

Draft Federal Environmental Assessment Guidelines
Under the *Canadian Environmental Assessment Act*
for the
Ambassador Bridge Enhancement Project (2006)

Prepared by Transport Canada in Consultation with the Federal EA Review Team

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1.0 PURPOSE

The purpose of this document is to provide guidance on the federal environmental assessment (EA) that needs to be conducted for the Ambassador Bridge Enhancement Project between Detroit, Michigan and Windsor, Ontario. This project is being proposed by the Detroit International Bridge Company (DIBC) and the Canadian Transit Company (CTC), the owners and operators of the existing Ambassador Bridge. Transport Canada (TC) is a Responsible Authority for the project, while the Windsor Port Authority (WPA) is a prescribed authority.

The project includes the construction and operation of a new international bridge across the Detroit River almost parallel to the existing Ambassador Bridge, which will connect into the existing plazas and infrastructure.

In Canada, a federal EA of the proposed project is required under the provisions of the *Canadian Environmental Assessment Act* (CEAA). This document (henceforth referred to as EA Guidelines) describes the basis for the conduct of the EA, and for focusing the assessment on relevant issues and concerns. The document also provides direction on how to document the EA study. In addition, the EA Guidelines provide a means of communicating the federal EA process to stakeholders.

2.0 BACKGROUND

The existing Ambassador Bridge is a suspension bridge that spans 9000 feet (2743 metres) in length, with 1850 feet (564 metres) over the Detroit River. The height of the two towers is 363 feet (111 metres). The vertical clearance of the bridge structure is 152 feet over the Detroit River. The structure consists of a 55-foot (17 metre) wide deck, including four highway lanes of traffic, which two lanes traversing eastbound and two lanes traversing westbound. The maximum grade of the bridge is 5%. The bridge also contains a sidewalk that is currently closed.

In July 2004, the proponent submitted a document entitled “Preliminary Permit Application for the Ambassador Bridge Enhancement Project”, which proposed to build a new four-lane suspension bridge adjacent to the existing structure. That document was subsequently withdrawn, and was replaced a new document in March 2006, which is the subject of these guidelines.

3.0 APPLICATION OF THE CANADIAN ENVIRONMENTAL ASSESSMENT ACT

TC has confirmed that it is a responsible authority (RA) under CEAA for this environmental assessment (EA) because the project shall require an approval under the *Navigable Waters Protection Act*, which is identified in the *Law List Regulations*. The WPA has also identified a need for an environmental assessment of the project, as it would involve crossing over federal water lots in Windsor, Ontario. Since the WPA is a Prescribed Authority, the *Canada Port*

Authority Environmental Assessment Regulations will apply. TC and the WPA will coordinate their activities, to ensure that a single environmental assessment is conducted.

The project is not described in the *Comprehensive Study List Regulations* of the CEAA. Thus, section 18(1) of the CEAA requires TC and the WPA to ensure that a screening-level assessment of the project is carried out before taking any action that would allow the project to proceed, in whole or in part.

After the screening process, TC and the WPA, as the RAs, must determine whether the environmental effects of the project are significant. This governs whether the RAs can take action that will enable the project to proceed (i.e., whether to provide the permit, land interest, or other authorization that triggered the need for the assessment).

4.0 IDENTIFICATION OF OTHER FEDERAL AND PROVINCIAL EXPERT DEPARTMENTS

On March 13, 2006, a project description was submitted to the Canadian Environmental Assessment Agency for circulation to federal authorities in accordance with the *Federal Coordination Regulations*. The document provided background information on the project, as well as information on its proposed location.

Following the circulation of the project description, a number of federal authorities also identified themselves as having specialist or expert advice that may be necessary to conduct the assessment, including: Environment Canada; Health Canada; Fisheries and Oceans Canada; and the Canada Border Services Agency (CBSA). They will participate as expert federal authorities in the EA process.

Since the assessment has the potential to be multi-jurisdictional, the Canadian Environmental Assessment Agency is serving as the Federal Environmental Assessment Coordinator (FEAC). Together, these departments comprise the federal review team.

Consultation with the Ontario Ministry of the Environment is also taking place, to ensure that federal EA requirements can be coordinated with any provincial EA requirements that may arise. At this time, no provincial EA requirements have been confirmed. Efforts are also underway to determine what environmental assessment requirements may exist in the United States, and to identify any opportunities for coordination.

5.0 PREPARATION OF ENVIRONMENTAL ASSESSMENT DOCUMENTATION

TC and the WPA, based on the authority provided in subsection 17(1) of the CEAA, will delegate the preparation of an Environmental Impact Statement (EIS) to DIBC/CTC. The EIS, together with any additional technical studies that are prepared to support it, will be used by federal departments in assessing the project and preparing a screening report.

The proponent is requested to submit the EIS and any supporting technical studies to the Canadian Environmental Assessment Agency, in its capacity as the FEAC. The Agency will distribute the EIS and supporting documentation to the federal review team for review and comment. Based on comments received, the federal review team may request revisions to the EIS. When the EIS is considered satisfactory, the draft EIS will be made available for public review and comment. The federal review team will provide the public comments to the proponent, and may request that additional revisions be made to the EIS. More than one iteration may be required before the report is considered complete. Once it is complete, the RA(s) will use this information to prepare a screening report.

6.0 PUBLIC REGISTRY

TC has established a Public Registry for the assessment, as required by section 55 of the CEAA. This includes the posting of the assessment in the Canadian Environmental Assessment Registry (CEAR), which can be accessed on the Internet Web site of the Canadian Environmental Assessment Agency (www.ceaa.gc.ca). The CEAR number for this project is 06-01-21100. As the assessment proceeds, the CEAR will include the following documentation:

- Description of the project;
- Notices of commencement (2004 and 2006) and termination (2004);
- Scope of the factors to be considered;
- Notices requesting public input;
- EA decisions; and
- Follow-up information (if required).

Interested parties will be able to obtain copies of these documents by accessing the CEAR website and downloading the files. Interested parties may obtain copies of specific documents by corresponding with the contacts (see Section 11.0).

7.0 SCOPE OF THE PROJECT

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

In establishing the scope of a project for a screening-level assessment under CEAA, the physical works that are involved in the proposal, and any specific undertaking that will be carried out in relation to those physical works, must be determined.

At this stage of the EA, the scope of the project includes the following components:

- Construction and operation of a six-lane bridge across the Detroit River, designed to provide navigational clearances in accordance with U.S. and Canadian requirements; preliminary designs have no piers located in the water as described in the Ambassador Bridge Enhancement Project Report; and
- Construction and operation of the CBSA Port of Entry Plaza and associated road infrastructure, to meet current and future border management requirements of the CBSA over the planning horizon of the border crossing¹.

In addition, the scope of the project may include other activities related to any associated modifications to the existing Ambassador Bridge structure. Additional information has been requested from the proponent in this regard. The scope of the project may be revised after this information has been submitted.

The EIS must provide a complete description of each component of the project, and the associated physical works and activities. The scope of project may be further refined as additional information regarding the specific project components becomes available.

8.0 SCOPE OF ASSESSMENT

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

- 16(1) *Every screening...shall include a consideration of the following factors:*
- (a) The environmental effects of the project, including the environmental effects of malfunctions or accidents that may occur in connection with the project and any cumulative environmental effects that are likely to result from the project in combination with other projects or activities that have been or will be carried out;*
 - (b) The significance of the effects referred to in paragraph (a);*
 - (c) Comments from the public that are received in accordance with this Act and the regulations;*
 - (d) Measures that are technically and economically feasible and that would mitigate any significant adverse environmental effects of the project; and*
 - (e) Any other matter relevant to the screening... that the responsible authority... may require to be considered.*

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

¹ CBSA has indicated that three statutes and regulation in Canada obligate the owner/operator of a crossing to provide, at no cost to her Majesty, adequate spaces for CBSA to examine people and goods seeking entry into Canada. CBSA has advised that additional customs facilities will be required in order to accommodate a new span.

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

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

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

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

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

When these terms are used in this document their meaning is as defined above.

The scope of the assessment for the Ambassador Bridge Enhancement Project shall include environmental effects of the project, including the environmental effects of malfunctions or accidents that may occur in connection with the project, and any cumulative environmental effects that are likely to result from the project in combination with other projects or activities that have been or will be carried out. Additional guidance on the cumulative effects assessment is provided in section 9.6 of this document.

With the discretion allowed for in paragraph 16(1) (e) of the CEAA, the RA(s) will also require consideration of the purpose of the project, the need for the project and the benefits of the project. In addition, a description of alternatives to the project should be provided, as well as an analysis of alternative means of carrying out the project.

“Need for” the project is defined as the problem or opportunity that the project is intended to solve or satisfy. “Purpose of” the project is defined as what is to be achieved by carrying out the project. “Alternatives to” the project is defined as functionally different ways to meet the project need and achieve the project purpose. “Alternative means” are defined as the various ways, that are technically and economically feasible, that the project can be implemented or carried out.

The consideration of these factors is intended to help establish the conditions under which certain environmental effects may or may not be justified under the circumstances, should such a determination be required at the end of the EA process.

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

8.1 Scope of the Factors to be Considered in the Assessment

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

- Air quality and climate;
- Surface water and groundwater;
- Water levels and flows in the Detroit River, in relation to any construction activities that may take place from the water;
- Surface and subsurface geology and soils;
- Vegetation, vegetation communities and wetlands;
- Fish and fish habitat;
- Wildlife and wildlife habitat, including migratory birds;
- Species at risk, including those species listed under the *Species at Risk Act*; and,
- Noise and vibration; and
- Contaminated sites and waste management.

In keeping with the definition of “environmental effect”, the scope of the factors also includes the effect of any change that the project may cause in the environment on:

- Human health and socio-economic factors;
- Physical and cultural heritage;
- Current use of lands and resources for traditional purposes by Aboriginal peoples;
- Things of historical, archaeological, paleontological or architectural significance.

More detail on each of these components is provided in Table 1 at the end of this document. This information will be revised as the assessment process proceeds, and more information is available on the location and design of the specific project components.

9.0 ASSESSMENT METHOD

9.1 Content of the Environmental Assessment Screening Report

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

- Application of the CEAA;
- Scope of the project;
- Scope of the assessment;
- Project description;
- Spatial and temporal boundaries of the assessment;
- Description of existing environment;
- Assessment and mitigation of environmental effects;
- Cumulative environmental effects;
- Magnitude and significance of residual effects;
- Stakeholder consultation;
- Follow-up program, if required; and
- Conclusions and recommendations for decision.

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

9.2 Project Description

The EIS should include a clear statement of the purpose of and need for the project, drawing from and referencing any supporting technical studies, and relevant studies conducted for similar projects. An analysis of alternatives to the project and alternatives means of carrying out the project should also be provided.

An adequate description of the project is required for the assessment of the environmental effects of the project. The project description must include a description of the construction, operation and decommissioning and abandonment activities that are being proposed. The description of the project shall refer to, and elaborate on, the items identified in the project scope, supported with appropriate maps and diagrams.

The main objective of the project description is to identify and characterize those specific components and activities that have the potential to interact with, and thus result in a likely change or disruption to, the surrounding environment, during construction, during normal operations, and in the event of malfunctions and accidents.

9.3 Spatial and Temporal Boundaries of the Environmental Assessment

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

Study areas must encompass all relevant components of the environment including the people, biota, land, water, air and other aspects of the natural and human environment. Study boundaries should be defined taking into account ecological, technical and social considerations, such as the composition of the neighbouring communities. The spatial boundaries shall reflect the geographic range over which the project's environmental effects may occur, even if these effects extend beyond the project footprint.

The project footprint includes the area where new construction takes place, as well as areas or structures that are being decommissioned or abandoned, such as the potential closure of the offsite secondary inspection facility for commercial trucks entering Canada.

The following geographic study areas are suggested as a reference point. It is expected that the spatial boundaries may vary for each environmental component, depending on the nature of the predicted effects. The specific spatial boundaries shall be explicitly defined in the EASR.

Site Study Area	The Site Study Area is the project footprint, as described above.
Local Study Area	The Local Study Area is defined as that area existing outside the Site Study Area boundary, where there is a reasonable potential for the occurrence of environmental effects from the project. The boundaries may change, as appropriate, following a preliminary assessment of the spatial extent of potential environmental effects.
Regional Study Area	The Regional Study Area is defined as the area within which there is the potential for cumulative effects.

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

Both the study areas and time frames will remain flexible during the assessment and can be changed as further information on the project and/or environmental effects becomes available.

9.4 Description of the Existing Environment

A description of the existing environment is required to determine the likely interactions between the project and the surrounding environment and, conversely, between the environment and the project.

The components that are typically described include, but are not necessarily limited to:

- Air quality and climate;
- Surface water quality and quantity;
- Groundwater quality and quantity;

- Surface and subsurface geology and soils;
- Sediments characteristics (physical and chemical);
- Vegetation and vegetation communities
- Fish and fish habitat;
- Wildlife and wildlife habitat, including migratory birds;
- Current use of lands and resources for traditional purposes by Aboriginal peoples;
- Community and neighbourhood characteristics, including adjacent and nearby land uses;
- Species at risk, including those species listed under the *Species at Risk Act*; and,
- Noise and vibration.

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

9.5 Assessment and Mitigation of Environmental Effects

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

The following provides further details on the assessment of effects caused by the project (Section 9.5.1), and the assessment of effects of the environment on the project (Section 9.5.2).

9.5.1 Assessment of Effects Caused by the Project

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

- 1) *Identify the potential interactions between the project activities and the existing environment during construction and normal operations, and during identified relevant malfunctions and accidents.*

Specific attention should be given to interactions between the project and the environment.

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

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

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

Identified changes in socio-economic conditions and various aspects of culture, health, heritage, archaeology and traditional land and resource use should be focused on those changes that are likely to result from the predicted changes that the project is likely to cause to the environment.

Quantitative as well as qualitative methods may be used to identify and describe the likely adverse environmental effects. Professional expertise and judgment may be used in interpreting the results of the analyses. The basis of predictions (including data and modelling limitations/assumptions and inaccuracies) and interpretation of results, as well as the importance of remaining uncertainties, shall be clearly documented in the EASR.

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

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

The EASR shall identify measures that are technically and economically feasible and that would mitigate any significant adverse environmental effects of the project, including cumulative effects. Any proposed mitigation measures must be implemented to conform to any pertinent federal and provincial regulations, guidelines, standards, best practices and/or codes of practice, and the EASR shall indicate how this will be achieved.

Where the prevention of effects cannot be assured, further mitigation measures in the form of contingency responses, will be described.

4) *Describe the significance of the environmental effects that likely will occur as a result of the project, having taken into account the implementation of the proposed mitigation measures.*

The criteria for judging and describing the significance of the residual (post-mitigation) effects may include: magnitude; duration and frequency; ecological context; geographic extent; and degree of reversibility. Existing federal and provincial regulatory and industry standards and guidelines are relevant as points of reference for judging significance. Professional expertise and judgement may also be applied in judging the significance of environmental effect. All applicable federal and provincial laws must be respected.

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

9.5.2 Assessment of Effects of the Environment on the Project

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

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

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

9.6 Assessment of Cumulative Effects

The effects of the project must be considered together with those of other projects and activities that have been, or will be carried out, and for which the effects are expected to *overlap* with those of the project (i.e., overlap in same geographic area and time). These are referred to as *cumulative environmental effects*.

In order to consider the potential cumulative environmental effects of the project, the EA should identify other projects and activities that have been or will be carried out in the study area, including future projects that are reasonably foreseeable. The emphasis in this section should be on “reasonably foreseeable” projects (e.g., projects that have been approved or that are currently advancing through the regulatory approvals process). Ongoing discussion with federal authorities will be required on the list of other projects and activities that should be addressed. At a minimum, effort should be made to identify other projects planned by local and regional governments, as well as provincial and federal agencies.

The projects should include, but not be limited to, other transportation and border infrastructure projects, notably the existing Ambassador Bridge. All projects must be considered, especially those that may add cumulative effects to water quality, air quality, and noise as these three environmental factors often experience the most impact from multiple projects / cumulative effects and should be a focus of a cumulative effects analysis.

The cumulative effects assessment should identify the residual environmental effects that may be caused by the proposed project, and identify where the effects from the other projects and activities may overlap with the project’s effects to produce a cumulative environmental effect. Potential cumulative effects from both the construction/decommissioning and operations phases should be considered.

Generally speaking, the information available to assess the environmental effects from other projects can be expected to be more conceptual and less detailed as those effects become more remote in distance and time to the project, or where information about another project or activity is not available. The consideration of cumulative environmental effects may, therefore, be at a more general level of detail than that considered in the assessment of the direct project-environment interactions. Where potentially significant adverse cumulative effects are identified, additional mitigation measures may be necessary. Additional guidance on the cumulative effects assessment can be provided by the federal review team as the assessment proceeds.

9.7 Significance of Residual Effects

The preceding steps in the EIS will consider the significance of the environmental effects of the project on the environment; of the natural hazards on the project; of project malfunctions and accidents; and of other projects and activities that could cause cumulative effects.

The EIS will consider all of these effects in providing an opinion on whether the project, taking into account the mitigation measures, is likely to cause significant adverse environmental effects. The RA(s) will make the final decision on significance in their screening report.

9.8 Consultation

Given the level of public interest in border issues in the Windsor area, the proponent is requested to provide updates of its public consultation plan to the federal review team, outlining what steps are being taken to identify and address community concerns. It is also recommended that this plan be made available for the public for their review and input. The plan should include a list of stakeholders that have already been consulted, and an outline for future consultation activities. If consultations have not yet been undertaken, it is recommended that this work be initiated as soon as possible. It is expected that key stakeholders would include the City of Windsor, the University of Windsor, local community and business groups. It is also expected that consultation will be undertaken with potentially affected First Nations, including the Walpole Island First Nations.

The EIS will contain a summary of the public comments received during this EA process. The EIS will indicate how issues identified have been considered in the completion of the assessment, or where relevant, how they may be addressed in any subsequent licensing and compliance process.

The RA(s) will also establish a public consultation process in the review and decision-making process for the EASR, under section 18(3) of CEAA. This will include opportunities for the public to examine and comment on the draft EIS.

9.9 Follow-up Program

A statement on inspection and compliance monitoring activities should be included to ensure that proposed mitigation is implemented and functioning as predicted in the EIS. Actions necessary

to maintain the effectiveness of mitigation in order to provide the required level of environmental protection should be monitored and detailed in the follow-up program if a follow up program is deemed necessary in the EIS.

The need for a follow-up program must be considered in the EIS. The purpose of a follow-up program is to assist in determining if the environmental and cumulative effects of the project are as predicted in the EIS. It is also to confirm whether the impact mitigation measures are effective, and to determine if any new mitigation strategies may be required. The design of the program should be appropriate to the scale of the project and the issues addressed in the EIS.

9.10 Conclusions and Recommendations for Decision

The EIS should present a preliminary recommendation by the proponent as to whether the project is likely to cause significant adverse environmental effects, taking into account the appropriate mitigation measures. However, staff from each of the RA(s) will make recommendations on taking decisions on the EA and project-related public concerns, consistent with section 20 of the CEAA. The RA(s) will make their decision and will present that decision in a screening report.

If the RA(s) concludes that the project is not likely to cause significant adverse environmental effects, taking into account the appropriate mitigation measures, it may proceed with approvals and regulatory decisions in relation to the project. If the RA(s) conclude that the project is likely to cause significant adverse environmental effects, they may not take any actions that would permit the project to proceed, or may choose to request that the project be referred to a review panel for further assessment.

10.0 STEPS IN THE ENVIRONMENTAL ASSESSMENT PROCESS

The following points indicate the key steps likely to be followed by the federal review team during the EA process:

- Determination of the application of CEAA to the project, including application of the Federal Coordination Regulation; establishment of Public Registry;
- Preparation of working draft of EA Guidelines; distribution of draft EA Guidelines to proponent and federal and provincial authorities, and to the public; receipt of comments from federal and provincial authorities, and the public;
- Review and disposition of comments received; revision of draft EA Guidelines;
- Issuance of EA Guidelines and delegation of EASR to the proponent;
- Receipt of draft EASR from the proponent;

- Distribution of draft EASR to review team; revision by proponent, as appropriate, of EASR;
- Public review and comment on draft EASR; federal review and dispositioning of public comments; completion of EASR; and
- RA's Notice of Decision on EASR.

Please note that the federal review team may identify additional steps as the assessment proceeds. For example, where background or supporting studies are produced, it is suggested that work plans or outlines for these studies be provided in advance to the federal review team for review, in order to facilitate the assessment process.

11.0 CONTACTS FOR THE ENVIRONMENTAL ASSESSMENT

Anyone wishing to obtain additional information or provide comments on any aspect of the EA being conducted on the Ambassador Bridge Enhancement Project staff contacts:

<p>Mr. Mohammad Murtaza Senior Program Officer Canadian Environmental Assessment Agency 55 St. Clair Avenue East, Room 907 Toronto, ON M4T 1M2</p> <p>Phone: 416-952-1585 Fax: 416-952-1573 E-mail: mohammad.murtaza@ceaa-acee.gc.ca</p>	<p>Ms. Kaarina Stiff Environmental Assessment Project Manager Transport Canada 330 Sparks Street, Place de Ville, Tower C Ottawa, ON K1A 0N5</p> <p>Phone: 613-990-2861 Fax: 613-990-9639 E-mail: stiffk@tc.gc.ca</p>
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12.0 REFERENCES

The EIS should include a list of references.

Table 1 – Scope of the Factors

Factor	Issues to be Examined
<p>Air Quality² and Climate</p>	<ul style="list-style-type: none"> • Description of ambient air quality (including mean, 90th percentile, maximum observed values as well as the number and frequency of exceedances of criteria and standards) in the study area over a recent 5-year period, drawing from provincial, federal and any other monitoring programs. Include key results of localized studies focused within or near the study area • Identification of residences and sensitive receptors potentially impacted by air emissions and fugitive dust from all project phases, including construction, operation, and decommissioning. This should include the residences and receptors closest to the most heavily congested roadways in the study area such as the approaches to the customs plaza. • The analysis should take into account the potential alternatives for the existing structure, in order to reasonably predict potential effects that may result from the implementation of the proposed project • Identification of potential effects associated with construction, and any required demolition activity, such as exhaust emissions from operation of heavy equipment and dust generation • Identification of the measures that will be used to reduce dust and particle emissions from construction activities and construction vehicle movements • Identification of potential air quality effects associated with the operations phase of the project, including emissions associated with increased traffic in the proposed study area, using recognized air quality modeling techniques; • Development of emissions scenarios for past (baseline) present and future (project completion and 10 years later) milestone dates. The future operating scenarios should include all credible options including continued operation of the existing bridge. • Use of an appropriate transportation model to estimate current and projected vehicle kilometres travelled and use of an recognized approach to project fleet composition • Estimation of vehicle exhaust and roadway emissions using recognized tools such as MOBILE6/6.2C and United States EPA emission factors. Include information on current and future vehicle queuing and idling (including spatial extent, frequency and duration) • Assessment of air quality effects for key pollutants and precursors (CO, NO_x, SO₂, PM₁₀, PM_{2.5} and VOCs), air toxics (benzene, acetaldehyde, formaldehyde, 1-3 butadiene, acrolein and PAHs) and greenhouse gases (CO₂, N₂O and CH₄) • Evaluation of regional impacts through pollutant burden analyses for the

² Annex A provides additional guidance on air quality. The proponent may wish to submit a draft Air Quality work plan to federal authorities for review to ensure that all relevant parameters are addressed.

Factor	Issues to be Examined
	<p data-bbox="488 233 781 264">pollutants listed above</p> <ul style="list-style-type: none"> <li data-bbox="443 275 1430 338">• Use of a 5-year meteorological data set representative of conditions in the study area to support dispersion modelling <li data-bbox="443 348 1458 485">• Use of a recognized dispersion model (such as the US EPA’s CALQ3HCR) for the pollutants listed above for the baseline, do nothing and future operating scenarios. The application of the models(s) should be consistent with published guidelines and recommendations. <li data-bbox="443 495 1463 632">• Consideration of the additional impact of other local and regional emissions through addition of a suitably conservative background concentration (i.e. 90th percentile) or through use of another approach such as combined effects assessment <li data-bbox="443 642 1425 747">• Comparison of the predicted effects on residences and sensitive receptors with the National Ambient Air Quality Objectives and Canada Wide Standards <li data-bbox="443 758 1438 789">• Identification of related impacts to human health and sensitive ecosystems <li data-bbox="443 800 1446 863">• Discussion of the potential for transboundary air quality impacts as well as any potential for impacts on First Nations’ lands <li data-bbox="443 873 1463 978">• Description of any proposed mitigation measures as well as their anticipated impact on the magnitude and frequency of the predicted effects of the project <li data-bbox="443 989 1081 1020">• Opinion on the significance of residual effects
Surface Water	<ul style="list-style-type: none"> <li data-bbox="443 1024 1455 1381">• Description of existing drainage from natural and built features in the study area, including name, location and characteristics; specific attention should be paid to: <ul style="list-style-type: none"> <li data-bbox="488 1136 1422 1167">○ The existing Ambassador Bridge, its approaches and adjacent plazas; <li data-bbox="488 1178 1430 1272">○ The Detroit River Area of Concern (AOC) as outlined in the remedial action plan (notably locations and characteristics of any contaminated bed sediments within the study area); and, <li data-bbox="488 1283 1390 1381">○ The preservation³ (and enhancement) of the natural, cultural and recreational features of the Detroit River given its designation as a Canadian Heritage River. <li data-bbox="443 1392 1390 1539">• Identification of potential water quantity and quality effects during construction and operations (e.g., erosion, sedimentation, including re-suspension of bed sediments, construction fluids, effluents, etc. and maintenance chemicals, etc.), including those due to accidental spills <li data-bbox="443 1549 1438 1686">• Description of proposed erosion and sediment control plans, stormwater management plans and other runoff management and treatment/mitigation measures, including spills control measures/contingencies, during construction and operation. <li data-bbox="443 1696 1455 1717">• Comparison of predicted effects of project drainage (based on conformance

³ As appropriate to surface water considerations. This bullet is also applicable to the Factors: “Vegetation and Vegetation Communities”, “Fish and Fish Habitat”, “Wildlife, Wildlife Habitat and Migratory Birds” and “Species at Risk”

Factor	Issues to be Examined
	<p>with provincial stormwater management guidelines⁴/requirements and best practices for winter de-icing⁵.) to federal and provincial water quality and sediment quality guidelines for protection of aquatic habitat and potable water resources, including the Guidelines for Canadian Drinking Water Quality and CCME Environmental Quality Guidelines;</p> <ul style="list-style-type: none"> • Identification of any drinking water treatment facilities in the study area should be identified • Opinion on the significance of residual effects and ecological consequences • If construction of the proposed bridge involves work from barges or temporary staging areas in the river, potential effects on water quality, and levels and flows in the Detroit River should be described, along with mitigation proposed to address any associated impacts.
Groundwater	<ul style="list-style-type: none"> • Description of groundwater resources in the study area, including water quality, depth of water table and direction of flow, infiltration/recharge and seepage/upwelling zones • Identification of proximity of any drinking water wells • Identification of predicted impacts on groundwater resources (quality and quantity), including those from stormwater runoff and accidental spills during all projects phases • Comparison of predicted effects to applicable federal and provincial water quality guidelines • Identification of any predicted alterations to base flow, and associated impacts • Description of proposed mitigation measures • Opinion on the significance of residual effects and ecological consequences
Surface and Subsurface Geology and Soils	<ul style="list-style-type: none"> • Description of surface geology and soils in the study area • Description of subsurface geology in the study area, including any relevant information from historic salt mining activity in the vicinity of the project footprint • Identification of predicted effects on surface and subsurface geology from the project, including potential for contamination by roadway drainage and accidental spills during all project phases • Identification of predicted effects on the project from subsurface geology, including any potential of accidents or malfunctions • Description of proposed mitigation measures • Opinion on the significance of residual effects and ecological consequences
Vegetation and	<ul style="list-style-type: none"> • Description of any vegetation and wetland communities in the study area

⁴ Ontario Ministry of Environment's Stormwater Management Planning and Design Manual (March 2003) available electronically at: http://www.ene.gov.on.ca/envision/env_reg/er/documents/stormwatermanual/index.htm

⁵ Notably the Synthesis of Best Practices for Road Salt Management (Transportation Association of Canada), available at: <http://www.tac-atc.ca/english/pdf/roadandbridge.pdf>
<http://www.tac-atc.ca/english/pdf/drainage.pdf>

Factor	Issues to be Examined
Vegetation Communities	<p>using the Ecological Land-use Classification system; vegetation, including local mature trees, should be characterized based on number, type, maturity and habitat quality and function</p> <ul style="list-style-type: none"> • Identification of predicted impacts of the project during construction and operations, including vegetation removal and any relevant operational considerations • Identification of disturbance to vegetation from drainage modifications, including changes in groundwater levels • Description of proposed mitigation measures • Opinion on the significance of residual effects and ecological consequences
Fish and Fish Habitat	<ul style="list-style-type: none"> • Description of presence of aquatic life (including fish and mussels) and their habitat in the study area • In conjunction with the assessment of water quality impacts, identify impacts of construction and operations on fish and fish habitat, specifically spawning, migration, and food availability • Description of proposed mitigation and/or compensation, with reference to the DFO principle of “No Net Loss” of fish habitat from the policy for the Management of Fish Habitat • Opinion on the significance of residual effects and ecological consequences • Identify waterways affected by works that may be possible fish migration routes.
Wildlife and Wildlife Habitat, including Migratory Birds	<ul style="list-style-type: none"> • Description of migratory birds and wildlife species frequenting the project area over multiple seasons and their habitats (notably any significant habitats potentially impacted by the project), including species that may only use the study area on a seasonal basis, notably species using the area as a migratory bird corridor /flyway and for other functions (e.g., staging, resting, feeding, over-wintering, etc). • Description of any wildlife habitats and other areas including urban environments (often migrating birds will use man-made structures as shelter) crossed by the project that are utilized as wildlife corridors providing linkages to significant habitats • Identification of predicted effects of the project, during construction and operations, including a discussion of any additional risk of bird collisions due to the bridge structure (notably towers and cables), considering any lighting proposed for transportation/navigational safety and aesthetics. • Description of proposed mitigation measures, including measures that will be put in place to ensure compliance with the <i>Migratory Birds Convention Act 1994</i>, <i>Species at Risk Act</i>, and any regulations under these statutes • Identification of measures in place to mitigate bird collisions with the proposed bridge structure. • Opinion on the significance of residual effects and ecological consequences
Species at Risk	<ul style="list-style-type: none"> • Identification of the presence of species of conservation concern (local, regional, national), including those species listed under the <i>Species at Risk</i>

Factor	Issues to be Examined
	<p><i>Act</i> (SARA) or the presence of suitable habitat, their residences or critical habitat, and any other species designated by the Committee on the Status of Endangered Wildlife in Canada</p> <ul style="list-style-type: none"> • Consideration of the requirements of SARA • Identification on whether or not the project activities are likely to have an adverse environmental effect on any species of concern • Description of proposed mitigation and monitoring measures if any species of concern are likely to be affected • Opinion on the significance of residual effects and ecological consequences
Noise and Vibration	<ul style="list-style-type: none"> • Description of the community and neighbourhood characteristics, including a detailed description of adjacent and nearby land uses, to facilitate an understanding of the project area in the context of noise impacts • Identification of nearby residences as well as noise sensitive receptors, including schools, daycares, hospitals and seniors' residences that will be included in the noise assessment; • Description of ambient noise levels in the study area, including at sensitive and nearest receptor locations, using noise modelling and/or field measurements, as required; description should also address noise levels associated with the use of engine brakes • Identification of predicted noise and vibration impacts resulting from the use of heavy equipment during construction, including the predicted worst-case 1-hour sound level, using recognized noise assessment and modelling techniques • Identification of predicted noise and vibration levels during operations at the most exposed façade of residences and sensitive receptors, using recognized noise assessment and modelling techniques; noise assessment should also address impacts associated with the use of engine brakes • Comparison of predicted noise and vibration levels to relevant guidelines • Description of proposed mitigation measures, including noise walls or berms, or other noise reduction measures • Opinion on the significance of residual effects
Socio-economic	<ul style="list-style-type: none"> • Description of heritage and archeological resources in the study area; analysis should include heritage impacts on the existing Ambassador Bridge structure as well as heritage impacts on the neighbouring community of Sandwich; local community organizations and the City of Windsor should be consulted for assistance in identifying potentially affected resources • Identification of any socio-economic effects that may result from a project impact on the environment, including potential impacts on cultural and archaeological resources • Description of proposed mitigation measures • Opinion on the significance of residual effects
Contaminated Sites and Waste	<ul style="list-style-type: none"> • Description of waste materials (e.g., construction waste, garbage, sewage and hazardous waste) that will likely be generated during construction and

Factor	Issues to be Examined
Management	<p>operations phases of the project</p> <ul style="list-style-type: none"> • Identification of procedures for identification of contaminated and/or hazardous waste materials and for transporting, handling and disposal of waste materials, including contaminated or hazardous waste, during the construction phase • Identification of effects the project may have, including those from contaminated sites and any proposed remediation options, notably options requiring in-situ treatment or removal and transportation of contaminated material • Identification of the containment, disposal or remediation method (including environmental effect) for contaminated soils/materials; or a description of the options that will be considered and the decision framework that will be used to select the most appropriate method • Identification as to whether any hazardous waste are proposed to be transported across the international border • Description of the proposed mitigation/remediation measures, including a description of the contingency plans that would be implemented to mitigate any environmental effects that could be caused by any accidents or malfunctions during the construction and operations phases • Opinion on the significance of residual effects
Navigation	<ul style="list-style-type: none"> • Description of navigation uses in the Detroit River, including a summary of primary users (e.g., commercial shipping, recreational boating), vessel sizes, volumes of traffic, and traffic patterns (e.g., direction of traffic, vessel stops at nearby port facilities and businesses) • Identification of potential impacts to navigation during both the construction and operation phases, including any associated demolition activities • Description of the proposed mitigation/remediation measures, including a description of how navigation will be maintained during project construction, and how project design elements are intended to prevent navigation impacts during operations • Opinion on the significance of residual effects
Current use of lands and resources for traditional purposes by Aboriginal peoples	<ul style="list-style-type: none"> • Identification of any First Nations land uses and interests; • Identification of any indirect effects the project may cause on the current use of land for traditional purposes, or on First Nations cultural, archaeological or heritage resources • First Nations groups (including, but not necessarily limited to, Walpole Island First Nations) should be consulted for assistance in identifying potentially affected resources • Description of proposed mitigation measures • Opinion on the significance of residual effects
Malfunctions and accidents	<ul style="list-style-type: none"> • Identification of potential malfunctions or accidents that may occur in connection with the project, during each phase (e.g.,

Factor	Issues to be Examined
	<p>construction/decommissioning and operations)</p> <ul style="list-style-type: none"> • Identification of potential environmental effects that could result from these malfunctions or accidents, particularly concerning the potential release of hazardous or deleterious substances to the environment • Description of proposed mitigation measures • Opinion on the significance of residual effects
Effects of the Environment on the Project	<ul style="list-style-type: none"> • Identification of how the environment could adversely affect the project, for example, from seismic events or severe weather, including occurrences of extreme winds, ice jams, and high water level events • Identification of potential effects of climate change on the project, including an assessment of whether the project might be sensitive to changes in climate conditions during its life span • Description of proposed mitigation measures • Opinion on the significance of residual effects
Cumulative environmental effects	<ul style="list-style-type: none"> • Identification of other projects and activities that have been or will be carried out in the study area; emphasis should be on “reasonably foreseeable” projects (e.g., projects that have been approved or that are currently advancing through the regulatory approvals process) • Description of residual effects from the proposed project • Description of potential environmental effects from these ‘other projects and activities’ • For each relevant environmental component, the cumulative effects analysis should indicate whether and how each of the “other projects and activities” could have environmental effects that overlap in time and space with the environmental effects of the proposed project to produce a cumulative effect • Consideration should be given the length of time over which the environmental effects of this project will occur, not just the period of time during which the project will be constructed • Description of proposed mitigation measures • Opinion on the significance of residual effects
Significance of environmental effects	<ul style="list-style-type: none"> • Description of the framework used to formulate the opinions on the significance of residual effects • The significance framework should include, but not necessarily be limited to, the following factors: magnitude, geographic extent, frequency, duration, irreversibility, and ecological context • For each environmental component, the significance criteria should be defined, used quantitative measures to the extent possible • Opinions on significance should be clearly supported by, and traceable from the description of the existing environment, the description of project activities, the potential interactions (environmental effects) and the mitigation measures • Note that the federal Responsible Authorities will make the final determination of significance

Factor	Issues to be Examined
Follow-up program	<ul style="list-style-type: none"> • Description of compliance monitoring measures that will be put in place to ensure that the required mitigation measures are implemented • Opinion on whether a formal follow-up program is required to ensure that the environmental effects were as predicated, and/or that mitigation measures were effective
Public consultation	<ul style="list-style-type: none"> • Description of public consultation plan, including a list of key stakeholders and meetings • Summary of public concerns, and what steps are being taken to address them

Annex A – Ambassador Bridge Enhancement Project – Air Quality Requirements

Air quality was identified as an environmental component of specific concern to the federal EA review team. This annex provides additional information on how the federal review team expects the air quality assessment to be conducted. It is recommended that the proponent consider providing a draft Air Quality work plan to federal reviewers before carrying out the air quality study, in order to ensure that all requirements will be met.

It should be noted that the environmental assessment will also need to address potential human health effects associated with project-related effects on air quality. Additional guidance on how to carry out this assessment this can be provided by the federal review team later in the process, once preliminary air quality results are available.

The ambient air quality concentrations in the study area should be described for key pollutants based on local monitoring data from provincial, federal and any other available stations. Pollutants of interest include NO_x, SO₂, CO, particulate matter (PM₁₀ and PM_{2.5}) and transportation-related volatile organic compounds (see later in this section) and PAHs. The analysis should span a recent five-year period and include mean and 90th percentile values, as well as maximum observed values and the number and frequency of exceedences of provincial and national criteria and standards. Local air quality studies focused within or near the study area would also assist in the description of the existing air quality conditions.

The identification of residences and sensitive receptors should include those that are likely to be most-heavily impacted by air emissions and fugitive dust emissions from all project phases, including construction, operation and decommissioning. This should include the closest residences to the customs plaza and the closest residences along the most frequently congested section(s) of Huron Church Road approaching the customs plaza.

Emission scenarios should be developed for past, present and future milestone dates, to illustrate changes in emissions resulting from the project. The assessment should include appropriate milestone years to reflect the existing conditions, the expected date of project completion, and 10 years post-construction. The future operating scenarios should include both the continued operation and the decommissioning of the existing bridge. The analysis should also include a “do nothing” case for the future dates. Particular attention should be paid to the fleet mix as well as particulate and VOC emissions from heavy trucks.

An appropriate transportation model should be used to estimate current and projected future Vehicle Kilometres Traveled (VKT) for the project area. The projected vehicle fleet composition for the project area should also be evaluated. Emissions from vehicle exhaust and roadway surfaces should be generated using recognized tools such as United States Environmental Protection Agency (EPA) emission factors that have been adjusted to reflect Canadian standards where appropriate. MOBILE6 and the Canadian version MOBILE6.2C are the standard tools used to generate vehicle exhaust emissions estimates. Information on current and projected vehicle queuing and idling (including spatial extent, frequency and duration) at intersections,

customs plazas and approaches should also be collected and incorporated into the analysis. These methodologies should be used to determine the pollutant emission rates and quantities for the pollutant burden analysis.

Pollutant burdens for each operational scenario should be calculated for the following pollutants and precursors: carbon monoxide (CO), nitrogen oxides (NO_x), SO₂, CO₂, CH₄, particulate matter less than 10 microns (PM₁₀), particulate matter less than 2.5 microns (PM_{2.5}) (which includes Diesel Particulate Matter (DPM)), and volatile organic compounds (VOC), and for the following air toxics: benzene, acetaldehyde, formaldehyde, 1,3-butadiene, acrolein, and polycyclic aromatic hydrocarbons (PAH). Potential impacts due to ground level ozone (GLO) should be considered through an assessment of emissions changes in ozone precursors and their ratios, in relation to ambient ozone concentrations.

Maximum emission scenarios should be developed for all relevant averaging time frames. The highest predicted traffic flow scenario for each project corridor and each operating scenario should be used to develop the maximum credible air pollutant emission scenarios. The emission rates shall be input to the dispersion model to predict the maximum concentrations at ground level and elevated receptors.

A 5-year meteorological data set, representative of conditions in the study area should be used in conjunction with an approved air dispersion model, to assess the maximum concentrations of the contaminants emitted from the project. Meteorological data from readily available sources, such as federal, provincial and state agencies is recommended. Dispersion modeling should be undertaken using a recognized model (such as the US EPA's CALQ3HCR) for each of the pollutants identified earlier in this section, for the baseline, do-nothing and future operational scenarios. The application of the model(s) should be consistent with published guidelines and recommendations for that model.

In order to obtain an accurate representation of the predicted worst-case air quality conditions at any point, the impact of roadway operating emissions should be combined with the contributions from other local, regional and distant air pollution sources. This may be done by adding the worst-case modeled concentration at a given receptor to a suitably conservative background concentration (such as the 90th percentile of hourly observations) to arrive at the worst-case concentration at the receptor. Another acceptable approach to incorporate ambient influences would be to undertake what is referred to as a combined effects analysis. Under this approach, modeled concentrations for each hour of the 5-year data set are added to the representative background concentration of that pollutant for the exact same time to determine the worst-case concentrations.

The predicted worst-case concentrations should be compared to provincial (MOE Ambient Air Quality Criteria (AAQC)) and federal (Canada-wide Standards and National Ambient Air Quality Objectives) guidelines, as available. For receptors where an air quality standard or criterion is predicted to be exceeded, an analysis of the frequency of exceedence should be completed. If any criterion or objective is expected to be exceeded, then suitable mitigation measures should be evaluated. Additional dispersion modeling could be undertaken to estimate

the frequency and magnitude of the residual impacts after the application of the mitigation measures.

The modeling results and their comparison to air quality standards and guidelines should then be used to evaluate the related impacts to human health and sensitive ecosystems. It is recommended that interim air quality modeling results be provided to the review team when available so that additional guidance on potential human health effects can be provided.

The potential for transboundary air quality impacts should be discussed as well as any potential impacts on First Nations lands.

An assessment of the construction-phase emissions (including dust, exhaust from the operation of heavy equipment and any demolition-related emissions) would help to identify and minimize any short-term nuisance effects. In addition, where possible, effects due to traffic disruption (i.e. increased idle times and queuing) should also be assessed. These analyses should take into account the plans for the existing structure, in order to reasonably predict potential effects that may result from the implementation of this proposed project.

The assessment should also discuss the measures that will be used to reduce dust and particle emissions from construction activities and construction vehicle movements. It should also outline how contract documents will stipulate that motorized equipment must meet design specifications for emission controls and conform to provincial Drive Clean standards, where appropriate, and that idling of any equipment should be limited to an absolute minimum and be strictly monitored. Provisions should also be made for contractors to avoid, or at least limit, the use of their most polluting motorized equipment during smog advisories.

The assessment should include an opinion concerning the significance of residual effects.