in a timely way (when it was produced and not many months later), allow a reasonable time for its analysis by experts retained by concerned stakeholders and also allow time for the provision of a response to DRIC based on that expert advice.

By holding back much of this vital information until the last minute (we refer again to your self-selected December 12 comment deadline) and refusing to provide other components, DRIC has chosen to act in a manner that prejudices the public interest, the City of Windsor and the EA process.

Given the Premier's statements last Friday in Windsor that the Parkway is a done deal - - he endorsed the Parkway plan and is eager to see it move ahead – "we make a call and we stand by that and we will be judged by that", DRIC's attitude regarding air impact analysis is perhaps not unsurprising. However, that does not mean DRIC's conduct, or the Premier's endorsement, makes DRIC's process legally compliant with its EA responsibilities.

May we again suggest DRIC consider its options for attempting to obviate the fundamental prejudice DRIC has chosen to create for its own process.

Yours sincerely,

GOWLING LAFLEUR HENDERSON LLP

David Estrin
Certified Environmental Law Specialist

DE:tp

cc: Mayor Eddie Francis

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GOWLINGS

Submission on Behalf of the City of Windsor

Comments on the Access Road Undertaking

Detroit River International Crossing Study and Ontario Ministry of Transportation

Draft Environmental Assessment Report, November 2008

December 12, 2008

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Submission on Behalf of the City of Windsor

Comments on the Access Road Undertaking

Detroit River International Crossing Study and Ontario Ministry of Transportation

Draft Environmental Assessment Report, November 2008

EXECUTIVE SUMMARY

This submission on behalf of the City of Windsor to DRIC focuses solely on that part of DRIC's environmental assessment (EA) process in which DRIC decided that the Windsor-Essex Parkway (the Parkway) was the environmentally preferred alternative for the design of the access road component of the DRIC study. The access road would extend Highway 401 from its current termination point to a new border crossing in Windsor also being proposed by DRIC.[1]

Windsor has, since the commencement of the DRIC environmental assessment (EA) in 2004, attempted to meaningfully participate in that process. Windsor's participation included carrying out peer reviews with the assistance of highly experienced consultants as well as seeking to make positive suggestions to DRIC as to alternative ways of carrying out this undertaking, most especially in respect of the best way of extending Highway 401 to the proposed new DRIC bridge (access road). A major part of Windsor's contribution was the development by Windsor staff and expert consultants of a green corridor concept, which Windsor first advanced to DRIC in June 2007, and which was further detailed and publicly presented in October 2007 as GreenLink Windsor.

[1] Legally, the Ontario Ministry of Transportation (DRIC) is the proponent of the DRIC access road undertaking. Before having legal authority to proceed with the access road component DRIC must, pursuant to the Ontario *Environmental Assessment Act*, (OEAA) obtain approval of its environmental assessment (which DRIC DRIC call an Environmental Assessment Report (EAR)) from the Minister of Environment or, if the matter is referred by the Environment Minister to the Environmental Review Tribunal, from the ERT. In that DRIC is the proponent of the access road undertaking, reference to DRIC in this submission should be understood to be interchangeable with DRIC

Windsor does not dispute the need for a new border crossing, customs plaza or access road, or the location of any of these project elements. Windsor's objective, throughout the environmental assessment process, has been to ensure that the access road that is built will indeed be the "technically and environmentally preferred alternative." Unfortunately, as elaborated in this submission, the DRIC Parkway clearly cannot be considered, let alone be objectively judged, as achieving that objective. On the contrary, DRIC's own air quality data shows that the Parkway fails to protect human health and the environment; the Parkway will result in the unacceptable exposure of Windsor and LaSalle residents living, working or going to school near the Parkway, as well as those who would use the Parkway "greenspace", to hazardous levels of air contaminants.

Windsor's residents will live with the access road for decades to come. The design of the access road is critical, as it has the potential to either divide or unite communities, improve or worsen air quality, help or hinder the quality of life in Windsor's communities.

Windsor and DRIC agree that the access road that is selected should be the one that does best job of easing traffic congestion, while at the same time protecting people, neighbourhoods and air quality. Windsor fully supports the evaluation factors and criteria that DRIC selected to evaluate the access road, as approved by the Minister of the Environment in the Terms of Reference (TOR).

Windsor's basic complaints in relation to the DRIC access road EA process are clearly stated:

- DRIC failed to fairly apply <u>its own criteria</u> to the evaluation of access road alternatives;
- DRIC refused to evaluate GreenLink as an access road alternative; and
- DRIC improperly decided that the Parkway is the preferred access road alternative without prior publication of an evaluation demonstrating that is a reasonable conclusion and without providing for public comments on the validity of that evaluation before the decision was made.

Instead, DRIC announced its Parkway decision on May 1, 2008 and has been defending it ever since. In these actions DRIC has fundamentally failed to comply with its legal obligations under the Ontario *Environmental Assessment Act* (OEAA) and the EA TOR with respect to the access road undertaking.

Not only does good decision making require fair and even-handed evaluation of alternatives, this type of evaluation is mandated by statute, the OEAA. Consequently, Windsor expected a fair evaluation of all reasonable access road alternatives, as required by the OEEA Act and the TOR.

Windsor expected that DRIC would apply consistent criteria to each alternative. Windsor expected that DRIC would fairly present the analysis of impacts, costs and benefits of each alternative to stakeholders, <u>before</u> DRIC made a decision. Windsor expected DRIC to keep its promises regarding consultation and participation. DRIC failed on every count.

DRIC's failure to meet Windsor's expectations is not simply an indication of poor planning or consultation practices, it is also a matter of law. Each point of friction between DRIC and

frustrated stakeholders has its roots in a statutory violation, in a failure by DRIC to abide by the terms of the TOR and the OEAA.

GreenLink Windsor has unique and multiple positive attributes and it was overwhelmingly endorsed by Windsor residents in open houses and polling as vastly preferred to the DRIC Parkway. A fair and objective assessment of GreenLink by DRIC would have identified these positive attributes and led to GreenLink being identified as the environmentally preferred access road alternartive.

Unfortunately DRIC dismissed GreenLink from consideration without any fair and objective evaluation of it, despite legal requirement on DRIC to do so pursuant to the OEAA.

Of equal if not greater concern is that an objective analysis of the DRIC Parkway, using DRIC's own data, shows that the Parkway clearly cannot be considered the "environmentally preferred alternative" that DRIC claims. Rather, the Parkway will fail to protect human health and the environment. These implications of the Parkway have never been revealed by DRIC.

In contrast, DRIC's own data clearly shows that an access road with tunnelled sections as proposed by GreenLink (but not the Parkway "tunnels" which are actually short overpasses/land bridges), would be protective of health and the environment, in addition to better connecting neighbourhoods and providing healthy green space.

Windsor's findings and comments with respect to DRIC's decision that the Parkway is the environmentally preferred access road alternative are summarized in items A – C in this executive summary, and are elaborated in the remainder of this submission.

> **A. DRIC's draft EAR is fundamentally erroneous in concluding that the Windsor-Essex Parkway is the "environmentally preferred alternative" for the proposed access road. On the contrary, DRIC's own air quality data shows that the Parkway fails to protect human health and the environment; the Parkway will result in the unacceptable exposure of Windsor and LaSalle residents living, working or going to school near the Parkway, as well as those who would use the Parkway "greenspace", to hazardous levels of air contaminants.**
>
> **DRIC has hidden these results from the public and neglected to describe and evaluate these significantly negative human health impacts.**
>
> **Had DRIC's air impact data been appropriately analyzed and fairly presented, it would show that the only means of protecting the health of Windsor residents near the access road and users of access road greenspace from hazardous road emissions is by tunnelling those parts of the access road in proximity to residential neighbourhoods. DRIC's air modelling clearly shows that tunnelling segments of the access road achieves this protection. The Parkway overpasses cannot prevent such health impacts.**

B. GreenLink Windsor clearly qualifies as the environmentally preferred access road alternative using DRIC's EA evaluation criteria; the Parkway does not. A fair and objective analysis using DRIC's own data and modelling of segments of the DRIC Alternative 3 (Tunnel) demonstrates that the tunnelled sections of the access road, as proposed by GreenLink, (but not the short overpass/land-bridges in the Parkway) would provide significant protection of human health and the environment and result in GreenLink being identified as the "environmentally preferred alternative".

GreenLink would also more clearly achieve other important DRIC EA criteria better than the Parkway, such as connecting communities and community features on either side of the right-of-way (ROW) through healthy greenspace. GreenLink Windsor will provide healthy greenspace and connections of communities on either side of the ROW, in contrast to the contaminant laden and noisy land bridges and other alleged "green" areas in DRIC's Parkway, without the cost of a full tunnel.

C. Unfortunately, and contrary to the OEAA, DRIC failed to carry out the required EA evaluation of GreenLink. Further, in arriving at its decision to select the Parkway as its preferred access road alternative, DRIC failed to observe legally binding environmental assessment process requirements imposed both by the OEAA and the Terms of Reference for the DRIC EA. DRIC's actions in respect of the Parkway choice were also unfair to the City of Windsor.

Unless DRIC agrees to carry out an appropriate, objective analysis regarding the impacts and benefits of access road alternatives in accordance with required statutory procedure and with fairness towards stakeholders such as Windsor, the DRIC's decision that the Parkway is the "environmentally preferred access road" alternative is subject to being declared a legal nullity.

DETAILED SUMISSIONS

A. DRIC's draft EAR is fundamentally erroneous in concluding the Windsor-Essex Parkway is the "environmentally preferred alternative" for the proposed access road.

On the contrary, DRIC's own air quality data shows that the Parkway fails to protect human health and the environment; the Parkway will result in the unacceptable exposure of Windsor and LaSalle residents living, working or going to school near the Parkway, as well as those who would use the Parkway "greenspace", to hazardous levels of air contaminants.

DRIC has hidden these results from the public and neglected to describe and evaluate these significantly negative human health impacts.

Had DRIC's air impact data been appropriately analyzed and fairly presented, it would show that the only means of protecting the health of Windsor residents near the access road and users of access road greenspace from hazardous road emissions is by tunnelling those parts of the access road in proximity to residential neighbourhoods. DRIC's air modelling clearly shows that tunnelling segments of the access road achieves this protection. The Parkway overpasses cannot prevent such health impacts.

1. DRIC's air modelling data shows that traffic emissions from the Parkway will be hazardous to human health for a wide swath of Windsor throughout a large part of each year on both side of the Parkway right of way (ROW) and that users of the Parkway's "greenspace" will be exposed to even higher concentrations of these contaminants.

2. On the other hand, DRIC's own data also shows that emission from an access road ROW which has significant tunnelled sections -- e.g. an access road with one kilometre long tunnels, as modelled by DRIC for the Tunnel (Alternative 3) and proposed by the City's GreenLink -- will prevent exposure of adjoining neighbourhoods to these dangerous pollutants. However, the short (maximum 240 metre) overpass/land-bridges DRIC has chosen for the Parkway will not provide meaningful protection.

3. DRIC's EAR is deficient and unacceptable because, unless it is rewritten, it misleads the public and even could mislead government agencies, such as the Ministry of Environment, on this fundamental issue.

4. The text of DRIC's draft EAR as well as its air quality reports do not discuss and therefore do not reveal the significance of how the Parkway will in fact lead to negative and harmful air impacts; equally unacceptable is that the DRIC EAR does not reveal that another alternative form of access road, one with substantial tunnelled sections, will be protective of human health and meet Ontario air

standards for lands and people in the vicinity of the tunnels. These conclusions, which are not included in the DRIC draft EAR, were apparent from an independent expert analysis of DRIC air modelling data carried out on behalf of the City of Windsor by Dr. Tony van der Vooren, one of Ontario's most experienced air experts. The independent peer review commissioned by Windsor of the DRIC data shows that an access road with substantial tunnelled sections adjacent to residential neighbourhoods will prevent the human health impacts the Parkway will permit.

5. DRIC's draft EAR is fundamentally deficient for failing to acknowledge that its own contaminant modelling results shows that, rather than protecting human health and the environment, the Parkway will result in a wide swath of persons living in homes, studying in school and colleges, carrying out business or using parks in proximity to the 11 kilometre Parkway right-of-way (ROW) being subjected to concentrations of air particulates which DRIC's Human Health Risk Report accepts as sufficient to cause respiratory and cardiovascular disease, cancer and death.

6. DRIC's approach is contrary to the OEAA and to the public interest in failing to reveal that serious deficiency as well as not revealing that other alternatives it has studied will prevent these health impacts and therefore be environmentally preferred. DRIC has misled the public and failed to meet OEAA requirements in its draft EAR by comparing the air contaminant levels predicted to be associated with the Parkway with the no-build alternative and concluding that as DRIC air modelling results for the Parkway will be similar to those from the no-build scenario, the Parkway is acceptable.

7. Some of the highlights of that analysis, presented in more detail later in this submission, indicates that that within 50 metres of the DRIC Parkway right-of-way there are 230 homes that will be exposed to unacceptable levels of PM 2.5; that within 100 metres there are 585 homes that will similarly be impacted and that these impacts will occur despite the fact that the Parkway right-of-way would be substantially wider and displace twice as many residents than the right-of-way proposed for any other access road alternative.

8. The draft EAR is also misleading and erroneous when it concludes (page 3-21) "As the six kilometre tunnel alternative (DRIC access road Alternative 3) did not have substantial air quality benefits, neither would the shorter tunnels that were proposed in the GreenLink Windsor proposal." This conclusion is unsupportable based on DRIC and SENES (DRIC's air consultant) analysis which clearly shows that the tunnel was the only alternative <u>not</u> to cause air quality exceedances, while the Parkway failed to meet air quality standards by a wide margin.

9. DRIC has unreasonably ignored or discarded its own air report findings that only a tunnel would be protective of air quality criteria within 150 or more metres from the access road because DRIC made it clear it would not consider an end-to-end

tunnel. DRIC therefore ignored the results of its own air quality comparison in order to avoid having a tunnel appear to be environmentally preferred.

10. DRIC had, and continues to have, the responsibility to assess how access route alternatives, such as a tunnel, can indeed prevent exposure of residents to harmful levels of contaminants. For example, DRIC recognizes "there are three local air quality impacts to consider with the tunnels" such as those proposed by GreenLink.

- " the impact on the community adjacent to the tunnel
- the impact on receptors near the tunnel portals; and
- the impact on the air quality on the tunnel covered area (green space)." (pg 3-21)

11. However, DRIC failed to carry out that assessment using those three factors both with respect to GreenLink and also with respect to how substantial tunnelled sections, if incorporated into the Parkway, could provide local air quality benefits. This failure by DRIC is particularly unreasonable given that its own air quality modelling of the DRIC tunnel compared to other options showed that only the tunnel could protect local air quality and not lead to exceedances. It was also totally unreasonable because DRIC's air quality data shows that without tunnelling the Parkway will not provide the major benefit DRIC claims for the Parkway, healthy new greenspace; rather, without substantive tunnelled sections, the Parkway will only provide polluted and unhealthy greenspace.

<u>DRIC's Air Quality Impact Analysis is Flawed</u>

12. DRIC concluded in the EAR that all six access road alternatives were of equally "low impact" to air quality, and that there was "no clear preference" among them.[2] An analysis of DRIC's own data demonstrates that this conclusion is unsupportable.

13. Over the course of the next 20 years, only <u>one</u> of the six access road alternatives will produce air quality that meets Ontario and federal standards by 2035, and that alternative is the Tunnel. Every other alternative will fail to meet air quality standards by a significant margin – including DRIC's Preferred Alternative, the Parkway.

14. The Environmental Assessment Report ("EAR") does not come clean about the fact that the Parkway will fail to protect air quality and as a result, the health of Windsor residents when there is alternative available that will be fully protective of air quality.

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[2] "The assessment found <u>essentially</u> no difference among the access road alternatives in terms of the improvements provided to local air quality compared to the no-build.. ", all alternatives were equally "low impact" (EAR, pg. 8-44).

15. This failure is particularly troubling in relation to the most vulnerable of Windsor's residents. Children, the elderly, and people with asthma and cardiopulmonary disease are most susceptible to, and suffer most from, poor air quality. (In addition, however, once Ontario's Air Quality Index rating reaches "poor" or "very poor", even healthy adults are put at risk.)

Air Quality in Windsor

16. DRIC has acknowledged that in Windsor already suffers from poor air quality and smog:

> "...existing air quality in the study area is...characterized by elevated pollutant concentrations in relation to rural areas, with periodic compromised air quality due to particulate based contaminants, which typically occur during smog events." (TEPA Air Quality Impact Assessment, pg. E-3)

17. Poor air quality is intimately linked to the particulate released by diesel-powered trucks, and to traffic in general crossing the border in Windsor:

> "Due to the proximity to the Canada US border and the resulting high rate of traffic through the City of Windsor, vehicular emissions and their effect on air quality are of concern...The City of Windsor also has a high fraction of diesel powered transport trucks that are used to move goods into and out of Canada. Diesel exhaust is highly visible, and there is increasing evidence of health effects associated with it..." (TEPA Air Quality Impact Assessment, Dec. 2008, at pg. 1).

18. Windsor's air is also heavily impacted by transboundary pollution, as DRIC recognizes:

> "... eliminating all Ontario sources of emissions of PM2.5 and NO2 will have no impact on air quality during smog days due to the significant contribution from transboundary sources" (TEPA Air Quality Impact Assessment, Dec. 2008, at pg. 14).

19. Consequently, air quality was one of seven key evaluation factors for the access road.[3]

20. DRIC's stated goal in the air quality studies was not only to improve traffic flow, but also to improve air quality in comparison to existing conditions and in comparison to the No Build scenario. DRIC recognized that the preferred access road alternative should contribute as little additional particulate as possible to already poor background conditions, and if possible serve to improve air quality over existing conditions:

> "Thus, a primary objective of the Air Quality Assessment is to have a transportation solution that not only improves transportation, but also

[3] TEPA Air Quality Impact Assessment, Dec. 2008, at pg. 1.

> improves the overall air quality relative to existing conditions or "No Build"." (TEPA Air Quality Impact Assessment, pg. 1)

21. DRIC's modelling has demonstrated that, with the No Build scenario, current levels of air pollution will only get worse. The story told in the EAR, and in the Air Quality Impact Assessment for the Technically and Environmentally Preferred Alternative (TEPA), is that the Parkway doesn't do much better than the No Build at improving air quality.

22. The story that DRIC fails to tell in the EAR is that the Parkway actually does much worse at protecting air quality than an access road with tunnelled segments.

23. In summary, DRIC's data demonstrated that there was an alternative capable of meeting the stated goal of providing significant improvements over current conditions and over the No Build scenario, while also improving traffic flow. **That alternative was Alternative 3, the end-to-end tunnel ("Tunnel"), which was modelled by DRIC in segments that look remarkably like the tunnels that Windsor is proposing in GreenLink.**

24. As set out in detail below, GreenLink offers the same potential as the Tunnel's segments to protect air quality in communities adjacent to the access road and within the greenspace created by GreenLink's tunnels.

25. The Parkway does not come close to the protection offered by GreenLink, or the Tunnel, because the Parkway does not actually propose to build tunnels. The Parkway proposes to build a series of landscaped overpasses, that DRIC has been calling "tunnels". However, these landscaped overpasses are not built like tunnels and unlike real tunnels - they offer no meaningful protection of air quality.

26. Because DRIC has failed to fairly evaluate the Tunnel's segments, it has dismissed GreenLink without even carrying out an evaluation.

27. DRIC's rationale for refusing to evaluate GreenLink is as indefensible as its selection of the Parkway as the Preferred Alternative. Both decisions fly in the face of DRIC's own data, which demonstrates that only by tunnelling key segments of the access road will the air quality of Windsor's residents be protected.

Measuring Air Quality Impacts

28. DRIC selected fine particulate matter (PM2.5) as one of the key air pollutants to study, because it is the most critical air pollutant from a human health perspective. PM2.5 can be inhaled deep into the lungs, and cause serious health impacts, ranging from aggravated asthma and chronic bronchitis to premature death.[4] For

[4] Impacts listed by the World Health Organization (2004), as cited in DRIC Human Health Risk Assessment, Technically and Environmentally Preferred Alternative, December 2008 at pg. 28.

this reason, there is a federal standard of 30ug/m3 for PM2.5 that has been adopted by Ontario ("Standard").

29. It should be noted that DRIC's TEPA Human Health Impact Assessment acknowledges that heath impacts are likely occurring at <u>existing</u> rates of exposure to PM2.5 in Canada:

> "The World Health Organization Working Group stated that.... [adverse] health impacts also occur at particulate matter levels <u>commonly observed in Canada</u>.." (pg. 27)

30. DRIC also acknowledges that threshold of particulate exposure below which health impacts do not occur is not known with certainty, but that based on existing scientific studies, is expected to be lower than the existing Standard – around <u>7 ug/m3</u>, as compared to a Standard of 30 ug/m3. In other words, the Standard is 23 ug/m3 higher than the lowest known effect level for particulate.

> "CARB (2008) indicated that 7 ug/m3 may serve as a possible threshold since this level was the lowest concentration observed in an American Cancer Society study carried out by Pope et al (2002). This large cohort study provided evidence that **<u>exposures to PM2.5 as low as 7 ug/m3 can be associated with premature death</u>**. This threshold was considered in this assessment as the health based limit." (pg. 28)

31. DRIC's Human Health Risk Assessment notes that mortality and disease impacts are measurable for fine particulate even on a <u>very short term basis</u>, as little as a <u>single</u> day smog event:

> "the National Mortality and Morbidity Air Pollution Study (NMMAPS) that has evaluated data from 90 large US cities (Dominici et al 2003)... has shown an increase in cardiopulmonary mortality. In the short term (within 1-2 days after air pollution exposure) the cardiopulmonary mortality increased by 0.21% **<u>for each 10 ug/m3 increase in PM10</u>**. The importance of this is that the particulate matter exposures that North Americans breathe on an almost daily basis have a measurable impact [sic] in our daily mortality total.
>
> Dominici et al (2006) re-examined the risks of cardiovascular and respiratory effects based upon hospital admissions associated with short term exposure of PM2.5. The results of the study indicate a short-term increase in hospital admission rates associated with PM2.5 for all of the health outcomes (ie. cerebrovascular disease, peripheral vascular disease, ischemic heart disease, heart rhythm, heart failure, respiratory tract infection, and chronic obstructive pulmonary disease)... **<u>The largest association was for heart failure, which had a 1.28% increase in risk per 10ug/m3 increase in same-day PM2.5 concentration."</u>**

32. These implication of these findings is that it is absolutely critical that the alternative that is <u>most</u> protective of air quality be selected in relation to the air

quality evaluation factor. Not only should the Preferred Alternative be able to meet the Standard for PM2.5 (and other critical smog precursors), but also it should be the one that adds the least additional particulate to air quality that is already seriously degraded.

<u>Air Quality In Communities Adjacent to the Parkway</u>

33. DRIC's Draft Air Quality Impact Analysis does not show readers the real numbers, or actual pollution levels, that DRIC modelled for each of the six access road alternatives. Instead, DRIC provides results for each alternative as a percentage of the No Build modelling results. This masks the implications of the modelling, and allows DRIC to avoid showing the unreasonably high levels of pollution that the Parkway will generate.

34. When DRIC's percentages are replaced with actual numbers, it is clear that the Parkway <u>fails to meet the Standard for PM2.5 by nearly 9 ug/m3,</u> and is modelled to have as many as 23 days more exceedances than the Tunnel for specific sections of the access road.

35. It is also clear that the Tunnel is the <u>only</u> alternative of six able to meet the Standard and protect the air quality of Windsor residents even on the worst smog day in 2035. The Tunnel is predicted to have no exceedances of the CWS, while the No Build is modelled to have up to 74 days of exceedance for specific segments of the access road.

	Canada Wide Standard	**Tunnel**	**Parkway**	**Do Nothing**
DRIC's Comparison from May 2008 Report (Given in %)	N/A	66%	86%	100%
In Real Numbers: Maximum concentration PM2.5 in 2035 (ug/m3)	30	29.7	[redacted]	[redacted]

5 DRIC does not provide actual numbers for the No Build (ie does not tell the reader what 100% is equivalent to). However, DRIC's monitoring data from air quality stations beside the corridor from 2006 - 2007 provides us with the current worst-day maximum concentrations within the corridor (45 ug/m3 for the first quarter and 47 ug/m3 for the entire year of monitoring). The No Build scenario modelled by DRIC assumes that no improvements will be made to reduce congestion, but that traffic will grow and fuel standards will improve. To be conservative, we have used the current worst day maximum PM2.5 concentration, as measured by DRIC near the existing roadway, as the No Build maximum worst day PM 2.5 concentration in 2035: 45 ug/m3 (for the first quarter), which likely underestimates the worst-day pollution concentrations in 2035.

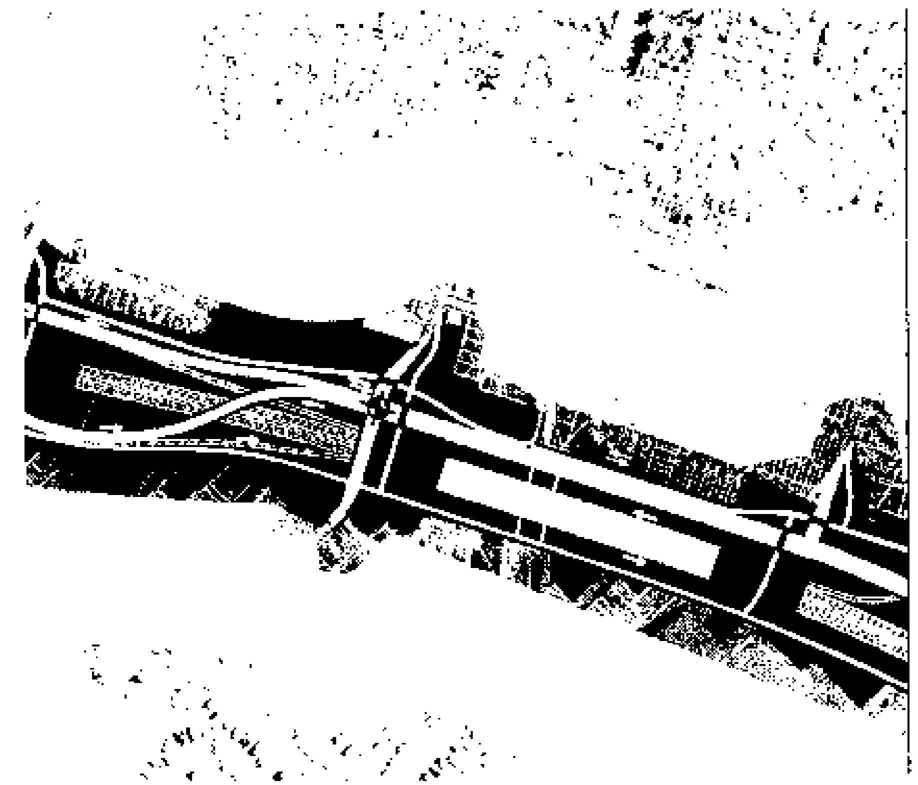
36. The Tunnel reduces total particulate matter on the worst smog day in 2035 by 15.3 ug/m3 compared to No Build, and shows no modelled exceedances of the Standard.

37. To put this improvement in air quality into context, by decreasing PM 2.5 by 15 ug/m3, the Tunnel's segments would result in a decrease of 6% for all causes of death, 9% decrease in cardiopulmonary mortality and 12% decrease in lung cancer based on the health impacts cited by DRIC per 10ug/m3 increment of PM 2.5.[6]

38. In contrast, the Parkway fails to even meet the CWS for PM 2.5. Yet DRIC has concluded that there is no difference between the alternatives, and that all are "equally protective" of air quality. The Parkway cannot be of "equally low impact" to the Tunnel, when it is almost 9 ug/m3 over the Standard.

39. Whatever DRIC concludes in the EAR, the families living in the estimated 230 homes within 50 m of the Parkway ROW, and 585 homes within 100 m of the Parkway ROW (and outside of the area proposed for purchase by DRIC), cannot be expected to consider the Parkway of equally "low impact" as a Tunnel that decreases death rates by up to 12% over the no-build.

[6] DRIC's Human Health Risk Assessment tells us that for every 10 ug/m3 increase in PM 2.5 there may be a corresponding **increase of 4% in all causes of death, 6% increase in cardiopulmonary mortality and 8% increase in lung cancer mortality** (pg. 31). In addition every additional 10 ug/m3 increase in PM2.5 may bring an additional 1.95% in pneumonia rates, 1.27% increase in cardiovascular disease, and 2.5% increase in COPD. DRIC Human Health Risk Assessment, Dec. 2008, at pg. 31-34.



40. This picture shows Parkway with **102 Houses within 100m** of the right of way (including St. Cecile Academy of Music and The Children's House Montessori School), of which 43 **Houses are within 50m** of the right of way (including St. Cecile Academy of Music)

41. DRIC's modelling also demonstrates that the Tunnel will improve air quality by two full categories on the Air Quality Index as compared to No Build. For example, if a smog day with the Do Nothing scenario caused air quality that was "very poor", the Tunnel would generate air quality that was "moderate".

42. The difference, in terms of health impacts, is remarkable. The Do Nothing Scenario would put people with respiratory disease, heart disease, children and the elderly at "high risk", and put even healthy adults at risk, while the Tunnel would protect these vulnerable populations and represent no risk at all to the general population.

43. The Ministry of the Environment's table, below, shows the "health effects of different AQI levels caused by fine particulate matter":

Category	AQI	Fine Particulate Matter ($PM_{2.5}$)
Very Good	0 - 15	Sensitive populations may want to exercise caution.
Good	16 - 31	Sensitive populations may want to exercise caution.
Moderate	32 - 49	People with respiratory disease at some risk.
Poor	50 - 99	People with respiratory disease should limit prolonged exertion; general population at some risk.
Very Poor	100 or over	Serious respiratory effects even during light physical activity; people with heart disease, the elderly and children at high risk; increased risk for general population."

MOE, "Fine Particulate Matter", excerpted from MOE webpage on December 6, 2008 at www.airqualityontario.com science pollutants particulates.cfm.

44. The Parkway is more than one full category worse than the Tunnel in terms of the Air Quality Index. Air quality that is "moderate" with the Tunnel would be "poor" with the Parkway, requiring vulnerable groups to stay indoors and limit physical activity, and creating air quality that puts even healthy adults at risk.

45. Once again, DRIC's EAR chooses to disregard these very real and very significant differences in air quality for Windsor, calling all alternatives equivalent and of equally "low impact". This is simply not true.

46. DRIC's data are as bad or worse. DRIC acknowledges in the December 2008 TEPA Air Quality Impact Assessment that the Parkway will generate air pollution concentrations as high as 114 ug/m3 for PM10, as compared to a standard of 50 ug/m3 for specific segments of the access road.

47. The PM10 maximum is fully 64 ug/m3 over the standard. DRIC's Human Health Impact Assessment advises that changes of as little as 10 ug/m3 of PM10 increases cardiopulmonary mortality by 0.21% in as little as 1-2 days of exposure (pg. 30), and an increase in 0.5% for all causes of death (pg. 32). Applying the increase to the whole 64 ug/m3 exceedance, without considering increases from current levels (which are not provided), the Parkway would increase the risk of cardiopulmonary mortality by 1.34% and for all causes of death by 3.2%.

48. The Tunnel, in contrast, prevents PM10 from escaping into residential communities, protecting residents who live adjacent to the tunnelled segments, along with users of the greenspace above the tunnel segments.

49. In comparative terms, five of the six alternatives that DRIC studied will make Windsor's air quality worse, than it is currently, particularly for those living adjacent to the new roadway, where impacts will be most keenly felt. Only one alternative will make it better.

50. DRIC disregards these findings completely in the EAR, and buries them in misleading text and tables in the Draft Air Quality Impact Analysis (May 2008).

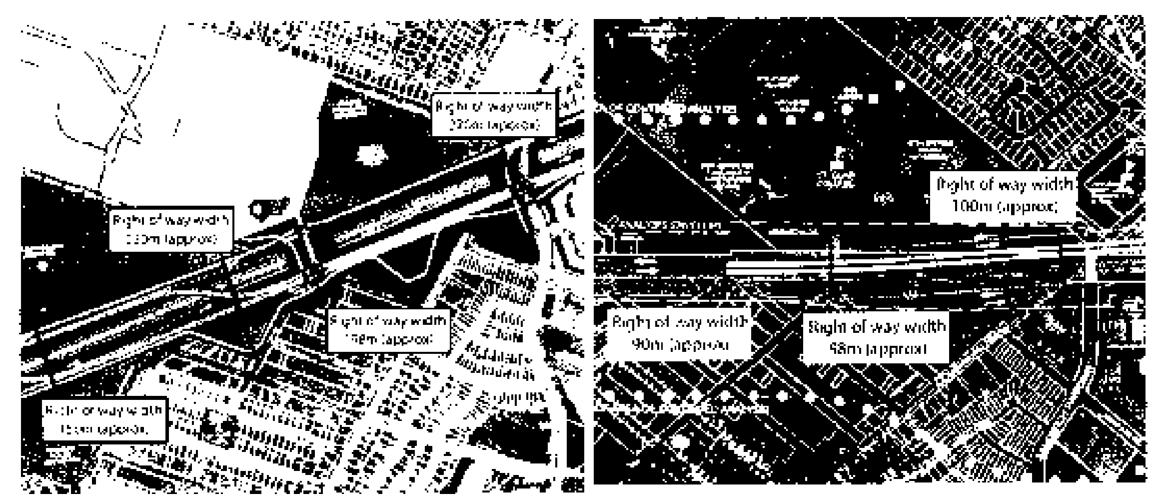
Air Quality Inside the Parkway ROW

51. Worse still is the air quality inside the Parkway ROW – precisely where the vast majority of DRIC's much-heralded greenspace will be located.

52. The Parkway places greenspace directly above the pollution source – i.e. on landscaped over passes – and directly adjacent to the pollution source, along the edge of the road and inside the Parkway's ROW.

53. As outlined above, air quality 50 m away from the Parkway ROW will fail to meet the CWS by a wide margin. The disparity widens even further, however, when one considers that those impacts were measured 40-200 m farther away from the Parkway than from the Tunnel, because the ROW for the Parkway was artificially widened.

54. The figure below illustrates the same section of the Parkway ROW and the Tunnel ROW showing the range in ROW widths for each (198 m – 270 m for the Parkway as compared to 90-100 m for the Tunnel). For this specific section, the Tunnel ROW averages ~96 m, while the Parkway is anywhere from or 54m to 174 m wider than the Tunnel.



55. The very limited improvement in air quality that DRIC predicts when comparing the Parkway to the No Build is due not to the impact of the overpass structures, but rather due to the fact that DRIC has widened the right-of-way ("ROW") for the Parkway, adding green buffers to this alternative before measuring impacts.

56. DRIC clearly acknowledged this mitigation of the Preferred Alternative in the TEPA Air Quality Impact Analysis released in December 2008.

> "The Right of Way (ROW) is also expanded in sections with the Windsor-Essex Parkway to provide additional buffer" (pg. 2)

57. This green buffer was not integral to the design of the access road. Trails and greenspace could have been added alongside any of the other five Practical Alternatives with the same results in terms of air quality.

58. More important, the Parkway was the only alternative to be mitigated before the impacts of air pollution were measured. DRIC specifically refused to consider mitigation for any alternative other than from the Parkway.

> "Mitigation options were not considered in this phase of the assessment". (Draft Air Quality Impact Assessment, May 2008, pg. 36)

59. As the impacts of any road are felt within the first 250 m, and DRIC measured air pollution 40-200 m further away from the source in relation to the Parkway than it did for any other alternative, DRIC unfairly stacked the deck in favour of the Parkway.

60. Air quality for people walking directly adjacent to the road, or on an overpass on top of the road, will be much, much worse than it is 100 m away from the road. DRIC provided data within the last week about air quality at the landscaped overpasses.[7]

61. What is clear from the December data is that PM 2.5 levels as high as 71 ug/m3 are modelled for the greenspace above the Bethlehem / Labelle Tunnel (South Portal) in 2035. The Standard for PM 2.5 is 30 ug/m3. DRIC also predicts that the CWS will be exceeded at this location for 74 days of the year.

62. In other words, air quality fully 41 ug/m3 above the Standard for PM2.5 has been predicted by DRIC for the greenspace on the landscaped overpasses.

63. DRIC describes this very greenspace as "new recreational space (parkland and trails)"[8], which constitute a "community benefit"[9] of the Parkway alternative, and a "corridor that better connects communities and natural features"[10]:

[7] It should be noted that DRIC's May 2008 data and its December 2008 data are irreconcilable. One must be incorrect. Setting aside the inconsistency for the purpose of providing comments, both reports show significant exceedances of air quality standards.
[8] Social Impact Assessment at pg. 127.

> "The Windsor-Essex Parkway demonstrates a greater consistency with local municipal planning in terms of meeting objectives that improve the life of its residents..."[11].

64. Nowhere in DRIC's discussion of the benefit of the greenspace and green buffer included in the Parkway alternative does DRIC analyze the negative impacts of air quality within that greenspace that is 41 ug/m3 above the Standard for PM2.5. This is a notable absence particularly since vulnerable groups can be expected to use this greenspace – children and the elderly, for example, are precisely the sort of users that one might expect for recreational walking trails and parkspace.

65. Nor is PM 2.5 the only pollutant modelled to reach such staggering exceedances. On top of the same tunnel in 2035, PM10 is modelled to reach a maximum of 484 ug/m3, as compared to a standard of 50 ug/m3. **In other words, the Parkway produces air quality that fails the standard by 434 ug/m3 – or by 8.68 times.**

66. DRIC also predicts 182 days where the standard is exceeded – or fully half of the year.

67. DRIC does not tell stakeholders that the Tunnel – or the GreenLink tunnelled segments - would protect against all of these exceedances, because DRIC fails to present the results for the Tunnel or for GreenLink in the December TEPA Air Quality Impact Assessment or the Human Health Impact Assessment.

68. DRIC attempts to downplay the significance of these stunning exceedances by comparing the exposure of residents using the greenspace within the Parkway to the exposure of workers on a job site, and arguing that much higher limits should apply. However, DRIC acknowledges that short-term exposure criteria for healthy, adult workers have no bearing on health impacts within vulnerable groups, whether persons with asthma, cardiac conditions, the elderly, or young children. DRIC has simply failed to consider the health impacts of high pollutant levels on these groups.

69. The segments of the Tunnel evaluated by DRIC averaged 1.2 km in length, and generated air quality levels that met regulatory standards and provided a significant improvement over current conditions and the No Build scenario - meeting the very goal that DRIC stated in its TEPA Air Quality Impact Assessment.

70. GreenLink proposed 3 tunnelled segments of 1 – 1.2 km in length, located strategically so as to protect residential communities on either side of the Access road from air pollution.

71. GreenLink's long tunnels will protect air quality and prevent pollutants from reaching the greenspace above the tunnels and the backyards and adjacent homes.

[9] Ibid.
[10] EAR at pg. 8-46.
[11] Ibid.

just as the segments of the Tunnel were modelled to do. DRIC's own data demonstrates that only the segments of the access road that were tunnelled were able to meet the regulatory standard.

72. It must be reiterated that the only alternative that DRIC studied that included tunnelled segments was Alternative 3 (Tunnel). Although DRIC talks about "tunnels" when it describes the Parkway, what DRIC proposes are essentially landscaped highway overpasses, and not tunnels.

> "The tunnel structures are **typical of most overpass structures** ..."
> (Draft Air Quality Impact Assessment, May 2008, at pg. 37)

73. As set out above, the Parkway's landscaped overpasses will clearly fail to protect air quality, while GreenLink's tunnels fully protect air quality – as the segments of the Tunnel did. As a result, the Parkway and GreenLink are fundamentally different from an air quality perspective – just as the Parkway and the Tunnel were fundamentally different.

74. GreenLink is the only alternative, apart from the Tunnel itself, that will create healthy greenspace with clean and breathable air, and to protect the communities adjacent to the Access road beside the tunnelled sections.

Noise Impacts Inside the Parkway ROW

75. DRIC also failed to consider the noise levels that users of the Parkway's greenspace would be subjected to.

76. The City of Windsor commissioned an independent Peer Review of noise levels that would be predicted to occur and impact users walking or playing on top of the Parkway landscaped overpasses (which vary in width between 120 to 240 m), as compared to the noise levels that would be experienced on GreenLink green space above its much longer (e.g. 1 km) tunnels.

77. The analysis carried by Valcoustics Canada Inc. (Dr. Al Lightstone, one of Canada's senior noise consultants) indicates that the noise levels on the DRIC overpasses would be significantly higher – by approximately 10 decibels, which is perceived by listeners as twice as noisy - as the noise level that would be experienced on green space above the segments of GreenLink's 1 km+ tunnels or the segments of the DRIC Tunnel, Alternative 3.

78. Noise levels on the DRIC landscaped overpasses (part of the DRIC "greenspace") would be twice as loud as the minimum noise level the Ministry of Environment recommends for recreational backyard purposes.

79. The acoustics analysis also found that within an area of about 67 metres on either side of the DRIC Highway 401 roadway, users of the Parkway "greenspace" will be exposed to noise levels of about 65 dBA, which again is 10 decibels more, or

twice as loud, as the noise level that the Ministry of Environment recommends for recreational backyard purposes.

80. Indeed, the noise level from the Parkway would only drop down to the minimum MOE recommended level for recreational areas at a distance of almost half a kilometre (450 metres) from the Parkway roadway. Even at a distance of about a 150 metres from the roadway, the predicted noise level is 60 dBA, which is "somewhat noisy" and not ideal for quiet contemplation.

81. DRIC's EAR is silent in relation to noise impacts to users of the Parkway's greenspace, and in relation to the comparative noise impacts of the Parkway and the Tunnel, or the Parkway and GreenLink.

Conclusion on Air Quality Impacts

82. Based on the foregoing review, three conclusions are inescapable.

83. First, the DRIC's own data does not support the conclusion that the Parkway is the environmentally preferred alternative.

84. Second, only GreenLink offers the benefits of the Tunnel's segments in terms of air and noise quality protection – the Parkway does not.

85. Third, only tunnelling key sections of the Access road will protect Windsor's air quality, and make the greenspace produced a comfortable and healthy place to relax and exercise for Windsor's residents and families.

86. The Parkway's greenspace will be polluted, noisy and unhealthy greenspace, which will fail to meet regulatory standards. In comparison, GreenLink's 340 acres of parkland can be expected to meet regulatory standards on the basis of the modelling for the Tunnel. GreenLink's parkland would be healthy, protective greenspace from an air quality and noise perspective.

87. The same is true of the air quality in the backyards of homes neighbouring the tunnelled segments of GreenLink – air quality would be protected, achieving regulatory standards.

88. GreenLink offers the potential to protect air quality in the same manner as the Tunnel segments, at considerably less cost. It offers significant and measurable benefits using the DRIC's own criteria, both for the users of 340 ha of parkland above GreenLink's tunnels, and for the homes and sensitive receptors that live adjacent to the proposed corridor, all of whom would see their air quality protected with GreenLink.

89. In an EA in which air quality is ranked as an important factor, the real impacts of the existing alternatives on air quality and health should have been fairly

evaluated and compared as between all reasonable alternatives. This was not done. DRIC's EAR therefore violates the Environmental Assessment Act, DRIC's own Terms of Reference ("TOR"), and the common law requirements of procedural fairness and fundamental justice.

90. GreenLink can avoid the negative air quality impacts that the Parkway will generate, at less than half the cost of the Tunnel. GreenLink merits a fair evaluation.

B. GREENLINK WINDSOR CLEARLY QUALIFIES AS THE ENVIRONMENTALLY PREFERRED ACCESS ROAD ALTERNATIVE IN ACHIEVING DRIC EA CRITERIA, WHEREAS THE PARKWAY DOES NOT.

A fair and objective analysis using DRIC's own data and modelling of segments of the DRIC Alternative 3 tunnel demonstrates that tunnelled sections for the access road, as proposed by GreenLink, (but not the short overpass/land-bridges in the Parkway) would provide significant protection of human health and the environment and result in GreenLink being identified as the "environmentally preferred alternative".

GreenLink would also more clearly achieve other important DRIC EA criteria better than the Parkway, such as connecting communities and community features on either side of the right-of-way (ROW) through healthy greenspace. GreenLink Windsor will provide healthy greenspace and connections of communities on either side of the ROW, in contrast to the contaminant laden and noisy land bridges and other alleged "green" areas in DRIC's Parkway, without the cost of a full tunnel.

91. The following slides are part of a power point presentation by the City given to DRIC on May 26, 2008 when DRIC finally attended a meeting with Windsor Council – almost one month after DRIC had announced it had decided the Parkway was its preferred access road alternative. In its draft EAR DRIC has continued to ignore its obligation to carry out the required GreenLink evaluation. These slides however show how GreenLink is preferred using the DRIC EA criteria:

GreenLink Better Meets DRIC Criteria
But DRIC Failed to Evaluate GreenLink
When GreenLink is Evaluated the Result is Clear

DRIC PARKWAY CRITERIA (August 07)	PREFERRED ALTERNATIVE
Reduce/eliminate the potential for the access road to act as a barrier between communities	GreenLink
Maintain/enhance local access and maintain/enhance community connections	GreenLink
Protect people and communities	GreenLink
Create a green corridor for Windsor that would truly be unique, with thousands of trees and shrubs, acres of new green space and natural landscaping along the Parkway	GreenLink
Allow for people-friendly spaces on wider bridges and short tunnels. These spaces will allow communities on both sides of the corridor to connect and provide opportunities for new trails for pedestrians and cyclists, linkages for wide landscaped buffer zones, and entrance points for local traffic	GreenLink
In combination with the planting of trees and shrubs, improve air quality, and limit the noise and the visibility of international trucks from nearby residences	GreenLink
Separate international and local traffic, improving operations and safety for motorists	No Preference
Address the future transportation needs of the Region	No Preference

ACCESS ROAD ASSESSMENT
GreenLink Better Meets DRIC Factors

DRIC FACTORS	PREFERRED ALTERNATIVE
Changes to Air Quality	GreenLink
Protection of Community and Neighbourhood Characteristics	GreenLink
Consistency with Existing and Planned Land Uses	GreenLink
Protection of Cultural Resources	GreenLink
Protection of the Natural Environment	GreenLink
Improvements to Regional Mobility	No Clear Preference
Cost and Constructability	[illegible] constructable. Parkway is somewhat less $

- GreenLink provides much greater protection for and connection of communities.
- Both GreenLink and the Parkway are constructable. While GreenLink is initially somwhat more costly than the Parkway, GreenLink provides more long-term benefits.
- The 2008 DRIC Windsor-Essex Parkway Provides No Real Change from the 2007 Parkway Design.

Comparing GreenLink to the Parkway

The following table compares tunnelling lengths in the original (2007) DRIC Parkway, in DRIC's 2008 revision, and in the City of Windsor's GreenLink proposal. As can be seen there is no real change between the two DRIC parkways. In comparison GreenLink provides must greater protection for and connection of communities:

Connecting and Protecting: Parkway v. GreenLink

DRIC Parkway			GreenLink	
Segment	2007 Length	2008 Length		
LaBelle	240	240 (N/C)	1020	Bellewood H Estates
Grand Marais	120	120 (N/C)		
Pulford	130	130 (N/C)	230	Pulford
Oakwood	120	120 (N/C)	1220	Oakwood
Todd Lane	130	130 (N/C)		
Huron Church Line	220	220 (N/C)		
St. Clair College	120	120 (N/C)	240	St Clair College
Cousineau	170	120 (-50)	1000	Mt. Carmel/Villa Paradiso
Hearthwood	160	220 (+60)		
Howard	120	240 (+120)	120	Howard
New Tunnel at Spring Garden	-	220 (+220)	-	-
Total	1530 m (Approx.)	1280m (Approx.)	3,830 m (Approx.)	

The Parkway Trail – Recreation Trail or Sidewalk?

DRIC has noted that they have 20 km of recreational trail in the Parkway concept.

However....

- Of the 20 km of trail, approximately 4.5 km is directly adjacent to, or in very close proximity to, a roadway – 23% of the trail functions as a sidewalk and not a true recreational trail.
- The close proximity of large portions of these trails to roadways is detrimental to the health of the path users.
- On average, trail walkers or joggers along the Parkway will be exposed to higher PM 2.5 concentrations than background. With GreenLink, there will only be limited areas with PM 2.5 concentrations above background.
- The above will likely compromise desirability and use of this trail.

Parkway Still Fails to Meet DRIC Criteria Compared to GreenLink

In summary, the DRIC 2008 Parkway is substantially the same as the DRIC 2007 Parkway. Neither version of the Parkway, compared to GreenLink, achieves the objectives DRIC itself proclaimed.

92. The following is taken from Gowlings March 31/08 letter to DRIC, attention Dave Wake. This letter also enclosed a disk which provided DRIC with extensive

technical studies carried out by expert engineering and planning consultants in which the City provided further elaboration of why GreenLink was a viable and preferred alternative. DRIC has never specifically provided to the City any professional evaluation responding to these studies or to the matters specifically elaborated in the Gowlings March 31, 2008 letter. Further, DRIC has not undertaken any evaluation of GreenLink in the draft EAR using the required EA evaluation criteria.

Excerpts from Gowlings March 31/08 letter to DRIC:

"<u>DRIC's Initial Objectives and Commitments for the Parkway Access Road – August, 2007</u>

In August, 2007 DRIC proposed a "Parkway" alternative for the access road which would meet the following objectives:[12]

- Reduce/eliminate the potential for the access road to act as a barrier between communities.
- Maintain/enhance local access and maintain/enhance community connections.
- Protect people and communities.
- Create a green corridor for Windsor that would truly be unique, with thousands of trees and shrubs, acres of new green space and natural landscaping along the Parkway.
- Allow for people-friendly spaces on wider bridges and short tunnels. These spaces will allow communities on both sides of the corridor to connect and provide opportunities for new trails for pedestrians and cyclists, linkages for wildlife, landscaped buffer zones, and entrance points for local traffic.
- In combination with the planting of trees and shrubs, improve air quality, and limit the noise and the visibility of international trucks from nearby residences.
- Separate international and local traffic, improving operations and safety for motorists.
- Address the future transportation needs of the Region.

Also in August 2007, the DRIC Study Team issued an "Information Sheet" entitled "The Parkway: A New Option", and in this document DRIC stated it had listened to public

[12] DRIC-URS Public Information Open House No. 5 Power Points, pg 48, and Frequently Asked Questions, August, 2007.

comments and concluded that "local residents want an access road to a new border crossing that:

- takes trucks off local streets
- reduces the amount of pollutants in the air
- improves the movement of border-bound traffic
- is not intrusive
- is state-of-the-art
- will not be determined on cost alone
- improves the quality of life
- provides a long-term solution."

The DRIC study team also stated in this August, 2007 document that the Parkway alternative, which was developed "based on refinements to the below-grade Practical Alternatives (Alternatives 1B and 2B) and reflecting the study goals and the community input received to date"

> "will allow communities on both sides of the corridor to reconnect and provide opportunities for new trails for pedestrian and cyclist and linkage for wildlife...The concept of the Parkway...can address all the requirements for the access road identified by the community and the study team", listed in the information sheet.

These were, and are, commendable objectives for the determination of the type of access roadway from Highway 401 to a new bridge crossing. However, at that time DRIC did not provide any details or reports analyzing why the Parkway concept was the preferred design to achieve these objectives, and in fact DRIC indicated it believed further study and community consultation was required in respect of arriving at the best design for the access road.

Indeed, the DRIC study team made the commitment that the Parkway option

> "will be refined further, based on comments received through public consultation....[t]he plan we are showing in August is not the final access road option. We will look to the community for their input on the look and feel of the Parkway. Community input continues to be an essential part of the DRIC study process...with community input, we can make this refined option even better."

<u>The City's Response to DRIC's Invitation for "Community Input" – GreenLink Windsor</u>

The Parkway concept is a depressed six-lane controlled access roadway (and four-lane service road at street level), with a relatively conventional cross-section and 10 crossings, labelled "land bridges", that would have some landscaping associated with them, as well as along the edges of the right-of-way in between the two directional pavement portions. These land bridges represent approximately 25% of the Parkway.

City Council took seriously the DRIC Study Team's commitment that the Parkway plan presented by DRIC in August, 2007 "is not the final access road option" and that DRIC "will look to the community for their input" and that "with community input we can make this refined option even better."

Following its review of the Parkway concept, Windsor City Council retained Parsons Brinckerhoff (PB), a major international engineering firm headquartered in New York, and Sam Schwartz PLLC, a firm specializing in transportation planning, to determine if DRIC's objectives and public wants could be more effectively achieved, and negative impacts more effectively mitigated, by an alternative design for this access road.

The mitigation plan designed by Sam Schwartz Inc. and Parsons Brinckerhoff used the same basic route, similar, but tighter property requirements, below grade cut and cover tunnels, six in total, and utilized the same highway access points as the Parkway alternative. However, their plan included much more use of cut-and-cover tunnelling adjacent to residential and institutional receptors, the creation of functional parkland over tunnels, thousands of trees, a continuous community trail system and much better linkages of communities and pedestrian access across the new highway and service roads. The plan was named "GreenLink Windsor".

The City's consultants developed the GreenLink Windsor proposal, which was presented publicly in October, 2007. The GreenLink alignment has six covered highway segments or tunnels, ranging in length from 120 m to 1,220 m, with 3 tunnels longer than 1 km, with the result that GreenLink has tunnels covering about 65% of the new access road, with landscaping on these longer tunnel roofs. The tunnel portals (entrances and exits) are located away from adjacent sensitive areas such as residential or institutional communities.

SUMMARY OF DRIC PARKWAY VS. GREENLINK WINDSOR

as presented in October, 2007

	DRIC Parkway	GreenLink Windsor
Cost	$1.5 B	$1.566-1.676 B (2007)
Vehicular Capacity to 2035	Much more than adequate	Much more than adequate
Pollution Impacts	Throughout corridor	Only at portals—controlled by foliage
Noise	Throughout corridor	Limited to non-residential areas
Creates City Links	Poorly	Unifies City
Green Opportunities	Minimal—mostly between roadways	Dramatic—more than 300 acres
Covered Length of Highway (from Hwy 3 Merge to EC Row)	1,500 metres (25%)	3,830 metres (64%)
Pedestrian Safety	Most conflicts resolved, but pedestrian bridges may not be widely used	Conflicts resolved using grade-friendly bridges
Community Cohesion	Minimal	Significant
Community Statement	Virtually none	Could become world-class attraction in and of itself
Land Values	Flat	Significant increase

WHAT GREENLINK ACHIEVES

Meets DRIC's Parkway Objectives:

Protect people and communities -- Of the approximate 1290 City of Windsor homes in the vicinity of the 6-km route, GreenLink tunnels shield approximately ±90% from the new highway.

Create a signature gateway welcoming people to Windsor, Ontario and Canada

Create a green corridor for Windsor that would be truly unique, with thousands of trees and shrubs, acres of new green space and natural landscaping along the Parkway

Allow for people-friendly spaces on wider bridges and short tunnels. These spaces will allow communities on both sides of the corridor to connect and provide opportunities for new trails for pedestrians and cyclists, linkages for wildlife, landscaped buffer zones and entrance points for local traffic

In combination with the planting of trees and shrubs, improve air quality and limit the noise and the visibility of international trucks from nearby residences

Separate international and local traffic, improving operations and safety for motorists

Address the future transportation needs of the region

Provides cross-community linkages, uniting the divided east and west sides of Highway 3/Huron Church Road. Division is intensified in the DRIC Parkway concept and is not addressed with a bored tunnel.

Enhances functional ecological linkages between environmentally protected areas.

Provides uninterrupted pedestrian and non-motorized pathways designed to blend with park surrounding.

Limits exposure to emissions to tunnel portal vicinity - tunnel portals have been intelligently sited away from sensitive land receptors.

Provides *functional* open space — active green space encourages use and collection areas.

Consistent with City of Windsor Official Plan and Environmental Master Plan.

Important Comparison Questions	DRIC Parkway	GreenLink Windsor
What is it?	• Open cut below grade highway with land bridges	• tunnelling to connect communities and protect neighbourhoods • a plan that creates parklands
Does it protect people?	• no, it divides and separates neighbourhoods	• yes, tunnels protect adjacent neighbourhoods
Does it connect communities?	• no, open cut divides communities	• yes, unites communities of Bellewood Estates, Spring Garden, Huron Estates, Oakwood Park, Villa Borghese, Pulford, Mt. Carmel, Villa Paradiso, and LaSalle
What does it do for air quality?	• distributes pollutants along corridor • no mechanical ventilation	• points exhaust away from sensitive areas • mechanically ventilated, 126 jet fans
What about traffic noise?	• impacts communities along corridor	• protects residential areas from noise
What will it cost?	• $1.5 B	• $1.566 – 1.676 B (2007)

Public Response to GreenLink

Sam Schwartz, Nasri Munfah of Parsons Brinckerhoff and Mark Galvin of the City of Windsor introduced the GreenLink Windsor proposal in a presentation to a special meeting of Windsor City Council on October 9th, 2007. The public and media attended the presentation, and the presentation was broadcast on Cogeco Cable 11 and subsequently replayed several times over the next week.

To present the GreenLink Windsor proposal to the residents of Windsor and obtain their views of the City's proposal compared to the DRIC Parkway alternative, the City and its consultant organized a series of five Public Open Houses during the week of October 15th – 19th, 2007.

Each Open House featured a series of about 30 information panels and maps showing various aspects of the GreenLink Windsor proposal and the proposed design of the tunnels and service roads adjacent to communities between Hwy 401 and the EC Row Expressway. Two TVs continuously replayed a video of the GreenLink Windsor presentation to Council.

At each Ward Open House, comment forms were handed out to the attendees with a request to fill them out at the Open House. The comment form asked for any comments, and asked the question: Do you prefer the GreenLink Windsor proposal to the *DRIC Parkway? Y_ N_; If Yes why?: If no, why not?* The questions were open ended, and respondents could give as many reasons as they liked. People were asked to provide their name and how to contact them if they had asked a question or would like more information. A copy of the comment form is included as Appendix C of this report.

GreenLink 2007 Open House Attendance and Comment Forms Received

	Location	Date	Attendance	Comments Forms
Ward 1	Massey Secondary School	October 15	~ 1500	389
Ward 2	Mackenzie Hall Cultural Centre	October 18	~450	129
Ward 3	Willistead Manor	October 17	~370	106
Ward 4	Gino A. Marcus Community Complex	October 16	~240	80
Ward 5	Forest Glade Community Centre	October 19	~435	145
TOTALS			**~2995**	**849**

The October, 2007 Open House public responses to GreenLink Windsor were overwhelmingly positive. GreenLink Windsor was clearly preferred by the vast majority (90% average from all Wards) of people who filled out the comment forms. People loved the green spaces, the links between the neighbourhoods, the use of tunnels, and the contribution GreenLink Windsor will make to the City of Windsor.

Ward	Preferred GreenLink Windsor to the proposed DRIC Parkway	Did not prefer GreenLink Windsor to the proposed DRIC Parkway	No preference	Unsure/Undecided	Other (destroyed, otherwise not counted)
Ward 1	89%	4%	5.6%	1.5%	0.4%
Ward 2	84%	5%	10%	1.5%	NA
Ward 3	94%	2%	3%	1%	NA
Ward 4	94%	1%	5%	NA	NA
Ward 5	88%	3%	8%	1%	NA

Representative positive comments included:

"Green Link is far superior to the DRIC proposal. It's what Windsor needs and deserves."

"Looks great – get it done!"

"Excellent compromise between DRIC and full tunnelling."

"I think this is a great solution for everyone."

"Big improvement over DRIC."

"Attractive, well thought out, needed, something Windsorites can whole-heartedly support and will bring a sense of pride to the citizens of Windsor."

"I am much more impressed with this proposal. Would be much better for Windsor's future."

"It is very impressive! It doesn't split the city and should move truck traffic to a border crossing with little impact to the city."

"This to me is an awesome, awesome plan. Providing green space to the City of Windsor, addressing the problem of moving the traffic, making the City a masterpiece in providing visitors a first impression - what else could we ask for."

Fifty-five comment forms were mailed to the City after the Open Houses. Fifty-two out of the 55 respondents preferred the GreenLink Windsor proposal to the proposed DRIC Parkway. Two respondents had no preference, and one respondent did not prefer the GreenLink Windsor proposal because he wants full tunnelling.

In response to the question as to why they preferred the GreenLink Windsor proposal, the reasons given were similar to the ones received at the Open Houses. In order of preference, the main reasons given included: more greenspace/better for the environment; meets community needs/more community oriented/doesn't divide City; more tunnelling; reduces pollution, and good for tourism. Of the caveats on their preference, most mentioned air quality concerns and need for scrubbers or filters; three respondents still preferred a full tunnel, and two respondents mentioned additional tunnelling; namely, at Howard, North Talbot and Southwood Lakes.

Further indications of the overwhelming resident support for the GreenLink Windsor proposal is provided by the Border Solution Survey Results. In response to the GreenLink Windsor information brochure, *We're at a crossroads You Deserve a Greener Future*, that was mailed out to City residents and available at the Open Houses, residents were asked to call 311 to say Yes to GreenLink Windsor. In response to the question, "Are you in support of the GreenLink Windsor Border Solution?", 99% of the 3166 callers stated "yes".

Further information is found in the Open Houses Report Summary transmitted with this letter and a statistical summary of responses to the Windsor 311 Call In Survey is found as Appendix 2 to Peter Walker's Planning Analysis Report.

DRIC and City Interactions October and November, 2007 re GreenLink

As you know, you and some other DRIC team members attended these October, 2007 open houses and witnessed the overwhelming public support. The City provided GreenLink Windsor design details to DRIC in October, 2007 and City consultants and DRIC consultants met on November 14, 2007 to discuss various details of GreenLink, at which time DRIC raised technical and cost issues. If DRIC requires further copies of the GreenLink details, they are found on the City's Web site http://www.greenlinkwindsor.com.

Following that meeting, on November 29th, the City provided you with a disk containing the additional information DRIC had requested. This included:
Interfacing Meeting Notes (meeting of November 14, 2007)
Comparison of Air Quality Impacts of Various Options
Service Road Tunnel Cross Section
401 Tunnel Cross Section (including jet fan ventilation)

401 Tunnel Cross section (not including jet fan ventilation)
Comparison Table (Planning Considerations)

New Supplementary GreenLink Technical Studies Being Submitted to DRIC With This Letter

However, as DRIC had raised a number of questions at the November 14th, 2007 meeting, the City had its consultants carry out further analysis of GreenLink.

These new technical studies are as follows:

GreenLink Additional Air Quality Analyses
GreenLink Constructability and Construction Cost Estimating Review
Property Acquisition Differences between DRIC's Parkway and Windsor's GreenLink
GreenLink Economic and Fiscal Impact Analysis
GreenLink Potential Air Rights Development

These recently completed studies confirm GreenLink's attributes and demonstrate GreenLink is clearly viable, constructible, meets and exceeds DRIC criteria and provides even more benefits than originally indicated when it was presented by the City to DRIC in October. These further technical studies were carried out by Parsons Brinckerhoff (PB), and independent peer reviewers. City staff contributed to the report analyzing the differences in property acquisition requirements between the Parkway and GreenLink.

These new technical studies are being electronically transmitted to you with this letter so that DRIC can study the new information.

New Planning Analysis

The City also commissioned a Planning Analysis by one of Ontario's senior Land Use Planners, Peter Walker, FCIP, RPP comparing GreenLink and the Parkway. A copy of that Planning Analysis report is also electronically enclosed.

Mr. Walker's analysis concludes that the Parkway is not consistent with Provincial planning policies. These deficiencies are highly significant from an EA perspective, in that both DRIC's criteria for the access road announced in August, 2007 and in the ToR DRIC committed to ensure planning policy is respected in the choice of the preferred alternative. On the other hand, the Planning Analysis found that GreenLink Windsor meets and exceeds Planning policies and the DRIC access road objectives.

To quote from Peter Walker's Planning Analysis report:

"Greenlink represents good planning, and is an appropriate response to the DRIC process which recognizes that in providing an access road to a new Detroit River crossing, it is desirable to reconnect communities and provide new greenspace for residents. Greenlink is also more responsive to and in conformity with the Provincial Policy Statement for land use planning and the City of Windsor Official Plan policies than the Parkway.

The Parkway has evolved from a process that does not appear to have considered either the Provincial Policy Statement, or the provisions of the City's Official Plan in the comprehensive manner that both policy documents require. The Parkway proposal is dependent only on the transportation-related policies of both documents. That is not consistent with Provincial Policy nor the Official Plan, nor is it sufficient, since virtually every aspect of the Parkway proposal involves change to existing land use, and therefore the planned use, and such changes need to be made in conformity with the Official Plan, unless an amendment is being requested.

The Greenlink proposal, on the other hand, is a product of City Council acting in a manner consistent with the planning framework it is obligated to use. Therefore although there will be changes to the existing and planned use, the changes occasioned by Greenlink would be less intrusive and much more in conformity with the City's planning policies.

In comparing the two proposals from a Planning standpoint, we conclude Greenlink is the superior solution for the City of Windsor as a whole, and for residents of the neighbourhoods adjacent to the access road. The Parkway does not provide the scale of relief that is needed, and possible, as illustrated by the Greenlink proposal.

Greenlink is an opportunity to respond to the need for a new access route that is sensitive to the existing and future needs of the community. It has been proposed in a professional manner by the City of Windsor; it is obviously the alternative that has the most benefits to offer the community; and it is strongly supported by the community at large.

We conclude that Greenlink is far more responsive to the environmental assessment process for elements that involve the related planning process, which elements in turn relate to the impact on the existing and planned use of lands affected by the transportation aspects of the assessment."

Closing

The City is encouraged by results of the recent supplementary GreenLink studies. The results only strengthen the GreenLink option; these new studies show GreenLink provides more benefits and is even better than when first announced, and that there are clearly compelling reasons to embrace it.

One of the main concerns previously voiced by DRIC is that of cost. In response, the City commissioned a constructability/value engineering/peer review of GreenLink. The analysis included establishing project specific unit prices and used costs of material, labour, equipment, supplies, contractor and subcontractors' field and home office overheads, performance bond, and contractor's anticipated profit. This process is usually used for projects at an advanced design level and is based on a similar approach as used by contractors in bidding projects. All data used is being provided to DRIC as part of the report. Using this more in-depth information, the new report confirms that GreenLink costs are within the same scope estimated for the Parkway.

Moreover, GreenLink creates a potential tax base for development. It would be short-sighted to only look at upfront costs; people don't want to live beside a 6 lane freeway but they do want to live besides a park. Creating viable land that can be either developed after the fact or enjoyed by nearby residents, increasing the desirability of living in the vicinity, is a main attribute of GreenLink. GreenLink is shown not only to be viable but meets and exceeds DRIC criteria and is clearly more appropriate in meeting DRIC objectives and the ToR than the Parkway.

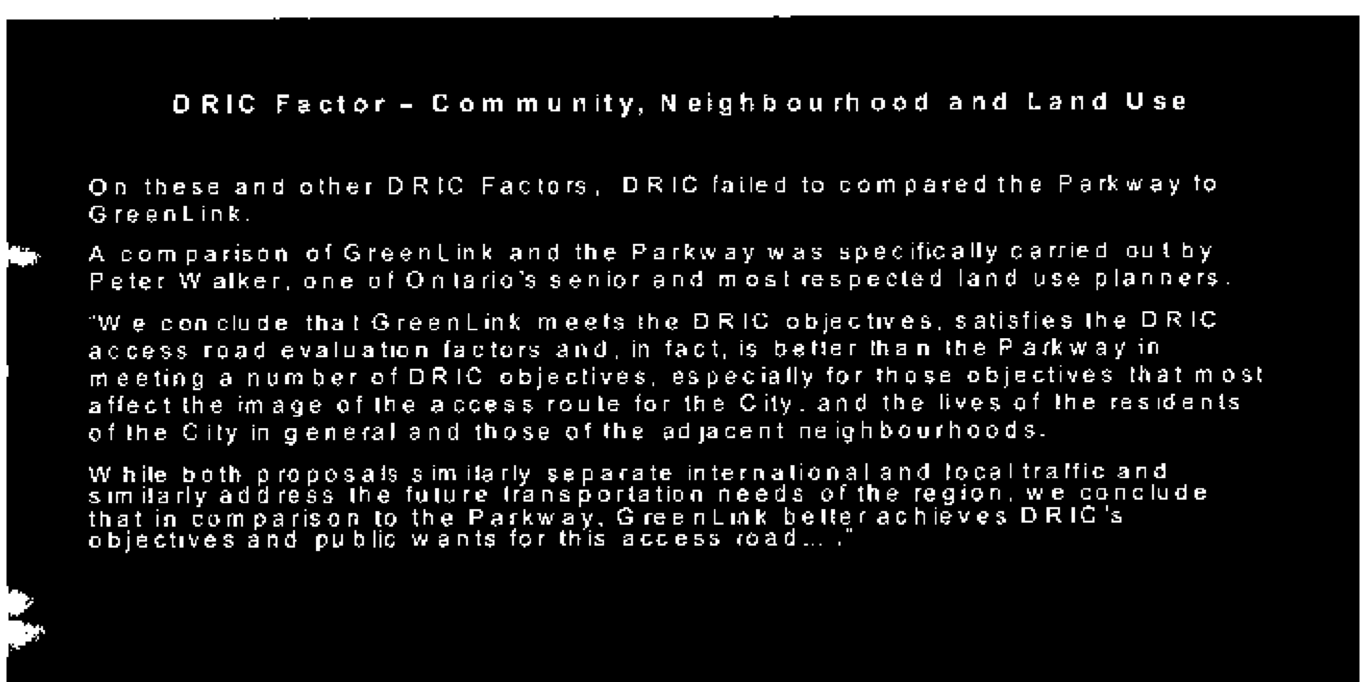
For DRIC to choose the Parkway, which presents a design that least meets DRIC and ToR criteria compared to GreenLink, would signal significant negative implications for conforming with requirements of the OEAA. This issue would form another important topic for the requested meeting between DRIC and the City.

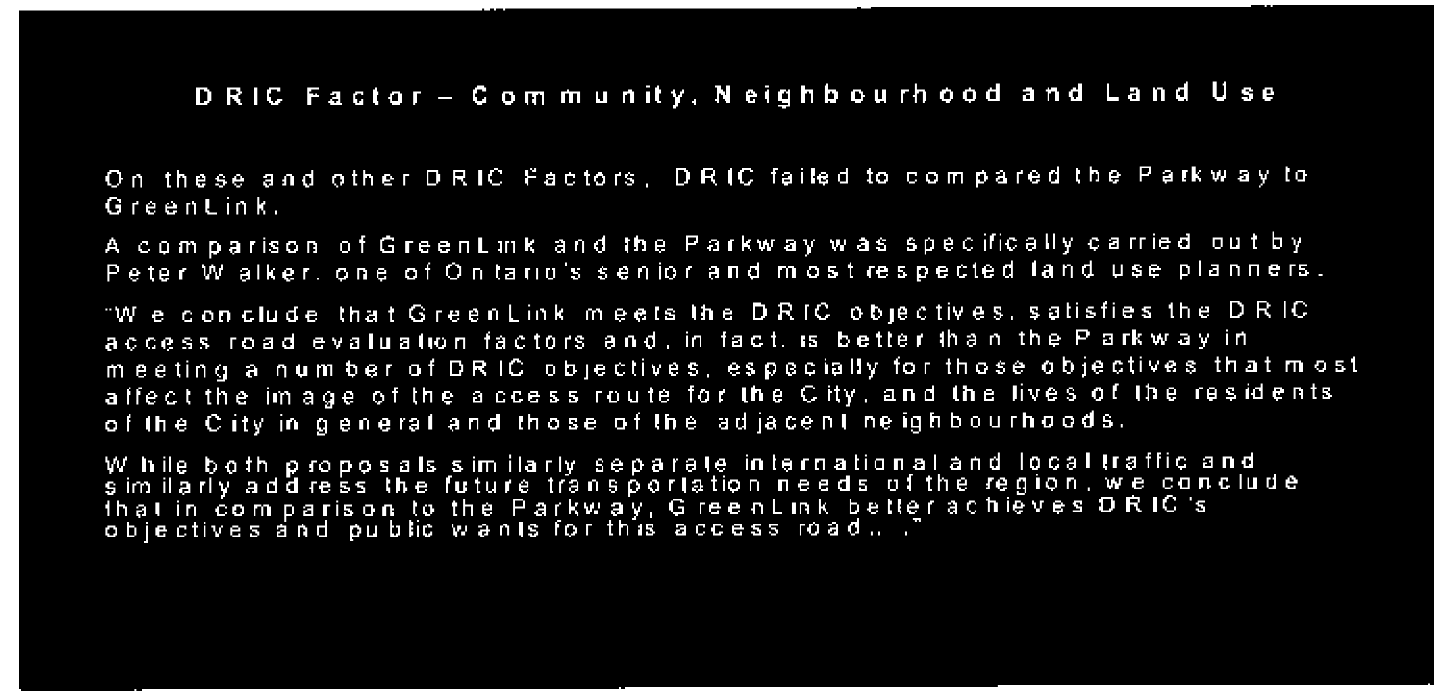
It is essential that the final design selected for this key component of border transportation infrastructure

- clearly fulfills objectives, goals and criteria approved by the Ontario Minister of Environment in the DRIC EA ToR,
- clearly is responsive to public "wants" DRIC identified in the EA process , and
- best meets the objectives DRIC itself identified in August, 2007 for this access route: "identifying a solution to Windsor's border transportation issues that protects the community and improves the quality of life."

We are sure your DRIC Study Team will agree these new reports raise significant considerations. City Council wishes to meet with respect to these matters before DRIC makes further decisions regarding the final design of the access road. Please contact me as soon as possible to arrange that meeting with Council as well as the pre-meeting between DRIC staff and City staff and consultants as requested at the outset of this letter."

93. The following power point slides, focussing on the community, neighbourhood and land use attributes of GreenLink, were amongst those delivered to DRIC when its officials attended at the May 26, 2008 Windsor Council meeting.





Peter Walker's Conclusions

GreenLink:

- better protects people and communities;
- better creates a signature gateway on the access road portion of the system;
- better creates a green corridor for Windsor that would be heavily landscaped and would be truly unique;
- better allows for people-friendly spaces on the wider length of tunnelled portions, which will allow the communities and neighbourhoods on both sides of the corridor to connect, or reconnect;
- better allows for new green spaces for a wide variety of uses including, if desired, some moderate scale of built form;
- better improves air quality in this part of Windsor; and
- better limits the noise and visibility of trucks accessing the border crossing, from nearby residences.

Comparing GreenLink to the Parkway

"GreenLink represents good planning, and is an appropriate response to the DRIC process which recognizes that in providing an access road to a new Detroit River crossing, it is desirable to reconnect communities and provide new greenspace for residents. GreenLink is also more responsive to and in conformity with the Provincial Policy Statement for land use planning and the City of Windsor Official Plan policies than the Parkway.

The Parkway has evolved from a process that does not appear to have considered either the Provincial Policy Statement, or the provisions of the City's Official Plan in the comprehensive manner that both policy documents require. The Parkway proposal is dependent only on the transportation-related policies of both documents. That is not consistent with Provincial Policy nor the Official Plan, nor is it sufficient, since virtually every aspect of the Parkway proposal involves change to existing land use, and therefore the planned use, and such changes need to be made in conformity with the Official Plan, unless an amendment is being requested."

Comparing GreenLink to the Parkway

The GreenLink proposal, on the other hand, is a product of City Council acting in a manner consistent with the planning framework it is obligated to use. Therefore although there will be changes to the existing and planned use, the changes occasioned by GreenLink would be less intrusive and much more in conformity with the City's planning policies.

In comparing the two proposals from a Planning standpoint, we conclude GreenLink is the superior solution for the City of Windsor as a whole, and for residents of the neighbourhoods adjacent to the access road. The Parkway does not provide the scale of relief that is needed, and possible, as illustrated by the GreenLink proposal.

Comparing GreenLink to the Parkway

GreenLink is an opportunity to respond to the need for a new access route that is sensitive to the existing and future needs of the community. It has been proposed in a professional manner by the City of Windsor; it is obviously the alternative that has the most benefits to offer the community; and it is strongly supported by the community at large. We conclude that GreenLink is far more responsive to the environmental assessment process for elements that involve the related planning process, which elements in turn relate to the impact on the existing and planned use of lands affected by the transportation aspects of the assessment.

Montréal | Ottawa | Kanata | Toronto | Hamilton | Waterloo Region | Calgary | Vancouver | Moscow

C. Unfortunately, and contrary to the OEAA, DRIC failed to carry out the required EA evaluation of GreenLink. Further, in arriving at its decision to select the Parkway as its preferred access road alternative, DRIC failed to observe legally binding environmental assessment process requirements imposed both by the OEAA and the Terms of Reference for the DRIC EA. DRIC's actions in respect of the Parkway choice were also unfair to the City of Windsor.

Unless DRIC agrees to carry out an appropriate, objective analysis regarding the impacts and benefits of access road alternatives in accordance with required statutory procedure and with fairness towards stakeholders such as Windsor, the DRIC's decision that the Parkway is the "environmentally preferred access road" alternative is subject to being declared a legal nullity.

94. Windsor's basic complaints in relation to the DRIC access road EA process are clearly stated:

- DRIC failed to fairly apply <u>its own criteria</u> to the evaluation of access road alternatives;
- DRIC refused to evaluate GreenLink as an access road alternative; and
- DRIC improperly decided that the Parkway is the preferred access road alternative without prior publication of an evaluation demonstrating that is a reasonable conclusion and without providing for public comments on the validity of that evaluation before the decision was made.
- DRIC's choice of the Parkway is not supported by DRIC's own data.

95. Instead of consulting as required, DRIC announced its Parkway decision on May 1, 2008 and has been defending it ever since. In these actions DRIC has fundamentally failed to comply with its legal obligations under the Ontario *Environmental Assessment Act* (OEAA) and the EA TOR with respect to the access road undertaking.

96. Not only does good decision-making require fair and even-handed evaluation of alternatives, this evaluation is mandated by statute, the OEAA. Consequently, Windsor expected a fair evaluation of all reasonable access road alternatives, as required by the OEEA Act and the TOR.

97. Windsor expected that DRIC would apply consistent criteria to each alternative. Windsor expected that DRIC would fairly present the analysis of impacts, costs and benefits of each alternative to stakeholders <u>before</u> DRIC made a decision.

Windsor expected DRIC to keep its promises regarding consultation and participation. DRIC failed on every count.

98. DRIC's failure to meet Windsor's expectations in not simply an indication of poor planning or consultation practices, it is also a matter of law. Each point of friction between DRIC and frustrated stakeholders has its roots in a statutory violation, in a failure by DRIC to abide by the terms of the TOR and the OEEA.

Fundamental Requirements of the OEAA

99. Section 6.1 of the OEAA prescribes the requirement of an "environmental assessment" which are binding on DRIC/MTO as proponents of the access road undertaking:

<u>**(Ontario)** ***Environmental Assessment Act***, Revised Statutes of Ontario, 1990, chapter E.18</u>

Preparation of environmental assessment
<u>6.1 (1)</u> The proponent shall prepare an environmental assessment for an undertaking in accordance with the approved terms of reference. 1996, c. 27, s. 3.

Contents
(2) Subject to subsection (3), the environmental assessment must consist of,

(a) a description of the purpose of the undertaking;

(b) <u>a description</u> of and a <u>statement of the rationale</u> for,

(i) the undertaking,

<u>(ii)</u> the <u>alternative methods of carrying out the undertaking</u>, and

(iii) the alternatives to the undertaking;

(c) <u>a description of</u>,

(i) <u>the environment that will be affected</u> or <u>that might reasonably</u> be expe<u>cted to be affected, directly or indirectly</u>,

(ii) <u>the effects</u> that <u>will be caused or that might reasonably be expected to be caused to the environment</u>, and

(iii) the actions necessary or that may reasonably be expected to be necessary to prevent, change, mitigate or remedy the effects upon or the effects that might reasonably be expected upon the environment,

<u>by</u> the undertaking, <u>the alternative methods of carrying out the undertaking</u> and the alternatives to the undertaking;

(d) <u>an evaluation of the advantages and disadvantages to the environment of the undertaking, the alternative methods of carrying out the undertaking and the alternatives to the undertaking</u>; and

(e) a description of any consultation about the undertaking by the proponent and the results of the consultation. 1996, c. 27, s. 3.

100. Just one example of DRIC's failure to comply with this fundamental requirement of the OEAA is found in the fact that DRIC did not provide any analysis comparing, e.g. how many people and homes in Windsor and LaSalle within, e.g. 150 of an access road which incorporated tunnelled sections would be saved from exposure to unhealthy, excessive air impacts compared to the Parkway, which does not have real tunnels, but only overpasses/land-bridges which cannot prevent off ROW emissions of traffic contaminants.

101. Another example of DRIC's failure to carry out the requirements of an environmental assessment is that DRIC did not provide any analysis stating the concentrations of hazardous particulate matter that people using the Parkway trails and Parkway greenspace would be exposed to compared to their exposure on trails and greenspace shielded from such contaminants by tunnelled sections, such as those provided in GreenLink.

102. Quite incredibly, DRIC reports contain data which, when read by air quality experts, demonstrates that the Parkway will produce high exceedances of PM 10 and PM 2.5 at Parkway land bridge portals, but DRIC fails to provide the required "description" of the impacts as required by s. 6.1 (2)(b) of the OEAA

> "... the environmental assessment must consist of ... a description of ...
>
> (i) the environment that will be affected or that might reasonably be expected to be affected, directly or indirectly,
>
> (ii) the effects that will be caused or that might reasonably be expected to be caused to the environment

Further, the DRIC draft EAR fails to comply with s. 6.1(2)(d) of the OEAA which requires an environmental assessment to include:

> (d) an evaluation of the advantages and disadvantages to the environment of the... alternative methods of carrying out the undertaking and the alternatives to the undertaking

In this instance the missing comparison would be the contaminant levels greenspace users of the Parkway land bridges would be exposed to compared to greenspace above or adjacent to real tunneled sections.

103. Most incredibly DRIC failed to abide by fundamental requirements for an environmental assessment set out in s. 6 of the OEAA because it failed to evaluate GreenLink as an access road alternative method.

OEAA s. 6: "the environmental assessment must consist of,

(b) a description of and a statement of the rationale for,

(i) the undertaking,

(ii) the alternative methods of carrying out the undertaking, and

(iii) the alternatives to the undertaking;

(c) a description of,

(i) the environment that will be affected or that might reasonably be expected to be affected, directly or indirectly,

(ii) the effects that will be caused or that might reasonably be expected to be caused to the environment, and

(iii) the actions necessary or that may reasonably be expected to be necessary to prevent, change, mitigate or remedy the effects upon or the effects that might reasonably be expected upon the environment,

by the undertaking, **the alternative methods of carrying out the undertaking** and the alternatives to the undertaking;

104. DRIC's various access road alternatives, as well as GreenLink, are "alternative methods of carrying out the undertaking" i.e. alternative methods of extending the 410 Highway to the new bridge.

105. DRIC clearly admits in its draft EAR that "The GreenLink Windsor proposal could be considered an " intermediate" alternative between The Parkway and the full 6 km tunnel that was assessed previously".

106. But DRIC failed to assess GreenLink in accordance with the requirements of s. 6 of the OEAA or with DRIC's more refined EA criteria used by DRIC in evaluating all alternative access road options as set out in the DRIC Terms of Reference.

107. Rather than doing what it is legally required to do in assessing alternative access road options, and apply the specific factors and criteria prescribed for that evaluation in the TOR, DRIC's "evaluation" of GreenLink consists of

- attack sheets posted on DRIC's web site which inaccurately and without foundation maligned GreenLink, using criteria not found within the TOR; and
- providing a biased and inaccurate discussion of GreenLink on one page of its draft EAR.

108. DRIC's approach to GreenLink fundamentally contravenes its own TOR which states:

> **"The evaluation of alternatives is an integral component of the integrated environmental study.**
> **A sound evaluation process is based on five key principles:**
> **1) Comprehensive**
> **2) Understandable**
> **3) Replicable**
> **4) Traceable; and**
> **5) Participatory" [TOR, pg 25, May, 2004]**

109. DRIC has published nothing to demonstrate it even attempted this required evaluation of GreenLink; indeed DRIC admitted to Windsor Council on May 26, 2008 that it had not done so.

Other Significant EA Process Principles And Issues

110. The Ontario *Environmental Assessment Act* has been in place since 1975. Over the last 30 + years members of the former Ontario Environmental Assessment Board (now the Environmental Review Tribunal) and Joint Boards (usually comprised of EAB/ERT members and OMB members) have established clear principles in terms of the obligation of proponents subject to the OEAA.

111. For example, in a 1994 decision refusing to accept the environmental assessment of the Ontario Waste Management Corporation, a provincial crown corporation seeking to establish a new hazardous waste disposal site, the Joint Board said:

- "For us to accept the environmental assessment, we must be satisfied that there is a need for the undertaking, that the reasonable alternatives have been identified and have been evaluated in a systematic way, and that the outcome of the evaluations is the most environmentally suitable alternative" (p. 2-8).
- "the OWMC has the onus of establishing, on the balance of probabilities, that the preferred system is preferred to the alternatives, and it has not done so" (page 5-73)

112. DRIC's EAR clearly fails to meet these criteria.

- as "reasonable alternatives" which must include GreenLink based on DRIC's admission at page 3-21 of the draft EAR, have not "been evaluated in a systematic way", as admitted by senior DRIC and DRIC officials to Windsor Council on May 26, 2008; and
- without evaluating GreenLink in "a systematic way" DRIC cannot establish that the Parkway is preferred to other GreenLink.

113. In 1995 another Joint Board decision refusing acceptance of an environmental assessment for a proposed undertaking by Steetley Quarry to establish and close a solid waste disposal site in an existing quarry, the following similar principle to that in the OWMC case was stated:

"Unequal treatment of alternatives and advantages and disadvantages would be destructive of the process of a balanced analysis.

Wide differentials in available data on which evaluation of options can be based contravenes the purpose of s. 5.3 (now s. 6.1 (2) of the OEAA."

114. In another decision of the Joint Board (North Simcoe) the environmental assessment was not accepted and the undertaking was denied approval. In commenting on the evaluation of alternative sites, the Board stated:

"The major defect is the proponent's failure to apply the same level of detail to the 7 sites before choosing the preferred site. There seems to be a predisposition to have Site 41 selected – a predisposition that indicates bias."

DRIC's EA Failures in Consideration of Alternatives

115. Contrary to the requirements of the EA Act, DRIC did not identify and evaluate all reasonable alternatives in arriving at a preferred access road alternative for the highway connection component of the international crossing.

116. Practical Alternatives 1A, 1B, 2A, 2B and 3 presented at the PIOH 3 meetings in March 2006 represent generic alternatives that each assume a consistent highway configuration along the entire length of the corridor. The Parkway proposal presented at the PIOH 5 meetings in August 2007 represents a different kind of alternative - a composite configuration that adapts a basic configuration a depressed highway – to include limited tunnelled sections, buffering, and different relationships between the access road and the re-configured Highway #3 at different locations. While there is range of potential alternative design solutions for different sections along the access road and the access road as a whole, DRIC presented only one composite solution (subsequently further refined) and failed to adopt an environmental assessment planning approach to developing, consulting on and evaluating a reasonable range of composite solutions. The Parkway alternative has been further optimized and mitigated since PIOH #5, bringing the level of detail even further beyond that of the original five access road alternatives, but again this was not done through an alternatives-based EA planning process as required by the TOR.

117. DRIC indicates on page 3-22 of the draft EAR that it solicited comments on its Parkway in order to identify how the Parkway could be improved and that it had reviewed and assessed the City's material on that basis. This appears to suggest that since the DRIC did not request new alternatives for consideration, it did not have to give consideration to proposals for new alternatives.

118. However, this approach runs counter to the EA principle that all reasonable alternatives be evaluated. The DRIC team never indicated that the GreenLink

alternative was unreasonable and in fact admitted it is an "intermediate alternative" between the Parkway and the full 6 km tunnel alternative. The evaluation of alternatives cannot be limited by confining consideration of submissions to refinements to alternatives already identified, rather than new alternatives.

119. Because it did not evaluate a reasonable range of practical alternatives or take an alternatives approach in developing its preferred alternative, DRIC has not demonstrated that it has selected the alternative with the "best overall balance of transportation engineering, individual factor area impacts and overall environmental impacts, including input that has been received through consultation on those issues", as required by the TOR.

120. While DRIC says GreenLink was more expensive than the Parkway, DRIC did not present any evaluation of the long-term savings in health costs and community and environmental benefits that could be associated with a tunneled access road. Thus DRIC failed again to meet requirement of s. 6 of the OEAA which requires an environmental assessment to include an "evaluation of the advantages and disadvantages to the environment of...alternative methods of carrying out the undertaking". Under the OEAA "environment" is broadly defined to include not only the natural environment but "the social, economic and cultural conditions that influence the life of humans or a community".

121. In any event, DRIC has always claimed that cost is not the only factor in the evaluation it must make (for example, in the Canadian Frequently Asked Questions handout provided at the time of PIOH 3 in March 2006 DRIC states that "Cost is only one of seven important factors we are considering throughout the EA process.") DRIC's TOR treated cost as a comparative factor with its own assigned weight and not an exclusionary factor (i.e. it cannot cause alternatives to be discarded based on fixed cost limits alone).

122. The influence of cost in relation to other environmental benefits on the selection of a preferred alternative can only be established by conducting a comparison between the Parkway and other alternatives at an appropriate level of detail and using a systematic and traceable methodology, and DRIC did not do this.

123. The DRIC environmental assessment leading to its decision to choose the Parkway as the preferred alternative access road lacks consistency. The Parkway was optimized and taken to a greater level of detail than the other alternatives. For example in the overall assessment under the "Impact on Community Character/Cohesion" factor in Exhibit 8.15 the draft EA Report states that "The end-to-end tunnel does not provide the same benefits to community character (presumably referring to the Parkway) as it does not improve linkages across the Huron Church/Highway 3 corridor over the current condition and reduces visibility for local businesses". However, by the time DRIC reached that conclusion preferring the Parkway, DRIC designed the Parkway and then further enhanced it to specifically incorporate linkages.

124. There are clearly greater opportunities to further explore linkages with an end-to-end tunnel option than with only limited tunnelling, but DRIC did not do this. If this work had been done the tunnel option may well have displayed benefits over and above those indicated in the evaluation. These benefits would also have been applicable to GreenLink, but they were not evaluated. Since GreenLink incorporates more tunnelling adjacent to sensitive areas than the Parkway, these benefits would potentially accrue to the GreenLink to a greater extent than for the Parkway.

125. The inequitable nature of the evaluation of the Parkway against the other access road alternative is further illustrated by inconsistencies in the DRIC air quality assessment, as discussed in the section of this submission dealing with air impacts.

126. Prior to the comparison between the Parkway and other alternatives the DRIC team had taken steps to add further air quality mitigation, by substantially widening the Parkway right of way compared to other alternatives, which requires purchasing residences and displacing more people than other alternatives and without optimizing the other alternatives to a similar extent.

127. The basis for the air quality evaluation of the Parkway versus the other alternatives was also different, with predictions of air contaminants being made at the edge of a green buffer for the Parkway, and from the highway edge for the other Practical Alternatives.

128. As the Joint Board has indicated, it is critical in an EA that the alternatives be developed to a similar level of detail and that they be optimized in a similar way for the comparison to be fair. The further development of the Parkway alternative as described prevents a fair comparison with the other alternatives.

<u>DRIC Consultation and Fairness Failures – Violations of the TOR</u>

129. The approved TOR goes beyond the requirements of the EA Act in stating that a principle of the evaluation is that it be "participatory". The understanding that a participatory process is of a higher order of magnitude than "consultation" was confirmed by the MOE's 2007 Consultation Code of Practice. It defines "Participation" as:

> **"An extension of consultation where directly affected persons become joint partners in the design and implementation of projects. They participate in helping proponents "make" choices. Ground rules and simple agreements specifying concerns may be made between the proponent and directly affected persons, which will require joint planning and necessitate public input."**

130. While the City of Windsor was consulted as part of the DRIC EA, it cannot be said that it was given the opportunity to participate in decision making. Throughout the process the DRIC team has attempted to frame the scope of consultation as discussion of refinements to alternatives already generated, rather than one of ensuring the full range of alternatives is evaluated or providing the data to allow participation in decisions before they are announced.

131. The approved TOR also goes beyond the requirements of the EA Act in requiring that consultation on the analysis of practical alternatives take place before a decision on the preferred practical alternative is taken. However, DRIC ignored and avoided that requirement.

132. In August 2007 the DRIC team presented an analysis of the five access road alternatives initially identified for consultation, but at the same time introduced a new alternative for comment -- the Parkway -- without including it in the evaluation of the original alternatives (DRIC PIOH 5 display boards, July 2008).

133. At the next round of consultation, PIOH 6 in May/June 2008, DRIC presented a modified version of the Parkway – the "Windsor-Essex Parkway" -- as the preferred alternative -- without having consulted on the evaluation of that alternative.

134. This approach undermined the requirement of the TOR that there be an opportunity for informed consultation before a decision is made by DRIC as to the preferred option. The manner in which DRIC decided in private and announced its decision, then saying it was willing to consult, fails to comply with the TOR commitment that the most stringent of the range of regulatory requirements would be incorporated into the process, and it is contrary to the required process described in the TOR.

135. For example, Exhibit 1.3 of the approved TOR – "Schematic Illustration of the Integrated NEPA/OEAA/CEAA Process Environmental Study Process for Detroit River International Crossing", indicates that there will be a Public Hearing under NEPA and public consultation under the *Ontario EA Act* after the assessment of practical alternatives i.e., the access road alternatives, and before a recommended alternative is selected.

136. This approach is said to be based on the U.S. NEPA process, however since it is incorporated into the approved TOR under the Ontario EA Act and since the EA for the access road must be prepared in accordance with the TOR, it is also binding under the Ontario process.

137. Section 3.3.2 (b) of the approved TOR, "Evaluation of Practical Alternatives", provides a fuller description of the formal hearing under NEPA that would be held prior to the selection of a preferred practical alternative, and the corresponding third round of Public Information Open Houses (PIOH) to be held

in Ontario to provide a similar opportunity to comment on the analysis of these alternatives.

138. In Section 5, "Consultation for the Integrated Environmental Study Process", the TOR again describes opportunities for stakeholders to be consulted following the analysis of practical alternatives and prior to the selection of a preferred practical alternative, and during consideration of selection of the preferred Concept Design Alternative.

139. Section 5.1 of the TOR, "Public Consultation During the Integrated Environmental Study Process", states:

> "Within the integrated environmental study process, public consultation will involve reviewing, commenting and providing input to the technical and environmental work undertaken and to provide input to the public consultation process. The proposed consultation plan encourages proactive consultation, which will allow comments and views of the public to assist in influencing the study and the recommendations thereof."

140. Exhibit 5.1 to the TOR "Proposed Public Consultation During Integrated Environmental Study Process", again shows consultation following the analysis of practical alternatives and prior to the selection of the preferred practical alternative. However, DRIC did the reverse. DRIC released no evaluation of the Parkway before selecting the Parkway as its preferred alternative and only subsequently attempted to justify how that decision was reached.

141. Another violation of the TOR occurred in respect of s.5.2.4 in which DRIC had made this commitment: "at the request of any Council, the Partnership will attend additional Council meetings to discuss project related issues."

142. Windsor Council made a request to DRIC that it attend to provide information on project related issues on February 1, 2008 and subsequently repeated this request on a number of occasions, the last of which was on April 28, 2008. However, DRIC avoided attending Windsor Council until May 26, 2008, more than three weeks after the announcement that the Windsor-Essex Parkway is the preferred option. This strategic delay in responding to the City's request comprises a direct contravention of the commitment contained in the approved TOR. It also evidenced DRIC's clear bias against Windsor and GreenLink.

DRIC Introduces the Parkway Alternative

143. DRIC also used Open House #5 to propose a new alternative called "the Parkway", and it would become the sixth and final practical alternative examined by DRIC as part of the access road environmental assessment process.

"A Parkway alternative has been developed, based on refinements to the below-grade Practical Alternatives…and reflecting the study goals and the community input received to date.. this is a new option, never fully presented to the public prior to Public Information Open Houses of August 2007 .." (DRIC Study Team, "The Parkway: A New Option", August 2007)

144. The Parkway was also the sole apparent focus of the DRIC's ongoing evaluation after August 2007, despite the nominal existence of six practical alternatives, for two reasons.

"A Parkway alternative was developed and presented to the community for feedback in August 2007. This alternative was based on refinements to the below-grade alternatives and reflected the study goals and the public feedback received to date. The Parkway **subsequently** underwent technical analysis to the same level of detail as the initial five Practical Alternatives…."

DRIC, "The Windsor-Essex Parkway: How We Got Here", May 2008 (emphasis added)

145. Like the two remaining practical alternatives, the Parkway was also a below-grade access road. The Parkway included a series of 10 bridges, averaging 141.5 metres in length, designed to allow people to cross from one side of the access road to the other, above ten lanes of traffic.

146. Since August 2007, DRIC has called these structures "tunnels". In engineering terms, however, they are effectively landscaped highway overpasses, designed for foot traffic. DRIC's own consultants acknowledge this reality:

"The tunnel structures are <u>typical of most overpass structures</u>…"

(Draft Practical Alternatives Evaluation Working Paper: Air Quality Impact Assessment, May 2008, at pg. 37)

147. DRIC presented the Parkway as an alternative that had been developed in response to community concerns, and one that would be refined, evaluated and improved through further community consultation.

"**Community input is what led to the Parkway** alternative and with community input we can make this option even better." (DRIC, Frequently Asked Questions, DRIC PIOH #5, pg. 2)

148. DRIC indicated that the Parkway had been designed to address "all of the requirements of the access road <u>identified by the community</u>". Eight specific community concerns were identified, which centred on the need to improve the quality of life for Windsor residents, take trucks off the street, and reduce air pollution. DRIC noted that residents did not want a solution determined on the basis of cost alone.

"…We listened to <u>your</u> comments, feedback and ideas. Local residents want an access road to a new border crossing that:

- takes trucks off local streets;
- reduces the amount of pollutants in the air;
- improves the movement of border-bound traffic;
- is not intrusive;
- is state-of-the-art;
- will not be determined on cost alone;
- improves quality of life;
- provides a long-term solution

(DRIC Study Team, "The Parkway: A New Option", August 2007, emphasis in the original)

149. Not only was the Parkway expected to do better at meeting community concerns, but it was also "expected to provide many advantages" over the other Practical Alternatives, measured against the evaluation factors and criteria in the TOR.

150. DRIC made these assertions notwithstanding the fact that the Parkway was just a concept in August 2007, and <u>had not yet been</u> <u>evaluated</u>, whereas the five practical alternatives had been "exhaustively studied".

"A Parkway is expected to provide many advantages **over the other options that were exhaustively studied**…." (DRIC, Frequently Asked Questions, DRIC PIOH #5, pg. 3)

151. The public was presented with a new alternative and with a promise. The Parkway would be evaluated in the same level of detail as the original five practical alternatives, <u>before</u> any decisions were made by DRIC about which alternative was the best for Windsor.

"**What's Next? Conduct detailed analysis** of enhanced Parkway alternative…" (pg. 18)

"…Before any final decisions are made, the Parkway **will be analyzed** in the same level of detail as the initial five Practical Alternatives…(DRIC, Power Point, Open House No. 5, "DRIC EA August 14 & 15, 2007", pg. 18 & 28, emphasis added)

152. DRIC also assured the public that the Parkway was "not the final access road option". Rather, the Parkway was to be refined and improved upon through ongoing public consultation.

"The plan we are showing in August is **not the final access road option**. We will look to the community for their input on the look and the feel of the Parkway. Community input continues to be an essential part of the DRIC study process." (DRIC, Power Point, Open House No. 5, "DRIC EA August 14 & 15, 2007" at pg. 18, emphasis added)

153. Stakeholders were invited to help DRIC "make this refined option even better."

> **"Community input helped lead us to the Parkway and with community input, we can make this refined option even better. ."**
> (DRIC, Power Point, Open House No. 5, "DRIC EA August 14 & 15, 2007" at pg. 18, emphasis added)

Windsor Proposes GreenLink Alternative (October 2007)

154. In October, 2007 Windsor responded to DRIC's call for input by proposing an access road alternative design referred to as "GreenLink Windsor".

155. Briefly, GreenLink is an access roard alternative which constitutes a blend between Alternative 3, the full end-to-end tunnel, and the below-grade alternatives (1B and 2B), in that it proposed to tunnel 65% (or 3.8 km) of the most sensitive stretches of the access road.

156. GreenLink's long tunnels were designed to mitigate the adverse effects of the access road, including air pollution, noise and dust impacts, and the need to expropriate homes and businesses. The Parkway simply spread these impacts out along the length of the corridor and attempted to buffer residences using greenspace.

157. GreenLink's design effectively eliminated these impacts for the communities around the tunnels, by keeping vehicle contaminants buried underground for stretches of up to 1.2 kilometres at a time. In addition, the portals to the GreenLink tunnels, where any dust or air pollutant impacts could emerge, were purposefully located away from residential areas and placed in zones of least impact (vacant and industrial land).

158. As important as cutting off the source of air pollution and nuisance impacts, however, GreenLink proposed to knit together a divided community.

159. In place of the existing 4-lane Huron Church corridor, GreenLink proposed to bury the ten-lane access road under greenspace and parks in stretches of up to 1.2 kilmetres in length. By creating real, usable greenspace and parks above the kilometres-long tunnelled sections of access road, GreenLink would unite communities, recreation centres, schools and amenities on either side of the corridor that are currently divided.

160. Windsor presented GreenLink at a City Council meeting on October 9, 2007, through cable television, and at a series of five Open Houses attended by close to 3,000 residents. Public responses at Windsor's open houses were overwhelmingly in favour of GreenLink, with 90% preferring GreenLink and just 3% preferring the Parkway. (The remaining 7% were undecided or had no

preference). Mail-in forms received later continued this pattern, with 94% in favour of GreenLink.

(See letter from D. Estrin to Mr. Dave Wake, DRIC, March 31, 2008.)

161. DRIC was invited to participate in the open houses held by Windsor, and was presented with design details in relation to GreenLink. Windsor also made its technical team of consultants available to meet with DRIC's consultants, on November 14, 2007, and provided additional information by letter and CD on November 29, 2007.

162. Windsor also commissioned a comprehensive and costly series of technical studies by Canadian and international experts, which were transmitted to DRIC in March 2008, listed below.

- Parsons Brinkerhoff Americas Inc. "Detroit River International Crossing, Proposed Highway 401 along Talbot/Huron Church Road Corridor, Windsor GreenLink: Additional Air Quality Analyses", March 13, 2008.
- Parsons Brinkerhoff Americas Inc. "Detroit River International Crossing, Proposed Highway 401 along Talbot/Huron Church Road Corridor, Windsor GreenLink: Constructability and Construction Cost Estimating Review", March 20, 2008.
- Parsons Brinkerhoff, "Differences in Property Acquisition Requirements Between DRIC's Parkway and Windsor's GreenLink", March 19, 2008.
- Parsons Brinkerhoff, "Detroit River International Crossing, Proposed Highway 401 along Talbot/Huron Church Road Corridor, GreenLink Economic and Fiscal Impact Analysis", March 21, 2008.
- Parsons Brinkerhoff, "Detroit River Internationl Crossing, Proposed Highway 401 along Talbot/Huron Church Road Corridor, GreenLink Potential Air Rights Development", February 25, 2008.
- "Planning Analysis of City of Windsor: GreenLink Windsor Proposal for the Access Road Link Between Highway 401 and a Crossing of the Detroit River:, Peter R. Walker, FCIP, RPP, Walker, Nott, Dragicevic Associates Limited, March 17, 2008

(Letter from D. Estrin to Mr. Dave Wake, DRIC, March 31, 2008)

DRIC Refuses to Consult with Windsor (November 2007 – April 2008)

163. Between the release of the GreenLink alternative in October 2007, and May 2008, Windsor made repeated requests for staff and Council-level meetings with DRIC.

164. Windsor's objective was to ensure that DRIC had formally evaluated GreenLink pursuant to the TOR, so that a proper, OEAA required evaluation of the advantages and disadvantages was made of GreenLink and the Parkway. As noted in a letter from Windsor to DRIC, the City indicated a meeting was required so that DRIC could demonstrate that

> "....an objective comparison of GreenLink and the Parkway is being made, as required under the TOR and the OEAA, prior to a preferred design for the access road being chosen and announced"
>
> Letter from D. Estrin to Mr. Dave Wake, DRIC, March 31, 2008 at pg. 1-2.

165. Windsor's repeated requests for a meeting with DRIC included a formal City Council resolution issued February 11, 2008 and transmitted by the City Clerk to DRIC on March 3, 2008.

166. DRIC is obligated pursuant to the TOR to meet with Council upon request.

> "Municipal councils are key stakeholders. ..**At the request of any Council, the Partnership will attend additional Council meetings to** discuss project related issues." (Detroit River International Crossing, Environmental Assessment Terms of Reference, as amended July 7, 2004, at pg. 51)

167. DRIC committed in a letter dated April 15, 2008 to arrange a meeting "as soon as possible", re-iterating its commitment to consult in relation to the selection of a Preferred Alternative:

> "I can assure you of our ongoing commitment to an open and transparent decision-making process....
>
> The selection and evaluation of the various alternatives is a continuing process and the DRIC study team welcomes Windsor's input."

Letter to D. Estrin from D. Wake dated April 15, 2008, emphasis added)

168. It should be noted that, at this stage, eight months had passed since the announcement of the Parkway as a new alternative. No evaluation of the Parkway had been released to stakeholders for review, as DRIC had promised in August 2007.

169. Notwithstanding the DRIC commitment to the City made in April, the promised meeting was not arranged prior to the DRIC's selection and announcement of the preferred alternative.

DRIC Attacks GreenLink (April 25- May 1, 2008)

170. Instead of meeting with Windsor as requested, DRIC publicly released three "Fact Sheets" highly critical of GreenLink, and posted them on its Web site.

The first DRIC Fact Sheet was dated April 25, 2008 and titled "DRIC Study Team's Assessment of GreenLink Proposal's Highway Specifications". Without foundation, this claimed GreenLink would endanger first responders and highway users with "sub-standard" shoulder widths and slopes, and allow for flooding at five times the rate of the Parkway. These assertions were false.

171. The second Fact Sheet was dated April 28th and titled "DRIC Study Team's Review of GreenLink Cost Estimates", and suggested that GreenLink had vastly underestimated the project's cost, and inferred that GreenLink should be rejected by taxpayers.

172. The title of the third Fact Sheet, issued May 1, 2008 conveyed DRIC's theme: "**Why Not GreenLink**". Again, it contained false information.

173. These "Fact Sheets" were issued without so much as a courtesy call or email to Windsor, and the allegations that they contained were never put to Windsor for a response. They were the EA equivalent of negative election "attack ads", designed to unfairly and maliciously denigrate GreenLink.

174. DRIC issued these in lieu of the consultation and dialogue that was promised by DRIC, and which was required by law pursuant to the TOR and the EA Act. The issuance of these "Fact Sheets" is simply unacceptable behaviour for a provincial Ministry, obligated by law to conduct an independent, transparent, and even-handed evaluation of all alternatives, especially when also required to consult with stakeholders.

WE Parkway Selected as DRIC's Preferred Alternative Prior to EA Evaluation

175. Just three days after DRIC's second attack on GreenLink was released to the media, DRIC, MTO and two senior provincial cabinet ministers from Windsor held a press conference to announce the selection of the Preferred Alternative, the Windsor Essex Parkway.

176. The WE Parkway was an updated version of the Parkway as presented in August 2007 (in other words, DRIC selected the sixth and final practical alternative).

177. Windsor was advised on April 30, at 12:07 pm that a press conference would be held at 9:30 am the next day. In contrast, "friendly" municipalities and industry associations were briefed in advance, and offered supportive press statements.

178. At the time of DRIC's announcement, neither the EAR detailing the DRIC's evaluation, nor the underlying technical studies, had been released for stakeholder review and comment.

179. Notwithstanding the lack of underlying studies and the lack of a draft EAR, DRIC insisted that decision had been made, and its analysis completed, by May 1, 2008:

> **"It's really a case of just dotting the 'i's' and crossing the 't's'…** We can talk a little bit more about the specifics **but I need to stress and emphasize that the analysis is complete**…"

Fausto Natarelli, Director, MTO Windsor Border Initiatives Implementation Group, Transcript of DRIC Announcement of the Windsor-Essex Parkway as the Preferred Alternative, May 1, 2008

180. As of May 1, 2008, the five original Practical Alternatives were all discarded.

Release of the Draft Environmental Assessment Report (November 12, 2008) – Further DRIC Process Unfairness

181. The draft EAR itself was not released until November 12, 2008, more than six months after DRIC announced its preferred alternative.

182. As of November 12, 2008, DRIC had not released 11of twenty technical reports used to conclude the Parkway was preferred. The EAR indicated that those technical reports were "in the process of being finalized", and would "be made available with the final EA report submission".

183. The final EA Report submission referenced above is scheduled for the end of December 2008. The 30-day public comment period on the draft EAR ends December 12, 2008, before the release of most of the missing technical reports listed as "pending".

184. One of the technical reports not available for stakeholder review even as of December 12, 2008 is the report that documents DRIC's comparative analysis of the Practical Alternatives. This document was promised to stakeholders when the Parkway was first announced in August 2007, and was to have been released after the analysis of the Parkway was completed. According to DRIC, this analysis was complete by May 1, 2008, prior to the selection of the Preferred Alternative.

185. As a result of the timing outlined above, stakeholders have been required to provide public comment on the draft EAR without having access to a substantial component of the underlying technical analyses from which the conclusions in the EAR are derived.

186. This continues the pattern of unfair and unacceptable practice DRIC established at Open House #5 (August 2007), when stakeholders were presented with and "consulted on" the comparative evaluation of the five Practical Alternatives, without access to any of the underlying data.

187. In addition, stakeholders are being presented with DRIC's analysis of Practical Alternatives and the selection of the Preferred Alternative simultaneously. In other words, there has been no Open House held between DRIC'ss Open House 5, announcing a new Parkway concept without any analysis, and Open House 6, selecting it as the Preferred Alternative. This is the very opposite of what is required by DRIC's own TOR.

188. The TOR required DRIC to present the results of its analysis of the Practical Alternatives to stakeholders for feedback, and to consider that feedback, *before* selecting a Preferred Alternative.

189. The TOR figure entitled "Exhibit 1.3 – Schematic Illustration of the Integrated NEPA/OEAA/CEAA Process Environmental Study Process for the Detroit River International Crossing" is a flow chart. Exhibit 1.3 shows the step "Assess Practical Alternatives" as coming before "Public Information Open House / Consultation Under OEAA". Only after the Practical Alternatives have been assessed, and an Open House held to consult on that assessment, is DRIC to proceed to the step of "Select Recommended Alternative".

190. The text of the TOR is explicit. The purpose of PIOH 3 (in the TOR) is to present stakeholders with the analysis of all practical alternatives, to solicit and consider input thereon, and only then to select the preferred alternative.

> "Prior to selecting the preferred alternatives …a draft EIS will be prepared and circulated…The draft EIS will provide the information used to generate the study area, the evaluation of illustrative alternatives, as well as the analysis of practical alternatives. A formal Public Hearing will be arranged in the U.S. to provide interested parties the opportunity to comment upon the work documented in the draft EIS.
>
> The third round of Public Information Open Houses (PIOH) will be arranged in conjunction with the U.S. Public Hearing to provide [Canadian] stakeholders a similar opportunity to comment on the analysis of practical alternatives….
>
> Upon completion of the formal Public Hearing and the third round of Public Information Open Houses, the Partnership will consider the comments received, refine the alternatives and the analysis as required, and undertake the evaluation of the practical alternatives …
>
> The fourth round of Public Information of Open Houses will provide interested parties the opportunity to comment on the selected preferred practical altearntive(s)." (pg. 40-41)

191. TOR Exhibit 5.1 further demonstrates that PIOH 3 is premised on the release of the draft EAR (or a document equivalent thereto) to the public, in order to facilitate the process of consultation described above. (pg. 46).

192. Comparing the actual process to the process required by the TOR, DRIC failed on three grounds. DRIC failed to release the EAR or an equivalent document in

order to facilitate consultation, failed to present its analysis of the practical alternatives to stakeholders for comment before selecting the Preferred Alternative, and failed to consider public input in relation to the analysis of alternatives before choosing its Preferred Alternative.

193. Instead of the process set out in the TOR, DRIC followed the model of "announce and defend", releasing its analysis of the six Practical Alternatives together with its selection of the WE Parkway as the Preferred Alternative.

DRIC's Unfair and Dismissive Treatment of GreenLink

194. Windsor designed GreenLink to meet DRIC's own evaluation factors and criteria and, in particular, to better address the community concerns identified in August 2007 as the motivation for development of the Parkway.

195. Windsor feels strongly and its studies demonstrate that GreenLink does a better job of meeting DRIC's own criteria than does the WE Parkway, and has worked hard to show that this is objectively the case. Windsor has done more than "show up" to the table and offer comments. Windsor has hired competent, expert advisors, spent considerable public resources to participate constructively and usefully, and respected DRIC's own ground rules regarding the process.

196. In return, all that Windsor has asked for is a fair hearing. "Show us", Windsor has said, "that the Parkway is superior to GreenLink, using your own criteria. Show us the analysis". DRIC has refused.

197. An evaluation of the advantages and disadvantages to the environment of GreenLink as compared to the Parkway has never been presented to stakeholders, and will not be presented to the Minister of Environment when the EAR is submitted for approval, because it has never been done. This is a specific and fundamental violation of s. 6.1(2)(d) of the OEAA.

198. In a presentation to Windsor City Council on May 26, 2008, DRIC conceded that GreenLink had not even been evaluated as an alternative pursuant to the EA Act.

199. The following excerpt is taken from a transcript of DRIC's presentation to Windsor City Council on May 26, 2008. The exchange set out below involves His Worship Mayor Eddie Francis asking Doug Chambers of SENES Consulting, DRIC's air quality consultant, if GreenLink had been compared against the Parkway or the other Practical Alternatives in relation to air quality:

> "Mayor: ...When it said "all alternatives" to provide net benefit to local air quality I presume then based on the earlier Council questions, as a point of clarification, **GreenLink was not considered when it came to air quality?**
>
> D. Chambers: Good evening. I can't remember the details of slide 14 but I think that referred to 5 major options...

> Mayor: **So you didn't measure GreenLink against your five options?**
>
> D. Chambers: **No, we did not."**

200. Similar questions were asked of DRIC in relation to each of the seven evaluation factors used to assess DRIC's six Practical Alternatives (the original five alternatives, plus the Parkway). In each case, DRIC answered that GreenLink <u>had not been evaluated</u> alongside the other six Practical Alternatives.

201. At one point, Mayor Francis asked Len Kozachuk, DRIC's then Deputy Project Director, whether GreenLink had actually been assessed as an access road alternative within the EA process at all. His answer was no.

> "Mayor: Mr. Kozachuk and to the [DRIC] Team, on page 11 of your presentation today there's a table. On page 11 of the Summary of Assessment, in that table, and directly to Councillor Gignac's question, deals with comparisons for air quality, community and neighbourhood land use, cultural resources, natural environment, regional mobility and cost and constructability. The Councillor's question, if I understand it correctly: **Was GreenLink measured in each of those assessment factors?**
>
> L. Kozachuk: **Not as a formal alternative as for the other six alternatives."**

202. Mr. Kozachuk's concession that GreenLink had not been evaluated was confirmed when DRIC began to release technical studies May 2008. None of the 17 technical studies released by DRIC in 2008 evaluated GreenLink as a Practical Alternative.

203. The draft EAR itself, recently released, does not treat GreenLink as a Practical Alternative or subject it to evaluation pursuant to the factors and criteria set out in the TOR.

204. When asked why it had failed to evaluate GreenLink as required by the TOR and the EA Act, DRIC provided two explanations.

- DRIC claimed that selected features of GreenLink had been incorporated into the Parkway; and
- DRIC's end-to-end tunnel, eliminated from further consideration in August 2007, was used as a proxy for the evaluation of GreenLink.

205. In relation to the first explanation, His Worship Mayor Francis asked DRIC why GreenLink was the <u>only</u> alternative of the seven examined not to be evaluated against the approved criteria and evaluation factors. DRIC responded that the Parkway had "adopted" many of GreenLink's features.

"Mayor: But Mr. Wake, with respect, that is not the question. I asked you, at the beginning of the process, you had 15 plazas, 15 bridges and other proponents, and you measured and evaluated on the same factors – **replicable**, traceable, open, justifiable – and you went through the process, shook things out and you arrived at a result, and you said yes. I said to you: "That is the environmental assessment process?" You said yes.

So it is the same environmental assessment process, so why isn't the same type of treatment given to GreenLink? I don't care if you 'looked' at it, because quite frankly you're biased, just like we're biased, in our opinion in terms of what the best solution is, and that's why we have the environmental assessment process to remove bias. **So why was it that GreenLink was not subjected to the environmental assessment process with the seven criteria and seven factors measured up against GreenLink** to determine whatever that output is, whatever shakes out at the end?

D. Wake: Umm, well, as I was explaining, we've received GreenLink, we looked at it, we found a number of similarities between GreenLink and the Parkway…

Mayor: You do not want to answer the question.

D. Wake: …**we concluded that a complete analysis of GreenLink was probably, when it comes down to it, <u>we really didn't need to do that because we understood the benefits</u>**, the impact based on the work that we have done on the other factors or all factors for all five alternatives.

Mayor: Now we're getting somewhere. So the answer of the question based on your understanding of how things are, you **made a determination that it wasn't an appropriate subject to be brought forward for evaluation** against those factors?

D. Wake: **We looked at it. We found the commonalities. We found the Parkway adopted many of those features.** We had already looked into end-to-end tunnels…"

206. In the draft EAR, DRIC takes the position that it considered Windsor's input on whether the Parkway should be modified:

> "The study team carefully reviewed and assessed all of the information available about the GreenLink Windsor proposal, and considered the extent to which it would be appropriate to modify the August 2007 Parkway alternative."

207. But in the draft EAR DRIC agrees that "The GreenLinkWindsor proposal could be considered an "intermediate" <u>alternative</u> between the Parkway and the full 6 km tunnel that was previously assessed."

208. Neither the OEAA nor the TOR permit the "adoption" of features from an alternative <u>to take the place of</u> an <u>assessment using the approved evaluation factors and criteria</u>. In order to compare apples to apples, it is important that each alternative is compared against a consistent, traceable, set of criteria. This is a fundamental EA requirement which is explicitly binding on DRIC, but which it flaunted in the case of GreenLink.

209. In relation to the second explanation. Councillor Percy Hatfield asked Fausto Natarelli if DRIC <u>planned</u> to evaluate GreenLink pursuant to the same evaluation factors and criteria used to select the Parkway. Mr. Natarelli's answer was no.

210. Mr. Natarelli explained that it was not necessary to evaluate GreenLink (which proposed 65% tunnelling as compared to the Parkway's 31% of overpass coverage), because the impacts of a full tunnel had already been examined:

> "P. Hatfield: …**Do you plan to compare GreenLink, the City's plan, to the DRIC plan** between now and sometime in the future, if you haven't done so already?
>
> F. Natarelli: As I indicated earlier on, Councillor, **we've taken the best aspects of GreenLink**, they're found in the Parkway…" (Transcript of Windsor City Council Meeting, May 26, 2008, emphasis added)
>
> "Mayor: Correct me if I'm wrong, though, but you were very clear in your presentation today, or your term was, that let's pick a tunnel, the Labelle Tunnel which is 1,220 metres, but you did not evaluate it to see what the impact on air quality was? So what's your point? Can you rule out mechanical ventilation where a tunnel of 1,200 metres based on cost vs. benefit when **you did not even compare it? Where's your analysis?**
>
> M. Thomson: **We did not compare it directly. For compassion, we used the results of the analysis that had come from the full tunnel and the end-to-end tunnel…**"

211. Mr. Natarelli is claiming it was not necessary to evaluate GreenLink because DRIC had evaluated and discarded the full tunnel. In essence, DRIC took the view that if the full tunnel was not supérior to the Parkway, then GreenLink could not be superior either. This view is repeated in the draft EAR at pg. 3-21 and 3-22.

212. In fact tunnelling was the only DRIC alternative that protects health of residents from vehicle emissions. Windsor has serious concerns about the extent to which DRIC failed to reveal the serious air quality impacts that the Parkway will cause compared to an access road with tunnelled sections, thereby misrepresenting the true benefits associated with tunnelling and the health impacts of the Parkway. These concerns are set out in detail elsewhere in this submission under the topic of DRIC's air quality analysis, and will not be repeated here.

213. Notwithstanding these concerns, the more fundamental point is that DRIC cannot point to authorization in the TOR or the OEAA to permit evaluation "by proxy". Evaluation "by proxy" is not a procedure contemplated or recognized by MOE guidelines or legal precedent. Certainly DRIC has never provided Windsor with any authority that would permit GreenLink to be dismissed on the basis of evaluation "by proxy".

214. Beyond the two official explanations offered by DRIC, a third is also evident in the answers provided to Council on May 26, 2008. In particular, DRIC refused to consider GreenLink because MTO would not consider tunnels >240m in length, purportedly due to the increased costs that attend such tunnels.

> "L. Kozachuk: ...One of the major differences between the Parkway and the GreenLink is that of the length of the tunnels and that of the need for mechanical ventilation. As has been pointed out earlier, the **DRIC team does not consider any tunnels longer than 240 metres** .. As far as the **Ministry of Transportation is concerned, they're not interested in looking at tunnels with mechanical ventilation** at the moment because of the increased construction, operation and maintenance costs that those facilities [sic] inhibit on the roadway in perpetuity..."

215. On a substantive level, it is simply not true that longer tunnels cost more to operate than short tunnels. In fact, the opposite is true. The operating costs of the GreenLink tunnels have been demonstrated to be lower than the Parkway tunnels over the life of both facilities. Short tunnels require a great deal of illumination for safety reasons, precisely because they are so short that drivers' eyes do not adjust in time, and artificial daylight conditions must be maintained underneath the short overpasses. Further, the DRIC overpasses will have a substantially shorter life span than long tunnels (50 to 75 years rather than 125 to 150 years for a real tunnel) and will therefore require costly replacement at relatively frequent intervals. Further, it is not clear that DRIC recognized or costed bridge deck replacement would be needed after 25 to 30 years, which would require full removal of the landscaping over the DRIC bridges.

216. Even if cost were a factor, DRIC's own evaluation criteria place cost as just one of the 39-45 evaluation criteria identified in the TOR, and in DRIC's documents, one of seven evaluation criteria. On a weighted basis, cost cannot account for more than 13 % of the decision.

217. On a process basis, DRIC's arbitrary exclusion of tunnels greater than 240 m length is simply not an approved evaluation criterion or evaluation factor. It stands outside the factors that DRIC was permitted to rely upon when evaluating or deciding to discard alternatives. In legal terms, it was *ultra vires* DRIC to rely on this MTO demand when rejecting GreenLink.

218. It is also completely nonsensical to say that tunnels >240m would not be considered. DRIC *did* examine a tunnel >240 metres. Alternative 3, the full tunnel, was an end-to-end tunnel, stretching 6 km or 6,000 metres. In comparison, GreenLink's tunnels ranged from 120 m to 1,220 m.

219. Finally, it should be noted that DRIC does discuss GreenLink for a few pages in the draft EAR (pg. 3-21 to 3-22), in the section on consultation. What is clear from this discussion is that DRIC decided to discard GreenLink based on a sort of "back of the envelope" review, without actually undertaking the analysis mandated by the TOR.

220. For Windsor, a municipality whose residents and neighbourhood will be affected by the access road design for many generations to come, DRIC's refusal to put GreenLink "through the mill" and only undertake the cursory critique they refer to so loosely in the draft EAR, undertaken entirely in private and without consulting with Windsor or consulting with the public, results in DRIC again engaging in an unfair process, contrary to the OEEA. DRIC's attacks on GreenLink in April and May, 2008 and its cursory discussion on two pages of the draft EAR, clearly fail to not only result in the assessment required by the OEAA and TOR but also render DRIC's decision making wholly NOT transparent, replicable, and consistent, and therefore a further violation of the TOR.

221. For example, it is not up to DRIC to decide, in a back room, that the cost of GreenLink is not worth the expenditure without having conducted an evaluation as required by the OEAA. That is what an EA must do: what are the costs, what are the benefits, where are the trade-offs, how do the alternatives compare? If DRIC could eliminate alternatives without evaluating those alternatives, what have the last two years of public EA process served to accomplish? Why not take the same position on any of the other practical alternatives?

222. DRIC's failure to evaluate GreenLink as an alternative against EA criteria means that not only are stakeholders not assured that the best solution has been selected, it means that the public's overwhelming preference for GreenLink can be ignored by DRIC.

223. Nowhere in the draft EAR does DRIC make clear that 90-94% of the participants in the Windsor Open Houses preferred GreenLink. Nowhere does DRIC present its own statistics on this issue.

224. Nowhere does DRIC indicate that the Mayor of Windsor presented DRIC with postcards completed by 16,500 residents indicating a clear preference for GreenLink. The strength of this public preference has been completely ignored by DRIC during the EA process, as it has steadfastly refused to treat GreenLink as an alternative. As Councillor Hatfield noted on May 26, 2008, DRIC and DRIC left the Council meeting without even taking the cards along.

> "Thank you, your Worship...did you know we are all being presented with 16,500 names tonight that the members of the DRIC team left the room, left the post cards behind and I hope that's not indicative of what they think of the opinion of the people of Windsor who have clearly indicated a preference for GreenLink, where they've left the room and left 16,500 post cards behind..."

Further DRIC Illegalities

225. For all of the above reasons the DRIC's decision announced May 1, 2008 choosing the "Parkway" alternative as the preferred access road, and the methods used to reach that decision by DRIC/MTO, are a legal nullity, in that:

(a) DRIC refused to assess GreenLink as "an alternative method of carrying out the undertaking" in comparison to the Parkway, as required by section 6.1(2)(b)(ii) of the EA Act, particularly where DRIC invited the public to submit recommendations for improving the access road design and knowing that Windsor had invested considerable resources in developing that design;

(b) DRIC failed to give fair consideration to how GreenLink could effect a "betterment" in preventing and mitigating environmental impacts, thereby vitiating the prescribed "purpose" of the EA Act as set out in s. 2, i.e., "the betterment of the people of whole of any part of Ontario by providing for the protection, conservation and wise management in Ontario of the environment;"

(c) DRIC failed to abide by the requirements of s. 6.1(1) of the OEAA requiring the EAR to be prepared in accordance with the Terms of Reference approved by the Environment Minister for this project under that Act;

(d) DRIC chose a preferred alternative (the Parkway) without having evaluated the alternative designs for the access road (i.e., the "alternative methods of carrying out that undertaking") in a public, objective, fair, replicable, traceable and participatory manner as required by the TOR, including its failure to carry out rankings and weightings of the alternatives in terms of TOR criteria, or if such rankings and weightings were carried out, its failure to publish and allow for public comment on such rankings and weightings before DRIC/MTO announced the preferred alternative access road on May 1, 2008;

(e) DRIC failed to consult the City of Windsor in making key decisions with regard to this undertaking, contrary to s. 5.1 of the EA Act which requires that the proponent Minister must consult with "such persons as may be interested" and also failed to consult the City in violation of consultation requirements of the TOR and the Ministry of Environment;

(f) DRIC violated the approved TOR, violated the principles of procedural fairness, and acted without jurisdiction by:

(i) choosing the Parkway as the preferred alternative on or before May 1, 2008 without having conducted an EA pursuant to the OEAA (i.e., without having applied the approved evaluation and selection criteria set out in the TOR to all alternatives, including GreenLink, and considered the results);

(ii) using unapproved, undocumented and extra-statutory criteria, known only to the DRIC study team, in determining that GreenLink was not better in achieving mitigation of access road impacts than the Parkway and should not be carried forward as an alternative within the environmental assessment ("EA") process;

(iii) selecting the Parkway as the preferred alternative notwithstanding the fact that GreenLink better satisfies the DRIC TOR and selection criteria;

(iv) engaging in selective consultation with stakeholders supportive of DRIC's preferred alternative, while refusing to meet with the City of Windsor;

(v) receiving detailed technical input from the City of Windsor but refusing to consult thereon except after the decision as to the Parkway was made;

(vi) responding to the City of Windsor's input with a "Why Not GreenLink" media campaign, calculated to undermine public support, rather than consulting in good faith as required by the TOR and EA Act;

(vii) ignoring overwhelming public support of GreenLink in the selection of the Parkway as the preferred alternative;

(viii) ignoring, failing to summarize, or summarizing incorrectly the results of DRIC's own evaluation factors and criteria that did not support the Parkway, or which generated a preferred alternative other than the Parkway from among DRIC's five practical alternatives;

(ix) ignoring, failing to summarize, or summarizing incorrectly the results of public and community-based evaluations that did not support the Parkway, or which generated a preferred alternative other than the Parkway from among DRIC's five Practical Alternatives.

226. The following power point slides were delivered by Windsor to DRIC on May 26, 2008 in order to again highlight how DRIC ignored it's own EA criteria and acted contrary to the rules of fairness. Even as of December 12, 2008, DRIC has continued to ignore these fundamental EA process illegalities.

DRIC Ignored Its Own Criteria by Failing to Evaluate GreenLink

DRIC Failure to Comply with its EA obligations:

EA Requirement	DRIC Compliance?	DRIC Failure to Comply
"When preparing an environmental assessment, the proponent shall consult with such persons as may be interested": s. 5.1 Ontario *Environmental Assessment Act*	x	DRIC failed to comply: Prior to the May 1/08 decision DRIC refused to meet with City Council to discuss GreenLink and to discuss its views of the Parkway compared to GreenLink
DRIC's consultation plan "will allow comments and views of the public to assist in influencing the study and recommendations thereof" *DRIC EA Terms of Reference, approved by Minister of Environment, pg. 45*	x	DRIC failed to comply: Prior to making its decision of May 1, 2008 DRIC refused to provide the City with and refused to consult the City regarding the relevance and accuracy of facts and analysis used in reaching its decision that the Parkway is the preferred alternative and DRIC also refused to meet with the City to allow the City to assist in influencing DRIC's decision

DRIC Failure to Comply with its EA obligations:

EA Requirement	DRIC Compliance?	DRIC Failure to Comply
"At the request of any Council, the Partnership will attend additional Council meetings to discuss project related issues" *DRIC EA Terms of Reference, approved by Minister of Environment pg. 61*	x	DRIC failed to comply: City Council formally requested February 1, 2008 to meet with the DRIC team regarding the access road component, that request was repeated in letters dated March 31, April 17 and April 28, 2008. DRIC refused to arrange a meeting until after it decided and announced it has chosen the Parkway as its preferred alternative.

DRIC Failure to Comply with its EA obligations:

EA Requirement	DRIC Compliance?	DRIC Failure to Comply
"Consultation with interested persons is a cornerstone of environmental assessment and is a legal requirement of the Ontario Environmental Assessment Act. It is fundamental for the proponent to engage interested persons in the environmental assessment process early and often. Consultation should be meaningful and involve the two-way sharing of information." *MOE Code of Practice "Preparing and Reviewing Environmental Assessments in Ontario" August 2007* "One element of responsible decision-making is ensuring that those with a potential interest in the proposal are provided with opportunities to contribute to decision-making and to influence decisions where possible." *MOE Code of Practice "Preparing and Reviewing Environmental Assessments in Ontario" August 2007*	X	DRIC failed to comply On May 1, 2008 DRIC [illegible] with the [illegible] Technically and Environmentally Preferred Alternative for the Canadian access road." However, DRIC reached this decision without providing the City of Windsor Council any opportunity to meet with DRIC to discuss DRIC's proposed evaluation data and analysis indicating why the Parkway should be preferred [illegible] the City [illegible] to DRIC's internally produced evaluation [illegible] the Parkway.

DRIC Failure to Comply with its EA obligations:

EA Requirement	DRIC Compliance?	DRIC Failure to Comply
Ontario Environmental Assessment Board Criteria for Evaluating Consultation a) did the proponent provide for interested persons to participate in a reasonable and meaningful way? b) Was the input received through the consultation taken into account by overall study process?	X X	DRIC failed to comply -DRIC refused to meet with City Council to discuss GreenLink, a professionally developed and supported alternative. -DRIC acted unreasonably by making belated and spurious criticisms of GreenLink without attempting to discuss these with the City. -DRIC clearly refused to take the input received from the City about how GreenLink better meets DRIC criteria into account announcing the Parkway as its preference. -DRIC has neglected to compare GreenLink and the Parkway.

Why DRIC's Process was contrary to its Environmental Assessment Terms of Reference (ToR)

Specifically DRIC was required, before it suddenly announced its decision that the Parkway was the preferred alternative for the access road, to have completed a sound evaluation process based on five key principles:

1) Comprehensive
2) Understandable
3) Replicable
4) Traceable; and
5) Participatory[1]

There were no materials published prior to this decision which make the DRIC decision "understandable, replicable or traceable". DRIC failed to assess GreenLink as an alternative route design and clearly DRIC's decision avoided participation let alone consultation with the City Council in rejecting GreenLink.

[1] DRIC EA Terms of Reference, pg 35

May 1st Parkway Decision was Contrary to rules of fairness

Excerpts from relevant Canadian Judicial rulings on consultation requirements:

- "What must not be compromised in any case is the necessity that the notice, consultation and input elements, however structured, not be perfunctory and formalistic. They must be meaningful and realistic, designed to ensure that there is a real opportunity for persons affected to take reasonable steps to try to influence the decision.... sufficient of such information and material would generally have to be made available, at least in summary form, so that the persons affected will have a context in which to make their input, so that their representations can be directed to the real issues under active consideration".

May 1st Parkway Decision was Contrary to rules of fairness

- "The right to be heard and to play a meaningful part in the decision-making process is illusory unless it includes the right to explore and develop reasonable alternatives, the right to reasonable disclosure of information and documentation necessary to fully develop and present the position that the affected party wishes to be heard, and the right to be granted sufficient time to accomplish the foregoing."

May 1st Parkway Decision was Contrary to rules of fairness

- "A mere pro forma opportunity (for those interested) to present their views will not suffice. Instead there must be "meaningful participation in the actual decision-making.
- "[T]he right to be heard includes the right to the reasonable disclosure of information and documentation that will enable the affected party to fully develop and present the viewpoint that he or she wishes to be heard."

May 1st Parkway Decision was Contrary to rules of fairness

- "A mere pro forma opportunity (for those interested) to present their views will not suffice. Instead there must be "meaningful participation in the actual decision-making.
- "[T]he right to be heard includes the right to the reasonable disclosure of information and documentation that will enable the affected party to fully develop and present the viewpoint that he or she wishes to be heard."

DRIC has acted unfairly towards the City

- When asked on May 1 why DRIC refused to meet with the City prior to its decision, Dave Wake indicated DRIC was too busy to do so, stating "We have been working you know quite feverishly to assemble the information… "
- It was not revealed that DRIC had in fact met and briefed selected County officials and groups prior to the announcement.

May 1st Parkway Decision was Contrary to rules of fairness

- "A mere pro forma opportunity (for those interested) to present their views will not suffice. Instead there must be "meaningful participation in the actual decision-making.
- "[T]he right to be heard includes the right to the reasonable disclosure of information and documentation that will enable the affected party to fully develop and present the viewpoint that he or she wishes to be heard."

DRIC Inconsistency re Process

DRIC rushed to complete its analysis of the Parkway access road and announced it before the bridge or plazas - without taking the time to consult with City Council or analyzing GreenLink and discussing that with the City before rejecting it.
DRIC in effect separated the assessment of the access road from these other components.
But previously, DRIC said that was unacceptable.

- March /06: City asks DRIC to consider a "municipal-provincial" environmental assessment to identify further corridors and determine the most appropriate connecting route. The City said that there was a need for a "full and proper EA of the connecting route issue (given) its significance for the City, LaSalle and Essex County."
- May 16/06: DRIC (Dave Wake) letter to City said: "In the Terms of Reference, and in the work carried out since January, 2005, we have emphasized the importance of an end to end solution. **Therefore, we are not prepared to extract the access road portion from the overall environmental assessment. We intend to continue with the full, formal environmental assessment study for a solution extending from Highway 401 in Canada to the interstate system in the US."**

Montreal | Ottawa | Kanata | Toronto | Hamilton | Waterloo Region | Calgary | Vancouver | Moscow

Process Issues

DRIC's process unfairness and failures with respect to public consultation and compliance with DRIC Terms of Reference and the EAA include:

- **DRIC acting secretly:**
  Despite DRIC's commitment to "an open and transparent" decision making process:
  - DRIC secretly carried out an evaluation on which DRIC based its decision preferring the Parkway, but kept it from the City, although City Council had repeatedly asked to meet before the decision was made.

May 1st Parkway Decision was Contrary to rules of fairness

- "A mere pro forma opportunity (for those interested) to present their views will not suffice. Instead there must be "meaningful participation in the actual decision-making.
- "[T]he right to be heard includes the right to the reasonable disclosure of information and documentation that will enable the affected party to fully develop and present the viewpoint that he or she wishes to be heard."

Process Issues

- DRIC avoiding legally required public consultation duties:
  - DRIC failed to consult in advance with Windsor regarding the data and analysis comparing how the Parkway and GreenLink meet the Terms of Reference;
  - DRIC failed to provide to the City DRIC's preliminary evaluation for review and response before determining the Parkway is preferred and publishing unwarranted criticism on GreenLink;

DRIC U.S. Process Consults First and Then Decides
Draft Environmental Impact Statement (U.S. Portion) February 2008
comment period ends May 29, 2008 (cont'd.)

PREFACE

Federal, state, and local agencies, and the public, will review and comment on this DEIS. A public hearing will be held. Comments received from the public and agencies will be summarized and addressed in the Final Environmental Impact Statement (FEIS) in which a Preferred Alternative will be identified. Any necessary changes resulting from the comments will be made in selecting the Preferred Alternative. Once complete, the FEIS must be first approved by the Federal Highway Administration (FHWA) and, then, it will be distributed for public and agency review. If FHWA agrees with the document's findings, after its circulation, it will issue a Record of Decision (ROD). It will allow the project to move forward into the design phase.

Process Issues

- **DRIC unfairly using the Terms of Reference evaluation criteria: "consistency with land use"**
  - In evaluating access road alternatives to a new crossing using the factor of "consistency with land use" DRIC in 2005 ruled out possible alternative routes through LaSalle based largely on the fact that such routes were
    - "not consistent with Town of LaSalle's existing and planned urban area uses; impacts to Town Centre;
    - impacts to Oldcastle settlement area and TransCanada Trail;
    - impacts boundary of LaSalle future urban area and residential uses near Victory Street"
  - but DRIC's Parkway decision fails to recognize how the Parkway will, as designed, be inconsistent with thousands of existing homes in close proximity to the Parkway, areas that are existing and planned residential areas in Windsor's Official Plan;

Process Issues

- DRIC not respecting the EA Terms of Reference requirements for consultation and public participation:
  - The EAA and the ToR require a process that effectively allows key stakeholders timely access to information and to influence the outcome of the most important aspect of the access road component of the EA process – the evaluation and selection of the preferred alternative.
  - After-the-fact public open houses DRIC now proposes to hold are clearly of dubious value in terms of changing the May 1st decision.
  - The DRIC Canadian process should have been the same as the U.S. DRIC process: information, data and analysis first for public consultation, and only then a preferred alternative decision.

Conclusions

227. If the fundamental legal errors in the DRIC EA process previously identified by Windsor, and elaborated in this submission, once again, are not appropriately rectified MTO has no legal authority to submit this EAR in respect of the access road to the Environment Minister. DRIC's access road decision and its EAR in respect of the access road decision were arrived at in fundamental violation of the OEAA and TOR as well by an unfair process. Any such EAR cannot in law constitute an "environmental assessment". Rather, it is a legal nullity. As such, the Environment Minister has no jurisdiction to receive, consider, or review it, and certainly cannot process it for approval.

228. As it has in several previous submissions to DRIC, Windsor once again invites DRIC to take steps to cure the fundamental prejudice DRIC has created to its own EA process. DRIC could do this by:

(a) incorporating GreenLink as a formal alternative within the access road component of the DRIC EA process;

(b) with the participation of key stakeholders such as Windsor, fairly evaluating GreenLink along with the other six alternatives previously identified, using only approved evaluation and selection criteria;

(c) publishing the results of the revised technical evaluation(s);

(d) consulting all stakeholders in relation to the evaluation;

(e) giving full and fair consideration to the result of consultation and, in particular, public input supportive of GreenLink;

(f) with the participation of key stakeholders such as Windsor, selecting a Preferred Alternative based on the outcome of the evaluation in (b) and the consultation in (d) and (e);

(g) preparing an EAR setting out the results of the evaluation and consultation, and the rationale for the selection of the Preferred Alternative, in accordance with the TOR.

TOR_LAW 7021706 1

Paciorka Leaseholds Limited

Summary -- MTO – DRIC Meeting
October 30, 2008
Location: 949 McDougall Ave., Windsor, Ontario
Time: 2:00 pm to 3:15 pm

Attendees
MTO -- Mike Harrison
URS – Chris Schueler
Paciorka Leaseholds Limited – Bruce Paciorka
HGS Consultants – Rick Spencer

The DRIC scheme was discussed in terms of its impact, potential remedies and timelines such as land freeze, environmental assessment (E.A.), environmental assessment review period, sequence of highway construction, support roads, infrastructure reconfiguration, etc.) that will affect two of Paciorka Leasehold Limited's planned developments, particularly Area I (Lansing, Loretta at Huron Church Road to Ninth Street) and Area II (Ensign, Valebrook, Lamont, Bethlehem at Maiden Road to Third Street)

Area I
Two access roads are required by the City from three optional points of entry which are 1) Todd Lane at either Ninth or Tenth Street, 2) Pulford and Pittsburg Street at Huron Church Road, and 3) Emilia Street at Huron Estates. The MTO is currently exploring the Pittsburg, Pulford Street and Todd Lane at Tenth Street combination. Paciorka Leaseholds Limited's preference is the Emilia and Ninth Street at Todd Lane combination because this could be constructed prior to the expressway rather than in tandem with the DRIC construction project. This would provide an alternative traffic route for approximately 275 residences (and perhaps 500 to 600 vehicles) that exist in Huron Estates and on Lambton and Reddock Streets unencumbered by the lengthy DRIC expressway project. This may also reduce damages due to delay of Paciorka Leaseholds Limited development plans that would otherwise be caused by the DRIC project. It should be noted that Ninth Street is viewed as a collector road by Paciorka Leaseholds Limited. The DRIC's current plan to route Ninth Street from Pittsburg southward to Reddock, then east on Reddock to Tenth, then southward to Todd Lane, would impose collector road status and heavier traffic volume that Reddock Street is not designed to service, nor that Reddock Street residents will appreciate. Paciorka Leaseholds Limited's plan to build Lansing Street between Ninth and Tenth Streets will provide a road loop and water main loop with Reddock Street, therefore, a continuance of Ninth Street from Reddock Street to Todd Lane is recommended rather that using Tenth Street

The sanitary line from Northway Street westward on Pulford Street to the westside of Huron Church Road at Pittsburg Street will be displaced due to the DRIC project. Three alternative solutions are under consideration by the MTO. A secondary pumping station for a sanitary sewer will likely be required as the direct result of the expressway. A resolution to this issue is essential before our consultant can proceed with his functional servicing study.

The MTO suggests that the waterline is an insignificant issue for them. Timing and the connection point must be determined by the MTO before Paciorka Leaseholds Limited can proceed with its functional servicing study

Paciorka Leaseholds Limited anxiously awaits the MTO's determination of the location and timing of

The roadway access points.
The sanitary sewer connection.
The water main.

in order to proceed with the required Functional Servicing Study and Traffic Calming Study which are preliminary to our rezoning application.

Paciorka Leaseholds Limited is hopeful that a window of opportunity will materialize to develop their land in this area between the conclusion of the Environmental Assessment Review period and before, or during, the construction of the expressway.

Area II
Paciorka Leaseholds Limited expressed a concern that the DRIC might exhaust the capacity of the current storm water system that would have supported development of their land. The MTO, however, assured Paciorka Leaseholds Limited that this is not the case. The development of lands owned by Paciorka Leaseholds Limited in this area has been frozen pending the determination of, the preferred route and plaza location and subsequently, the outcome of the Environmental Assessment and Assessment Review period which is expected to be completed in August of 2009. The opportunity to develop this area in the near term is very much dependent upon mutual cooperation between the City of Windsor and the MTO.

Paciorka Leaseholds Limited has four commercial tenants in a plaza on Malden Road about one block south of Springgarden Road. These tenants have managed businesses in these units variously for between twelve and twenty-two years. They are very concerned about the MTO construction activities near this Malden Road location that will discourage traffic flows by detour, traffic movement delays, noise, dust and exposure to heavy equipment. A seven week construction project occurred on Malden Road during the summer of 1997 to install sanitary sewers which severely affected their businesses.

In summary, a moratorium on development has been imposed on the two Paciorka Leaseholds Limited planned developments Area 1 and Area 2 previously mentioned since February 24, 2006 / March 14, 2006 (reference MTO / Lee Anne Doyle / Rick Spencer / cc). They are entirely within the area of continued analysis and subject to the MTO's environmental assessment and review period due to be completed in August of 2009.

Paciorka Leaseholds Limited awaits determination of remedial infrastructure solutions (sanitary access points, water line location, access roads, etc.).

An opportunity for some development on Lansing Street at North Street and Malden Road may exist between the conclusion of the environmental assessment in August of 2009 and the commencement of construction a year later, depending on the MTO's timelines and determinations.

Paciorka Leaseholds Limited, October 30, 2008
(revised November 28, 2008)

ENVI283MC-2008-4423

THE DETROIT INTERNATIONAL CROSSING
PROJECT

Regarding : Comments for the Ministry of Environment & the Environmental Assessment process

To believe that the DRIC bureaucrats have come up with the preferred "solution" also known as, The Windsor-Essex Parkway Plan, is a lie. The Parkway Project, is an enviromental nightmare, just waiting-to-happen. The DRIC bureaucrats ignored the public's wishes time-and-again, in safety features, in practical design, and in the economic reality which governs this city.

The staggering incompetence of the Ministry of the Environment is simply irresponsible. The lack of intellagence in relation to scientific data, showed contempt for public participation, and only fostered bureaucratic indifference.

The blatant manipulation of press releases, scientific reports, and public displays was down-right criminal, throughout the process. Four documentaries on the border crisis, highlighted the public's distrust of government officials. One of these titles was called, "Toxic Trespass" by the National Film Board of Canada. Do you believe, through official intimidation, that the Ontario Government can justify anything? Citizens are outraged, that the people who were supposed to be the lead agency in protecting us, failed us.

It is irrational to conclude, that the Ministry of Health would sanction HIGHER levels of pollution, and yet that is exactly what the Ministry of Transportation is recommending. Does the Ministry of Environment understand the cynicism here? or the irony?

The Ministry of Transportation set about cheapening the lives of citizens, and arrogantly (impacted) ignored quality - of - life issues, all for its own shameful interests.

Government Officials ambushed the DRIC process, despite the public's optimism for the projects original intent. Sadly, DRIC bureaucrats showed no creativity or vision, for generating the public's enthusiasm into action. Even the NAFTA AGREEMENT guaranteed that the public would be at the decision-making-table, yet the (CCG) community consultation group, was not permitted to have discussions with their own MPP's in a Public Forum. Added to the fact, that the CCG, demanded (for over 3 years) that governance meetings with Federal Ministers, be called, for Plaza Design Modifications & Security Issues, Infact, the official line at the first meeting to choose a Windsor Community

Consultation Group, was to weed-out participants!!! On the American Side, this policy was insured, when (LAC) The Local Advisory Council to DRIC, limited members, by selected appointments only. It didn't help, that competing private corporations, wanted to undermine the DRIC process itself, infavour of exclusive financial partnerships with the governmental agencies.

For Canadians, the process became a matter of survival for neighbourhoods, for local business, for environmental & health concerns, all in anattempt to <u>live with</u>, the consequences of a transportation corridor that cared <u>nothing for</u>, the empowerment of the public.

Now the Ministry of the Environment will sweep all the dangers, risks, and its economic racism, under the political carpet, inorder to pretend that the government's conservation policies are sound and viable. Even local MPP's are denying their responsibilies, inspite of their government's visible interference with the process.

Sub-standard funding. Sub-standard innovations. Sub-standard protections, and questionable engineering & scientific methods. Its no wonder Sandra Pupatello and Dwight Duncan, offended legions of citizens with their, "TAKE IT, OR YOU'LL GET NOTHING DECLARATION"

The murky dementions of computer modelling, is now openly criticized by the public. Noise & Pollution Modelling, along with vibration testing, inevitably lead to questions about unregulated standards, unproven safety levels, and the lack of mediation.

The Government's answer to removing trucks from Windsor's City Streets? Up-load the E.C.Row Expressway and the Huron Church/Talbot Road Corridor.

The Government's answer to the inevitable "doubling" of pollution levels in ten years ? As one official put it, "I'm not here to clear up, the air pollution of Windsor." Seem the bureaucratic message was, quote "Windsor has the cleanest air in Ontario", unquote.

Answers like that show, government studies are a farce. Unable to come up with viable solutions, the government would rather pull the wool over the public's eyes, than admit they're victimizing thousands of citizens on a daily basis.

The real grassroots discussions were lead by thousands of Windsorites. And the strategy was clear, that Queen's Park must not

mortgage our future, or create environmental refugees. No politician has the discretion to impliment inferior policies, especially in the face of an environmental meltdown. The McGuinty Government has mandated a "bright future" for our region, with the support of a strong fiscal policy. Citizens here find (Finance Minister) Dwight Duncan's views misguided. Only someone, out of touch, could make an arguement infavor of a plan, designed with spiralling obsolescence.

The entire project should cost $5.5 Billion (dollars), between the two upper levels of government ---- inorder to accommodate the ($550 Billion) annual trade dynamic, that uses this transportation corridor.

Citizens are well aware, of how badly this project is needed, but they're not willing to be bullied into accepting a solution with a death warrent tied to it. Yet the Liberal Government refuses to recognize the loss of $33 Billion (dollars), in the next 15 years, due to Health Care Costs, from pollution emissions. The government won't recognize, the 3000 deaths, within the next 6 years (in Windsor) due to pollution related symtoms. To be blunt, the process has become a penny-pinching exercise, where citizens are considered expendable, by their own governments. Does the Ministry of Environment even understand the words, prevention & intervention? Does the Minister understand the power, of the Ontario Environmental Protection Act? If so, where is DRIC's cost benefits analysis, for emissions reduction? for health costs stablization? and risk management?

Fundamentally, DRIC abandoned "smart-growth" sustainability, and highjacked the policy confronting elements of poverty. There's a social movement that recognizes a link between environment, health, and poverty --- yet DRIC failed to respect the social justice aspect imbedded within its own program, for reviewing accumulated impacts.

OTHER ON-GOING EA's INCLUDE

A) The Banwell Road Project
B) The Manning Rd. Project
C) The Highway 3 Improvement Project
D) Ambassador Bridge

Of course, the issues of truck traffic and diesel emissions, go hand-in-hand. The Ministry of Transportation lied, when they said the current rate of trucks crossing the border, was inpart 12,000 a day.

The citizens of West-Windsor commissioned Wayne State University to determine what was the truth behind the numbers. Government computer modelling, again deliberately evaded the complexity for understanding the traffic-flow in my neighbourhood. Simply having traffic counting personnel on the corridor for 6 hours, is counter-productive. Our students were out on the streets for 2 weeks straight, for 24 hours a day. My neighbourhood experiences traffic 24 hours a day, which means we're exposed to pollution emissions 24 hours a day.

Inspite of the current economic down-turn, our statistics show 15,000 to 16,000 trucks a day. Consequently, in the coming years, using the DRIC's forecasts, by 2020, West Windsor & the new Border Crossing, will be welcoming POLLUTION EMISSIONS FROM 40,000 trucks a day.

The Ministry of Environment is well aware of the air quality situation, in our region. The so-called lack of funding, the lack of equipment, and the lack of scientific expertise, is suspect, inorder to conceal the true nature of what is happening in Windsor. Government Reports have come to my attention, that pollution levels in some parts of the city are 4 times higher, than anywhere else in Canada. By the time the DRIC project is complete, Windsor's emissions will spike to, 9 times the legal limits.
Which begs the question, why is the Ministry dodging the issues?

The Liberal Government's Parkway Plan, under the direction of URS Canada LTD. is contentious. It fragments the highway system, with a series of overpasses, that they claim creates a tunnel. In reality, the openings from this trench, are where emissions escape into neighbourhoods, into arenas, highschools, churches, and shopping plazas. (A.5 kilometer stretch) These portals of death, are the government's recommendations for an environmentally friendly future. The bureaucrats contend, that ventilation buildings are unnecessary, because they wouldn't change anything. The truth is, this simply becomes an exercise in semantics and government idiocy.

Citizens were specific, not to ask for ventilation buildings. ---- instead the public demanded 3 filtration buildings with engineered scrubber technology ---- the so-called SCRUBBER BUILDINGS. The Media never picked up on the fact, that the Ministry of Transportation maliciously pollutes unimpeded, and ventilation in itself, is not a means to capturing pollution.

The Ministry of Environment might be familier with the City of Windsor's GreenLink Project, that asks for 75% tunnelling. DRIC Officials are only offering 26% tunnelling. Consequently neither government proposal, provides protection. Must it be pointed out, that citizens still end up with 100% of these deadly emissions, which makes BOTH government proposals, worthless. It is unbelieveable that each level of government, envisions a right to patronize and manipulate citizens. Why was there no concerted effort to support citizen's initiatives?

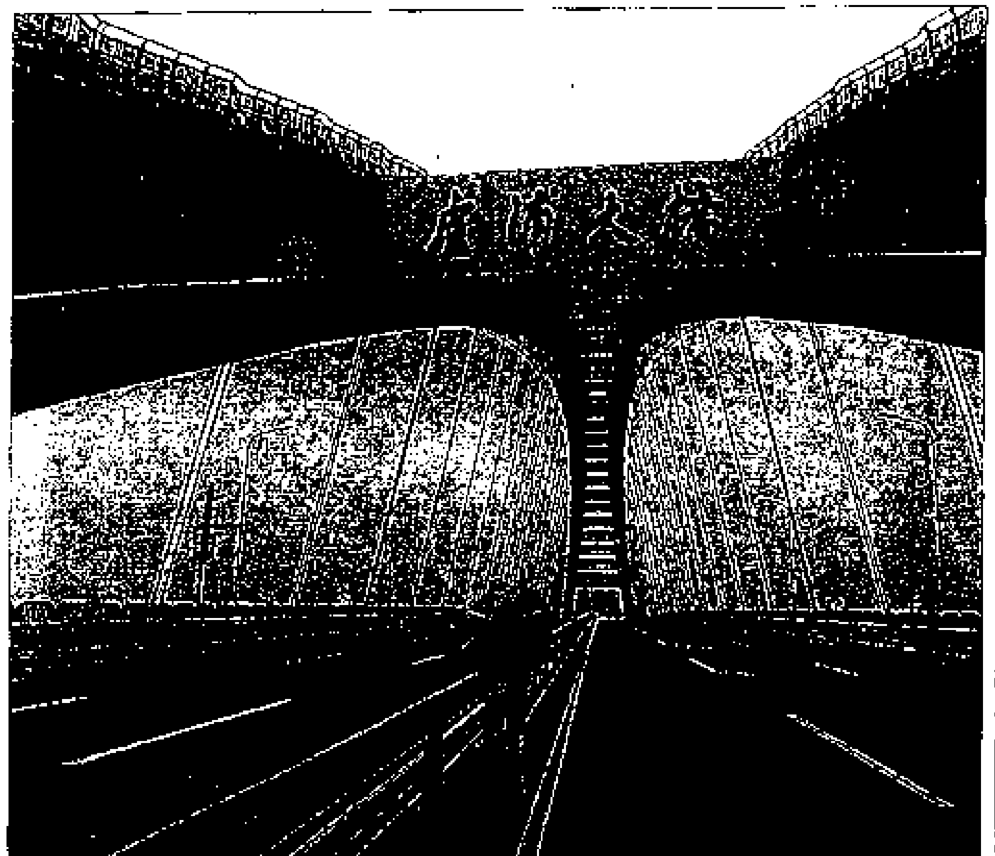
Citizens protecting CITIZEN'S RIGHTS was always at the fore-front of the CCG's agenda. 100% Tunnelling, with, Scrubber Buildings, is the only acceptable solution. And the Ministry of Environment knows this, is a human rights issue. Cost be damned, because if you attempt to make it an issue, the political fall-out would be devastating, for any government which imposes short-cuts. Don't tell us the technology doesn't work, because engineering intellence will prove you wrong everytime. Your DRIC Officials and Environmental Bureaucrats; do not live in an information vacuum.

Citizens wanted partnerships between The University of Windsor's Centre for (technological) Innovation and St.Clair College's Engineering Divisions, which could impliment and develope integrated filter systems, known as the next generation of electro-static parcipatators. These strategy improvements to Environmental Engineering Systems, could create a whole new industry in the Southwestern Ontario Region.

The co-ordinated forums of DRIC by-passed all these opportunities, that the PUBLIC pinned their hopes on. Must I point out, it was the Ministry of Environment that impeded all these economic initiatives, and it is only the Ministry of Environment that can correct all these grave errors, before it, and the Cabinet, make a final decision.

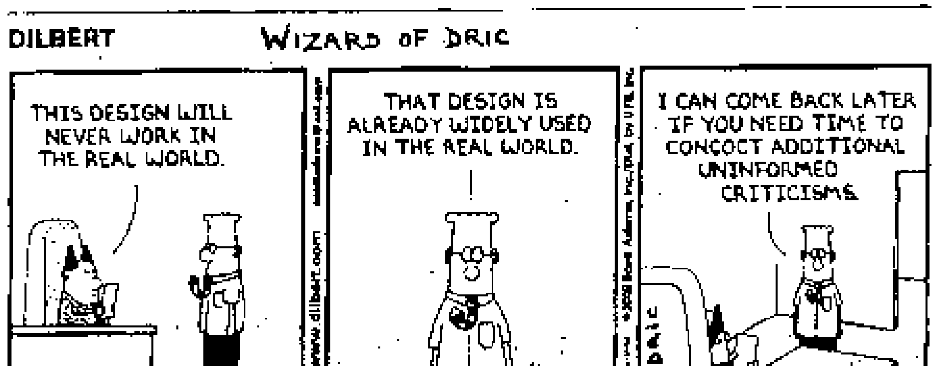
I thank-you for your kind consideration of this matter. And I look forward to a positive and concerted resolution, for everyone concerned.
Yours Cordially,

Mammoth connection



A man inspects the brand new Lupu Bridge, the world's longest steel arch, being built over the Huangpu River in Shanghai, China, today. The main section of the 3,900-metre-long (13,000-foot-long) record-breaking arch bridge is 750 metres (2500 feet) in length and 28.7 metres (95.7 feet) in width with six lanes. The bridge will be opened to traffic today.

Associated Press photo



Build with the future in Mind.

"Johnston, Steve (JUS)"
<Steve.Johnston@ontario.ca>
05/12/2008 03 35 PM

To <Jacquie Dalton@URSCorp.com>
cc
bcc
Subject EAComment5_RE DRIC Study - Notes of November 12 CANAAG Meeting

Hi Jacquie:

Review of the DRIC Environmental Assessment Report has been conducted and the following remarks are presented for your consideration:

The most significant concern created by the recent proposal is the roundabout proposal to be implemented in the vicinity of Howard Avenue and Highway 401. Roundabouts may improve the overall safety of intersections by eliminating or altering conflict types as divulged within " Roundabouts: An Informational Guide". The OPP however remains concerned about possible merge and diverge conflicts, particularly within the multilane roundabouts as proposed in the study. This concern is exacerbated due to the Ontario motoring public's general unfamiliarity with traffic patterns of this type. We would be interesting in knowing what the proposed speed limit is for this area; for the roundabout as well as the area leading to it. Lastly, with respect to this point, has the projected average daily traffic been calculated for this area?

The communications infrastructure is also of great interest. We agree that the usage of CCTV cameras through the Parkway is of great importance. The report seems to indicate that monitoring of the CCTV cameras would be conducted at the West Region Traffic Operations Center. While it may be too early for consideration, the Essex County OPP would like the ability to also be able to monitor the East camera feeds locally. As the report states the connection from a communications hub to the London TOC will be via leased media. Would it be reasonable to assume then, that it would be a relatively easy feat for the Essex County OPP to be able to monitor this as well? Real-time intelligence about major incidents within this area would be instrumental in developing a prompt response.

In essence, this constitutes the crux of our observations derived from this report. We appreciate the opportunity to provide feedback and look forward to continued participation in this process.

Thank you

SW Johnston

Provincial Constable # 9754
Strategic Planning Officer
Essex Detachment
Ontario Provincial Police
PH: (519) 723-2491

URS

Murray Thompson/Toronto/URSCorp
09/12/2008 10:38 AM

To [redacted]
cc Dave.Wake@mto.gov.on.ca, roger.a ward@ontario ca, jacquie_dalton@urscorp com
bcc
Subject EAComment6 Re: Fw: Windsor Parkway tunnelser

[redacted]

This will acknowledge receipt of your email of Dec 8, 2008 with comments pertaining to tunnels. By copy of this email, I am forwarding your comments to the MTO. The DRIC study team will review and consider these as we proceed to finalize the report for formal submission to the Ministry of Environment.

Thank you for your continued interest and participation in the project

---

Murray D. Thompson, P.Eng.
Vice President
URS Canada Inc. - Consulting Engineers & Geoscientists
75 Commerce Valley Drive East, Markham, ON Canada L3T 7N9
Tel: 905.882.4401, ext. 252 Fax: 905.882.4399
E-mail: Murray_Thompson@urscorp.com www.urs.ca

[redacted]

[redacted]
08/12/2008 11:21 PM

To Murray_Thompson@URSCorp.com
cc
Subject Re: Fw: Windsor Parkway tunnelser

Dear Mr. Thompson,

First, thank you for providing the list of features, lengths and separations along the Windsor Parkway as designed by URS. Based on it, I have constructed a list of suggestions for extensions to some of the tunnels. The extensions I suggest maintain maximum tunnel lengths of <240m, separations of 200m or more, and do not affect designs for entrance and exit ramps you have proposed.

The one thing your handouts at the November Open House did not include was where to send comments beyond those submitted at the Open House. I was informed that the comment period extends only to December 12, so I am sending my comments to you, and expecting that they will be forwarded to whomever should be receiving them.

[redacted]

phone. [redacted]
fax [redacted]

email [redacted]

Notes for DRIC on the potential for elongation of certain tunnels along the Windsor Parkway

After attending Open House #7 (November 2008) and carefully looking at the maps of the "final" Parkway proposal, I was struck by the long-held determination by DRIC to maintain tunnel lengths very similar to much earlier proposals, and to apparently refuse to compromise with the Greenlink proposal advanced by the City of Windsor. I was also struck by the potential to attempt such a compromise by extending a few of the tunnels without affecting the limitations that have been important to DRIC's design process: tunnels cannot be longer than 240m without requiring mechanical ventilation, and tunnels must be separated by at least 150m (and preferably 200m) to avoid pollutant entrainment. There are also constraints imposed by the design of entrance and exit ramps from the Parkway.

Nevertheless, there are places where compromises could be achieved. Having obtained data from URS in the form of a list of feature lengths and spacings from the beginning of the extension of Hwy 401 to the 'turn' near EC Row, what follows is a list of changes that would not affect design limitations, but could be achieved for only the added cost of walling and covering the added tunnel extensions:

1. The Cousineau Road tunnel could be extended 70m (to then be 240m long) toward the St.Clair College tunnel. That would reduce the separation between Cousineau Rd. and St.Clar College tunnels to 340m, still far longer than the minimum required.

2. The St.Clair College tunnel could be extended towards CousineauRd. by 100m, to a length of 220m, still short enough not to require mechanical ventilation, and leaving a spacing of 240m from the extended Cousineau Rd. tunnel. The separation would remain sufficient to avoid entrainment.

3. The Cabana Rd. tunnel could be extended from 120m to 170m in the direction of the Huron-Church Rd. tunnel while leaving a spacing of 200m between them.

4. The Pulford St. tunnel could be extended towards the drain by at least 50m (to a length of 170m), leaving sufficient space from the drain (at least 100m) and from the tunnel beyond.

5. The Spring Garden tunnel could be extended by 40m at either end to reach the maximum permissible length of 240m, without causing problems of spacing.

In total, the lengthening I am suggesting adds up to 310m of additional tunneling without affecting any of the constraints of length, separation, or ramps and other features in the design. The addition represents an approximately 16% increase in potential parkland associated with the Parkway, and in some places further insulates housing developments from the long-term impact of the roadway. The only explanation offered by URS and MOT officials why this should not be done was cast in terms of "cost/benefit". The costs would not be large, and the benefits in terms of aesthetics, parkland, and appearance of the project would be considerable.

Please seriously consider adjusting/compromising in your final project plans.

[redacted]

Phone: [redacted]
Fax: [redacted]
Email: [redacted]

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MEMORANDUM

21 November 2008

To: Catherine McLennon
Special Projects Officer
Environmental Assessment and Approvals Branch
2 St. Clair Ave. West
Toronto, ON M4V 1L5

From: Ian Kerr
Supervisor
Water Resources Unit

Re: Detroit River International Crossing Study
Draft Environmental Assessment Report
Individual Environmental Assessment W.O. 04-33-002
November 2008

The Water Resources Unit of the Southwestern Region of the Ministry of the Environment has reviewed the draft documents provided for the above referenced Individual Environmental Assessment. The comments from surface and ground water staff are attached to this letter as two separate memoranda.

If you have any questions, please contact me at 519-873-5041.

Yours truly,

Ian Kerr, P.Geo.
Supervisor, Water Resources
Southwestern Region

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November 21, 2008

To: Ian Kerr
Supervisor, Water Resources

From: Scott Abernethy
Surface Water Evaluator

Re: **Review of the Detroit River Crossing Environmental Assessment**

For surface water concerns, I have reviewed the following documents prepared by URS for the Canada United States-Ontario-Michigan Border Transportation Partnership

1. Environmental Assessment Report - Individual Environmental Assessment Detroit River International Crossing Study City of Windsor, County of Essex, Town of LaSalle, Town of Tecumseh (draft November 2008).
2. Practical Alternatives Evaluation Assessment Report - Stormwater Management Plan (revised March 2008) and
3. Practical Alternatives Evaluation - Constructability Report for Access Road Alternatives (draft May 2008)

The reports should explicitly identify the need for MOE approvals under the *Ontario Water Resources Act* for water quantity (water-taking permit) and water quality (sewage works approval) MTO projects are exempt from storm sewage works approvals under the *Public Transportation and Highway Improvement Act*, but MTO is not the proponent in this case The reports discuss the potential need for construction de-watering and for stream diversion, activities which would trigger water taking permit requirements for water flow daily rates greater than 50 cubic metres Hydrogen sulphide and any other contaminants present in ground water may require an OWRA-approved treatment system before discharge to a watercourse

Containment for spill control is the primary storm water quality concern for the truck staging area or plaza A pond discharge shut-off valve, as mentioned in the reports, is a logical part of an overall strategy for spill control

The proposal for nine stormwater ponds means that the drainage area supporting each pond is generally less than the preferred criterion (10 ha) and also less than the minimum criterion (5 hectares) based on MOE's Stormwater Manual (2003) Opportunities to reduce the number of ponds by combining drainage areas should be explored so drainage areas meet the criteria

Page 12 of the stormwater plan mentions the enclosure of Wolfe Drain as a possibility MOE views the burial of a watercourse as an adverse effect under the *Environmental Protection Act*

Page 16 of the stormwater plan alludes to the implementation of unspecified controls to limit the recognized damaging environmental impacts of chloride from road salt. De-icing alternatives to road salt should be investigated within the scope of the EA

The EA should commit to or propose an environmental monitoring program to show that the construction and operation of the project does not degrade water quality and it should propose contingency measures to rectify any degradation which is identified based on monitoring data

The storm water management plan for the bridge crossing would be prepared as a separate study If this study is part of the EA it should be reviewed by MOE so a complete assessment can be provided

Regards,

Scott Abernethy

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Fax (519) 873-5020
E-mail scott.abernethy@ontario.ca

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Ontario

File No. [illegible]

MEMORANDUM

21 November 2008

To: Ian Kerr
Supervisor
Water Resources Unit

From: Jeff Markle
Hydrogeologist
Technical Support Section

Re: Detroit River International Crossing Study
Environmental Assessment Report
Individual Environmental Assessment W.O. 04-33-002
November 2008

I have reviewed the sections of the EA documentation for the proposed Detroit River Crossing that pertain to potential effects on the groundwater. Specifically, portions of the following documents were considered:

1. URS. *Environmental Assessment Report, Individual Environmental Assessment W.O 04-33-002*. November 2008.

2. *Detroit River International Crossing Environmental Assessment Study. Practical Alternatives Evaluation, Constructability Report for Access Road Alternatives. Draft*. May 2008.

3. *Detroit River International Crossing Environmental Assessment Study. Practical Alternatives Evaluation Working Paper, Waste and Waste Management, Draft*. May 2008.

4. *Detroit River International Crossing Environmental Assessment Study, Draft Structural Planning Report for Practical Alternatives*. May 2008.

5. Golder Associates. *Preliminary Foundation Investigation and Design Report. Evaluation of Alternative Bridge Sites*. February 2008.

6. Golder Associates. *Preliminary Foundation Investigation and Design Report. Detroit River International Crossing Bridge Approach Corridor. Draft Report*. October 2007.

This EA has been completed in response to the need for a new or expanded crossing of the Detroit River identified as part of a long-term strategy to address the safe and efficient movement of people and goods between southwestern Ontario and southeastern Michigan. This

EA documents the process followed to select the form and location of the river crossing known as the Technically and Environmentally Preferred Alternative (TEPA). The TEPA comprises the Windsor-Essex Parkway (a six-lane freeway with 11 tunnels, 14 over- and under-passes, and service roads) which connect highway 401 to a new inspection plaza, Plaza B1 (an inspection area with parking and toll collection), and Crossing X-10B (a new six-lane bridge across the Detroit River between Windsor and Detroit). Many factors were considered in the evaluation process, but I have considered only those which related to potential effects on the groundwater in this review. My comments are provided below.

The area around the proposed project is characterized by approximate 20 to 35 m of overburden overlying bedrock. The overburden comprises 1 to 4 m of fill associated with industrial and urban development, mainly underlain by thick deposits of silty clay. The water table within the overburden is generally between 1 and 3 m below the ground surface (bgs) and groundwater within the bedrock is under artesian pressures in some areas. As a result of the high water table and artesian pressures, construction of elements of the approach corridor (tunnels and under passes) and inspection plaza may require dewatering. Where the dewatering will require pumping of more than 50,000 litres per day (Lpd) a Permit to Take water will be required. Evaluation of the potential impacts of the water taking should consider the guidance provided in the *Permit To Take Water (PTTW) Manual*, Ministry of the Environment, April 2005, and *Technical Guidance Document for Hydrogeological Studies in Support of Category 3 Applications for Permit to Take Water*, Ministry of the Environment, April 2008. In some cases (ie. tunnels), permanent dewatering may be required. The potential effects of such activities must be addressed.

The Waste and Waste Management report identifies several areas of known contamination, including closed landfills, on or near lands within the areas of the proposed approach corridor and inspection plaza. As well, former industrial lands within these areas are present and it is possible that contamination, associated with past land use, is present. Given that the proposed approach corridors and plazas are in or near former industrial areas and several known contaminated sites have been identified, any permit application must also consider the potential for the water taking to mobilize contaminates that are both on-site and adjacent to the proposed works. This potential for mobilizing contaminants is acknowledged on page 23 of the Waste and Waste Management Report. Where contaminated soils and material are encountered the procedures outlined in the May 2008 Waste and Waste Management document should be followed.

The groundwater in the area reportedly has high concentrations of hydrogen sulphide. Where the proposed discharge for a water taking is to a stream or wetland, the potential impacts of the hydrogen sulphide on the receiver should be addressed.

If you have any questions, please contact me.

Jeff Markle, P.Eng.
Hydrogeologist
Southwestern Region

cc. S. Abernethy

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Ontario

November 28, 2008

MEMORANDUM

To: Catherine McLennon
Special Project Officer
Environmental Assessment and Approvals Branch

From: Mike Parker
Supervisor, APEP
Southwestern Region

Re: Detroit River International Crossing Draft EA

The Air Unit of Southwestern Region, Technical Support Section has reviewed the draft individual environmental assessment for the Detroit River International Crossing Project and has the attached comments.

If you any questions regarding the attached comments, please contact me at 519-873-5043.

Yours truly,

M Park

Mike Parker
Supervisor: Air, Pesticides and Environmental Planning
Southwestern Region

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Ontario

November 28, 2008

MEMORANDUM

To: Mike Parker
Supervisor, APEP
Southwestern Region

From: Gerald Diamond
Air Quality Analyst
Southwestern Region

Re: DRIC Draft EA

I have read the draft EA and have the following comments. I have largely restricted my review, and hence my remarks, to the areas dealing with air quality. However, I do have a few general remarks.

The format of the document makes it very difficult to handle. I would suggest a more "typical" size for future iterations.

I find the distinction between "air quality" and "the natural environment" to be a bit off-putting as the first is merely a component of the larger second. However, it does give the environment more weight than it would otherwise receive.

For an environmental assessment, I found the detail and information on the environment to be somewhat sparse.

Section 4.1

Their description of the ministry's air monitoring in Windsor is wrong. They believe monitoring stopped in certain places when it hasn't and seem unaware of other stations altogether. Nonetheless, it is unlikely that the additional information would have made a significant difference to their conclusions.

Section 6.1

The writers remarks that they believe that traffic will divide evenly between the new link and the Ambassador Bridge. However, given the opposition to truck traffic passing through the downtown, and past residential areas, this may not be the case.

A more cautious approach would be to expect that political pressure might cause more of the truck traffic to be diverted to the new span and leave the existing bridge for lighter vehicles.

Section 6.2

The scoring table places "Changes To Air Quality" as separate from "Protection Of The Natural Environment". I am not sure I agree with this distinction.

More significantly, I disagree with weighting air quality this low. Residents regularly complain about the air quality impacts of the truck traffic, especially when queued. The Ontario Medical Association continues to assert that poor air quality results in thousands of premature deaths in Ontario each year. This should not be downplayed in the interest of *improving regional mobility*.

It is not made clear how broad brush descriptions are converted to numeric scores for the different categories. In particular there is no description of how the different air quality impacts were determined or how (presumably modelled results) were averaged to give descriptions such as "no to low impact".

Section 7

They state that " ...in recent years the number of fully operational [air monitoring] stations has been reduced to two." This is incorrect.

The tables summarising the air monitoring are vague in places. While 1 and 24 hour maxima are self explanatory, it is not clear if the average and 90th percentile rows refer to hourly or daily values.

I disagree with the choice of the 90th percentile as representing background, especially for particulate. Choosing this level in any given year still means there are about 36 days or 876 hours where the ambient concentration is higher. In addition, these are not randomly distributed but rather occur preferentially during the summer.

Tables on pages 8-16-8.19

In section 6, a detailed rationale was set out for the weighting. These were equated to the various "level[s] of importance" (see page 6-19). However in these tables three different weighting sets are used. While they are ascribed to different sources, it is not clear how the other two were used, how the "community consultation" differs from the "public" or if they were given equal consideration with the MTO weighting.

There does not seem to be much information on how the unweighted scores were derived.

It would be easier to reconcile these tables if the rationale for the weightings were closer to the tables.

Looking strictly at the two environmental factors and using the relative weightings given, the scores suggest the following.

From the Study Team's evaluation either **Crossing C + Plaza C** is the preferred choice. This is also the preferred choice for both the "public weighting" and "community consultation" weightings.

The scoring also seems a bit peculiar. Most of the scenarios describe the air quality changes as "slight increases" or "increases with 250 m". In spite of this there are no scores above 2. Given that "improve regional mobility" scores reach 7, this suggests that the impacts to air quality are much worse than the description suggests or that they are downplaying environmental concerns.

Section 10.1

The results are very qualitative. Several documents for the preferred alternative are described as pending. More detail will be necessary for the final version of this document.

Gerald Diamond

[redacted]

11/12/2008 10:26 AM

To <detroit.river@ontario.ca>

cc <info@partnershipborderstudy.com>, "Dan Taylor" <dctaylor@xplornet.com>, <Mike.Harrison2@ontario.ca>, "David J. Panton" <davidpan@mnsi.net>

bcc

Subject Comments and Recommendations wrt Roadway Lighting and the DRIC Draft EA Report

Dear Mr. Ward:

Further to my email to the DRIC Study team, dated June 29, 2008 (see message history below), I am writing to reiterate my request for the use of full cut-off and shielded road lighting fixtures along the Windsor-Essex Parkway, as well as along the new customs plaza and the international bridge crossing.

I am an amateur astronomer [redacted] and have an astronomical observatory in my backyard. I conduct educational and observational astronomy talks to small public groups [redacted] in my back yard, providing these groups an opportunity to view the night sky using the telescopes in my observatory. To prevent further detriment of my view of the nighttime sky from my backyard observatory, I am requesting that full cut-off, shielded roadway lighting fixtures mounted on traditional light standards, not high-mast light standards, be used along the Parkway. Please refer to my email of June 29th, 2008 for additional comments and details.

Please do not hesitate to contact me (daytime [redacted] or [redacted] evening [redacted], should you require additional information on these important issues or have any questions. If it would be helpful, please let me know if you would like a personal tour of my observatory. It can be arranged. I look forward to hearing from you with regard to the concerns expressed herein. Thank you.

[redacted]
Tel: [redacted]
Email: [redacted]

From: [redacted] [mailto: [redacted]
Sent: Sunday, June 29, 2008 1:26 PM
To: 'info@partnershipborderstudy.com'; 'detroit.river@mto.gov.on.ca'
Cc: [redacted]
Subject: Comments and Recommendations wrt Roadway Lighting and Road Noise, as a Consequence of the June 18th & 19th DRIC Public Information Sessions
Importance: High

DRIC Study Team:

As a resident of the Windsor and Essex County area, a member of the Royal Astronomical Society of Canada (RASC) and a professional environmental engineer, I request the following be included with the modifications and improvements to be implemented along the Windsor-Essex Parkway:

1. Engineered noise abatement measures, based on "Best Available Technology", to reduce the transmission of road noise into the housing developments adjacent to the highway, in accordance with applicable provincial regulations and guidelines;

2. The use of full cut-off and shielded road lighting fixtures, to:

a) Prevent light from shining upward into the night sky where it serves no useful purpose and is needless waste of energy.
b) Prevent glare in our line-of-sight, which is a safety hazard.
c) Prevent light intruding into private properties and households.

I am a serious amateur astronomer living in [redacted] and own a backyard astronomical observatory. I occasionally conduct educational and observational astronomy talks to small public groups [redacted] in my back yard, providing these groups an opportunity to view the night sky using the telescopes in my observatory. I am concerned about the adverse effect the proposed highway improvements could potentially have on my ability to enjoy my hobby and backyard observatory. During the 18 years I have lived in [redacted] I have noticed a significant increase in nighttime sky glow, particularly to the north. I am concerned that the construction of the Windsor-Essex Parkway will contribute to the further detriment of my view of nighttime sky from my backyard observatory, unless full cut-off and shielded roadway lighting fixtures are adopted for use along the Parkway.

As an astronomer and environmental engineer, I appreciate the importance of minimizing light pollution and light trespass, at the same time ensuring a safe and energy efficient living environment. Full cut-off and shielded roadway lighting fixtures are currently in use at some County intersections along Highway 3, as well as along many municipal roadways in the Town of LaSalle. These distribute light downward in the intended area, without glare. Through the use of full cut-off or shielded lighting fixtures, we can increase nighttime visibility and public safety, conserve energy and consequently reduce air pollution, be good neighbors, and regain our disappearing view of the starry night sky.

Few people recognize that a conventional high-pressure sodium (HPS) "cobra head" street light fixture may generally be replaced with a full cut-off HPS fixture having half the wattage. This translates into a savings in electrical energy and consequently, the reduction in energy demand displace acid-rain, smog and greenhouse gases that would have been produced by fossil-fuelled electric generating stations at Ontario Power Generation (OPG). The use of full cut-off or shielded light fixtures is good environmental sense.

With respect to noise, over the 18 years I have lived in [redacted] have noticed a significant increase in road noise, mostly as consequence of increased traffic (particularly truck traffic) along Highway 3.

I understand that it is common practice to require that air conditioning be provided in homes constructed in areas where nighttime sound levels due to road traffic are excessive. It should be realized, however, that with more household air conditioning systems required to operate at night because of excessive nighttime sound levels, electrical energy demand is increased which results in increased acid-rain, smog and greenhouse gas emissions from OPG stations and results in poorer regional air quality. The use of engineered noise barriers along the high way would encourage less reliance on household air conditioning systems and more use of natural ventilation, particularly when nighttime outside air temperature and humidity are low. In addition, without compromising road way durability and maintainability, the use of alternative road paving materials that reduce traffic noise, such as Asphalt-Rubber (AR) or Rubber Modified Asphalt Concrete (RMAC), should be considered

Should you require additional information on these important issues or have any questions, please do not hesitate to contact me (daytime: [redacted] or [redacted] evening: [redacted]. I look forward to hearing from you with regard to the concerns expressed herein. Thank you.

[redacted]

[redacted]
Tel: [redacted]
Email: [redacted]

Tel: 905.882.4401, ext. 187 Fax: 905.882.4399
E-mail: george katic@urscorp.com

----- Forwarded by George Katic/Toronto/URSCorp on 12/11/2008 03:39 PM -----

<mccormick.bj@HydroOne.com>
12/11/2008 03:23 PM

To <mike.harrison@ontario.ca>, <kevin.devos@ontario.ca>, <rhassall@morrisonhershfield.com>, <george_katic@urscorp.com>, <murray_thompson@urscorp.com>
cc <Ramona.Munteanu@HydroOne.com>, <chris.vanderreest@HydroOne.com>, <tibor.kertesz@HydroOne.com>, <ierullo@HydroOne.com>, <george.watt@HydroOne.com>, <vladimir.gracic@HydroOne.com>
Subject Detroit River International Crossing project - Environmental Assessment Report

At our last meeting, I promised to summarize recommended changes to the Detroit River International Crossing project - EA

1. Chapter 10 of the EA should very clearly state that an effect of the undertaking is the relocation of existing Hydro One transmission facilities and the need to acquire additional lands for future facilities. I would expect to see this described in Section 10 2.4 Socio-Economic Environment (Impacts to Existing and Planned Land Use) In this same section, there should be a firm commitment to compensation (eg to cover the costs of acquiring acceptable land and/or property rights)

2. In the evaluation of alternative plans (Chapter 6), the relocation of facilities should be identified as a negative effect (albeit mitigable) of the preferred plan

3. Chapter 11 should include commitments to Hydro One to continued consultation/negotiation and reassurance that the electricity ratepayers of Ontario and Hydro One will not be negatively impacted by the proposed plan The potential contamination and clean-up of the OPG ash site can be a significant liability and must be a component of the recommended mitigation plan.

4. Chapter 3 should describe the consultation to date with Hydro One. It should summarize the concerns expressed to the MTO consulting team about the need to relocate facilities and to acquire additional land north of the Plaza (ie which otherwise would have occurred on the Plaza site).

Overall, the EA should provide the rationale (ie project need) for Hydro One to gain EA Act approval of the facility relocations and to address site selection and consultation issues. It is important to understand that if we were to expand existing facilities, they would not be subject to EA Act approval A new site is subject to the Act. Your EA should be helpful in minimizing any future challenges to the use of this site and any demands for full blown site selection studies (ie your EA must not be silent on the matter) We will reference your EA in our future EA submission

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Environmental Assessment and Approvals Branch
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Ontario

December 11, 2008

MEMORANDUM

TO: Roger Ward
Senior Project Manager
Ministry of Transportation

FROM: Catherine McLennon
Special Project Officer
Environmental Assessment and Approvals Branch

RE: Detroit River International Crossing Study Draft Environmental Assessment, November 2008
EA FILE NO. EA 02 07

I have reviewed the November 2008 draft Environmental Assessment (EA) and offer the following comments for your consideration.

General Comments

1. The final EA should also be available on CD.
2. EA Code of Practice requirements (document available at: http://www.ene.gov.on.ca/envision/env_reg/er/documents/2008/010-1259a.pdf)
   a. Include in the final EA a tabular summary of Terms of Reference commitments and where in the EA they are discussed (see section 4.3.3 of Code of Practice).
   b. Include in the final EA a tabular summary of EA commitments, where in the EA they were made and generally when they will be fulfilled (see section 4.3.5 of Code of Practice).

Specific Comments

1. Page A-1 – *Environmental Assessment Act* approval, if given, would apply only to the Ministry of Transportation (MTO) and the portion of the undertaking under provincial jurisdiction. Make that clear here and when describing the undertaking for which MTO is seeking approval.
2. Page A-2 – The amending procedure is a standard one that MTO uses for individual EAs. The Ministry of the Environment (MOE) is currently working with MTO on potential

changes to the MTO Class EA, including the chapter 10 amending procedure. As a result of that work, further comments on this section may be made at the final EA stage. For now, include in section A.2 the requirement for MOE oversight/involvement regarding determination of significance of proposed changes.
3. Page 1-5, OEAA process products
   a. First Agency & Public Review – should be a 7 week review period (was 8 weeks because submission was previously expected just before Christmas).
   b. MOE will take some time after the "MOE Prepares Review" stage to translate the Review into French as the undertaking is proposed for an area to which the *French Language Services Act* applies (Essex County, City of Windsor).
   c. Remove the * from the 2nd "Agency & Public Review" and "Minister's Decision" periods.
4. Page 3-22, section 3.6
   a. Can a comment and response summary be provided much like for the open house summaries?
   b. It is stated that 12 meetings have been held with the First Nations. Other than Walpole Island, with which other community(ies) were meetings held?
5. Page 4-3, section 4.2.1 – To be consistent with other sections in chapter 4, consider adding some data to this section rather than just referring the reader to the supporting document.
6. Page 4-3, section 4.2.2 – The trend illustrated in table 4.2 starts in 2001, not mid-1990's as the text preceding the table suggests.
7. Page 4-24, section 4.6.3 – Where is the detailed information for Vegetation and Vegetation Communities located? Other sections present more information then refer the reader to supporting documentation.
8. Page 4-28 – The text on the map is difficult to read. This comment applies to several other Exhibits as well.
9. Page 4-29 – What do the blank columns in the table mean?
10. Page 5-5, Table 5.4 – How is "future" defined? What is the reason for there being no difference between 2004 and future statistics for cars?
11. Page 6-1
    a. 3rd paragraph – Reference should be made to Exhibit 6.17 not 6.16
    b. Last set of bullets on the page – Where in the Terms of Reference are these objectives identified?
12. Page 6-8 – How do the areas in the four columns match up to East Plaza, Central Plaza and South Plaza sites?
13. Page 6-9 – Zug Island is not identifiable on Exhibit 6.6 (or Exhibits 6.2 or 6.11).
14. Page 6-18 – Should the numbers in the last column for performance measures "Parklands" and "Archaeological Sites" be reversed?
15. Page 6-20 – In the end, are the public and other interested persons (i.e. Community Consultation Group) in general agreement with the factor weightings?
16. Page 6-24 – Is it CC-CF-SM that is the preferred route segment? Discussion on page 6-21 seems to suggest that.

17. Page 6-26 – Where is the tabular assessment of X13 and X14 (to be consistent with how other crossing information presented)?
18. Pages 6-29 and 6-33
    a. It is not immediately clear how the text description in the bullets at the top of page 6-29 match up with the columns in the table on page 6-33. The columns do not appear to be in the same order as the bullets. Being consistent here and then in the discussion that follows is important since the alternatives have similar names. Providing route segment information may help.
    b. The conclusion on page 6-29 about "Impact to Community and Neighbourhood Characteristics" does not appear to coincide with the information on page 6-33. Based on the information on page 6-33 alone, it appears that Huron Church (HCR)/Talbot corridor will have a greater impact than the Talbot Road by-pass (35 more houses and 20 more businesses displaced, disruptions about the same)
    c. 2nd column of text on page 6-29 – paragraph 1 should say 45 businesses displaced; paragraph 2 should say 25 businesses impacted (to match page 6-33)
    d. 2nd column, paragraph 3 on page 6-29 – Should it be within "200" metres of centre line, not 250 metres (to match page 6-33)
    e. 2nd column, paragraph 3 on page 6-29 – The 1370 households referenced here for Huron Church/Talbot Road corresponds to the last column in the table on page 6-33. Is the discussion on page 6-29 meant to relate to the last column? The question is asked as previously in the last paragraph in the 1st column on page 6-29, Huron Church/Talbot Road matched column one in the table on page 6-33.
    f. 2nd column, paragraph 3 on page 6-29 – For ECR/Rail Corridor, disrupted households is 1370 but according to page 6-33 it is 1890.
19. Page 6-31 and 6-33
    a. "Impacts to Natural Environment" discussion, last paragraph, page 6-31 – Only one alternative appears to sever natural areas (route in last column in table on page 6-33). From the information on page 6-33, no far superior alternative seems to emerge as argued on page 6-31.
20. Page 6-34 – Where is the tabular summary of the information presented on this page (to be consistent with how other crossing information presented)?
21. Page 6-37
    a. The decision rules (i.e. how an alternative is eliminated from or kept in the analysis) should be stated before the analysis begins. For example, in the paragraph directly under "Weighted Scores", it mentions decision rules. That should be expanded and brought up front (i.e. before getting into the Reasoned Argument Discussion). This will lend to the traceability of the ensuing discussion
    b. The paragraph at the end of the 1st column of text on the page seems out of place. Should the conclusion about the area of continued study not come after the arithmetic method evaluation (at the end of page 6-41 for example)?
    c. It appears from the third paragraph under unweighted scores that "reasoning" was applied to the arithmetic method evaluation and resulted in the elimination of alternatives. Should this occur given that the arithmetic method is strictly a numbers exercise? If reasoning is to be applied, then this must be made clear in the decision rules.

22. Page 6-38 – How is high, moderate, and low impacts determined? A brief explanation should be included in the EA.
23. Page 6-41 – How were the scores in Table 6-13 determined. Checking chapter 3 as the last paragraph on page 6-37 states does not provide the requisite information. A brief explanation should be included in the EA.
24. Page 6-46, section 6.5.2 – As X12 is the "twinning" of the Ambassador Bridge (i.e. constructing a new bridge proximate to the existing), the statement at the end of the 1st paragraph that this alternative would not provide a new crossing does not make sense.
25. Page 6-47, section 6.6
    a. End of 1st paragraph states "from Broadway Avenue to Brock Street in Sandwich Towne" – these areas are not evident on Exhibit 6.17.
    b. According to Exhibit 6.15 on page 6-41, CC1 and CC4 are also in the Area of Continued Analysis (ACA). The 2nd paragraph in section 6.6 does not reflect this
26. Page 7-8, section 7.2.1 – There appears to be a truncated discussion about noise effects. More detail is needed for the EA. ROW is mentioned in the 1st paragraph on the page, how does that relate to the ACA or the Area of Investigation?
27. Pages 7-12 to 7-30 – Exhibit 7-11 is referenced incorrectly numerous times on these pages.
28. Pages 7-19 and 7-20 – Why is there a discussion of businesses in this section of the document? The information is somewhat repeated in section 7.2.3 where it likely belongs
29. Page 7-20, Social Features – The Exhibit should be labelled Exhibit 7.7 not 7.13.
30. Page 7-25 – The paragraph above Exhibit 7.8 does not relate to delivery of emergency services
31. Pages 7-25 and 7-26, section 7.2.3 – Is there a reason for limited detail being offered for economic conditions compared to other parts of the environment?
32. Page 7-38 – What is the difference between ASI and URS in table 7.12 and also 7.13 on page 7-40?
33. Page 7-49, section 7.5.3 – The reference in paragraph 2 should be to Exhibit 7.27.
34. Page 8-9 – When and how were the measures for the various evaluation factors developed? Disruption was not used as a measure. Previous analyses used both displacement (acquisition) and disruption.
35. Page 8-11, Summary discussion – Broadway Street not mentioned previously. What are some of the indirect and nuisance effects expected?
36. Page 8-13, Summary discussion
    a. It is stated that the differences in air quality between Plaza B and C are notable. This is not evident from page 8-12 where the exact same information is given for air quality of both plazas.
    b. The last sentence in the summary about cost being considered of greater importance than impacts to natural features contradicts the ranking provided at the outset that ranked protecting the natural environment (rating 90) higher than cost and constructability (rating 75).

37. Page 8-15, Summary discussion – Cost and constructability issues with Crossing C- Plaza B should be mentioned in the summary on page 8-13 as it is relevant there as well (discussion in cost and constructability row also different for the exact same alternative).
38. Pages 8-16 to 8-20 – The way in which the information is presented in the tables is different than the way similar information is presented in table 6 13 on page 6-41 The same question applies about how the numbers were determined (see also comment 23 above). Provide a brief explanation with the tables in the EA.
39. Page 8-21
    a. As this section presents a bi national evaluation, more information is required about the US side for "Community and Neighbourhood Characteristics" and "Natural Features" (for crossings X-10A and X-10B).
    b. In the "Existing and Planned Land Use" discussion, reference is made in the third paragraph to Crossing X-10. Is that X-10A or X-10B or both?
40. Page 8-26 – In the opening sentence, reference should be to Exhibits 8.7 to 8.11. In the last sentence, reference should be to Exhibit 8 12.
41. Page 10-1 – The last three documents in the bulleted list are marked draft. Will they be finalized?
42. Section 10 – Much of the information in this section presents conclusions but not the detailed technical studies from which the conclusions were drawn. As these technical studies were not provided with the draft EA, comments on this section will be reserved until the final EA and the technical studies are submitted. In the final EA, reference the technical studies that led to the conclusions within each subsection so the reader knows exactly where to go to find more detailed information

If there are any questions about the above, please let me know.

Cath McL

Catherine McLennon

Environment Canada | Environnement Canada

Environmental Protection Operations Division - Ontario
Environment Canada
867 Lakeshore Road, P.O. Box 5050
Burlington, Ontario L7R 4A6

Our File Notre reference
2002-015
Your File Votre reference
URS Canada Project # 33015855 00ISS

December 12, 2008

Mr. Roger Ward
Senior Project Manager
Ministry of Transportation
Windsor Border Initiatives Implementation Group
949 McDougall Avenue, Suite 200
Windsor, Ontario
N9A 1L9

Dear Mr. Ward,

Re: Detroit River International Crossing Study, Windsor, Ontario
Proponent: Ontario Ministry of Transportation

This is in response to the letter from the Consultant Project Manager (Thompson/Shaw) dated November 11, 2008, requesting comments from Environment Canada (EC) on the draft Environmental Assessment (EA) Report prepared under the *Ontario Environmental Assessment Act*. Our comments are provided to the Ontario Ministry of Transportation (MTO) on behalf of EC in context of our role as a government review agency. Thank you for the opportunity to comment on this project.

We have reviewed the draft Environmental Assessment Report, Individual Environmental Assessment, W.O. 04-33-002, Detroit River International Crossing Study, City of Windsor, County of Essex, Town of LaSalle, Town of Tecumseh, November 2008 prepared by URS Canada (the EA Report).

The following comments are intended to assist you in finalizing the assessment, and relate to our areas of interest and expertise arising from the legislation and policies within EC's mandate. Our comments specifically pertain to the potential effects of this project during its construction, maintenance and operation, and, are related to water quality, air quality, toxics management, migratory birds, and species at risk. Please note that we have a regulatory interest in these factors as administrators of section 36 of the *Fisheries Act*, the *Canadian Environmental Protection Act 1999*, the *Migratory Birds Convention Act 1994*, and *Species at Risk Act*, respectively. Environment Canada's departmental interests in these environmental factors and the background context and requirements of relevant legislation, that are included in the appendix at the end of this letter, should also be referred to when reviewing our comments and recommendations.

The draft EA Report summarizes the findings documented in detailed assessment reports, however the information included for the assessment of the technically and environmentally preferred alternative (TEPA) is somewhat limited. EC has not yet had an opportunity to review the technical supporting documents so is unable to comment on the basis for the conclusions made regarding potential effects of the TEPA. Also, as we have just recently received additional information on the air quality analyses[1], including analyses that specifically consider the TEPA, and in light of the very tight review timeline and other priorities, EC is not able to provide comments on the air quality assessment. However, in EC's opinion, Chapter 10 could include more specific information on the environmental effects of project implementation and proposed mitigation and monitoring, particularly in areas where sensitive receptors and/or ecosystems are likely to be substantially impacted.

[1] Response to EC's prior comments sent by email dated December 5, 2008 (Wright/Shaw) and notice of release of the technical supporting document for the air quality assessment entitled, "Canada-United States-Ontario-Michigan Border Transportation Partnership, Air Quality Impact Assessment, Technical and Environmentally Preferred Alternative, December 2008".

Also, EC recommends that the EA Report include the following:

- **A separate section dedicated to the characterization and assessment of effects on surface water and groundwater resources, including its quality, quantity and ecological functions, community water uses, etc.**
- **A preliminary assessment of potential effects on migratory birds due to the two distinct bridge types to be considered and a range of likely design options for each bridge, given the lack of pertinent data at this time to support a detailed assessment.**
- **A summary encompassing all species at risk that are currently described in the sections on wildlife, vegetation, and fish (this could be included in the summary table under section 10.5).**
- **A consideration of transboundary environmental effects due to construction and operation of the project in and adjacent to the Detroit River and international boundary.**

See our comments below for further discussion supporting the main comments and recommendations above.

Specific comments for your consideration follow:

Water Quality and Quantity

The Terms of Reference for the Individual EA indicates that surface water and groundwater quality and quantity should be considered. EC notes that the draft EA Report does not have sections dedicated exclusively to the consideration of these environmental components.

- The assessment of surface water and groundwater do not appear to have been carried out consistent with technical requirements in the MTO's Environmental References for Highway Design, Sections 3.11 and 3.3 respectively.
  - Of note, baseline information on water quality in watercourses and groundwater resources potentially impacted by the proposed undertaking (TEPA) are not included.
- We also note that effects of the TEPA on surface water and groundwater are considered under the sections on 'Fish and Fish Habitat' and 'Drainage and Stormwater Management'; however, the assessment of potential effects is limited to fish and fish habitat only and appears to be based on unsubstantiated statements, as reference was not made to any specific baseline information. Also, any potential transboundary effects that may be experienced in the United States, due to bridge operation and in-water works close to the international border, should be described.
- If baseline water quality data indicates that certain parameters are at or near threshold levels identified in provincial and federal water quality guidelines, project discharges could potentially cause exceedances of these levels in receiving waters, notwithstanding the proposed enhanced level of stormwater treatment (rated at 80% suspended sediment removal). Alternatively, if receiving water quality is expected to improve, in some locations, this should be discussed and fully substantiated.

  Many of the watercourses on site receiving stormwater runoff from the project drain to Turkey Creek/Grand Marais Drain or other local drains that ultimately flow into the Detroit River. As the Detroit River is designated as an Area of Concern (AOC) by the International Joint Commission, a Remedial Action Plan (RAP) has been developed for this AOC (http://www.on.ec.gc.ca/water/raps/detroit/intro_e.html). Major environmental issues of concern have been identified in the AOC and are priorities in the RAP, notably those related to municipal discharges, exceedances of water quality objectives, contaminated sediments, and habitat degradation. Given EC's interests under the Great Lakes Water Quality Agreement and Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem, EC recommends that the updated EA Report clearly identify whether the level of mitigation proposed for stormwater runoff from the project helps to improve, protects, or impairs water quality in Turkey Creek and its tributaries, and other local creeks/drains in the project area that discharge directly to the Detroit River

- Effects on other environmental and socio-economic components (e.g. vegetation communities, recreational users, etc.), due to potential project effects on surface and groundwater resources, should also be considered and assessed
- EC recommends that all of the foregoing considerations be included in the updated EA Report

In regard to the proposed stormwater management plan, in our comments to URS Canada by email dated July 16, 2008, EC previously indicated that *"an assessment of SWMM plans for the proposed bridge alternatives were not included"* in the stormwater management plan at that time. We have not yet received responses indicating how our comments have been addressed, nor have we received the updated technical supporting document for review. We are pleased to note that the EA Report states *"deck drains are not proposed on the crossing and runoff will be collected for quality treatment -prior to discharge to the river"* (p. 10-18); however, specific details are not provided on the location, configuration and expected performance of the proposed stormwater management measures for the international bridge crossing. EC recommends that additional information be included in the EA Report on the proposed stormwater management plan for the international bridge crossing (including proposed spills contingency/management plans, and measures to minimize use of de-icing chemicals[2] and their potential adverse effects on the environment).

Wildlife, Including Migratory Birds and Species at Risk Issues

The loss of fish and wildlife habitat and degradation of fish and wildlife populations are major impairments that led to the designation of the Detroit River as an AOC. Restoring healthy and abundant fish and wildlife populations and protecting and rehabilitating existing natural habitat areas are, therefore, priorities of the Detroit River RAP. The primary focus is on restoring wetland habitat, naturalizing hardened shorelines, restoring in-river fish spawning habitat that has been lost, and creating linkages from the river to major habitat areas such as Black Oak Woods and the Ojibway Prairie Complex. Therefore, it is important that the project be implemented in a manner consistent with the objectives of the relevant Remedial Action Plans and Lakewide Management Plans. The following comments take into regard these objectives.

Migratory Birds
Project construction, operation or maintenance activities such as vegetation clearing and grubbing, site access, excavation and piling of soil/fill, etc., could result in the incidental take of migratory birds or their nests if conducted in migratory bird habitat during the breeding season. The removal of vegetation also has the potential to reduce habitat for birds, and construction, operation or maintenance activities could disturb nearby breeding birds and disrupt breeding.

To avoid incidental take during construction, the project works and activities that may affect migratory bird habitat should be timed to occur outside of the breeding season. We recommend that the following mitigation measures be implemented by the proponent to avoid significant adverse environmental effects on migratory bird species potentially breeding in the project area as identified in the proponent's bird survey:

- Construction activities with the potential to destroy migratory birds, such as vegetation clearing, should not take place in migratory bird habitat during the breeding season, defined for the following habitat types in the project region as
  - Forest: May 9 – July 23
  - Open: May 1 - July 23

[2] Some de-icing products typically used for bridge maintenance may contain additives high in ammonia, phosphorus and organics that may be deleterious to fish
<http://www.dot.state.co.us/publications/PDFFiles/3chem.calceicers.pdf>
<http://www.northsidesupplies.com/Lower%20Phosphorus%20Roadway%20De-Icers.htm>

- If the works must be conducted within breeding bird habitat during the identified breeding season for migratory birds, a nest survey should be conducted by a qualified avian biologist immediately prior to commencement of the works to identify and locate active nests of species covered by the *Migratory Birds Convention Act, 1994*. A mitigation plan (which may include establishing appropriate buffers around active nests) should then be developed to address any potential impacts on migratory birds or their active nests, and should be reviewed by Environment Canada prior to implementation

In regard to operational effects of the project, notably the international bridge crossing, EC notes that a preferred bridge design will be chosen at a later date (s. 9.1.2, p. 9-3) from two bridge types: a suspension bridge or a cable stayed bridge, both of which are supported by a network of steel cables. EC notes that migratory birds (primarily nocturnal passerine migrants) flying along, or across, the Detroit River at the bridge location may potentially be adversely impacted by a tall structure with supporting cables which could pose a collision risk. The following design parameters relevant to this issue are as follows (pp. 9-2, 9-3):

Suspension Bridge
Height above river surface to bottom of structure: 40.5 m to 46.3 m (133 ft to 152 ft)
Tower height above footing (assumed to be at water level): 140 m (459 ft)
- Superstructure height (towers above top of navigational clearance): 99.5 m (326 ft)
Suspended main span above river (clear): 855 m (2805')
Backstay spans (unsupported by cables at each end of bridge): 250 m (820 ft)
- Approximate profile area[3] of hanger cables & bridge deck across river: 42,536 m^2 (457,842 ft^2)

Cable Stayed Bridge
Height above river surface to bottom of structure: 40.5 m to 46.3 m (133 ft to 152 ft)
Tower height above footing (assumed to be at water level): 250 m (820 ft)
- Superstructure height (towers above top of navigational clearance): 209.5 m (687 ft)
Suspended main span above river (clear): 840 m (2756 ft)
Symmetric side spans (supported on cables at each end): 320 m (1050 ft)
- Approximate profile area of hanger cables & bridge deck across river: 155,030 m^2 (1,668,686 ft^2)

As can be seen from the above profile estimates, a cable stayed bridge would have a superstructure profile area 3.6 times that of a suspension bridge (ignoring any profile effects due to the main support cables from the top of suspension bridge tower to the ground anchorages). Therefore, depending on migratory bird use of the area, flying heights and weather conditions, EC would expect that a cable stayed design would pose a greater collision risk to birds than a suspension bridge design, particularly in light of its significantly larger profile area and increasingly dense cable hanger configuration with height.

EC notes that the information necessary to determine whether a particular bridge design would present undue risk to migratory birds due to collision mortality (associated with the bridge superstructure) at this site is not yet available. EC understands that the proponent intends to undertake further studies on *"species, populations and behaviours of migratory bird species in the vicinity of the Detroit River crossing"* (p. 10—15), and also that that *"Radar studies and point count surveys should be carried out"*, and we agree that additional studies should be undertaken to inform the bridge design and lighting. However, EC requests the opportunity to review and comment on the proposed work plans for the radar and other migratory bird studies associated with the bridge crossing. Also, it is not clear to EC whether these studies can be carried out in time to be considered under subsequent stages of the provincial EA review. Therefore, EC recommends the following approach be adopted to enable an adequate consideration of this issue, and to help minimize the potential for, and significance of, any adverse effects on migratory birds due to operation of the international bridge

- Work plans for the radar and other migratory bird studies associated with the bridge crossing should be provided to EC as soon as possible[4] for review to help ensure that study

[3] Estimated by EC as 0.5 x total cabled width (with hangers) x superstructure height above top of navigational clearance (for both bridge types)
[4] The work plans should be provided well in advance of the busy spring monitoring period to facilitate a more timely review.

procedures are appropriate. The studies to identify migratory bird species, populations and behaviours in the vicinity of the Detroit River crossing, including radar studies and point count surveys should be undertaken at an appropriate time next spring (to capture the main migration and nesting period); and study results provided to EC for review as soon as available. Based on EC's review of the spring study results, the need for additional fall studies will be identified.

- The MTO, Transport Canada and its bi-national partners should commit to working closely with EC, Ontario Ministry of Natural Resources, the U.S. Fish and Wildlife Service, and the Michigan Department of Natural Resources to identify any issues of concern to birds related to specific design options being considered for each bridge type, and, the preferred bridge design and any proposed lighting.

In summary, EC recommends that the EA for this project should fully assess impacts on migratory birds and their habitats as indicated in our comments above, propose measures to mitigate adverse environmental effects, and fully document the assessment in the updated EA Report. Such mitigation measures should also be reflected in the choice and configuration of the preferred bridge design, and construction environmental specifications.

Please note that these recommendations are solely intended to avoid significant adverse environmental effects on migratory birds. This advice does not provide an authorization for incidental take or for the disturbance, destruction or taking of nests under the *Migratory Bird Regulations* (MBRs), nor does it provide a guarantee that contravention of the MBRs will be avoided. It remains the proponent's responsibility to meet the requirements of the MBRs and to pursue any further measures that may be necessary to ensure compliance.

Species at Risk Issues
Based on the information provided in the EA Report, EC understands that construction of the project will likely impact a number of species at risk (SAR) listed on Schedule 1 of the federal *Species at Risk Act* (SARA), notably the western section of the Windsor-Essex Parkway and Plaza. EC understands that the lands required to construct the Plaza will be acquired by Transport Canada prior to construction and will ultimately be under federal ownership. At that time, certain provisions of SARA, including prohibitions and potential permitting requirements, may apply to these species. Therefore, EC's Canadian Wildlife Service will need to review specific details of proposed measures and monitoring to address impacts on any species listed under SARA, and to identify any permitting requirements. Pertinent information on these considerations was not included in the EA Report, therefore, EC is unable to provide specific advice on this matter. **EC requests that specific information on potential effects, and proposed mitigation and monitoring, in regards to the species at risk identified in the proposed plaza area, and any species at risk likely to use suitable habitats in this area, be provided to EC for its review.**

Wildlife Habitat and Restoration
In order to be consistent with objectives of the Canadian Biodiversity Strategy (i.e., to preserve the biodiversity of surrounding vegetation and ecosystems) and provide suitable habitat for migratory birds and other wildlife, including SAR, we strongly support the proposed re-vegetation of any disturbed areas or creation of proposed habitat compensation areas using native plant species. However, plants used should be indigenous to the area (and derived from the proposed plant salvage) to the maximum extent possible, and also well adapted to the site conditions and uses. *Use of invasive species should be avoided.* Also, other ecological conditions amenable to specific species should be re-created to the maximum extent possible (e.g., hydrological, soils, and physiographic conditions, etc.)

Monitoring

Proper implementation of all proposed mitigation measures, including those recommended in EC's comments above, is necessary in order to minimize any adverse environmental impacts due to the project. EC supports the project monitoring referenced in section 10.7. However, the MTO or its agent must also take any contingency actions necessary if the monitoring finds that the mitigation measures are not functioning as intended (e.g., suspend/reschedule work, repair/replace damaged mitigation, re-assess the design and re-construct, etc.).

Environmental Protection

EC expects that during construction and operation of the TEPA, mitigation measures and monitoring described in our comments above, and documented in the updated EA Report, will be developed in conformance with MTO's Environmental Protection / Technical Requirements, and Environmental Guides; and, implemented utilizing any appropriate standards/environmental provisions/practices referenced in the MTO's Environmental Reference for Contract Preparation.

Closing

In closing, we have identified a number of aspects for which we wish to receive additional information and/or confirmation that the MTO has committed to substantively address the issues raised in our foregoing comments.

Environment Canada's comments and recommendations are intended to provide expert support to project proponents and decision-makers, in accordance with its program related responsibilities and associated guidelines and policies. These comments are in no way to be interpreted as any type of acknowledgement, compliance, permission, approval, authorization, or release of liability related to any requirements to comply with federal or provincial statutes and regulations. Responsibility for achieving regulatory compliance and cost effective risk and liability reduction lies solely with the project proponent.

We trust that the above comments will assist you in completing the EA Report for this project.

Please contact the undersigned if you wish to discuss the above comments.

Yours sincerely,

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APPENDIX

Regulatory and Policy Context for Environment Canada's Comments and Advice[5]

Environment Canada's mandate to protect the environment and to actively promote sustainable development extends beyond the Department's legislated responsibilities for undertakings that trigger the *Canadian Environmental Assessment Act*. Our review and comments are related, but not limited, to our areas of interest and expertise arising from the following legislation, policies and agreements. More information is available on-line, as indicated in the footnote references below.

1. Legislation

Department of Environment Act

http://laws.justice.gc.ca/en/E-10/text.html

The *Department of Environment Act* provides Environment Canada (EC) with general responsibility for environmental management and protection. Its obligations extend to and include all matters over which Parliament has jurisdiction, and have not by law been assigned to any other department, board, or agency of the Government of Canada as related to: preservation and enhancement of the quality of the natural environment (e.g. water, air, soil), renewable resources including migratory birds and other non-domestic flora and fauna, water, meteorology, and coordination of policy and programs respecting preservation and enhancement of the quality of the natural environment.

The *Department of Environment Act* states that EC has a mandated responsibility to advise heads of federal departments, boards and agencies on matters pertaining to the preservation and enhancement of the quality of the natural environment. This responsibility is reinforced as per subsection 12(3) of CEAA, which states that federal departments must provide specialist and expert information or knowledge to other federal departments or review panels.

Canadian Environmental Protection Act, 1999

http://www.ec.gc.ca/CEPARegistry/subs_list/
http://www.ec.gc.ca/CEPARegistry/policies/

The Canadian Environmental Protection Act, 1999 (CEPA) contributes to sustainable development through pollution prevention and protects the environment, human life and health from the risks associated with toxic substances. Key parts of CEPA include:

- public participation;
- information gathering, objectives, guidelines and codes of practice;
- pollution prevention;
- controlling toxic substances;
- animate products of biotechnology;
- controlling pollution and managing wastes including nutrients, protection of the marine environment, disposal at sea, fuels, vehicle engine and equipment emissions, international air pollution and international water pollution, and hazardous and non-hazardous waste;
- environmental matters related to emergencies including requirements for environmental emergency plans;
- government operations - federal and aboriginal lands including regulations to close any regulatory gap between federal and provincial requirements, and,
- enforcement.

[5] Only those most pertinent to our review advice on this project are included in this appendix.

The Canadian Environmental Protection Act, 1999 enables the government to manage a toxic substance throughout its life cycle. Provisions under CEPA require Environment Canada, under certain conditions, to develop a "regulation or preventive or control instrument" for a substance that is found to be "toxic" under the Act. CEPA further requires the virtual elimination of anthropogenic releases to the environment of substances that are declared toxic and that are bioaccumulative and persistent. CEPA also establishes the requirements for the assessment of chemicals, polymers and products of biotechnology, prior to import or manufacture of substances not on the Domestic Substances List.

Fisheries Act

http://laws.justice.gc.ca/en/F-14/index.html

Environment Canada's mandate to advocate for the protection of water quality stems from the pollution prevention provisions of the *Fisheries Act*, which are administered by EC. Please be advised that the Compliance and Enforcement Policy[6] for the Habitat Protection and Pollution Prevention Provisions of the *Fisheries Act* states that compliance with the federal *Fisheries Act* is mandatory. Subsection 36(3) of the *Fisheries Act* specifies that, unless authorized by federal regulation, no person shall deposit or permit the deposit of deleterious substances of any type in water frequented by fish, or in any place under any conditions where the deleterious substance, or any other deleterious substance that results from the deposit of the deleterious substance, may enter any such water. Proponents should note that only a federal regulation under the *Fisheries Act* or another Act of Parliament can authorize a discharge of a deleterious substance, no federal permit, provincial, territorial or municipal regulatory permit or approval allows for exemption from the *Fisheries Act*.

In the application of the *Fisheries Act*, court cases have accepted that a discharge or effluent that is acutely lethal to fish is deleterious. In other words, results of tests designed to determine whether fish will die in an effluent or discharge within a specified time period will determine one aspect of deleteriousness. However, any substance with a potentially harmful chemical, physical or biological effect on fish or fish habitat is also deleterious. For example, substances (such as sediment) that smother nesting areas or spawning grounds, or interfere with reproduction, feeding or respiration of fish at any point in their life cycle are also considered deleterious. In general, any substance with a potentially harmful chemical, physical or biological effect on fish or fish habitat may be considered deleterious.

The act of depositing a deleterious substance should be considered a violation of the *Fisheries Act*, regardless of whether the water itself is made deleterious by the deposit. Subsection 36(3) of the *Fisheries Act* makes no allowance for a mixing or dilution zone. Any measurements or tests to determine whether something is deleterious should be done where the substance is at its highest concentration, typically at the point of discharge to the receiving water.

International Boundary Waters Treaty Act 2002 (recently amended)

The *International Boundary Waters Treaty Act*, administered by the Department of Foreign Affairs and International Trade, implements the 1909 Boundary Waters Treaty between Great Britain (on behalf of Canada) and the United States. The Treaty outlines principles and guidelines for the management of boundary and transboundary waters by Canada and the United States, with the primary objective of preventing or resolving disputes regarding the water quality and quantity of shared water resources. While Foreign Affairs and International Trade is responsible for the Act itself, the Minister of Environment is responsible for enforcement of orders made by the International Joint Commission.

[6] For more info please refer to: <http://www.ec.gc.ca/ele ale/default.asp?lang=en&n=D6765D33>

Migratory Birds Convention Act, 1994
http://www.cws-scf.ec.gc.ca/legislations/laws1_e.cfm

The disturbance, destruction or taking of a nest, egg, nest shelter, eider duck shelter or duck box of a migratory bird are prohibited under section 6 of the *Migratory Bird Regulations* (MBRs), under the authority of the *Migratory Birds Convention Act, 1994* (MBCA)*. "Incidental take" is the killing or harming of migratory birds due to actions, such as economic development, which are not primarily focused on taking migratory birds. No permit can be issued for the incidental take of migratory birds or their nests as a result of economic activities.

Under section 5.1 of the MBCA, no person shall deposit or permit to be deposited oil, oil wastes or any other substance harmful to migratory birds in any waters or any area frequented by migratory birds.

Species at Risk Act
http://www.sararegistry.gc.ca/default_e.cfm

The *Species at Risk Act* (SARA) has resulted in a consequential amendment to CEAA that amends the definition of "environmental effect" to clarify that all federal EAs must always consider adverse effects on listed wildlife species, and the critical habitat or residences of individuals of that species. In addition, section 79(2) of SARA requires that when a federal EA is carried out on a project that may affect a listed species or its critical habitat, adverse environmental effects must be identified, mitigation measures must be taken to avoid or lessen adverse effects, and environmental effects monitoring must be conducted.

SARA was proclaimed on June 5, 2003 and is intended to provide protection for individuals of wildlife species at risk listed under Schedule 1 of the Act, their residences (dwelling places, such as a den or nest or other similar area that is occupied or habitually occupied by one or more individual during part or all of its life cycle) and critical habitat (that part of areas used or formerly used by the species to carry out their life processes that is deemed essential for survival or recovery). Critical habitat will be identified for each listed species in Recovery Strategies or Action Plans. The prohibitions under SARA came into force on June 1, 2004 and apply to listed (Schedule I) endangered and threatened species for all federally protected aquatic species and migratory birds (including their residences) found anywhere, as well as to all endangered and threatened species, when found on federal lands.

> Pursuant to Section 79(1) of SARA, if any listed wildlife species, its critical habitat or the residences of individuals of that species may be adversely impacted by the project, the Responsible Authorities for the CEAA assessment must notify the competent Minister responsible for the listed species in writing. Fisheries and Ocean Canada is responsible for aquatic species at risk and can provide advice regarding potential impacts on these species covered under the *Fisheries Act*. Notifications in relation to listed terrestrial species are to be sent to EC, and for this project may be sent to my attention.

One of the purposes of SARA is to to manage species of special concern to prevent them from becoming endangered or threatened. In this context, we also recommend that all federal EAs consider potential impacts on any species listed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). http://www.cosewic.gc.ca/eng/sct5/index_e.cfm

2. Policies

* Please note that amendments to the MBCA in Bill C-15 came into force on June 28, 2005. This pollution prohibition was previously contained in s 35(1) of the *Migratory Bird Regulations*, which has now been repealed and is included as s.5.1 of the amended MBCA, 1994.

Federal Policy on Wetland Conservation
http://www.ramsar.org/wurc/wurc_policy_canada.htm

The Federal Policy on Wetland Conservation, 1991 is a shared federal responsibility that directs all departments to sustain wetland functions in the delivery of their programs, services or expenditures. The goals of the Policy include: maintaining the functions and values of wetlands; ensuring no net loss of wetland functions on all federal lands and waters, enhancing and rehabilitating wetlands in areas prone to degradation and loss, recognizing wetland functions in resource planning and management with regard to federal programs, policies and activities, securing significant wetlands; and recognizing and utilizing sustainable management practices to conserve wetlands.

The Federal Water Policy
http://www.ec.gc.ca/water/en/info/pubs/fedpol/e_fedpol.htm

The Federal Water Policy addresses the management of water resources, balancing water uses with the requirements of the many interrelationships within the ecosystem. The policy takes into account the needs of all Canadians in its overall objective to encourage the use of freshwater in an efficient and equitable manner consistent with the social, economic and environmental needs of present and future generations.

To manage Canada's water resources, the federal government has defined two main goals.
- to protect and enhance the quality of the water resource, and,
- to promote the wise and efficient management and use of water.

The policy stresses that government action is not enough. Canadians at large must become aware of the true value of water in their daily lives and use it wisely. We cannot afford to continue undervaluing and therefore wasting our water resources.

3. Agreements

Great Lakes Water Quality Agreement and Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem
http://www.on.ec.gc.ca/greatlakes/default.asp?lang=En&n=D6501F5-1

1) **Lakewide Management Plans** <http://www.ene.gov.on.ca/envision/water/lamps/index.htm>
The *Great Lakes Water Quality Agreement* (GLWQA), first signed in 1972 and renewed in 1978, expresses the commitment of Canada and the United States to restore and maintain the chemical, physical and biological integrity of the Great Lakes Basin Ecosystem and includes a number of objectives and guidelines to achieve these goals. In 1987 the governments of Canada and the United States made a commitment, as part of the GLWQA, to develop Lakewide Management Plans (LaMPs) for the Great Lakes. LaMPs have been developed for Lakes Erie, Ontario, Superior and Michigan. The Lakewide Management Plan (LaMP) for Lake Erie is coordinated by federal, state and provincial government agencies in the two countries. Under the guidance of these agencies, the LaMP unites a network of stakeholders in actions to restore and protect the Lake Erie ecosystem. The LaMP provides an opportunity to link their efforts, working towards the common goal of restoring Lake Erie for future generations.

2) **Remedial Action Plans** <http://www.on.ec.gc.ca/water/raps/map_e.html>
The *Great Lakes Water Quality Agreement*, first signed in 1972 and renewed in 1978, expresses the commitment of Canada and the United States to restore and maintain the chemical, physical and biological integrity of the Great Lakes Basin Ecosystem and includes a number of objectives and guidelines to achieve these goals. The *Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem* (COA) is the federal-provincial agreement that contributes to meeting Canada's obligations under the Canada-United States *Great Lakes Water Quality Agreement*. COA commits the governments of Canada and Ontario to restoring and protecting the Great Lakes Basin ecosystem and

focuses on specific remedial actions in priority areas denoted as Areas of Concern, such as those identified in the Detroit River Remedial Action Plan

Canada-U.S. Air Quality Agreement <http://www.ec.gc.ca/pdb/can_us/canus_links_e.cfm>
This Air Quality Agreement is a commitment from both the Canadian and United States governments to address transboundary air pollution The Canada – U S Air Quality Agreement provides a basic framework for the provision of comments on the nature of any air emissions and controls proposed for a project, particularly for two main substances sulphur dioxides and nitrogen oxides

4. Protocols and Strategies

Canadian Biodiversity Strategy <http://www.eman-rese.ca/eman/reports/publications/rt_biostrat/intro.html>
The Canadian Biodiversity Strategy was developed as a guide for the implementation of the United Nation's Biodiversity Convention. The Canadian Biodiversity Strategy emphasizes the importance of intergovernmental co-operation in the creation of new policy, management and research tools in furthering our ecological understanding and management

Other legislation, agreements and federal policies respecting environmental matters

The above list is not exhaustive, EC may have other interests in this project not identified at this time based on our review of additional information provided at a later date For further information on EC's mandated interests, please refer to http://www.ec.gc.ca/EnviroRegs

Essex Region Conservation Authority

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Review of DRIC Draft Environmental Assessment Report W.O. 04-33-002

FROM: Dan Lebedyk, *Conservation Biologist*, Essex Region Conservation Authority
SUBJECT: DRIC; City of Windsor; Canada-United States-Ontario-Michigan Border Transportation Partnership, Detroit River International Crossing and Highway 401 Upgrades; Ojibway Prairie Remnants, St. Clair College Prairie, Various Others SAR Habitat, ANSI, ESA, CNHS, Etc.
DATE: December 10, 2008

Pursuant to review of the above study, the following is provided for your information and consideration.

1) Municipality: **City of Windsor**
2) Property: **Highway 401 to U.S. Border**
3) Proponent: **Canada-United States-Ontario-Michigan Border Transportation Partnership**
4) Project Ref.: **DRIC; W.O. 04-33-002**
5) Proposal: **Detroit River International Crossing and Highway 401 Upgrades**
6) Natural Area: **Ojibway Prairie Remnants, St. Clair College Prairie, Various Others**
7) Significance: **SAR Habitat, ANSI, ESA, CNHS, Etc.**
8) Review and Comment:

a) Was the study carried out by qualified professionals in the field of ecology, terrestrial and/or aquatic biology, environmental planning, and/or other relevant earth sciences?

Yes, the study was carried out by the DRIC study team including professionals from LGL Consulting Limited and URS Canada Inc.

b) Did the study adequately identify and comment on existing significant natural features, linkages, and ecological functions of the study area?

Yes, the study has comprehensively evaluated the natural heritage features and ecological functions within the study area. Field investigations were conducted at appropriate times during the spring, summer and fall seasons and evaluations were conducted utilizing standardized, accepted protocols. Data collection and analysis included investigations of vegetation communities; floral species; faunal species including molluscs, insects, fish, amphibians, reptiles, birds and mammals; fish habitat; wildlife habitat and Species at Risk. Vegetation communities were typified in accordance with the Ecological Land Classification system. All vegetation communities and species accounts included accurate documentation of current rarity status in accordance with COSEWIC, COSSARO and the NHIC database assignments.

Migration corridors for mammals were documented in every habitat and connecting each of the habitat types. Faunal Species at Risk occurrences were associated with defined Wildlife Habitat Units and ELC vegetation communities. In addition, natural heritage designations were documented for all natural areas, including Provincial Nature Reserves, Areas of Natural and Scientific Interest

(ANSIs), Environmentally Significant Areas (ESAs), Carolinian Canada Sites and Candidate Natural Heritage Sites (CNHSs).

c) Did the study explain the nature of the proposed development adequately enough to identify and assess any potential impacts of the proposed development plan on the existing significant natural feature(s)?

Yes, the study has extensively analysed many different alternatives for the proposed access road and different combinations for plaza-crossing locations. Analysis of potential impacts included not only impacts associated with the right-of-way, but the study also investigated impacts within a 120 m adjacent land area. Evaluation criteria and ranking were also established to which the different development scenarios were analysed. The evaluation of alternatives was based on the number, area, type and significance of natural heritage features to be displaced or disturbed by the transportation facility. An arithmetic evaluation method was used to compare the practical alternatives using criteria and indicators. In addition, a reasoned argument evaluation was also conducted in order to consider other variables such as drainage modifications. This analysis has resulted in a Technically and Environmentally Preferred Alternative (TEPA), which consists of the Windsor-Essex Parkway, together with Crossing X-10B, connecting to Plaza B1 in Canada. Both a suspension bridge and a cable-stayed bridge are being carried forward to subsequent stages for analysis, evaluation and selection of the preferred bridge type. As stated in the Draft EA, *"The Technically and Environmentally Preferred Alternative (TEPA) has been developed to a concept design level, with sufficient detail as to confirm feasibility of the proposed infrastructure and to identify the property requirements and the environmental impacts."*

d) Did the study recommend and discuss actions which would eliminate, mitigate, or compensate (when appropriate) for any/all expected impacts consistent with accepted ecological, planning, engineering and resource management techniques, practices and principles?

Chapter 10.4 of the Draft EA outlines the effects on the natural environment and mitigation of the TEPA. The most significant natural heritage features (i.e., Ojibway Prairie Complex, Detroit River Marshes, etc.) were avoided in the formulation of the TEPA. The proposed crossing will avoid the placement of piers in the Detroit River for both the suspension bridge and cable-stayed bridge options.

Extensive efforts have been made to avoid and minimize impacts to Butler's Gartersnake and Eastern Foxsnake populations including refinements to the alignment of the Windsor-Essex Parkway. Habitat restoration and enhancement will be implemented to create new and higher quality habitat for these species. Snake barriers will be installed alongside portions of the Parkway prior to and after construction to prevent snake mortality. New snake nesting areas and hibernacula will also be created and snakes will be captured and relocated prior to construction.

A no "net loss in area or function" approach is being taken with respect to significant vegetation communities. Several mitigation measures have been recommended including restoration and enhancement of natural features, transplantation, exotic species removal, etc. Wildlife salvage will be carried out prior to clearing/grubbing to reduce the risk of wildlife mortality. Restoration and enhancement of habitat located along the Windsor-Essex Parkway will be used at strategic locations to reconnect significant wildlife habitat located on both sides of the Parkway. With respect to floral Species at Risk, 8 SAR are found within the TEPA. This includes numerous individuals of Climbing Prairie Rose, Colicroot, Common Hoptree, Dwarf Hackberry, Dense Blazing Star, Kentucky Coffee-tree, Riddell's Goldenrod and Willowleaf Aster located within the right of way for the Windsor-Essex Parkway and the plaza site. The mitigation techniques outlined above will also be employed with the objective of achieving a net benefit to all Regulated Species at Risk populations within the TEPA. Detailed mitigation strategies will be developed for these Species at Risk pursuant to the requirements to obtain permits under the *Ontario Endangered Species Act* and the federal *Species at Risk Act*.

For surface water features, specific environmental protection and mitigation measures have been recommended. Application will be made to secure federal *Fisheries Act* authorizations for all areas affected by the works, during later design stages of the project. Watercourse reaches will be restored and enhanced to maintain no net loss of the productive capacity of fish habitat. A fish passage system, likely fish locks, will ensure that fish will have access to upstream habitats in Cahill and Lennon Drains in perpetuity. Enhancements to realigned reaches and removal of entrance culverts along Wolfe Drain will augment the productive capacities of these systems and will result in an overall net gain of habitat area.

e) Did the study process include agency consultation in order to obtain input, and did the study explain how agency concerns have been addressed?

Yes, agency consultation has been extensive and consideration of ERCA issues relating to natural heritage have been addressed in the process. Further site-specific mitigative measures will be forthcoming in the next stage of the process.

f) Are the recommendations in the study able to satisfy all applicable legislation and policies?

The study process is considering all applicable legislative requirements. Final design and mitigation recommendations will be screened for compliance in the next stage of the process.

g) What is the final recommendation based on the review of the study?

The process has adequately considered relevant issues and legislative requirements with respect to natural heritage. Data collection and analysis has been comprehensive and technically sound. Proposed mitigation in concept appears acceptable. Further analysis relating to site-specifics is pending and will take place in the next stage in the process.

I would be pleased to discuss this review further at your convenience. If you should have any questions, or require any additional information please do not hesitate to contact me.

Yours truly,

Dan Lebedyk

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"Ward, Roger (MTO)" <Roger.A.Ward@ontario.ca>
12/12/2008 03:26 PM

To <Murray_Thompson@URSCorp.com>
cc <Jacquie_Dalton@URSCorp.com>, "Joel Foster" <Joel.Foster@ontario.ca>, "Dave Wake" <Dave.Wake@ontario.ca>
bcc
Subject EAComment13_FW: Detroit River inBox - TAA FW Comments on DRIC Draft EA

See Draft EA comments below

From: River, Detroit (MTO)
Sent: December 12, 2008 3:22 PM
To: Wake, Dave (MTO); Ward, Roger (MTO)
Subject: Detroit River InBox - TAA FW: Comments on DRIC Draft EA

From: [redacted] [mailto[redacted]]
Sent: December 12, 2008 3:15 PM
To: River, Detroit (MTO)
Cc: [redacted]
Subject: Comments on DRIC Draft EA

Friday December 12, 2008

Comments on the DRIC Draft Environmental Assessment

I have been involved in the DRIC process since October of 2003. I attended a public meeting in Lasalle at that time. (Bi-National Partnership).

The Planning needs/feasibility and terms of reference materials were obtuse and difficult for lay people to understand. In the ensuing years, the DRIC team has done a remarkable job in making the study material more accessible and more easily understandable.

I have been a member of the DRIC Community Consultation Group since that group's inception. I have also downloaded and studied large portions of the study. While my main interest is in the natural heritage impacts, I found it necessary to remain informed about all facets of the project in order to speak to natural heritage issues accurately. I have attended over 90 percent of the CCG meetings and PIOH sessions for this project.

As the leader of a local community group, I also had occasion to meet with DRIC team representatives outside of PIOH and CCG meetings. At all times they were respectful, and open to hearing the issues and concerns our group brought forward. Our submissions at the milestone points of the study were noted, as were concerns we had along the way about specific issues. (For example: the bibliography for existing literature relating to the natural heritage portion of the study was incomplete, they were receptive to receiving further documentation.)

I applaud the effort the DRIC Study team has made to make their process transparent and inclusive of public input.
While my own opinion as to the best border route solution is different from the preferred alternative, I am able to trace their decision and understand their rationale.
I believe they have struck a balance of benefits and impacts that is laudable.

The DRIC team faced not only a project of daunting scope and complexity, but a highly volatile local political situation.
DRIC had to engage the public while under constant attack from the City of Windsor, who spent milllions on lawyers, consultants and PR campaigns to discredit them. Often, the City's claims were baseless, manipulative and inflammatory. (eg. The Windsor Mayor's published/broadcast claims that DRIC are here to "destroy our community", council member's published/broadcast claims that the study process, including public involvement , is a "fraud", and that anyone expressing support for DRIC were "hired guns").

That the DRIC team were able to remain on the "high road" throughout is a testament to their professionalism and commitment to a successful project.
I cannot overstate how important this unflappable commitment to fairness of process was. In my opinion, the DRIC team leaders stepped into a leadership vacuum and displayed what real leadership requires: honesty, engagement and steadfastness. It is my belief that this leadership will finally lead to a fix to this area's decades old border traffic problem.

For those of us who live in the affected area (My home is within a kilometre of the preferred WEP route) but who are not represented by the City of Windsor (I am a Lasalle resident), it was easy to feel like any concerns we had would be overwhelmed by the City of Windsor's public relations campaign for their Schwartz Gateway proposal (2005) or Greenlink proposal (2008). I am grateful that not just the letter of the law, but the spirit of the law as it relates to the OEAA and CEAA, were upheld by DRIC, who refused to be swayed by the heavy handed tactics of Windsor's municipal leaders or local media. While acknowledging the City's efforts as "valuable input" to their study, and indeed having incorporated many of their best ideas, the DRIC team also ensured that citizens outside the City were heard, and that the project would be directed by legislated policy and process, not the whims of Windsor leaders or their consultants.

The exhaustive work done for the natural heritage portion of the DRIC study is impressive and will be of long term benefit to the community. Having brought together all known sources of information about the nationally unique ecosystems in the vicinity and having done the inventories and field work in the ACA, the Natural Heritage Assessment is a significant addition to the scientific literature for the Ojibway Prairie Complex and surrounding areas. It will support the efforts of biologists, conservationists, ecologists and planners for years to come.

Incorporating an "ecosystem based" approach to environmental assessment in highway planning is a stated goal of the MTO, but to actually put it into practice is very challenging. I believe DRIC rose to this challenge fully.

Two important indicators of this ecosystem based approach bookend the WEP design process: avoiding protected natural areas in their Area of Continued Analysis (ACA Nov. 2005), and moving the last leg of the WEP away from unprotected (but significant) natural areas and into the median of EC Row Expressway (Oct 2008). From beginning to end DRIC weighed impacts to the sensitive and significant ecosystems along their route and sought to minimize them as much as possible.

My one recommendation as the study moves toward approval: Establish a legacy fund for the Ojibway Prairie Complex. Some small percentage of the budget for this project, as well as a percentage of tolls for the new crossing, should be dedicated in perpetuity to the protection and enhancement of the Ojibway Prairie Complex. Of vital importance: enhancing and protecting a connection of natural corridors from the waterfront to Ojibway. The natural areas of the Ojibway Complex, wether the provincial park, the city parks, ERCA governed ANSI's or unprotected buffer areas were found by DRIC to be locally, provincially, nationally and even globally significant. For an infrastructure project of this scope to occur adjacent to such a significant wilderness area, any "ecosystem based" approach demands a parallel conservation project of similar scope . This should not be a "possibly" or a "perhaps", but a core finding of the environmental assessment. Despite DRIC's strong efforts to be sensitive to the Ojibway Complex's ecosystem, the adjacency impacts of their project will be significant. An ecosystem based approach would see mitigations applied not only at the "micro" level (ie: roadway barriers, plant rescue) but also at a "macro" level: long term funding for enhancement and strategic expansion of Ojibway's natural areas to offset the impacts for those areas in proximity to the WEP, plaza or crossing.

Respectfully submitted,

[redacted]

[redacted]

[redacted]

"Ward, Roger (MTO)" <Roger.A.Ward@ontario.ca>

12/12/2008 04:48 PM

To <Murray_Thompson@URSCorp.com>, <Jacquie_Dalton@URSCorp.com>

cc "Dave Wake" <Dave.Wake@ontario.ca>

bcc

Subject EAComment15_FW: Detroit River InBox - TAA FW: Concerns on DRIC plan

Draft EA Comments below

From: River, Detroit (MTO)
Sent: December 12, 2008 11:54 AM
To: Ward, Roger (MTO); Wake, Dave (MTO)
Subject: Detroit River InBox - TAA FW: Concerns on DRIC plan

From: [redacted] [mailto[redacted]
Sent: December 17, 2008 11:37 AM
To: River, Detroit (MTO)
Subject: Concerns on DRIC plan

Dear Mr. Roger Ward,

I'm sending you this message to express my concerns on the plan of DRIC developed recently. Despite many efforts to ease the public concerns on the impacts of the surrounding society, it still appears to me, strongly, that the studies was directional and biased on a pre-determined favorable plan, which may have significant societal consequence on safety, health, and environment.

As we all know, the plan has been proposed several years ago, and had been strongly opposed by local communicities, especially those residents living in surrounding areas. Should the plan go forward, these people will be the ones who are affected the most. So when we evaluate the social impacts, it would be fair to put these people's opinions with a larger weight factor than those who live 10 miles away, for example. Unfortunately, I don't think their voices are well heard, or at least, are not taken into account fairly enough. Some particular concerns were expressed about a local school, Oakwood elementary school (which was one of the best school in Essexx County and is now with decreasingly number of students, a symptom of people's concerns and leaving the area), a collage, and several local environment conserved parks. The new plan and assessment of environment contains very minimum, if not none, measures on those. Air condition itself won't tell a whole story, since there are other factors for traffic, such as material for construction, dust level, noise, temporary population impacts, etc. will all play critical roles to the local communities. An observation I have is the animal activities that have been impacted after 2001 due to the traffic pattern change. I would imagine the situation would become worst for animals, which there is nothing mentioned in the report.

As an experienced senior engineer and having been doing technical research for over 10 years, I understand very well how the scientific evaluation results can be interpreted in totally opposite ways to favor certain choices. And scientific approaches, unfortunately, will never solve the social problems along. Further, the report is every technical and in depth, requiring high-level knowledge and education in this expertise to fully understand it, which prevents the local residents from comprehending its implications.

Another concern is the report covers only the evaluation of the existing plan. It seems like everything they are doing is simply finding evidences to support this plan, which is neither fair nor scientific sound. The assessment should at least provide more than one alternatives, if not all due to the financial constraints, and demonstrate their pros and cons to public.

With all above said, I would like to recommend a further evaluation involving local communities and further communications with local residents in general terms rather than such highly-scientific technical reports. Other alternatives and their assessments and comparisons on the impacts of all aspects should be included in the future hearing and review so that people can understand the choices and alternatives.

Sincerely,

[redacted]

"Ward, Roger (MTO)" <Roger.A.Ward@ontario.ca>
12/12/2008 04:51 PM

To <Murray_Thompson@URSCorp.com>, <Jacquie_Dalton@URSCorp.com>, "Dave Wake" <Dave.Wake@ontario.ca>
cc
bcc
Subject EAComment16_FW: Detroit River InBox - TAA

More EA Comments from [redacted]

From: River, Detroit (MTO)
Sent: December 10, 2008 2:00 PM
To: Wake, Dave (MTO); Ward, Roger (MTO)
Subject: Detroit River InBox - TAA

From: [redacted] [mailto [redacted]
Sent: December 10, 2008 1:54 PM
To: River, Detroit (MTO)
Cc: gkauffman@lgl.ca
Subject:

DRIC TEAM

Grant Kauffman

Additional comments form [redacted]

I Have been trying all season to get a picture of one or more grey foxes in the area, but no luck. I have seen one at the Ambassador bridge area, McKee Park, Windmill Park, Russell and Mill St. In July 2007 Several other people have seen them and a couple have filed a report with NHIC. One of the Ojibway staff said he may have seen one, but not sure it wasn't a crossfox.

The one I saw with a friend who had seen it before, was very short and grey, seen at dusk. A local horse trainer reported one last DEC. 24 at Highway 18 and Morton. In mid July 2 delivery drivers reported seeing one at NEMAK

Recently I saw one near the Ferry on a street that runs past ADM. Sunday at 5.00 p.m. Looked dark and very spooked, ran back and forth in the open, I thought it was a wild turkey, but no it was a fox.

Again I will have track to confirm this sighting.

Another person, a retired horse trainer says he sees them regular , very short grey foxes at the Windmill, Close to where he lives.

So my question is will the foxes have a clear passage to get from Turkey Creek (where historically the grey foxes were sighted in this region, by oldtimers) to the base of Ambassador bridge, where they seem to like to go??
Sincerely,

[redacted]

Corporation of the County of Essex
Office of the County Engineer

Thomas R. Bateman, P. Eng.
County Engineer

December 8, 2008

Ministry of Transportation
Windsor Border Initiatives Implementation Group
949 McDougall Avenue, Suite 200
WINDSOR, Ontario
N9A 1L9

ATTN: Roger Ward, Senior Project Manager

RE: Detroit River International Cross Study
Draft Environmental Assessment Report

Dear Roger:

We are pleased to see this extremely important project reach this milestone. The process has been comprehensive and responsive and we are pleased to provide comments on the Technically and Environmentally Preferred Alternative (TEPA) for the "End to End Solution" for the Detroit River International Crossing Study.

The County of Essex has been engaged in this undertaking from its inception and has diligently strived to be value added to the Study. We have worked through the Municipal Advisory Group and provided feedback and comments on numerous occasions.

We provided a series of comments upon the release of the Windsor Essex Parkway (WEP) in the Spring of 2008 in a letter dated June 9, 2008. We have not received a formal response to the items reviewed in our correspondence.

We have reviewed the TEPA as presented at the Public Information Open Houses held in late November against the June version of the WEP and our previous comments. We were encouraged and pleased to see the introduction of the full scale roundabout at Highway #3 and rationalization of the Pedestrian Bridge facilities.

Continued on Page 2

360 Fairview Ave. West, Suite #201 Essex, Ontario N8M 1Y6
(519) 776-6441 Ext. 316 Fax (519) 776-4455
E-mail: tbateman@countyofessex.on.ca

Several of the items remain outstanding and our concerns related to these issues continue to exist.

1) **Todd/Cabana Intersection:**

- the operations of this intersection can be improved with the introduction of dedicated connections to southbound Huron Church Line (County Road 7)

2) **Extension of Tunnel Sections:**

- the option to extend the length of each tunnel section to 240m should be explored to provide improved connections and provide more usable green space
- the Oakwood tunnel specifically would benefit from lengthening to better align the green space and connectivity of the Spring Garden ANSI to the Oakwood Bush

3) **Extension of Trail System:**

- extension of Trail system along Highway #3 to connect with the Chrysler Greenway entrance and parking area at County Road 11 (Walker Road) should be explored
- connecting to the existing Chrysler Greenway facilities provides a unique opportunity to build on benefits of both networks

We understand some dialogue on this subject has taken place with the Town of Tecumseh and the Essex Region Conservation Authority but are unaware of the outcome of those discussions.

4) **Northbound Exit at Labelle**

- the proposed northbound off ramp at Labelle should be reviewed
- the storage length available at this location is such that queuing of exiting traffic, particularly trucks, may encroach into the speed change lanes in the below grade sections
- depending on the traffic volumes expected, the introduction of a double lane ramp may be warranted

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(519) 776-6441 Ext. 316 Fax (519) 776-4455
E-mail: tbateman@countyofessex.on.ca

Should the next steps of the project include the undertaking of a Design and Construction Report in advance of Detailed Design it may be possible to address these items in the Design and Construction Report. If the undertaking of the typical MTO DCR process is not envisioned we believe that the items could also be addressed in Detailed Design.

We appreciate the opportunity to once again comment on this project and look forward to reviewing these items further with the DRIC Team.

Yours truly,

T.R. Bateman

Thomas R. Bateman, P. Eng.,
County Engineer

TRB:gh

360 Fairview Ave. West, Suite #201, Essex, Ontario N8M 1Y6
(519) 776-6441 Ext. 316 Fax (519) 776-4455
E-mail: tbateman@countyofessex.on.ca

"Ward, Roger (MTO)"
<Roger.A.Ward@ontario.ca>
15/12/2008 10:35 AM

To "Dave Wake" <Dave.Wake@ontario.ca>, <Jacquie_Dalton@URSCorp.com>
cc <Murray_Thompson@URSCorp.com>, <Kevin.Devos@ontario.ca>, <Holly_Wright@URSCorp.com>, <Patrick_Puccini@URSCorp.com>
bcc
Subject FW: comments submission regarding Ontario Environmental Assessment Report for DRIC project

More comments on Draft EA regarding traffic forecasts and Travel Demand.
Roger

From: [redacted] [mailto: [redacted] **On Behalf Of** [redacted]
Sent: December 12, 2008 11:56 PM
To: River, Detroit (MTO)
Subject: comments submission regarding Ontario Environmental Assessment Report for DRIC project

To: Ontario Ministry of Transportatino
949 McDougall Avenue, Suite 200
Windsor, ON N9A, 1L9
Attention: Mr. Roger Ward, Senior Project Manager
Via: email to detroit.river@ontario.ca
Re: Detroit River International Crossing Study (DRIC)
Draft "Environmental Assessment Report: Individual Environmental Assessment (W.O. 04 33-002)", published November 2008 [referred to below as "Draft Ontario Report"]
Dear Mr. Ward:

I am a US citizen who resides in Southeast Michigan. Notwithstanding my non-Canadian status I respectfully request that you consider the comments offered below, inasmuch as the challenge the Draft Ontario Report addresses is a joint challenge to both the US and Canada and the solution to be selected is one that must be selected together by both nations and by the Province of Ontario and the State of Michigan.

I commented on the Michigan Department of Transportation (MDOT) DRIC Draft Environmental Impact Statement [referred to hereinafter as "Draft Michigan Report"] on 29 April 2008 (15 pages) and 29 May 2008 (5 pages). The attachment to this message is a copy of both sets of comments. They are forwarded for inclusion in the record of comments received by you on the Draft Ontario Report

The Draft Michigan Report relies on the same traffic data and forecasts used in the Draft Ontario Report. Most of my comments on the Draft Michigan Report are equally applicable to the Draft Ontario Report.

My major points are as follows:

(1) I find it disappointing and a major failure of both the Draft Michigan Report and the Draft Ontario Report that they did not consider a wider range of practical alternatives to a new highway crossing of the Detroit River. Note that Prime Minister Harper and President Bush in their joint DRIC statement issued on 21 August 2007 referred to "enhanced capacity", not "increased highway capacity" [ref: page 4 of my 29 April 2008 comments]

(2) The attention in the Draft Ontario Report to the option of placing either

truck trailers or entire tractor-trailer assemblies on railroad trains is inadequate, given that the September 2005 "Detroit River International Crossing Study Travel Demand Forecasts" report prepared by IBI Group [hereinafter referred to as "TDF"], states that ***"...the commercial vehicle traffic...potentially divertible to rail represents approximately 44% of the current total truck volumes on the Ambassador Bridge.*** " [ref: TDF page 122, where it also is stated that "potentially divertible" truck traffic is that traffic moving across the Detroit River with one trip end in or beyond the Greater Toronto Area and the other trip end in or beyond Detroit].

Given your data, it appears that during year 2035 the average hourly truck traffic crossing the Detroit River with one trip end in or beyond the Greater Toronto Area will be approximately 200 movements per direction. That traffic volume would fill one intermodal train leaving each end of the route every 30 minutes. [ref: Section 13 on page 4 of my 29 May 2008 comments]

(3) Canada is a signator of the Kyoto Protocol on Climate Change. The Draft Ontario Report totally ignores the vast reduction (perhaps 90%) in freight traffic fuel consumption and emissions on the Detroit-Toronto route that result from substituting intermodal rail service for trucks on highways. See Section 13 on page 4 of my 29 May 2008 remarks to MDOT for more detail.

(4) Totally ignored in the Draft Ontario Report is the prospect that the increased truck traffic resulting from building the DRIC highway project in lieu of improving railroad service is the fact that the former may very well necessitate widening Highway 401 the entire distance between Windsor and Toronto. Recall from (2) above my reference to the Detroit-Toronto truck traffic in year 2035 being an average of 200 vehicles per hour per direction. Peaking of truck traffic may result in the peak hour truck traffic on Highway 401 being 600 vehicles per direction. The Draft Michigan Report states that one truck takes up as much highway capacity as three automobiles. Thus 600 trucks per hour is the equivalent of approximately 1,800 automobiles per hour, which effectively accounts for the maximum automobile traffic that a highway lane can accommodate per hour.

(5) Much of the peak hour passenger car traffic between Detroit and Windsor is local commuter traffic. See Section 14 in my 29 April 2008 comments and also in my 29 May 2008 comments. A reasonable alternative to a new highway bridge would be the implementation of new public transport service across the Detroit River. One way to implement improved trans-border public transportation service would be to develop a light rail system in Windsor to complement Detroit's planned Woodward Avenue light rail system and to then join the two in a tunnel under the Detroit River.

(6) See my 29 April 2008 and 29 May 2008 letters for additional comments on the Draft Michigan Report that apply equally to the Draft Ontario Report.

(7) Last, the proposed DRIC highway project involves a total cost of at least $3 billion and perhaps $5 billion. Those sums very likely far surpass the implementation costs of an intermodal rail service and/or a dedicated public transportation service crossing under the Detroit River to serve the residents of Windsor and Detroit,

Respectfully,

[redacted]

--

[redacted]

[redacted]

telephone: [redacted]

2008 04 29+2008 0529DRIC DEIS comments.pdf

[redacted]

29 April 2008

Mr. Robert Parsons, Public Involvement/Hearing Officer
Michigan Department of Transportation
PO Box 30050
Lansing, MI 48909 USA
parsonsb@michigan.gov

RE: Detroit River International Crossing (DRIC), Wayne County, Michigan "Draft Environmental Impact Statement and Draft Section 4(f) Evaluation" -- approved by Federal Highway Administration on 15 February 2008

Dear Mr. Parsons:

This letter consists of comments submitted for the record regarding the Draft Environmental Impact Statement identified above

1. **Abbreviations and their Definitions**

For convenience, several abbreviations are used through the text of this letter. Facility name abbreviations are as follows:

AMB	the Ambassador Bridge, which is a privately-owned four-lane highway between Detroit and Windsor that opened for traffic in 1929
BWB	the Blue Water Bridge, which is a pair of two adjoining three-lane highway bridges over the St. Clair River between Port Huron, Michigan and Point Edward and Sarnia, Ontario, and which is owned by the governments of Michigan and Ontario [The older of the two spans was opened for traffic in 1938. The newer of the two spans was opened for traffic in 1997.]
DRT	the Detroit River Tunnel, which is a two-tube railroad tunnel (one railroad track per tube), which opened for railroad traffic in 1909, and which is owned by the Detroit River Tunnel Company (a Michigan corporation)
DWT	Detroit-Windsor Tunnel, which is a two-lane highway tunnel between Detroit and Windsor that opened for traffic in 1930 and that is owned jointly by the Cities of Detroit and Windsor

Abbreviations for organization names, report titles, and other terminology are as follows:

CEQ	Council on Environmental Quality, a unit of the Office of the President of the United States
DEIS	the Draft Environmental Impact Statement identified immediately before the salutation above
SEMCOG	the "Southeast Michigan Council of Governments", which is a regional planning organization whose planning jurisdiction consists of the following Michigan counties (listed in declining order of population): Wayne (which includes the City of Detroit), Oakland, Macomb, Washtenaw, Livingston, St. Clair, and Monroe
Local traffic	motor vehicle traffic which has both its origin and destination within the area consisting of Essex County in Ontario and all SEMCOG counties, except for St. Clair County
Long distance traffic	motor vehicle traffic which is not "Local traffic" as defined above
Borealis	Borealis Transportation Infrastructure Trust, a Canadian entity which is controlled by the Ontario Municipal Employees Retirement System and which in 2001 purchased from the Canadian National Railroad that railroad's 50 percent interest in the Detroit River Tunnel Company
DRTP	the Detroit River Tunnel Partnership, which appears to be an assumed name for the Detroit River Tunnel Company and which reportedly is co-owned by Borealis and the Canadian Pacific Railway
DIBC	Detroit International Bridge Company, the private organization that owns AMB
DCTC	Detroit & Canada Tunnel Corporation, the entity which is under contract to operate the DWT on behalf of DWT's owners
TDF	a working paper report entitled "Detroit River International Crossing Study Travel Demand Forecasts", prepared September 2005 by IBI Group http://www.partnershipborderstudy.com/pdf/TTRexisting&future2005-09-15.pdf
PCEs	"Passenger car equivalents", which is calculated in the DEIS by determining the sum of the following for a specific period of time (e.g., an hour, a day or a year): the observed or predicted passenger car vehicle traffic volume and 3 times the observed or predicted commercial vehicle traffic volume [For example, if during any given hour the traffic flow consists of 100 automobiles and 50 commercial vehicles, the PCE value for that hour is 250.]

2. Introduction

The DEIS is a very detailed review of several highway options for building a new truck/automobile bridge over the Detroit River at locations between the existing Ambassador Bridge and the southern tip of Grosse Ile Township, Michigan, as viewed from the US side of the border.

However, the viewpoint expressed immediately above should not be interpreted to imply that the DEIS complies with CEQ requirements for an Environmental Impact Statement as set forth in 40 CFR 1502. [ref: http://ecfr.gpoaccess.gov]

The balance of this letter provides elaboration on some of the ways the DEIS should be modified in order to properly respond to CEQ regulations.

3. Context of the DEIS

The context of this DEIS is twofold. First there is an overriding policy context. In addition there is a factual context.

3a. Policy Context:

There are at least three dimensions within the policy context: CEQ requirements; the President's agreement with the Prime Minister of Canada as stated on 21 August 2007; and the US government requirement that any new international border crossing requires a Presidential Permit before it can be constructed.

The first of the three dimensions in the policy context, the CEQ requirements result from the mandate set by Congress in establishing the CEQ. The origin and responsibilities of the CEQ are perhaps best described by quoting from the CEQ website, http://www.whitehouse.gov/ceq/aboutceq.html

Congress established CEQ within the Executive Office of the President as part of the National Environmental Policy Act of 1969 (NEPA). Additional responsibilities were provided by the Environmental Quality Improvement Act of 1970.

In enacting NEPA, Congress recognized that nearly all federal activities affect the environment in some way and mandated that before federal agencies make decisions, they must consider the effects of their actions on the quality of the human environment. NEPA assigns CEQ the task of ensuring that federal agencies meet their obligations under the Act. The challenge of harmonizing our economic, environmental and social aspirations has put NEPA at the forefront of our nation's efforts to protect the environment.

Some of the essential provisions of the CEQ requirements for an environmental impact statement establishing the policy context for preparation of the document are as follows:

<u>40 CFR 1502.1:</u> ...an environmental impact statement...shall provide full and fair discussion of significant environmental impacts and shall inform decisionmakers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment.

<u>40 CFR 1502.2(a):</u> Environmental impact statements shall be analytic, rather than encyclopedic.

<u>40 CFR 1502.2(g):</u> Environmental impact statements shall serve as the means of assessing the environmental impact of proposed agency actions, rather than justifying decisions already made.

<u>40 CFR 1502.14:</u> ...agencies shall...(a) Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.

<u>40 CFR 1502.14:</u> ...agencies shall...(c) Include reasonable alternatives not within the jurisdiction of the lead agency.

<u>40 CFR 1502.9:</u> If a draft statement is so inadequate as to preclude meaningful analysis, the agency shall prepare and circulate a revised draft of the appropriate portion.

<u>40 CFR 1502.9:</u> The agency shall make every effort to disclose and discuss at appropriate points in the draft statement all major points of view on the environmental impacts of the alternatives including the proposed action.

The second aspect of the policy context is the President's 21 August 2007 statement. The relevant parts of that statement are reproduced immediately below. Note that the statement does not commit the US and Canadian governments to any particular mode of transportation. Also, note that the statement does not commit the government to any specific type of action for "enhanced capacity", such as building a new crossing in lieu of enhancing border processing procedures. Presumably the Michigan Department of Transportation's $230,000,000 Ambassador Bridge Gateway Project which began during February 2008 qualifies as a "development of enhanced capacity" anticipated in the 21 August 2007 Joint Statement.

For Immediate Release
Office of the Press Secretary
August 21, 2007

Joint Statement by Prime Minister Harper, President Bush, and President Calderón
Montebello, Quebec, Canada

...

Smart and Secure Borders

Our three countries have a long history of cooperative border management, predicated on the understanding that our prosperity and security depend on borders that operate efficiently and effectively under all circumstances....

We ask ministers to continue to pursue measures to facilitate the safe and secure movement of trade and travellers across our borders and, in particular, to:

- ...
- Canada and the US will maintain a high priority on the development of enhanced capacity of the border crossing infrastructure in the Detroit-Windsor region, the world's busiest land crossing.

...

The third and final aspect of the policy context is that if any "development of enhanced capacity" of the border crossing infrastructure involves the construction of a new bridge or tunnel across the border, then a Presidential Permit is required. The US Department of State processes applications for Presidential Permits for new bridge and tunnel crossings. A summary of the procedure for obtaining the permit is presented on a US Department of State webpage. http://www.state.gov/p/wha/rls/fs/7895.htm .

Environmental reviews prepared pursuant to the CEQ requirements are an integral part of the approval process for a Presidential Permit. Thus it appears reasonable that the DEIS should help the President to decide the type and timing of any new transborder infrastructure installation.

3b. Factual context:

The factual context of the DEIS is that regrettably it is but one of three environmental statements which have been, are, or will be prepared for three proposed international crossing projects.

The second environmental statement is an Environmental Assessment dated April 2007 which the DIBC submitted to the US Coast Guard with regard to its proposal for a second suspension span to be located immediately downstream of AMB. That document is available for review at http://www.ambassadorbridge.com/drafts/_Draft_Environmental_Assessment.pdf

The third is a forthcoming environmental statement for a DRTP proposal to replace the existing two-track DRT with a one-track railroad tunnel with a cross-sectional dimensions greater than those of each of the two existing railroad capable of accommodating a large auto carrier railroad freight car referred to as an "Auto-Max" railcar and railroad freight cars that carry double stacks of larger containers. [Most auto carrier and many double-stack container railroad freight cars already are small enough to pass through the DRT.] DRTP's intention regarding the existing tunnel is stated by one of DRTP's two owners to include conversion of the existing tunnel to a truck-only highway. [See Section 4, below.]

Presumably an environmental statement will be required for each of the three Detroit River crossing proposals by the Canadian government in addition to the environmental statements required by the US Federal Highway Administration. Thus, a total of six environmental statements will have been prepared before the President and the Canada's Prime Minister make a decision as to which, if any, of the competing proposals will be implemented.

Unfortunately there simply is no way that the DEIS as it is constructed at this time can address the totality of environmental impacts of the three separate proposals. What is needed is for the US Secretary of Transportation and the Canadian Minister of Transport to jointly retain a qualified and impartial environmental impact evaluator who has no business relationship with any of the businesses and the Michigan and Ontario highway agencies involved in the competing proposals, in order to avoid the impression that the author of the environmental document is advocating a business or bureaucratic interest rather than the welfare of the public residing on both sides of the border.

In conclusion, the DEIS needs to be redone by the Office of the US Secretary of Transportation rather than by the Federal Highway Administration or another modal administration in order to objectively satisfy the CEQ requirements for a DEIS.

4. **The DEIS needs clarification as to what the DRTP proposes to do**

The DRTP proposal as of approximately 2005 included a provision to convert the existing two-track DRT to a truck-only highway. The DEIS working paper entitled "Indirect and Cumulative Impact Analysis Technical Report" states in a footnote on page 4-68 [pdf p. 139] that ***"The DRTP Truck-only Tunnel proposal has been withdrawn by the proponents."*** Notwithstanding that statement, as of the morning of 28 April 2008 a Borealis webpage, http://www.borealisinfrastructure.com/assets_transportation.aspx , stated the following:

Detroit River Rail Tunnel: OMERS jointly owns with Canadian Pacific Railway the 8,500-foot Detroit River Tunnel that links Windsor and Detroit. More than $130 billion of goods flow annually through this cross-border asset. This trade is expected to triple in the next five years. Additionally, a $600 million new rail tunnel and high-speed truck route are proposed for completion within five years to assure shippers fast and competitive routing on North America's busiest free-trade corridor. For more information, please visit www.thejobstunnel.com.

The www.thejobstunnel.com webpage reads "under construction".

Notwithstanding the assertion in the above-referenced DEIS working paper that the project sponsor has withdrawn the truck-only tunnel, the DEIS at page 3-191 refers to "***...the construction of the Detroit River Tunnel Partnership proposed truck-only tunnel***" and states that it would not "***...measurably diminish the traffic on the proposed DRIC crossing...***" and that it is not "***...associated with a program to enhance the community which hosts the crossing.***"

During February 2008 DRTP requested that a replacement rail tunnel be added to the SEMCOG Regional Transportation Plan for 2030. The project listing has no information regarding the number of tracks in the replacement tunnel, although informal presentations indicate that the replacement tunnel will contain only one track. In addition, no information is provided in the SEMCOG Regional Transportation Plan project listing about the future use or disposition of the existing tunnel. The primary information in the SEMCOG project listing is that the total cost for the part of the project on the US side of the border will be $172,785,000, that the entire cost will be privately provided, and that the time period for the expenditure is "2006-2010". [ref: http://www.semcog.org/Data/Apps/project.report.cfm?type=RTP&id=3425]

The problem described above can be cured if both of the two co-owners of the DRT submit for inclusion in the DEIS record a written statement clarifying their intentions regarding the disposition or alternate use of the existing two tubes comprising the existing DRT once the new one-track tunnel is constructed.

5. **Rationale for Considering the BWB in the DEIS**

The BWB is located approximately 60 miles from the AMB and the DWT. It is over the St. Clair River rather than the Detroit River. Nonetheless it is essentially a local international crossing between Detroit and Canada.

If one uses www.mapquest.com to check the driving distance between the Detroit City Hall (which is located at 2 Woodward Avenue, only three short blocks from the Detroit entrance to the DWT) and the Toronto city hall (located at 100 Queen Street West), one finds that the shortest route between the two city halls is via the DWT and Ontario Route 401. However if one makes the trip between the Detroit and Toronto city halls via the BWB and Ontario Route 402 to the point where that route intersects with Ontario Route 401 just west of London, one finds that the total travel distance is only 12.5 miles greater than the route using DWT [i.e., 243.6 miles vs. 231.06 miles]

Effectively there are places within the city limits of Detroit from which travel to London and Toronto involves a shorter trip distance and probably a shorter trip time than travel via either the DWT or the AMB.

This relevance in travel demand forecasting of the above-described geographical fact is discussed in greater detail on TDF pages 56-58 [pdf pp. 65-67]. With the exception of discussion and tables presented on DEIS pages 2-9 through 2-11, the local significance of the BWB for travel from Detroit to London and Toronto is not discussed in the DEIS.

The DEIS should be modified to conspicuously indicate that one reasonable alternative to building new bridges over the Detroit River at this time is to route more traffic over the BWB as long as the BWB has the ability to absorb more traffic. The authors of the TDF address that option in a sensitivity analysis summarized in Section 6.2.3 on page 124 [pdf p.133] of that report.

6. Existing and Projected Traffic on Detroit River Highway Crossings

The DEIS states on page 1-9 that as of 2004 the combined weekday traffic volume on the existing Detroit River border crossings, i.e., AMB+DWT, was as follows:

Automobile:	Total traffic	35,850
	Local traffic	28,450 (79% of total auto traffic)
Truck traffic.	Total traffic	13,000
	Long distance traffic.	6,500 (50% of total truck traffic)

On page 1-10 the DEIS states that the hourly combined capacity of AMB and DWT is 5,000 passenger car equivalents (PCEs) per hour, for which each truck is counted as three automobiles. The TDF explains [on pdf page #s 103 and 104] that the 5,000 PCE capacity estimate is for each direction of travel and that it is calculated by assuming the AMB and DWT capacities are 1,750 PCEs/lane and 1,500 PCEs/lane respectively. Because AMB has two lanes per direction of traffic and DWT has only one lane per direction of traffic, the total capacity for the two facilities combined is 5,000 PCEs/direction/hour.

The DEIS also states, on page 1-10, that the total traffic on AMB+DWT will reach the 5,000 PCE/hour capacity sometime between 2015 and 2035.

Although the TDF on page 55 [pdf p. 64] specifies the border crossing fees (apparently as of 2005) for ABM, DWT, and BWB, there appears to be no information in any of the DEIS documentation regarding the assumptions in the travel demand forecasting process of the border crossing fees for the years for which the traffic forecasts have been made.

Also, it appears from the DEIS that no consideration in the traffic forecasting was given to differential tolls based on any of the following options, which have been implemented in other major metropolitan areas, for example, the Golden Gate Bridge in San Francisco, CA {ref. http://goldengatebridge.org/tolls_traffic/toll_rates_carpools.php }

- Time-of-day variation in bridge/tunnel tolls to discourage travel during peak hours
- Lower tolls for vehicles equipped for electronic toll collection
- Lower tolls for a high-occupancy vehicle (i.e., an automobile or SUV with more than one or two persons in it)

A review of the web sites for the AMB, DWT, and BWB indicates that as of 28 April 2008 the toll differs depending on which direction the facility user is traveling for at least DWT and BWB. It also indicates that a discount is given by the operators of all three facilities for the purchase of commuter tokens or tickets. In other words, the facility usage fee policy of each facility operator gives discounts to travelers who tend to travel at peak travel times, a policy that runs counter to the view that transportation facility users who contribute to congestion should pay a greater fee than those who travel at times of no congestion.

Given the absence in the DEIS of an analysis of the sensitivity of peak period travel forecasts to increases in facility user fees during peak travel hours or to user fee decreases during off-peak travel hours, it is not possible to determine how realistic the peak hour travel forecasts contained in the DEIS and its supporting documentation are.

The DEIS should be amended to clarify the traffic forecasting assumptions and to quantitatively evaluate at least the fare policy options identified above

7. Change in Forecast Base Year from 2004 to 2007 and Revision of Forecast for 2034

The travel demand forecasts presented in the DEIS and the TDF use 2004 as a base year. We now have three more years of data and the DEIS should be amended to establish 2007 as the base year.

Traffic volumes on at least the BWB declined considerably between the end of 2004 and the end of 2007.

The declines in traffic volumes for the BWB have been…
from 3,760,000 in 2004 to 3,423,000 in 2007 for automobiles, and
from 1,800,000 in 2004 to 1,623,000 in 2007 for commercial vehicles.

Presumably similar declines in AMB and DWT traffic volumes also have taken place.

The TDF report presents estimates of the compound annual growth rates (CAGR) in traffic volumes across AMB, DWT, and BWB taken together for the period 2004 to 2015. Exhibit 5-7 on page 83 [pdf p.92] estimates the CAGR for automobile traffic to be 2.9%. Exhibit 5-18 on page 95 [pdf p. 104]indicates that the CAGR for commercial vehicle traffic to be 3.3%. Doing the math leads to the conclusion that the actual BWB auto and commercial vehicle traffic volumes during 2007 were respectively 23% and 25% less than what was forecasted for 2007.

The DEIS should be modified to present the traffic counts for the AMB, DWT, BWB and amend the forecast for the planning horizon year, 2034.

8. Modification of Forecasts to Reflect Changes in Fuel Prices Since 2004

The Energy Information Administration (EIA) maintains statistics at www.eia.doe.gov regarding gasoline and diesel fuel prices for various locations around the country.

EIA statistics for the US "Midwest (PADD-2)" show that the prices per gallon, including taxes, for "Gasoline All Grades – Conventional Areas" and "Diesel (On-Highway) – All Types" were as follows:

Date	Gasoline	Diesel
Average for 2004	$1.831	$1.770
Average for April 2008	$3.434	$4.040

The increases in gasoline and diesel fuel prices are extraordinary, being 88% and 128% respectively.

Because significant fuel price changes have an impact on travel demand the travel demand forecasts contained in the DEIS should be redone. In addition, the changes in fuel prices since 2004 give impetus to identify within an amendment to the DEIS the improvement of intermodal freight services as a reasonable alternative to constructing a new highway crossing of the Detroit River.

9. Evaluation of Peak Period Travel for AMB, DWT, and BWB as a Group during 2034

Assumptions regarding the tendency for traffic to move all at once are critical in reaching conclusions regarding the need for additional highway capacity between Detroit and Canada.

Figure 1-3 on page 1-10 of the DEIS illustrates that the peak hourly PCE traffic during 2004 was approximately **3,300 PCEs**

TDF devotes an entire section entitled "Temporal Patterns of Vehicular Travel" (Section 3.6 on pages 43 to 51 [pdf pp. 52-60]) to observed peak period travel patterns in years 2000 and 2004.

Exhibit 5-23 on ETF page **101** [pdf p.110] states that the traffic volumes were as follows:

AMB + DWT: 11,950,000 passenger cars
3,530,000 commercial vehicles

Applying the relationship between traffic volume and PCE's as established in the DEIS and repeated above, one may conclude that during 2004 the total PCE's for AMB+DWT was **22,540,000.**

Exhibit 5-23 on ETF page 101 [pdf p. 110] also includes travel demand forecasts for year 2035. Those forecasts are as follows:

AMB + DWT: 18,740,000 passenger cars
8,060,000 commercial vehicles

BWB. 5,910,000 passenger cars
4,290,000 commercial vehicles

If one applies the procedure specified in the DEIS for calculating PCEs, one finds that the 2034 forecasts summarized above imply that the total PCE's during that year is forecasted to be **61,700,000** [i.e., 18,740,000 + 3(8,060,000) + 5,910,000 + 3(4,290,000)]

As noted above during 2004 we had 3,300 peak hour PCEs for a total AMB+DWT traffic that year of 22,540,000 PCEs. The ratio between annual PCEs and peak hour PCEs that year was therefore **6,830**

The DEIS and its supporting documentation do not specify the ratio between annual PCEs and peak hour PCEs for year 2034 for AMB, DWT, and BWB taken together. However, as a preliminary assumption we can assume that the ratio will be same in 2034 as it was 2004, i.e., **6,830**. Doing that leads us to conclude that the peak hour PCEs in 2034 will be **9,034** (i.e., 61,700,000 divided by 6,830)

As noted above, the combined capacity of AMB and DWT is 5,000 peak hour PCEs per direction. Assuming that each lane of BWB has the same capacity as each lane of AMB, i.e., 1,750 PCEs per hour, the three lanes per direction at BWB add a total of 5,250 peak hour PCEs per direction of travel, giving us a combined capacity of 10,250 peak hour PCEs.

For AMB, DWT, and BWB taken together, the year 2034 peak hour PCEs projection derived above [i.e., 9,034 PCEs] is slightly less than 90% of the available capacity in place at this time, a result which suggests the need for providing more highway capacity across the Detroit River is not as urgent as is suggested in Figure S-2 on page ES-2 of the DEIS.

The DEIS should be revised to explicitly state how the peak period PCE statistic was derived from the year 2034 travel demand forecast and the justification for the procedure that was adopted.

10. Sensitivity of Peak Hour Travel Demand to Changes in Assumptions Made in Its Calculation; Peak Period Travel Disincentives; Evaluation of Reversible Lanes

Figure S-2 in the DEIS, prominently shown on page ES-2, indicates that the hourly PCE during 2004 was approximately 3,300. The temporal pattern of vehicular travel is addressed in the TDF on pages 43 through 51 [pdf pp. 52-60]. The TDF on page 51 [pdf p.60], lines 9-11, states that "***the change in travel characteristics between 2000 and 2004 indicates a change in the peak hour from a Summer afternoon weekday to a Fall afternoon weekday, although the differences are not large.***" [p 51 [pdf p.60], lines 9-11] PCEs.

Figure S-2 also shows that the hourly "Base Forecast Volume" will be 6,000 PSEs in year 2034.

However, neither the DEIS nor the TDF contains an analysis of the sensitivity of the hourly PCE for 2034 to changes in assumptions made in the calculations. The DEIS should be amended to address this issue.

As indicated in Section 6 above, it is possible to provide incentives to travel at times other than peak periods. The DEIS also should be amended to address the sensitivity of the peak hour travel forecasts to the implementation of various peak period travel disincentives.

Lastly, it appears from the discussion on TDF pages 43 through 51 [pdf pp.52-60] that between now and 2034 there will be a date beyond which the directional imbalance in traffic flow will be sufficiently large to make feasible the operation of lanes on which the permitted traffic flow is reversible depending usually on the time of day and day of week. For example, if an existing or new highway crossing the Detroit River has four lanes, at some times of day three of the lanes could be used for one direction of travel and the remaining one lane could be used for vehicles traveling in the opposite direction. BWB already has six travel lanes. For BWB normally three lanes are available for each direction of travel. However, during periods of imbalanced peak traffic flow the arrangement could be changed to provide four lanes for the peak flow direction. The DEIS should be amended to define and evaluate this option to avoid providing more capacity than is required.

11. <u>Michigan – Upstate New York Origin-Destination Statistics and Projections</u>

Many Michigan motorists traveling to Upstate New York and New England travel across Canada because the travel time to do that is shorter than to drive into Ohio and then along the south shoreline of Lake Erie. The DEIS includes no information about US traffic using Ontario as a short-cut to avoid driving around Lake Erie. The absence of that data makes it impossible to ascertain whether there is a practical alternative for accommodating such traffic that does not require adding capacity to the international crossings in metro Detroit.

The DEIS requires amendment to clearly present both existing and forecasted travel volumes between Detroit and Upstate New York that uses travel through Ontario as a short cut.

12. <u>US-Canada Travel Origin-Destination Statistics and Projections</u>

The Michigan Department of Transportation, the agency apparently managing the preparation of the DEIS on behalf of the Federal Highway Administration, has not included, either within the DEIS document or in any of the supporting documents, any travel origin-destination data for either "local traffic" or "long distance traffic" between the US and Canada. SEMCOG officials have referred my inquiry for "long distance traffic" data to the Ontario Ministry of Transport.. I advised the Michigan Department of Transportation of that referral and was not offered a local source for the data. I then contacted the Ontario Ministry of Transport which in turn advised that the data available at this time are only from a 1999 survey. The Ontario Ministry of Transport also stated that it has statistics as the result of a 2005 survey done in cooperation with US Federal Highway Administration and Transport Canada, but that it cannot yet share the data until a pending data sharing agreement is executed by the parties.

I have requested the 1999 data but have not yet received them. I therefore request from you an opportunity to supplement these comments after I receive and review the 1999 data. I also

request an opportunity to supplement these comments a second time, after receiving and reviewing the 2005 data.

Given the non-availability of the 2005 data, and given that practical alternatives to the DRIC project can not be evaluated without such data, it is imperative that the DEIS be amended to include the 2005 origin destination information and then released to the public for additional comment.

13. <u>Intermodal Rail Diversion of Truck Traffic</u>

The TDF on pages 122 and 123 [pdf pp.131-132] addresses the possibility that intermodal rail services could divert a significant amount of truck traffic.

The topic takes up only about 1.2 pages of text and one exhibit.

Perhaps the most notable point included in the discussion is the statement that "***the commercial vehicle traffic...potentially divertible to rail represents approximately 44% of the current total truck volumes on the Ambassador Bridge***."

The TDF on page 101 [pdf p.110] states that during 2004 a total of 3,370,000 commercial vehicles traveled over AMB. That statistic implies an average truck traffic volume between Detroit and Toronto of over 4,000 per day (both directions combined) or 2,000 per direction per day.

There already are intermodal rail services between southeast Michigan and southern Ontario. Apparently no public funds have been allocated to assist the railroads involved in those services to further develop and to expand the services.

One intermodal service, CP's Expressway, was established approximately in 2000. The TDF on page 122 [pdf p 131] incorrectly states the following about intermodal rail services in general as the result of the termination of that service: "***The potential is also brought into question given the recent cancellation of the CP Xpressway intermodal rail service in 2004***."

The reason the sentence quoted in the immediately preceding sentence is incorrect is that, according to a Canadian Pacific spokesman on 29 April 2008, the CP Expressway service continues to operate between Montreal and Toronto. The CP merely truncated the western portion of the service. It is not clear whether the truncation of the route was due to a need to reallocate scarce resources to the Montreal-Toronto segment because of great demand there, or if the incremental revenues from operating the service between Toronto and Detroit did not exceed the incremental costs of operating that segment.

Railway Age Magazine's January 2003 issue carried an article about the CP Rail Expressway service, and in that article stated that CP invested $50,000,000 in equipment to start up the service, which operated between Detroit, Toronto, and Montreal. Given that the DEIS suggests that $2.5 to $3.0 billion would be invested to complete a new highway crossing over the Detroit River, it appears inappropriate to deem questionable an intermodal service that requires an investment of less than two percent of the investment required for a new Detroit River highway crossing without examining ways to make such a service successful.

A second intermodal service between metropolitan Detroit and Toronto is operated by Triple Crown Service, a subsidiary of Norfolk Southern Railway. That service has been operating for many years, involves one train run per direction on each of five days per week, and for each train run takes approximately 80 to 100 trucks off not only the international highway crossing that otherwise would be used, but also the freeway between the border and Toronto. Air pollution emissions from the locomotive drawing the train reportedly are not more than 25% of the air pollution emissions that would be emitted by the highway tractors that otherwise would operate between Michigan and the terminal in Toronto.

There have been and continue to be other intermodal services between Toronto and Michigan.

In any event, given the statement quoted above that 44% of the truck traffic crossing AMB as of 2004 is potentially divertible to rail, and given the fact that 40 CFR 1502.1 requires that ***"...an environmental impact statement...shall provide full and fair discussion of significant environmental impacts and shall inform decisionmakers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment"***, it is imperative that the intermodal rail option be addressed, even though the rail intermodal service alternative is not within the jurisdiction of the lead agency in this case [ref: 40 CFR 1502.14]

14. Public Transportation Options

In Section 6, which is on page 7 of this letter, the magnitudes of weekday "Local traffic" and "Long distance traffic" are presented for automobile and truck traffic on AMB+DWT combined. The data there shows that automobile traffic that is "local traffic" accounted for 38% of the total daily PCEs. Probably "local traffic" accounted for by automobiles during the daily peak travel hour accounts for an even greater percentage of the peak travel hour PCEs accounted for by trucks and autos.

Given the fact that the State of Michigan and the Province of Ontario are considering what is essentially a $2.5 to $3.0 billion investment in a new highway crossing of the border, it appears that a reasonable alternative to the highway investment option could be an international public transportation service that would attract the automobile "local traffic" which now impedes the operation of trucks on AMB.

One option is to extend the planned Woodward Avenue light rail line southward to Oullette Avenue in Windsor, and then out Oullette and perhaps out two or three branches from Oullette. Such an extension probably could be done for a cost much less than the estimated cost of the proposed highway bridge structure over the Detroit River. The option therefore is a reasonable alternative and, according to CEQ requirements, needs to be the topic of detailed evaluation in the DEIS.

The evaluation envisioned would require for both 2004 and 2034 daily and peak-hour origin-destination data for trans-border automobile travel. It also would require the definition of a public transportation service on both sides of the border and the estimation of how much of the automobile travel could be diverted to the public transportation mode.

The DEIS therefore should be amended to do the requisite analysis of the public transportation alternative. If the origin-destination data do not exist, they will have to be developed in order to analyze the alternative.

15. Low-Cost Reasonable Alternatives

There are a number of options that do not involve the expenditure of millions or billions of dollars in order to achieve what President Bush, Prime Minister Harper, and President Calderon described on 21 August 2007 as "...the development of enhanced capacity of the border crossing infrastructure in the Detroit-Windsor region".

15a. Pricing Policies:

Already discussed above are several bridge and tunnel pricing policies that provide incentives to travel either before or after the facilities' peak travel hours and/or to travel in high-occupancy vehicles such as car pools or van pools.

Another pricing policy that could alleviate congestion is, at the time of the next fare increase, is to defer increasing the facility use fee for those who acquire NEXUS identification documents and therefore are eligible for expedited customs and immigration processing on each side of the border.

One of the most unfortunate pricing policies in effect at this time is the policy of selling commuter tickets at reduced prices and not requiring that the reduced-price tickets be used only during off peak hours.

15b. Marketing of the Blue Water Bridge:

A second option is to entice the drivers of trucks and autos to use the BWB instead of AMB or DWT. On page 124 [pdf p.133] of the TDF, in a section entitled "High Diversion to St. Clair River Crossing Scenario", the authors of the TDF state that there is a bias among travelers to use either AMB or DWT instead of the BWB, when all other factors are equal. The authors of the TDF go on to assert that if that bias were removed the need for additional Detroit River crossings would be deferred by six years.

Most likely trans-border travelers between Michigan and London and points east of London are not aware that the total trip length increases by approximately 12 miles when one end of the trip is in Detroit at the entrance to AMB or DWT and the other end of the trip is in London or east of London, and when the travel between the two locations is via BWB instead of via AMB or DWT.

A public education program is appropriate in order to effect a reduction in congestion at AMB and DWT. This can consist of one or more of at least of the following:

- Distribution (perhaps at Michigan and Ontario travel centers) of BWB brochures which announce the absence of a major travel time disadvantage for cross-border travelers destined to metro Detroit and to London and places east of London

- In Michigan, static signs along northbound I75 at points south of I75 milepost 45 (approximately) and also along eastbound I94, I96, and I69, to announce the advantages of using BWB rather than other crossings

- In Ontario, static signs located along westbound Highway 401, east of the Highway 402 interchange, to announce the advantages of using BWB to travel to Detroit

- Variable message signs installed in advance of route choice decision points, rest stops, and service centers to announce, for each of the existing border crossings, the estimated time to travel from the sign's location to downtown Detroit and/or other major destinations and whether that time estimate is expected to increase or decrease during the next hour or two. [Having the information before reaching the border could entice travelers to stop and rest or eat before reaching the border if delays at the border will diminish during the rest stop.]

15c Set up reversible lane programs:

If not already done, establish a reversible lane program for BWB and possibly AMB to take advantage of a major imbalance in directional traffic flows. This program could even extend to DWT during the hours immediately before and after major events in downtown Detroit. If necessary, during this occasions use of the DWT could be limited to individuals with NEXUS identification.

16. <u>DEIS Technical Reports</u>

The "Foreword" to the DEIS lists a number of technical reports as being included in the documentary record of the DEIS. Not included in that list is the TDF report which is identified on page 2 of this letter and which is referenced in DEIS Figures S-2 and 1-3. The record of working documents that are a part of the DEIS should be amended to include the TDF report.

Respectfully submitted,

[redacted]

[redacted]

29 May 2008

Mr. Robert Parsons, Public Involvement/Hearing Officer
Michigan Department of Transportation
PO Box 30050
Lansing, MI 48909 USA
parsonsb@michigan.gov

RE: Detoit River International Crossing (DRIC), Wayne County, Michigan "Draft Environmental Impact Statement and Draft Section 4(f) Evaluation" -- approved by Federal Highway Administration on 15 February 2008

Dear Mr. Parsons:

My letter dated 29 April 2008 consists of comments submitted for the record regarding the Draft Environmental Impact Statement (DEIS) identified above. This letter does not replace my 29 April 2008 letter. Rather, this letter serves as an addendum to my 29 April 2008 letter and the comments that follow therefore also are submitted for the DRIC DEIS record. Accordingly, please append this letter to my 29 April 2008 letter.

1. <u>Abbreviations and their Definitions</u>

The abbreviations used in this letter are identical to those used in my 29 April 2008 letter.

2. <u>Introduction</u>

Please refer to this section in my 29 April 2008 letter.

3. <u>Context of the DEIS</u>

Please refer to this section in my 29 April 2008 letter.

4. <u>The DEIS needs clarification as to what the DRTP proposes to do</u>

The Borealis webpage identified in Section 4 of my 29 April 2008 letter continues to be an active webpage.

In addition, the DRTP webpage providing answers to frequently-asked questions, <u>http://www.thejobstunnel.com/new/jobs-tunnel.php?nic=faqs</u> , continues to be an active web page.

Further, a <u>Crain's Detroit Business</u> article published on 04 June 2007 (at <u>http://www.crainsdetroit.com/apps/pbcs.dll/article?AID=/20070604/SUB/706010360</u> states that DRTP requires approximately $100,000,000 in US federal assistance to build the tunnel that

DRTP is proposing. The SEMCOG long range transportation plan line item described in my 29 April 2008 letter states that DRTP will require no local, state, or federal aid.

The inconsistencies between the DRIC DEIS document statement referred to in Section 4 of my 29 April 2008 letter and other published documents continue to require resolution. As noted on 29 April 2008, the inconsistencies can be cured if both of the two co-owners of the DRT submit for inclusion in the DEIS record a written statement clarifying their intentions regarding all of the following: the construction of the proposed high-clearance one-track tunnel, the disposition or alternate use of the existing two tubes comprising the existing DRT. In addition, the statement from DRTP's two partners also needs to make clear DRTP's need for federal assistance.

5. **Rationale for Considering the BWB in the DEIS**

Please refer to this section in my 29 April 2008 letter.

6. **Existing and Projected Traffic on Detroit River Highway Crossings**

As noted in my 29 April 2008 letter, the DEIS should be amended to clarify the traffic forecasting assumptions and to quantitatively evaluate at least the fare policy options identified in Section 6 of my 29 April 2008 letter.

7. **Change in Forecast Base Year from 2004 to 2007 and Revision of Forecast for ~~2034~~2035**

In response to my request, MDOT on 22 May 2008 provided via email the 2005 through 2007 annual traffic counts for AMB and DWT. The report I received is reproduced immediately below.

ANNUAL TRAFFIC

		2,005	2,006	2,007
Ambassador Bridge	Passenger Cars	5,865,633	6,113,134	5,649,619
	Trucks	3,445,585	3,498,127	3,398,745
	Buses & Misc.	76,660	68,991	34,071
	TOTAL	9,387,878	9,680,232	9,082,435
Detroit-Windsor Tunnel	Passenger Cars	5,774,705	5,269,959	4,732,981
	Trucks	148,065	127,433	111,082
	Buses & Misc.	59,117	59,772	54,362
	TOTAL	5,981,887	5,457,164	4,898,425

If one combines the BWB annual traffic volume changes since 2004 (reported in my 29 April 2008 letter) with the AMB and DWT traffic volume changes since 2004 shown above, it is readily apparent that the total annual traffic demand on the three crossings combined has declined significantly since 2004 -- by 12% for passenger car traffic, 2% for commercial traffic, and 7% for PCE's (as defined on page 2 of my 29 April 2008 comments and also in the DEIS). Comments on page 8 of my 29 April 2008 submission refer to the DRIC forecasted compound

annual growth rates (CAGRs) for the total growth in traffic as being 2.9%/annum for automobile traffic and 3.3%/annum for commercial traffic, which means that the 2007 traffic volumes should have been about 10% greater than the 2004 traffic volumes.

It can be concluded that traffic growth forecasts on which the DRIC DEIS relied are not consistent with the reality of traffic flows observed during 2007. Even if the approximate 3% CAGR for traffic volume eventually is realized, the date that the capacity of the existing crossings will be matched by traffic demand perhaps will be in the order of five years later than the years indicated in Figure S-2 on page ES-2 of the DRIC DEIS.

The DEIS should be modified to present the traffic counts for the AMB, DWT, BWB and to amend the forecast for the planning horizon year, ~~2034~~ 2035.

8. **Modification of Forecasts to Reflect Changes in Fuel Prices Since 2004**

I have nothing to add to this section of my 29 April 2008 letter other than to state that fuel prices have continued to increase since 29 April 2008 and that the justification for the conclusions of this section as stated on 29 April 2008 are even more justified now than they were on 29 April 2008.

9. **Evaluation of Peak Period Travel for AMB, DWT, and BWB as a Group during ~~2034~~2035**

I have nothing to add to this section of my 29 April 2008 submission.

10. **Sensitivity of Peak Hour Travel Demand to Changes in Assumptions Made in Its Calculation; Peak Period Travel Disincentives; Evaluation of Reversible Lanes**

I have nothing to add to this section of my 29 April 2008 submission.

11. **Michigan – Upstate New York Origin-Destination Statistics and Projections**

I have nothing to add to this section of my 29 April 2008 submission.

12. **US-Canada Travel Origin-Destination Statistics and Projections**

Although I have received from the Province of Ontario some of the 1999 data referred to in this section of my 29 April 2008 submission, I have not yet had an opportunity to evaluate the data.

The 2005 data continue to be unavailable, apparently due to inaction by the Federal Highway Administration to execute its data sharing agreement with its Canadian counterpart agency.

As indicated in my 29 April 2008 submission, given the non-availability of the 2005 data, and given that practical alternatives to the DRIC project can not be evaluated without such data, it is imperative that the DEIS be amended to include the 2005 origin-destination information and then released to the public for additional comment.

13. Intermodal Rail Diversion of Truck Traffic

I wish to supplement the comments in this section of my 29 April 2008 letter with the following comments.

As noted in my 29 April 2008 submission, the TDF states that approximately 44% of the current total truck volumes on the AMB are divertible to rail. The total commercial vehicle volume on the AMB during calendar year 2004 was 3,370,000 vehicles [TDF, page 31 (pdf page 40)]. If one divides that figure by 365 and then by 2, and multiplies the result by 44%, it is apparent that more than 2,000 commercial vehicles travel each day in each direction between Detroit and the Greater Toronto Area (GTA).

The TDF forecast for year 2035 is that the total commercial traffic across the border in Detroit will be 8,060,000 [TDF, page 97 (pdf p. 106)]. Interpolating that number to a daily truck traffic volume of travel and assuming that the commercial traffic between Detroit and the GTA is still 44% of the total, it is apparent that the average truck traffic between the two locations will be more than 4,800 per day/direction.

An intermodal train with one 4,000 hp engine can pull a train consisting of 100 semi trailers, especially if it is a train consisting of Roadrailer type highway trailers. Thus the market for rail transport of trailers between Detroit and the GTA at present is approximately one train leaving from each end of the route once every hour, 20 hours per day. As of 2035, that market potential increases to one train leaving each end of the route every 30 minutes.

The typical tractor required to haul one semi-trailer on a highway is equipped with a 400 horsepower engine, which means that 100 trailers towed on a highway require a total propulsion capacity of 40,000 horsepower, instead of 4,000 horsepower if transported by railroad. Theoretically there could be a 90% reduction in the fuel consumed in transporting trailers across southwestern Ontario by railroad instead of having individual tractors hauling them between Detroit and the GTA. The potential may very well exist to reduce emissions from the Detroit-GTA freight vehicles by 90% as well.

Rather than rely on historical narrative, the DEIS should quantitatively assess the potential for intermodal transport of truck trailers between Detroit (and points inland from Detroit) and the GTA.

14. Public Transportation Options

I have nothing to add to this section of my 29 April 2008 submission, other than to point out that, apparently as the result of trade agreements between the US and Canada, the number of "Windsor Census Metropolitan Area" residents working in the USA more than doubled between 1991 and 2001, from 2,545 to 6,975). [TDF, page 26]. If all of these residents travel during one peak hour each weekday morning and vice versa each weekday afternoon and are in autos occupied only by the commuter as the driver, they alone would account for more than two lanes of traffic capacity. Accordingly, public transportation is indeed one part of strategy that constitutes a reasonable alternative to the DRIC project.

15. Low-Cost Reasonable Alternatives

I have nothing to add to this section of my 29 April 2008 submission.

16. DEIS Technical Reports

I have nothing to add to this section of my 29 April 2008 submission.

Respectfully submitted,

[redacted]

[redacted]

December 12, 2008

Mr. Dave Wake
Windsor Projects Coordinator
Detroit River International Crossing Project
Windsor Office
1010 University Ave. W., Suite 104
Windsor, Ontario
N9A 5S4

Dear Mr. Wake,

On behalf of the residents of the Huron Estates neighbourhood, we wish to inform you of the results of a process of community consultation we have undertaken in our area and identify for you our particular concerns related to the DRIC project's proposed Windsor-Essex Parkway. Enclosed with this letter you will find the original returned canvass sheets from many households in our Huron Estates Community. These sheets and this letter are submitted to the DRIC Project in the belief that we have fulfilled the requirements of the DRIC process for making submissions by the deadline of December 12, 2008, to ensure this input will be included in the Parkway Environmental Impact and Assessment Study.

The canvass-sheet was designed by the Huron Estates planning committee and distributed to all 255 homes in our subdivision. The form asked residents to prioritise the three major concerns related to DRIC's proposed Parkway, as identified by the planning committee based on early feedback from the community. The three issues were as follows:

a. It does not protect our distance from it. There are 14 lanes of traffic right next to our backyards, above grade, from Pulford to over Turkey Creek, with no buffer zones, no berms, only a " proposed noise wall". We want this section under the Grand Marais Drain, below grade and covered.
b. It does not protect our air quality. There is no capture or treatment of diesel exhaust, a major health hazard. We want venting, filters or scrubbers, and greenery to clean up the exhaust pollutants.
c. It does not protect our natural environment and land use. It does not protect the value of our homes and neighbourhood. We want longer, wider covered sections with real usable parkland on the "Parkway".

In addition, space was provided on the form for any comments or further concerns residents wished to note.

Of the 255 homes canvassed, we received responses from 122 resident homes by phone or e-mail. In addition, we received a return of 90 completed canvass sheets, copies of which are enclosed. Overall, the response from residents was consistent. Residents were equally concerned about the issues of air quality, noise and sight pollution resulting from the community's proximity to the highway. They were also concerned by the lack of usable parkland in the current DRIC proposal, which also seriously limits connectivity to the other side of the proposed Parkway. Many residents also noted their concern about a negative impact on the value of their home.

The Huron Estates community is adjacent to a part of the Parkway that, according to the DRIC Parkway map, is "at or above grade". We have received verbal assurances from you and your project team that the roadbed in this section would be "slightly or somewhat below grade" but do not consider a below-grade roadway a sufficient measure to address our concerns regarding the impacts of noise and air pollution on our community.

The key recommendation from all the responses of our Huron Estates canvass is that the section of the Parkway directly adjacent to our community needs to be not only below grade, but most importantly, covered (referred to by some as being "tunnelled"). Like most other sections of the DRIC Parkway that come close to a residential community, residents of Huron Estates want the section of roadway from Pulford St. to past Grand Marais and Lambton Roads to be cut and covered.

Even sections of the proposed Parkway with low adjacent population density have been conceived in the cut and cover design. Surely our 255 homes at Huron Estates deserve the same cut and cover design and thus the same protections. Our area is as densely populated as the Howard Avenue area and certainly we are much more densely populated than the Spring Garden area. We know that other communities have been given consideration to address the negative impact of the proposed Parkway on the quality of life in their neighbourhoods. They have protection from the noise and air pollution by a covered Parkway section. We are asking for similar and consistent consideration for our community in the design of the adjacent section of the proposed Parkway.

The "cut and cover" approach is the only design that adequately addresses the primary concerns identified in our canvass of the Huron Estates community. A cover will protect the community from the noise and unsightliness of diesel traffic; it will offer protection from air pollutants; and it will provide more parkland, with usable, active green space, on the Parkway. In addition to these reasons, this approach will also help to protect the value of adjacent homes.

As noted, it is our intention and belief that this letter and the attached materials constitute a formal submission by the combined residents of Huron Estates to the DRIC project within the specified timeframe and in accordance with requirements to undertake community consultation as part of the environmental assessment process. In addition however, we look forward to meeting with you at your earliest convenience to discuss the views and concerns outlined here more fully. In the interim, should you have any questions or concerns, please do not hesitate to contact either [redacted] or [redacted] at [redacted] or [redacted] and [redacted] at [redacted]

Yours truly,

[redacted]

[redacted] and [redacted]
[redacted] and [redacted]

Encl.

Enclosed with this submission were 90 questionnaires completed by residents of the Huron Estates community.

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December 12, 2008

Delivered by Email

Ontario Ministry of Transportation
Windsor Border Initiatives
Implementation Group
949 McDougall Avenue
Suite 200
Windsor, ON N9A 1L9

Attention: Roger Ward, Senior Project Manager

Dear Mr. Ward,

Re: OPTrust Retail Inc. - Detroit River Crossing
Environmental Study Report

Please be advised that we are the solicitors for OPTrust Retail Inc., the owners of the Windsor Crossing Outlet Mall. Windsor Crossing Outlet Mall is the largest retail/commercial facility directly impacted by the current design for the new road link.

As you know, we have been in contact with the Ministry of Transportation's representatives and its consultants, URS, concerning the impact of the DRIC project on our client's property. We first met with Roger Ward and URS representatives on November 19th, 2007 at URS offices in Markham. Subsequently, our client, although it was under no legal obligation to do so, further attempted to mitigate its potential future losses by retaining BA Group to review the then current plans for the road link and proposed mitigation measures. Afterwards, our client retained architectural and marketing consultants to advise it further with respect to mitigation opportunities. Intervening in our client's review, through its consultants, of the impact of the proposed taking from its property were revisions as set out in the environmental study report released in November, 2008, which increased the property requirements from our client.

We write to register our client's objection to the current design as it appears that even if mitigation efforts are fully put into place, the economic future of the Windsor Crossing Outlet Mall will be significantly challenged. Key tenants of the mall are already advising our client's agent, Bentall LP, of their concerns respecting the security of their tenure in view of recent DRIC announcements. Accordingly, we cannot in this communication be fully explicit respecting our client's concerns as it may engender an inordinate response on behalf of the tenants whose leases are coming up for renewal. Suffice it to say that the

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Windsor Crossing Outlet Mall makes a significant contribution to the economic life of the greater Windsor area. The current proposals put its economic future in jeopardy and thus threatens to encumber the project with a substantial financial burden, estimated in the many tens of millions of dollars. Our expert advice is that this burden cannot be avoided by mitigating the impacts of the current design.

Accordingly, we urge you to consider substantial and material changes to the current design. While we recognize that our client will be made economically whole through the expropriation process, it appears to us on our respectful review of the written material available, that the consequences of the current design on the operation of the Windsor Crossing Outlet Mall have not been fully taken into account in the Environmental Assessment process to date.

We look forward to meeting with you to discuss this matter further. As from time to time, Mr. Waqué of our office has been keeping Lynn Sebastien of MTO current with our efforts in this regard, a copy of this letter is being sent to her for her information.

We will be pleased to provide further information to you on a confidential and without prejudice basis.

Yours very truly,

Stephen F. Waque/Christel Higgs
SFW/CH:em

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Neegan Burnside Ltd 15 Townline Orangeville ON L9W 3R4 Canada
telephone (519) 941-1161 fax (519) 941-8120 web www.neeganburnside.com

NEEGAN BURNSIDE

December 11, 2008

Walpole Island First Nation
R.R. No. 3
Wallaceburg, ON N8A 4K9

Attention: Dr. Dean Jacobs

Re: **Preliminary Review of the Detroit River International Crossing Draft Environmental Assessment**
NB File: FC013629

Dear Dr. Jacobs,

Please find enclosed our Environmental Assessment Team's review of the Detroit River International Crossing Environmental Assessment.

It is our understanding that comments are to be submitted to the Ministry of Transportation by tomorrow, December 12, 2008.

If you have any questions, please feel free to contact myself or Fiona Christiansen.

Yours truly,

Neegan Burnside Ltd.

Stephen Burnett, P.Eng.
SB:kc
Enc.

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2008-12-11 4:34 PM

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NEEGAN BURNSIDE

Memorandum

	Date	December 11, 2008	File No. FCO 13629
	Re	Preliminary Review of the Detroit River International Crossing Draft Environmental Assessment (November, 2008)	
To	Attention	Dr. Dean Jacobs	
	Company	Walpole Island First Nation	
From	Name	Tricia Radburn, Environmental Planner	
Reviewed by:	Name	Peter Somers, Senior Advisor, EPA Fiona Christiansen, Manager, EPA Steve Burnett, Project Manager	

Introduction:

Neegan Burnside Ltd. (Neegan) has been retained by Walpole Island First Nation (WIFN) to undertake a peer review of MTO's Draft Environmental Assessment (November 2008), with specific focus on aspects of the Project that fall within the interest of WIFN, such as the natural environment and archeology. The following provides Neegan's comments with respect to the above-captioned Environmental Assessment "the EA."

In general, we are pleased with the substantial effort that MTO's team (URS Canada Inc. ("URS") and LGL Limited ("LGL")) have put into data collection and characterization of existing conditions in the Area of Interest ("AOI"). Given the immense scope of the project, the study team has also done good work to identify potential impacts, evaluate project alternatives and consult stakeholders and the public. At least thirteen separate meetings have been held with the Walpole Island First Nation ("WIFN") and we are satisfied that the duty to consult, under the *Ontario Environmental Assessment Act*, has been met.

We do however have reservations regarding the timing of MTO's response to our initial concerns (April 2008). Specifically, Neegan, on behalf of the WIFN, provided comments on the *Draft Practical Alternatives Evaluation Working Paper, Natural Heritage, Version 1* (LGL Ltd., July 2007) in a memo dated April 15, 2008. MTO provided a response to those comments on October 17, 2008, followed by a meeting in early November. The timing of that response was such that WIFN's comments on the Practical Alternatives

were not addressed until after the project had moved ahead to the Preferred Alternative stage. We feel that this was not appropriate and did not meet the spirit of the EA process in terms of meaningful involvement of key stakeholders in the evaluation of alternatives. We also note that meeting minutes were not circulated following the above mentioned meeting. This is of particular concern as specific commitments were made to WIFN during this meeting and these commitments were to be documented in the EA. We believe the study team has good intentions to carry out all of their stated commitments. However, we would like to see additional information in the EA to ensure that commitments will be followed through.

We understand that the EA is only intended to provide mitigation measures at the conceptual level, and that many of the mitigation measures will be developed in greater detail, at the detailed design stage of the Project. However we suggest that some additional information be provided to clarify when commitments will be undertaken, who will be responsible, and how the WIFN be consulted and/or engaged and in what capacity. Specifically:

1. Archaeological/Cultural Resources:
   - The Stage 2, 3 and 4 (if required) Archaeological Assessments are still in progress. There is no indication of how the WIFN will be contacted should any aboriginal cultural resources be identified during these upcoming assessments.
   - **Please clarify the following in the EA: When will additional discussions be held with WIFN to determine if/how WIFN field work monitors could be involved (WIFN have confirmed that Monitors could be trained over winter months if required). Who will be responsible for cultural resources? How will possession of archaeological finds be determined?**

Please note that D.R. Poulton and Associates are conducting a review of the Archaeological report(s) and may have additional comments and questions that will be submitted under separate cover. This delay is a result of a delay in MTO providing final documents for review.

2. CEAA Screening/Cumulative Effects Assessment:
   - We understand that the requirements under the *Canadian Environmental Assessment Act* will apply to the Project, including the requirement for an assessment of cumulative effects, however we are unclear as to when the CEAA Screening will be undertaken and how WIFN will be involved.
   - **Please clarify the following in the EA: When will the CEAA Screening will be undertaken, who will be responsible for overseeing it (we assume Transport Canada) and how will the WIFN be consulted?**

3. Natural Heritage Mitigation:
   - Section 10.4.3 of the DRIC draft EA states that mitigation for the loss of vegetation communities and rare plant species will be developed at the detailed design stage as part of a landscape plan. It is intended that the landscape plan will be designed to achieve "no net loss of vegetation area, attributes or function". We concur that this is an appropriate goal and are pleased that there are plans to enhance natural areas and create a net benefit. The draft EA currently only makes reference to the restoration of prairies and forests. We would like to ensure that restoration plans also include wetland communities as there are number of significant and particularly rare wetland communities that will also be affected by the project.
   - **Please clarify the following in the EA: Will the WIFN be engaged regarding impacts to medicinal plants and if so how/when will this occur? Who will be responsible for overseeing the design and implementation of the Landscape Plan? When will work on the Landscape Plan begin? Who will be responsible for monitoring the success of restoration efforts? Who will be responsible for ongoing maintenance (e.g. for prairie habitats)? Will WIFN's Heritage Centre be involved, given their extensive experience in prairie and wetland habitat management and restoration? Will options to make use of the WIFN's Land Trust be explored?**

4. Species at Risk:
   - The draft EA indicates that mitigation measures for designated species at risk will be developed during the permitting process under the *Ontario Endangered Species Act* and federal *Species at Risk Act*.
   - **Please clarify the following in the EA: When will mitigation measures be developed? Will WIFN's Heritage Centre be involved and in what capacity? Please confirm that MNR will arrange a meeting with WIFN at an appropriate time during the *Ontario Endangered Species Act* ("OESA") permitting process. During this process WIFN will be involved in the development of compensation rations and the development of mitigation measures for species at risk. WIFN understand that they may be able to assist with regard to providing seed stock for the Project.**

5. Fish and Fish Habitat:
   - Given the below-grade parkway design proposed, barriers to fish migration will be created. Fish locks are proposed as mitigation on the Cahill and Lennon Drains.
   - **Please clarify the following in the EA: Are fish locks financially and practically feasible? How do they operate? Who will be responsible for monitoring the efficacy of fish passage and for operating and maintaining the locks in the long-term? Will consideration be given regarding**

engaging the WIFN with regard to the potential opportunity to re-locate mollusc species from Walpole Island to the Detroit River?

The key concerns identified above can be remedied with minor additions to the draft EA to document these additional commitments, to describe how commitments will be implemented and to identify who will be responsible for their implementation. We suggest that the table in Section 10.5 of the draft EA document, which summarizes environmental effects and mitigation, be expanded to include additional columns, such as those provided in the attached table. This table is only a rough framework to provide an example of the type of information that could be included. We assume MTO will complete the table where questions have been posed or cells left blank.

Once this information is provided, we will be in a better position to support a final EA for the proposed project.

We hope this review provides you with sufficient information. Please do not hesitate to contact us with any questions or concerns you may have.

Prepared by:

TRadburn

Tricia Radburn, Environmental Planner

Reviewed by:

Fiona Christiansen, Manager, Environmental Assessment and Planning

Table 1 Additional Information to be Included in Table 10.5 in order to Satisfy [illegible] EA Commitments

Existing Columns			Recommended Additional Columns		
Environmental Element/Category and Potential Impact	Concerned Agencies	Summary of Environmental Effects and Mitigation	Description of Future Commitments	Who is responsible for commitments and monitoring?	When will the commitment take place?
[illegible]	• [illegible]	• [illegible]	• [illegible] • [illegible]	• [illegible]	
[illegible]	• [illegible]	• [illegible]	• [illegible] • [illegible]	• [illegible] • [illegible] • [illegible]	
[illegible]	• [illegible]	• [illegible]		• [illegible] • [illegible]	
Wildlife and Species at Risk	• [illegible]	• [illegible]	• Baseline assessment • [illegible]	• [illegible] completed	• When will the studies take place

Ministry of Culture

Programs and Services Branch

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4th Floor
Toronto, ON M7A 2R9

Ministere de la Culture

Direction des Programmes et des Services
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Ontario

December 16, 2008

Mr. Roger Ward, Senior Project Manager
Ministry of Transportation
Windsor Border Initiatives Implementation Group
949 McDougall Avenue, Suite 200
Windsor, ON N9A 1L9
email: detroit.river@ontario.ca

Subject/Project: Detroit River International Crossing Environmental Assessment Study – Draft Environmental Assessment Report

Dear Mr. Ward,

Thank you for contacting the Ministry of Culture (MCL) regarding the draft Environmental Assessment (EA) Report for the Detroit River International Crossing EA Study dated November 2008.

MCL supports the objectives of the "Let's Get Windsor- Essex Moving" Strategy and welcomes the opportunity to work cooperatively with the Ministry of Transportation (MTO) to advise on heritage considerations in the environmental assessment process.

MCL's interest in this undertaking relates to our mandate of conserving, protecting and preserving Ontario's heritage. MCL would, therefore, be interested in remaining on the circulation list and being informed of the project as it proceeds through the EA process.

This Ministry generally supports the approach and commitments made. However, we have the following comments and recommendations to better address heritage:

1. Summary of the proposed Environmental Assessment

The Detroit River International Crossing (DRIC) Environmental Assessment Report documents the coordinated environmental study undertaken by the Border Transportation Partnership, which includes the Ontario Ministry of Transportation, Transport Canada, the Michigan Department of Transportation and the U.S. Federal Highway Administration. The study resulted from the *Planning/Need and Feasibility (P/NF) Study* completed in 2004 that identified the need to address the safe and efficient movement of people and goods in the long-term between Southwestern Ontario and Southeastern Michigan.

The report states that the DRIC is part of an overall international transportation improvement project that will require approvals from governments on both sides of the border. The Partnership's coordinated process facilitated the joint selection of a preferred river crossing, location to meet the requirements of the Ontario Environmental Assessment Act (OEAA), Canadian Environmental Assessment Act (CEAA), and the United States National Environmental Policy Act (NEPA) effectively and efficiently.

In addition, a key component of the EA study involved preparing an Environmental Assessment Report, to document environmental effects and the process that led to the selection of the Technically and Environmentally Preferred Alternative (TEPA). The report supports the analysis and evaluation of alternatives, along with the environmental and technical studies that have been undertaken in preparation of the EA report.

In a separate but parallel process, the Government of Canada, the Province of Ontario, the City of Windsor, and Essex County have continued to work together to reach agreement on additional initiatives to be pursued under the "*Let's Get Windsor-Essex Moving*" strategy. This initiative is aimed at relieving congestion and improving traffic flows to existing crossings in a manner that is consistent with the requirements of the Detroit River International Crossing Project.

2. Recommendations

- The Glossary of Terms should include the following definitions (from the Provincial Policy Statement, 2005):

  Archaeological resources: includes artifacts, archaeological sites and marine archaeological sites. The identification and evaluation of such resources are based upon archaeological fieldwork undertaken in accordance with the Ontario Heritage Act.
  Archaeological sites: any property that contains an artifact or any other physical evidence of past human use or activity that is of cultural heritage value or interest.
  Areas of archaeological potential: areas with the likelihood to contain archaeological resources. Criteria for determining archaeological potential are established by the Province, but municipal approaches which achieve the same objective may also be used. Archaeological potential is confirmed through archaeological fieldwork undertaken in accordance with the Ontario Heritage Act.
  Built heritage resources: one or more significant building, structures, monuments, installations, or remains associated with architectural, cultural, social, political, economic or military history and identified as being important to a community. These resources may be identified through designation or heritage conservation easement under the Ontario Heritage Act, or listed by local, provincial or federal jurisdictions.
  Conserved: the identification, protection, use and/or management of cultural heritage and archaeological resources in such a way that their heritage values, attributes and integrity are retained. This may be addressed through a conservation plan or heritage impact assessment.
  Cultural heritage landscape: a defined geographical area of heritage significance which has been modified by human activities and is valued by a community. It involves a grouping(s) of individual heritage features such as structures, spaces, archaeological sites and natural elements, which together form a significant type of heritage form, distinctive from that of its constituent elements or parts. Examples may include, but are not limited to, heritage conservation districts designated under the Ontario Heritage Act; and villages, parks, gardens, battlefields, mainstreets and neighbourhoods, cemeteries, trailways and industrial complexes of cultural heritage value.
  Cultural heritage resources: include built heritage, cultural heritage landscapes, and marine and other archaeological sites.
  Cultural heritage value: The Ontario Heritage Act, Regulation 9/06, identifies criteria for determining cultural heritage value. While some significant resources may already be identified and inventoried by official sources, the significance of others can only be determined after evaluation.

  Delete the following terms: 20th century Euro-canadian, historical settlements, historic Euro-canadian, historic pioneer.

- Under Section 4 [Description of the Existing Environment] – 4.5 Cultural Resources

  We recommend that the following wording be included: "The cultural environment includes cultural facilities (e.g. museums, libraries, theatres) and properties of cultural heritage value (e.g. archaeology, built heritage and cultural heritage landscapes) in the Analysis. Significant cultural heritage resources, including, archaeological sites, built heritage resources and cultural heritage landscapes, are located within the transportation corridor. The identification of any impact a proposed development or site alteration may have on the cultural heritage resources will need to be evaluated. Recommendations of alternative conservation methods to mitigate the impact of a proposed development or site alteration on cultural heritage resources will need to be addressed in appropriate reports (archaeological assessment report and/or heritage impact assessment report)".

  The Windsor area has a long-history of First Nations, Francophone, Euro-Canadian and American slaves' settlement and it contains a large number of archaeological sites, important buildings and cultural heritage landscapes.

- Under Section 4.5.1 Archaeological Resources, a summary is provided of the Historical maps and Euro-Canadian History in this section. It would be helpful to include a brief summary of native occupation of the specific areas identified in the section entitled "Physiography and Assessment of Pre-contact Archaeological Potential."
  Marine archaeological sites should be referenced in this section.

- Under Section 4.5.2 Built Heritage Resources, the wording in this section needs to be consistent throughout the document. As such, the wording should be revised to Cultural Heritage (Built Heritage Resources and Cultural Heritage Landscapes) and Archaeology. This is consistent with the Provincial Policy Statement, 2005.

  This section states that the assessment addresses above ground cultural heritage resources more than 50 years old. However, the established practice in other jurisdictions in Canada follows the '40 year rule', referenced in several key documents including the federal Treasury Board's Policy on Management of Real Property (1982), Cultural Heritage Process (Management Board Secretariat/Ontario Realty Corporation, 1994), the Municipal Engineers Association Class Environmental Assessment, Environmental Guide for Built Heritage and Cultural Landscapes (MTO, 2007) and Section 3.7 Built Heritage and Cultural Landscape Environmental Reference for Design (MTO, 2007).

  We note that the Detroit River, a Canadian Heritage River and American Heritage River, is mentioned in Section 4.5.1. The Detroit River should also be identified as a cultural heritage landscape. It would be more appropriate to include this information under Section 4.5.2.

- Under Section 7 [Description of the Area of Continued Analysis] – 7.4 Cultural Resources, the wording in this section needs to be consistent throughout the document. As such, the wording should be revised to Cultural Heritage (Built Heritage Resources and Cultural Heritage Landscapes) and Archaeology. This is consistent with the Provincial Policy Statement, 2005. This section provides an overview of archaeological and heritage resources that are existing within the Area of Continued Analysis.

- Under Section 7.4.1 Archaeological Resources, it is understood that the Environmental Overview Paper – Canadian Existing Conditions Volume 1 contains a list of archaeological sites, however there is a list of built heritage resources provided in Section 7.4.2, and it would be helpful to have a correspondingly brief summary/description of newly discovered archaeological sites.

  In Section 4.5.1 the previously registered sites are mentioned and are listed in detail in the Environmental Overview Paper – Canadian Existing Conditions Volume 1, however it is not clear whether any of these sites are located in the Area of Continued Analysis or TEPA.

- Under Section 7.4.2 Heritage Resources, the wording in this section needs to be consistent throughout the document. As such, the wording should be revised to Cultural Heritage (Built Heritage Resources and Cultural Heritage Landscapes) and Archaeology. This is consistent with the Provincial Policy Statement, 2005.

  It would be helpful to identify the proposed Sandwich Heritage Conservation District within the Area of Continued Analysis and TEPA.

- Under Section 10 [Environmental Effects and Mitigation of the Technically and Environmentally Preferred Alternative (TEPA)] – 10. 3 Cultural Resources the wording in this section needs to be consistent throughout the document. As such, the wording should be revised to Cultural Heritage (Built Heritage Resources and Cultural Heritage Landscapes) and Archaeology. This is consistent with the Provincial Policy Statement, 2005.

- Under Section 10.3.1 Archaeological Resources, under mitigation measures referring to the construction phase, two provincial references need updating to Manager, **Culture Programs Unit**, Ontario Ministry of Culture for archaeology, and for cemeteries issues it is now Ontario Ministry of Small Business and Consumer Services.

  In the conclusion, the second and third bullets refer to a need to complete the Stage 2 and 3 archaeological assessments in order to determine the extent of impacts to significant archaeological resources within the TEPA. However, in the list of supporting documents the "Technically and Environmentally Preferred Alternative – Stage 2 archaeological Assessment Report" is pending, no mention is made of the Stage 3 report. Is that to be completed after the next field season?

- Under Section 10.3.2 Built Heritage Resources, the wording in this section needs to be consistent throughout the document. As such, the wording should be revised to Cultural Heritage (Built Heritage Resources and Cultural Heritage Landscapes) and Archaeology. This is consistent with the Provincial Policy Statement, 2005. There is no need for further definition in this section, as all definitions are in the Glossary.

  There is no reference about cultural heritage landscapes (identification of resources, assessing impacts and mitigation measures).

  We recommend that the following wording be included under 'Assessing impacts to Built Heritage Resources': "The proposed undertaking may impact (direct or indirect, physical or aesthetic) cultural heritage resources:
    - destruction or unsympathetic alteration of all or part of a cultural heritage property;
    - isolation of a cultural heritage property from its surrounding environment, or
    - introduction of physical, visual, audible, or atmospheric elements that are not in character with a cultural heritage property or its setting.[1]"

  The report mentions that the mitigation measures were looked for six built heritage resources but there is no information on the draft work plan. Care shall be taken by MTO to ensure all conservation options have been considered and to document all its efforts in conserving cultural heritage resources.

[1] From *Guidelines on the Man-Made Heritage Component of Environmental Assessments* (Ministry of Culture, 1980)

- Under <u>Section 10.5 Summary of Environmental Effects and Mitigation</u>,
Item 7.0 Archaeology - please review provincial references as per previous comments under Section 10.3.1.
Item 8.0 Cultural Heritage – please review the wording in order to be consistent. See also previous comments under Section 10.3.2.

- Under <u>Section 10.6.4 Cultural Environment</u>, please note the wording should be consistent throughout the document. It would be appropriate to explain what kind of assessment would be expected for archaeology (e.g. archaeological assessment reports) and for cultural heritage – built heritage resources and cultural heritage landscapes (e.g. heritage impact assessments, documentation report).

- Under <u>Section 11.2 Compliance Monitoring Plan</u>, during the Construction stage it is necessary to continued to monitor the condition of the remaining cultural heritage resources to make sure that they are protected from construction activities and that they are secured and maintained. Construction activities that may affect cultural heritage resources include: Clearing and grubbing; Drainage; Grading, cuts and filling; Temporary site access; Utility removals, relocation, installation; Blasting; Borrowing and quarrying; Channel construction and modification; Coffer dam installation; Culvert installation; Dust control; Operation of equipment; Pavement grinds, sawing and milling; Location of portable plants; Structure demolition, structure excavation and structure installation including piles, piers and abutments; Stockpiling; Temporary diversions, detours; Tunnelling, jacking and boring; Removal of installation of utilities and Work yard development.

- <u>Draft Archaeology Work Plan (February 2006)</u>

  Under Table 1 - Archaeological Assessment By Study Stage – within the Level of Analysis Box under Stage 1 – Define Study Area and Stage 2 – Illustrative Alternatives – it is mentioned that registered sites and a model of archaeological potential will be based on proximity to water using mapping at least to 1:250,000 scale & likely 1:50,000 scale. It would be inappropriate to use 1:250,000 scale mapping when looking at archaeological site locations considering the registered archaeological site information is maintained at MCL on 1:50,000 scale mapping.

  Under Section 4.2 Task 2 – Data collection – Reference is made to the Stages 1 and 2 archaeological assessments being conducted in accordance with the Stages 1 to 3 archaeological assessment technical guidelines of the MCL, which is may be the 1993 document of that name. However, in Section 10.3.1 of the Draft ESR it indicates that MTO mandates that consultants working on MTO projects adhere to the 2006 Draft standards. The 2006 Draft standards need to be mentioned in this section of the Work Plan document.

- <u>Draft Cultural Heritage Work Plan (February 2006)</u>

  - The report informs the purpose of the working papers, however it is not clear what is their relation and consistency with the MTO's Environmental Guide for Built Heritage and Cultural Heritage Landscapes (February 2007).

  - Under Section 1.1.1 Built Heritage Resources and 1.1.2 Cultural Heritage Landscapes, we recommend that the definitions are from the Provincial Policy Statement, 2005. There is no mention to the Detroit River, a Canadian Heritage River and American Heritage River. The Detroit River should be identified as a cultural heritage landscape.

- <u>Draft Practical Alternatives Evaluation Working Paper – Archaeology (April 2008)</u>

  - Table 1 does provide information on archaeological sites identified during Stage 2. However, it would be beneficial to be able to view Appendix C as it includes the larger list of sites, and it is not included as it is not for public display.

    In addition it would be helpful to be able to view Appendix A which contains a series of maps illustrating the location of all Priority 1 through 5 lands to better understand the evaluation of alternatives. Perhaps these two Appendices could be sent directly to the Ministry of Culture.

- <u>Draft Practical Alternatives Evaluation Working Paper – Cultural Heritage (March 2007, revised April 2008)</u> – also known as Cultural Heritage Resource Assessment Report

  - Under Section 1.2 – Purpose and Scope, the third paragraph "This report presents the results of background research, outlining *aggregate* areas and individual properties of heritage significance within the study area as a whole". It is not clear the meaning of aggregate within the heritage context.

    The 4th paragraph states that "This assessment addresses above ground cultural heritage resources over 50 years old". See comments above under Section 4.5.2 regarding the established practice of '40 year rule'.

    On Page 5, the Criteria for determining significance for the resources are recommended by the Province and two regulations under the Ontario Heritage Act are in place: Ontario Reg. 9/06 (Criteria for Determining Cultural Heritage Value or Interest) and 10/06 (Criteria for Determining Cultural Heritage Value or Interest of Provincial Significance).

    Please note that the wording is not consistent throughout the document and it should be consistent with the Provincial Policy Statement, 2005. We recommend that "features of heritage interest" be changed to "resources of cultural heritage value".

  - Under Section 1.3 - Data Collection, it should be consistent with MTO's Environmental Guide for Built Heritage and Cultural Heritage Landscapes (February 2007). There is no mention that the consultant have looked into other databases: if there are any provincially-owned or leased (by the province) heritage properties, as well as, any site identified through a provincial plaque or a heritage easement agreement with the Ontario Heritage Trust.

  - Under Section 2.3 – Area of Continued Analysis, the report identified 3 cultural heritage landscapes. There is no mention to the Detroit River and Highway 18 (Ojibway Parkway), a heritage highway, generally considered to be the oldest road in Ontario. Some native trails (Talbot Road, now Highway 3 and the Middle Road, now Highway 46) are also located in the Windsor area.

    It is not clear whether the cultural landscape unit 3 (Town of Sandwich) have the same boundaries as the proposed heritage conservation district.

  - Under Section 3.0 Heritage Impact Assessment, in addition to what is written there, we recommend that the following be included: "A heritage impact assessment (or equivalent study) is a study to determine if any cultural heritage resources (including those previously identified and those found as part of the site assessment) or in any areas of archaeological potential, are impacted by a specific proposed development or site alteration. It can also demonstrate how the cultural heritage resource will be conserved in the context of redevelopment or site alteration. Mitigative or avoidance measures or alternative development or site alteration approaches may be recommended." (MCL, Ontario Heritage ToolKit)

Under Areas of Impact, we recommend that the wording and strategy be consistent with MTO's Environmental Guide for Built Heritage and Cultural Heritage Landscapes (February 2007), especially Section 5.4 – Develop Preservation/Mitigation Strategy.

- Under Section 4.0 Recommendations, the report states that "although no significant part of the historic town of Sandwich is within the ACA, Sandwich as a whole is a heritage sensitive area and thus the selection of a bridge crossing location must take into account any direct or indirect impacts on the adjacent historic community". The consultant didn't articulate Sandwich's cultural heritage value. The bridge location has been selected and there is no information about either the selection and decision or the impacts.

- Bridge Conceptual Engineering Report (February 2008)
  - The bridge location has been selected and there is no information about either the selection and decision or the impacts. We recommend that this information be articulated within the Practical Alternatives Evaluation Working Paper – Cultural Heritage.

It is not clear when the "Technically and Environmentally Preferred Alternative – Cultural Heritage Resource Assessment Report and Stage 2 Archaeological Assessment Report" will be available for review and comments and how those relate to the final Draft EA.

Please find attached to this letter the Legislative Framework for Cultural Heritage Protection.

In general, MCL has no major objections or concerns regarding the process proposed for the completion of the environmental assessment. We look forward to continue working with MTO on this process and the opportunity to review the results of the Environmental Assessment. Please do not hesitate to contact MCL if you have any questions regarding best practices and the expectations of this Ministry for the conservation of cultural heritage resources.

Sincerely,

Karla Barboza
Heritage Advisor

Ministry of Culture
Programs and Services Branch
Culture Services Unit
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cc. James Hamilton, Manager (A)
Culture Services Unit, Ministry of Culture

Penny Young, Heritage Planner
Culture Services Unit, Ministry of Culture

Shari Prowse, Archaeology Review Officer
Culture Programs Unit, Ministry of Culture

Murray Thompson, Consultant Project Manager
DRIC Windsor Project Office, URS Canada Inc.

Attachment 1 - Legislative Framework for Cultural Heritage Protection

a) The Minister of Culture (MCL) is responsible for the administration of the *Ontario Heritage Act* and is responsible for determining policies, priorities and programs for the conservation, protection and preservation of Ontario's heritage, which includes cultural heritage landscapes, built heritage and archaeological resources.

   Furthermore, under the *Ontario Heritage Act*, the Minister of Culture is responsible for licensing archaeologists conducting archaeological fieldwork for proponents under the *Planning Act* and *Environmental Assessment Act*. As a term and condition of the license, archaeologists must follow standards and guidelines set out by the Ministry of Culture. MCL is currently updating the standards and guidelines for archaeological fieldwork and reporting.

b) In Ontario, environmental assessments are undertaken under the *Ontario Environmental Assessment Act*. The purpose of the Act is to provide for the protection, conservation and wise management of Ontario's environment. The Act defines environment in a broad sense that includes natural, social, cultural, economic and built environments. This broad definition of the environment makes the assessment of the impact of the undertaking on cultural heritage resources part of the standard environmental assessment process in Ontario. Environmental assessments made under the EA Act therefore assess and address the impact of the undertaking on cultural heritage resources.

c) The *Planning Act* sets out the legislative framework for land use planning in Ontario and lists matters of provincial interests, which include the conservation of cultural heritage resources. Section 3 of the Planning Act requires that decisions that affect planning matters "shall be consistent with" Provincial Policy Statement (PPS) under the Act.

d) Cemeteries are important and sacred places. While the operation and management of cemeteries in Ontario falls under the *Cemeteries Act*, administered by the Ministry of Government Services, over a hundred cemeteries have also been designated under the *Ontario Heritage Act*. The *Cemeteries Act* contains specific procedures for the closure (i.e. removal) of cemeteries if the Registrar of cemeteries determined that the closure is "in the public interest".

MAYOR - MAIRE
GARY McNAMARA

DEPUTY MAYOR SOUS MAIRE
TOM BURTON

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The Corporation of the Town of Tecumseh

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December 16, 2008

Mr. Roger Ward
Senior Project Manager
Ministry of Transportation
Windsor Border Initiatives Implementation Group
949 McDougal Avenue, Suite 200
Windsor, Ontario
N9A 1L9

- VIA EMAIL and POST-

Re: Detroit River International Crossing Study
Draft Environmental Assessment Report, November 2008

Dear Roger:

Please be advised that the Town of Tecumseh Municipal Council, at its meeting held December 9, 2008, passed the following resolution:

"MOTION: (RCM-380/08) Moved by Councillor Rita Ossington
Seconded by Mayor Gary McNamara

That the Town Council, in accordance with the B. Hillman and G. DeGroot, December 5, 2008 Report 35/08, recommend Council:

1. *Endorse the Detroit River International Crossing Study Draft Environmental Study Report, dated November 2008, as prepared by URS Canada Inc. on behalf of the Ontario Ministry of Transportation and Transport Canada;*

2. *Request the Ontario Ministry of Transportation ("MTO") to continue to allow representation of appropriate Town of Tecumseh staff on a Steering Committee that will ultimately oversee the Detailed Design process;*

3. *Request that the MTO confirm the continuation of discussions regarding design alternatives for the DRIC recreational trail and its extension to the east to the Chrysler Canada Greenway; and*

4. *Advise the MTO of the need for on-going discussions with the Town in order to finalize matters related to municipal streets that are to be closed and/or realigned (Mero Avenue and portions of Outer Drive) and new local streets that may be required to provide access to lands that may become landlocked as a result of the Parkway design alternative.*

CARRIED"

I trust this information is to your satisfaction.

The Town appreciates the opportunities it has had available to it over the past years to engage in the DRIC process and looks forward to ongoing discussions as this important project moves forward.

Regards.

Brian Hillman, MA, MCIP, RPP
Director of Planning and Building Services.

BH:cd

cc. Tony Haddad Chief Administrative Officer, Town of Tecumseh
Laura Moy, Director, Staff Services/Clerk
George De Groot, Director, Public Works and Environmental Services

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December 18, 2008

Roger Ward, Senior Project Manager
Ministry of Transportation
659 Exeter Road, 2nd Floor
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Re: Detroit River International Crossing Study – Draft Environmental Assessment Report MNR Review

Dear Mr. Ward,

Thank you for the opportunity to review the Draft Environmental Assessment Report for the Detroit River International Crossing Study (URS, November 2008). We have reviewed this document as it relates to our ministry's mandate with a specific focus on natural heritage and natural resources.

Please note that our review has been completed without receipt of the revised Natural Heritage Report. As such, the comments below reflect only our review of the Draft Environmental Assessment Report (EAR). Once the revised Natural Heritage Report is submitted, our comments may be addressed, refined or enhanced.

General Comments:
Overall, the authors of the Draft EAR have completed a thorough review of the issues and have attempted to address them. We acknowledge that the implementation of the Endangered Species Act 2007 brings forth new challenges; as these two processes are evolving concurrently, we appreciate the ongoing dialogue that has enabled us to address new and complex questions.

Incomplete Data and Analysis
Though this large comprehensive and complex report integrates several disciplines and attempts to synthesize the extensive data collection that has occurred since 2005, it appears that there are gaps in the data and/or analysis. Specifically, field work completed in 2007 and 2008 does not appear to be included in the Draft EAR.

Furthermore, we note that many of our previous comments do not appear to have been incorporated into the Draft EAR.

Due to the short timelines associated with the agency review of the Draft EAR along with the delayed release of the revised Natural Heritage Report, our review should be deemed cursory in nature.

Endangered Species
It is important to clarify the language regarding the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), the Committee on the Status of Species-at-Risk in Ontario (COSSARO), the Species at Risk Act (SARA) and the Endangered Species Act (ESA). For greater clarity

- COSEWIC and COSSARO are assessment bodies; specifically, they assess species and recommend 'at risk' rankings to the federal and provincial governments, respectively. Their rankings are a recommendation, not a legal listing.
- Environment Canada (EC-CWS or DFO) and MNR take that recommendation and list the species under the federal Species at Risk Act (SARA) and/or the Endangered Species Act (ESA) 2007, respectively. The 'at risk' ranking assigned under SARA or the ESA 2007 is the legal listing.

From a biodiversity standpoint, there is value in recognizing the COSEWIC and COSSARO recommended ranking, as they may sometimes differ from the legal ranking. Also, the COSEWIC/COSSARO rankings can indicate species that will soon have a change in legal ranking.

With respect to the mention of 'schedules' under the ESA 2007, it is of more value to identify the legal ranking under the ESA 2007 than the schedule it falls within. The schedules contained within the ESA 2007 were intended to identify the transition in protection for the species listed under the former Endangered Species Act (1971) to the new Endangered Species Act (2007).

Furthermore, the significance of species at risk, whether listed or rare, appears to have been downplayed in this report. This is done by identifying only the SARA species and then using language such as 'Several provincially, regionally or locally significant species that occur…" It should be noted that there are vast numbers of provincially, regionally or locally rare species. The listing and the rarity should be clarified in the revised Natural Heritage Report and the Final EAR.

Use of Metric System
We recommend the Final EAR be written in the metric system (i.e. Canadian system). The author switches between metric and imperial systems.

The Draft Environmental Assessment Report
The air photo figures were poorly reproduced in the Draft EAR. This should be addressed in the Final EAR.

Section 4.5, Cultural Resources
There appears to some detail outlining the Euro Canadian history; however, there is little or no reference to Aboriginal issues or pre-settlement occupation.

Section 4.6, Natural Environment
In regards to page 4-29, table 4.6, we recommend that the number of provincially listed species is included. Currently, table 4.6 mentions the number of federal SARA species and then the number of "provincially and locally significant species". The same concern applies to table 7.17 (page 7-73).

Section 4.6.1, Geology / Subsurface Environment

The potential impact of past solution mining activities in the area has been adequately addressed through the drilling of wells and evaluations undertaken by MTO. No further work is required.

There continues to be a potential concern of locating the bridge and/or plaza close to the BP Canada Energy Windsor Storage Facility (4300 Matchette Road/ EC Row). MNR regulates the storage caverns under the Oil, Gas and Salt Resources Act and by adopting CSA Z341 Storage of Hydrocarbons in Underground Formations.

BP Windsor Storage Facility is a nationally significant facility and parts of it are subject to National Energy Board approvals. This facility stores propane/ ethane/butane type of feedstocks in underground storage caverns. These feedstocks are flammable and explosive; furthermore, relatively large volumes are stored under high pressures at this facility. These stored products provide feedstocks for some of the refineries in Sarnia.

If not already completed, we would recommend that the proposed route /plaza should consider the potential safety risks with the nearby storage facility and determine if any additional mitigation measures are required as a part of the Hazard Identification and Risk Assessment.

Section 4.6.2, Aquatic Habitat and Communities
In regards to Detroit River, we seek clarification on the following:

- Proximity of the piers to the Detroit River
- Is there a requirement for shoreline reinforcement near those piers? If so, we recommend that soft shoreline techniques be used instead of sheet pilings.

The small tributaries, especially those that may support spring fisheries and spawning have been considered separate from the Detroit River. The nearshore ares of the Detroit River and the interactions with tributary mouths (i.e. some area identified as spring pike spawning or areas with gravel substrate) should be considered at the holistic level

Along this stretch of the Detroit River, nearshore habitat is lacking and limited. Soft shoreline techniques and interaction with tributaries may mitigate against the deep transportation channel of the Detroit River.

Further characterization of the substrate and spawning suitability should be considered at the proposed pier area. Fish mitigation patterns should be considered if a pier is close to the river.

It appears there is a lack of information regarding potential spills oil leaks etc.; particularly as downstream of the proposed ditch includes large spawning areas for walleye, perch, whitefish, sturgeon and northern madtom (SAR). This should be considered.

Section 4.6.3, Vegetation and Vegetation Communities
In the last paragraph, the author states that there are 615 plant species and 133 are non-native; while in section 7.5.1, the author identifies 618 plant species and 186 are non-native. Clarify this discrepancy.

Section 4.6.4, Wildlife and Wildlife Habitat
We are currently working with LGL/ MTO to complete the wetland evaluation for the newly identified Ojibway Prairie Wetland Complex, which will be designated a provincially significant wetland. We will forward the wetland evaluation along with its boundaries once completed.

Section 4.6.5, Designated Natural Areas
We (Ontario Parks) are willing to discuss further potential opportunities surrounding the dedication of lands for protection. Specifically, opportunities to secure additional lands adjacent to Ojibway Prairie Provincial Nature Reserve, for the purposes of adding them to the park, would contribute to the protection of provincial significant species and associated habitat. In addition, consideration could be given to improving the outdoor recreational opportunities within the nature reserve e.g., trail and viewing platform upgrades

This part of Ontario is considered to be one of the most biodiverse areas of the province; specifically for the number of species at risk. To highlight this biodiversity, we have attached a compilation of plant SAR for the Ojibway area and Walpole Island (Woodliffe 2001)

While Walpole Island is the single most significant natural area in Ontario with its size, array of significant natural areas (e.g. prairie, savanna and wetland); however, Ojibway area is also phenomenal. There are approximately equal numbers of recorded plant SAR on Walpole Island and the Ojibway area. The greater Ojibway area has been noted as one of the best areas in the province for insects, especially those that are SAR. Species new to science have been found in the Ojibway area. The significance of these designated natural areas is greatly understated in the Draft EAR.

Lespedeza virginica is also located in the Titcombe Road North ANSI (page 4-26); as an endangered species that is afforded general habitat protection under the ESA 2007, it is of significance and should be identified in this section.

Section 6.3.1, Central Alternatives, Conclusions
According to the authors, it appears aspects of regional mobility are considered of greater importance than edges of sensitive natural heritage features. This determination should be substantiated using scientific qualitative assessment. As many of the species involved are known to be at risk of extinction, we seek clarification on whether regional mobility have been consider of greater importance than edges of sensitive natural heritage features.

Section 6.3.2, Crossing / Plaza Alternatives, Tables 6.10 to 6.12
In these tables, there is a criterion specific to the quantity of endangered or threatened species (ETS) and/or their habitat. We are seeking clarity on the criteria used to identify and measure habitat for endangered species and threatened species. There are a significant number of endangered species and threatened species that will be impacted as a result of the project.

For example, in Table 6.11, the Eastern Foxsnake has a fairly large home range, and only 13 or 14 hectares have been identified to be impacted. The Plaza area for the TEPA is at least 55 hectares. We suggest that the authors consider whether more of the Plaza could be habitat for the Eastern Foxsnake as well as other endangered species and threatened species. The quantity identified in the table does not appear to align with our understanding of the impact of the project on the habitat of endangered species or threatened species.

We has not received mapping for the habitat of endangered species and threatened species; as such we seek to review the mapping and analysis. We understand that surveys are ongoing for certain species at risk. As we are uncertain in the methodology for identifying the quantity of ETS / habitat and consequently the impacts from a particular alternative on the identified ETS / habitat, we are unclear whether a stringent/ effective comparative analysis has occurred.

Also, we request additional information on how the low-moderate-high impact assessments in the tables were determined. Some low or moderate impacts, if only compared spatially, can represent high impacts to individual species or ecological functions, depending on the actual location and nature of the disturbance.

More details on the arithmetic evaluation should be provided to discern the differences in why X10 was selected as a preferred option over X1, which scored the same, with specific reference to species and natural areas impacted between the two.

Section 6.3.2, Crossing / Plaza Alternatives - Table 6.11
In Table 6.11, Plaza CC2 is not presented. Clarify whether Plaza CC2 and Plaza CC3 are separate or combined. According to Exhibit 6.3B, the size of CC2 is 214 acres and CC3 is 80 acres and therefore results in a combined footprint of 294 acres or ~119 hectares. Consequently, it appears that a quantity of 13 or 14 ha of ETS habitat would be impacted may be low.

Furthermore, based on our understanding of the plazas and crossings, CC7 (as should on exhibit 8.3) should have a much lower impact on the natural environment than CC2 and /or CC3.

Section 7.5, Natural Environment
In the subsections (e.g. vegetation, fish, wildlife), the report provides dates in 2006 and/or 2007 when field work was conducted. Specifically, in the draft EAR, vegetative data collection occurred only in 2006. We note that field staff were on site frequently in 2007 and 2008, yet there is no representative data. It does not appear that the data from 2007 and 2008 has been considered in the draft EAR; please ensure that the data and the analysis from 2007 and 2008 be reflected in the final EAR.

Detailed location information on species at risk and other natural heritage values, from the Natural Heritage Report, is needed for comparative overlay with the suggested and alternate route locations. At this time, it is not possible for MNR to confirm either the assessment of individual impacts or to compare impact severity among the different proposed routes. Furthermore, we are unable to prescribe appropriate mitigation measures for the preferred route and plaza location or determine that the recommendations provided will result in benefits to species or areas as described. Specific impact assessments and comparison of mitigation measure effectiveness and feasibility need to be demonstrated in either the revised Natural Heritage Report or the Final EAR.

Section 7.5.1, Vegetation and Vegetation Communities
It is important to note that many 'cultural' savannas and meadows identified in the study area still support indicators of natural savannas and prairies. Although these overall communities may exist in a degraded or cultural state, they often represent important functional habitats for plants and animals at risk. Some types of cultural disturbances such as mowing are not necessarily detrimental to the overall function of these communities, and may actually benefit the persistence of open meadow and remnant prairie habitats. Significance of vegetation communities must be evaluated on the basis of functionality as well as condition.

In the last paragraph of the Tallgrass Prairie section, page 7-44, there is discussion regarding the value of groundwater and its benefits to the survival of tallgrass prairie communities. Our understanding of this discussion is that the groundwater in the surficial aquifer is important for

the survival of tallgrass communities. We do not agree – most tallgrass prairie plant species are well adapted to drought prone situations.

On page 7-47, Species at Risk, we recommend the following changes:

- Summer snowflake, a G2 species, is not native to Ontario and should not be included as a SAR
- Butternut is mentioned twice in this paragraph – once identifying it as listed under the ESA 2007, and once as only "provincially significant". Suggest removing mention under "provincially significant".
- Spiked / dense blazing star: For consistency, choose either spiked or dense as reference made to both common names throughout the EAR (e.g. p.10-16).

Section 7.5.2, Molluscs and Insects
In the Data Collection section, we would like to note that the Karner Blue Recovery Team is not a division of Environment Canada.

Section 7.5.4, Wildlife Data Collection
From a statistical perspective, the point counts for birds will be useful to determine the relative abundance level of many species; however, point counts record the most abundant species and have a tendency to miss the less common species. The nest surveys will allow breeding species to be identified later in the season as the adults are feeding young.

We note that the Visual Encounter Surveys (VES) was not completed for birds; VES were completed for other groups of fauna and provided the opportunity to spend quality time in various habitats targeted to ensure a greater number of species will be recorded. Specifically, provincially and locally SAR are more likely to be accounted for. It should be noted that the 5 or 10 minute point count relies mostly on hearing and is likely not to capture many of the less common species.

On page 7-62, the author references the extirpation of Butler's Gartersnake from Malden Park after construction of the E. C. Row Expressway. This is a strong indication of what may occur to the current population of Butler's Gartersnake after construction of this project.

FWCA is the **Fish and Wildlife Conservation Act** not the Fish & Wildlife Coordination Act.

Section 7.5.5, Designated Natural Areas
Exhibit 7.30: the ANSI boundary for Spring Garden is incorrect. For ANSI identification purposes, the ANSI should be delineated using the red line (ESA) as determined and approved by MNR.

Section 8.1.1, General Criteria - Crossings
Under environmental issues, consideration should be given to all natural heritage features including woodlands, provincially/regionally rare species, and not only "wetlands and/or endangered species".

Section 8.1.2, Description of Practical Plaza and Crossing Alternatives
If possible, the footprint for Plaza B/B-1 or related components should be shifted slightly north to better avoid encroaching into identified significant natural areas. Additional route adjustments should be considered to further reduce impacts to identified sites for Butler's Gartersnake and Eastern Foxsnake along the south side of the EC Row Expressway. Any MNR authorization under the ESA 2007 to disturb regulated species or habitats will require a

comprehensive assessment of all potential alternatives, including avoidance alternatives to the species, which could reduce the impact to existing species at risk values.

We request that more information on the nature of species at risk should be provided in table 8.3 (page 8-12); specifically, number of endangered species, threatened species, species of special concern, and provincially/nationally rare species. This will help to discern the weight of the specific species at risk impacted by individual crossing alternatives, as compared to lumping all species together.

Section 8.1.3, Analysis and Evaluation
It is our understanding that the additive weighting method is a good technique when alternatives differ from each other in significant ways (i.e the differences are large). For example, it may be considered an appropriate method to use when comparing the larger set of alternative crossings and routes and by applying adequate weighing factors to indicators and criteria at all disciplines levels (built heritage, storm-water management, natural heritage etc.).

Clarification is sought on the use of "Simple Additive Weighting" in the impact assessment at the Area of Continued Analysis level as the method does not adequately differentiate between the various scenarios. Specifically, it does not give a representative weighing once the score is summarized along with the scores of other disciplines.

One example is found in table 8.3 (page 8-13) where it appears that Plaza B is advanced for further consideration over other plazas due to the cost and time associated with the re location of the Keith Transformer Station which is considered to be of "greater importance than the increased impact to the natural features".

Furthermore, in table 8.3, when reading the "protect the Natural Environment" features impacts under each scenario, it is difficult to say that one plaza differs significantly in impacts to natural heritage features from another plaza because the summaries are too general.

Following the logic through, with the scoring provided in tables 8.5, 8.6 and 8.7 is impossible. The detailed information needed to review the scoring in tables 8.5, 8.6 and 8.7 is provided in a document that is not yet available; as such, we cannot trace the logic in these tables or the decisions based on them.

We returned to the Draft Practical Alternative Evaluation Working Paper-Natural Heritage to review the "Simple Additive Weighting". Generally, in additive weighting, results can be seriously skewed depending on the significance assigned to each factor and this is particularly true if "size" is used as a multiplier within the computation; size then tends to outweigh most other factors.

The scoring system appears largely based on size of a unit (i.e. size is used as a multiplier), which means a "highly significant" corridor of "small size" can result in a score or weight that does not reflect its ecological importance or the impact of its removal or disturbance. Similarly, if a very large vegetative unit of low quality (from a vegetation perspective) that has high number of other species (animals, amphibians etc.) the score may not necessarily reflect its importance from a habitat perspective.

It should be noted, that this is a weakness of the additive weighting method of assessment. To clarify, the assignments of weights to indicators and criteria are critical in the development of this method. It is unclear whether these have yet been sufficiently refined to provide a true

reflection of difference between alternatives at the Area of Continued Analysis level. We are unclear whether appropriate weights have been given to the natural heritage feature as they it appears that they are largely based on the size of the unit.

The authors indicate that the assignment of significance was assessed based on professional judgment and application of the principles of Landscape Ecology. These assignments should be provided to review. Specifically, we hope to see a more detailed / stronger summary of the data presented in Appendix J of the working paper as it would allow reviewers to comment on the methodology as applied; as well more clarity is sought for section 2.4.2.

For example, in section 2.4.2.1 of the Draft Working Paper, three types of landscapes units were described/ recognized: patch, corridor and matrix, further in the same section "significance" were assigned based on criteria defined. However, the matrix, corridors and patches are not identified anywhere in the report so that they can be reviewed and the assignment of "significance" factors based on landscape ecology judged.

Section 8, Exhibit 8.3
On this Exhibit, Plaza CC7 is located on the west side of Sandwich Street: while on Exhibit 6.3B, Plaza CC7 is shown on the east side of Sandwich Street.

Section 10.4.2 - Wildlife and Wildlife Habitat
Clarification is sought as to whether impacts to Golden winged Warbler and Red-Headed Woodpecker or their habitat are anticipated. Although these species were not observed during surveys in the last season, suitable and recently used habitats should be identified, protected and mitigated.

We recommend the following change: a significant quantity of SAR habitat <u>will</u> be lost, not <u>may</u> be lost
Prior to the identification of any mitigation measures, it should be clarified whether the Butler's Gartersnake and Eastern Foxsnake populations in these localized pockets will remain stable. It is noted that since faunal surveys are still ongoing, impact assessments and mitigation measures will need to incorporate future findings as well as better address existing information.

The proposed relocation of snakes and other fauna from the project area should not be referred to as protection or mitigation measures since they do not avoid or alleviate impacts.

The final EAR should provide more detail on the methodology of any "wildlife salvage" approach, since some species are legally protected and/or subject to animal care protocols.

Mitigation statements such as "where feasible" or "where practical" do not provide support that a reasonably comprehensive analysis of project needs and environmental needs has been conducted. Detailed mitigation measures should be a requirement of this report as it has direct bearing the selection of the TEPA.

We look forward to seeing detailed mitigation plans and species-specific management plans as they are developed and in preparation of the ESA 2007 permit application. When developing these detailed plans, we recommend the following be considered:

- Additional documentation as to why natural heritage values cannot be avoided.
- Faunal mitigation measures, such as strategies to avoid/reduce snake and bird mortality, need to be identified in the final EAR so that design, construction and

mitigation options can be considered that may influence the preferred and approved locations of the project features. Specifically:
  - Restoration efforts will need to include specific barrier designs to reduce road mortality of local reptile populations.
  - Additional information should be provided to substantiate that impacts to snakes can be mitigated through fencing, berming or light shielding.
  - To maximize the chance of survival of faunal populations, habitats proposed to be restored must be created and in a functional state prior to the alteration of existing features.
- If suitable vegetation communities are restored, further clarity / analysis is needed to determine if other impacts such as road mortality, habitat fragmentation and trail creation will hinder the success of enhancement or replacement efforts.
- The high number of species at risk and other natural heritage values within the project area combined with the complexity of the site warrant completion of related surveys and development of additional mitigation measures.

The term 'compensate' is used in the report in regard to anticipated habitat losses. It should be noted that *compensation* does not necessarily equal *mitigation* nor *overall benefit* with respect to impacts, and that sufficient information on the location, type and amount of habitat needed to adequately compensate for potential losses has not been provided.

It is our understanding that the recommended plaza area has not been examined to determine the presence of habitat for Eastern Foxsnake although the species is known to occur in the AOI. We recommend that further analysis be undertaken to identify its habitat needs, including identification of landscape connectivity. For example, we believe that area of Plaza B may be very good habitat to supply many of the Eastern Foxsnake's ecological needs.

For the Plaza Area, we seek clarification on the nature of the landscaping and setbacks to be implemented for mitigation; specifically, more detail is needed to demonstrate these activities will adequately protect the original functions of the site.

Section 10.4.3, Vegetation and Vegetation Communities
On page10-15, we suggest that the word "planted" in front of Common Hoptree and Dwarf Hackberry be removed.

We appreciate that the Floristic Quality Assessment (FQA) approach has been used to further refine the significance of vegetation communities. It is unclear, however, how the information from the FQA were incorporated in the determination of low, medium and high values of the vegetation community.

Please consider an additional analysis where the author overlay the faunal values, including an appropriate evaluation of habitat for the SAR ecological function, to come up with an overall value based on all SAR.

Clarification is sought regarding the statement that there are no rare vascular plants in the right of way; also clarify the term rare in this section.

It is already known that construction *will* result in loss of vegetation communities, as such replace *may* with *will*. Specific impacts should be sighted consistently throughout this section since the conclusion states "a total of approximately 100 ha of vegetation communities will be removed..." On page 10-16, clarify compensation for the 100 hectares.

The test of overall net benefit to vegetation communities and SAR populations has not been supported in this Draft EAR. Instead, we recommend that the author state that the goal is to achieve a net overall benefit or provide additional supporting information.

Please consider the following in the development of the detailed mitigation plans:
- Consideration of avoidance alternatives. Avoidance, in this context, is to the species.
- Related plans and feasibility assessments for restoration/mitigation activities must be completed. These plans must be scientifically defensible and include criteria to determine effectiveness.
- Further avoidance through adjustments to design and site plans should be considered.
- Transplanting or transporting of species at risk, particularly regulated species, can not be considered an option until detailed translocation and/or habitat restoration plans are in place to ensure individuals are moved to areas with appropriate site conditions.
- Information is reflected appropriately in the landscape plan.

The term "minimized to the extent possible" is used, see previous comments in wildlife section.

The prairie communities will require regular fire to remain functional. Confirm whether the use of fire in proximity to the proposed TEPA is a viable alternative to maintain these vegetation communities. Prescribed burning should occur as ecologically appropriate for the site and related vegetation community, not necessarily "as frequently as possible". Criteria should be established to monitor the natural areas.

Section 10.4.4, Molluscs and Insects
Tallgrass and oak savanna communities are generally known to support a significant diversity of insects, including provincially rare species. There is not sufficient information provided to demonstrate no significant adverse effects to Monarchs or other significant species that may be present.

Section 10.4.5, Fish and Fish Habitat
We note that fish locks have been introduced to mitigate the potential effects to fisheries at both Cahill Drain and Lennon Drain. Please confirm which DFO/MTO/MNR fisheries protocol is being applied to this project. Based on the response, we may request further discussion on fish locks and their effectiveness; as well as ensuring adequate information is provided within the final EAR.

We note that Cahill Drain passage under highway 3 has been identified as a wildlife corridor of "note". This wildlife corridor is proposed to be eliminate; please confirm whether further mitigation is anticipated

Section 10.4.6, Designated Natural Areas
The stormwater management ponds along the south boundary of the proposed B-1 plaza location should be redesigned or repositioned to prevent encroachment in the Black Oak Woods feature.

Section 10.4.7, Landscape Plan
Please consider incorporating additional details regarding the landscape plan. Specifically, we are seeking clarity that the landscape plan will incorporate protection and / or mitigation measures determined to benefit ecological and species at risk benefits.

Section 10.5, Summary of Environmental Effects and Mitigation
We have the similar concerns as above for specific feature types and related recommendations. Generally, there is not sufficient information provided to demonstrate recommended activities represent adequate mitigation.

Section 10.6.3 Natural Environment
There are several information gaps in the data, impact analysis and specific mitigation recommendations in the environmental assessment.

Section 11, Commitment to Consultation, Compliance Monitoring and Permits/ Approvals
Page 11-1: To be accurate, please reference section 17 of the ESA 2007, not the permit class. A permit under s.17 of the ESA 2007 is required for this project to move ahead. A 17(2)d permit is not required - applying for a 17(2)d permit is the Ministry of Transportation's decision.

Comments on Draft Natural Heritage Work Plan
We also took the opportunity to review the Draft Natural Heritage Work Plan and we would like to offer the following comments:

Section 2.4: The strategy of avoiding areas of species at risk "where feasible" may not be considered an appropriate approach considering there are species regulated under provincial legislation in the project area.

Section 5.5: We suggest that consideration be given to include a review of potential *indirect* impacts in addition to direct impacts. Indirect impacts (e.g. trail development) are likely to occur in this type of project environment and in relation to the types of restoration work being proposed. It is important that other uses within restored and linkage areas are compatible with the natural heritage mitigation functions for which these areas have been identified. Impacts should be broken down to site design/footprint overlaps, construction phase impacts and operation phase impacts.

Thanks for the opportunity to provide comments.

Sincerely,

Original signed by:

Daraleigh Irving
District Planner
Aylmer District

c. MNR: D. Richards, A. Woodliffe, P. Hache, M. Cairns, J. Manocha, T. Marchand, R. Gould, R. Rybansky, D. Elliott, K. Yaraskavitch, R. Drouin, A. Lawson; R. St. Martin.
MTO: Joel Foster