

Eastern Bridge Project

Initial Project Description

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For Submission to the
Impact Assessment Agency of Canada



Public Services and
Procurement Canada

Services publics et
Approvisionnement Canada



NATIONAL CAPITAL COMMISSION
COMMISSION DE LA CAPITALE NATIONALE

Canada

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Contributing organizations include:

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- National Capital Commission (NCC)
- Parsons
- Stantec
- Robinson Consultants
- CBCL Limited

Any errors or omissions in this document are the responsibility of PSPC and the NCC.

Contents

1	Project Overview	6
1.1	History of Key Recommendations	8
1.2	Eastern Bridge Project.....	10
1.3	Document Overview	12
2	Proponent Information	15
3	Summary of Engagement	16
3.1	Institutional Engagement	16
3.1.1	Federal Departments	16
3.1.2	Transportation Partners	16
3.1.3	Municipal Departments	18
3.1.4	Provincial Impact Assessment Offices	18
3.2	Stakeholder and Public Engagement	18
3.2.1	Previous Engagement	18
3.2.2	Recent Engagement	21
3.2.3	Plans for Future Engagement	37
4	Summary of Engagement with Indigenous Communities	38
4.1	Past Engagement	38
4.2	Recent Engagement	39
4.2.1	Collaboration Agreements	40
4.2.2	Indigenous Participation Plans	41
4.3	Plans for Future Engagement	41
4.3.1	Planning & Impact Assessment	41
4.3.2	Construction.....	42
5	Environmental Studies, Regional Plans and Assessments	43
5.1	Regional Plans	43
5.1.1	Plan for Canada's Capital 2017–2067	43
5.1.2	Capital Urban Lands Plan	43
5.1.3	Long-Term Integrated Interprovincial Crossings Plan	44

5.2	Municipal Plans	46
5.2.1	Ville de Gatineau	46
5.2.2	City of Ottawa	47
5.3	Environmental Studies	49
5.3.1	Climate Projections and Regional Climate Vulnerability Assessment.....	49
6	Strategic Assessment	51
6.1	Strategic Assessment (Climate Change)	51
7	Project Purpose and Need	52
7.1	Purpose of the Project.....	52
7.2	Need for the Project	52
7.2.1	Regional Planning Context	53
7.2.2	Justification	55
7.3	Planning and Design Principles.....	56
7.3.1	Themes and Principles	56
7.3.2	Segment Descriptions.....	57
7.3.3	Functional Requirements.....	63
8	Provisions Describing the Designated Project	69
8.1	Designated and Incidental Portions	69
9	Project Description.....	71
9.1	Project Segments	71
9.2	Infrastructure Description	72
9.2.1	Permanent Infrastructure	72
9.2.2	Temporary Construction Components	75
9.3	Project Activities and Phasing.....	77
9.3.1	Construction Phase	77
9.3.2	Operation Phase.....	81
9.3.3	Decommissioning Phase	81
10	Production Capacity.....	82
11	Project Schedule	83
12	Project Alternatives	85

12.1	Alternatives to the Project.....	85
12.1.1	Initial Corridor Selection.....	85
12.1.2	Evaluation Refresh	89
12.2	Alternative Means of Carrying out the Project.....	91
12.2.1	Alternative Alignments for the Bridge Crossing	92
12.2.2	Alternative Interchange/Intersection Designs	95
12.2.3	Alternative Road Configurations	95
12.2.4	Alternative Construction Staging Locations	95
12.2.5	Alternatives for Ancillary or Temporary components	96
12.2.6	Process for Assessment of Alternatives	96
13	Project Location Information	97
13.1	Project Location	97
13.2	Federal Land Ownership	102
13.3	Municipal and Provincial Land Ownership	105
13.4	Private Land Ownership	106
13.5	Nearby Communities and Residences	110
13.6	Proximity to Indigenous Lands and Communities	112
14	Physical and Biological Environment.....	114
14.1	Physical Environment.....	114
14.1.1	Atmospheric Environment.....	114
14.1.2	Acoustic Environment.....	116
14.1.3	Geophysical Environment.....	117
14.1.4	Hydrological Environment.....	119
14.2	Biological Environment	120
14.2.1	Aquatic Environment.....	121
14.2.2	Terrestrial Environment	133
15	Socio-Economic Environment.....	174
15.1	Social Context	174
15.1.1	Description of Communities.....	174
15.1.2	Demographic Profiles	174
15.1.3	Green Spaces and Recreation	179
15.1.4	Community Facilities.....	180

15.2	Human Health Context.....	182
15.3	Cultural Heritage	183
15.4	Archaeological Potential	184
15.5	Waterway Navigation	187
15.6	Transportation Context.....	189
15.7	Economic Context.....	190
	15.7.1 Employment.....	191
16	Federal Financial Support.....	193
17	Regulatory Jurisdiction.....	194
17.1	Federal	194
17.2	Provincial	197
17.3	Municipal.....	203
18	Potential Effects on the Environment within Federal Jurisdiction	204
18.1	General Approach to Managing Potential Effects	204
18.2	Effects on Fish and Fish Habitat.....	205
	18.2.1 Construction.....	205
	18.2.2 Operation.....	206
	18.2.3 Planning and Additional Studies	206
	18.2.4 Avoidance and Mitigation Measures	206
18.3	Effects on Species at Risk.....	208
	18.3.1 Planning and Additional Studies	211
	18.3.2 Avoidance and Mitigation Measures	211
18.4	Effects on Migratory Birds	212
	18.4.1 Construction.....	212
	18.4.2 Operation.....	212
	18.4.3 Planning and Additional Studies	213
	18.4.4 Avoidance and Mitigation Measures	213
18.5	Federal lands	214
19	Potential Effects on the Environment	215
19.1	Potential Effects on Physical Environment	215
	19.1.1 Potential Effects on Air Quality	215
	19.1.2 Potential Effects on the Acoustic Environment	217

19.1.3	Potential Effects on Geophysical Environment	218
19.1.4	Potential Effects on Hydrological Environment	222
19.1.5	Potential Effects on Biological Environment	225
19.2	Potential Effects on the Social Environment	232
19.2.1	Construction.....	232
19.2.2	Operations	233
19.2.3	Avoidance and Mitigation Measures	234
19.3	Potential Effects on Human Health	236
19.3.1	Air Quality Effects	236
19.3.2	Noise and Vibration Effects	237
19.3.3	Drinking Water Effects	238
19.4	Potential Effects on Archeological Resources	240
19.4.1	Construction.....	240
19.4.2	Operations	240
19.4.3	Avoidance and Mitigation measures	240
19.5	Potential Economic Effects	241
19.5.1	Construction.....	242
19.5.2	Operations	242
19.5.3	Avoidance and Mitigation measures	243
19.6	Potential Effects to Federal Lands.....	245
20	Potential Impacts on Physical and Cultural Heritage of Indigenous Peoples	246
20.1	What We Heard - Identification of Potential Impacts on the Environment	247
20.1.1	Primary Communities	247
20.1.2	Other Communities and Organizations.....	248
20.2	Potential Effects and Mitigation Measures	248
21	Potential Impacts on Health or Socio-economic Conditions of Indigenous Peoples.....	250
21.1	Health Impacts.....	250
21.2	Cultural Impacts	250
21.3	Social and Economic Impacts.....	251
21.3.1	Indigenous Participation Plans	252
22	Greenhouse Gas Emissions	253

22.1	Introduction	253
22.2	Formula and Definitions	253
22.3	Construction	254
22.3.1	Emission Sources	254
22.3.2	Equipment & Vehicles	254
22.3.3	Land Use Change	255
22.3.4	Construction Summary	257
22.4	Operations	257
22.4.1	Emission Sources	257
22.4.2	Direct Emissions	257
22.4.3	Acquired Energy Emissions	260
22.5	Decommissioning	261
22.6	Net GHG Emissions	262
22.7	Mitigation	262
22.8	Upstream GHG Emissions	263
22.9	Uncertainty Assessment	263
22.9.1	Uncertainty Related to Data	263
22.9.2	Uncertainty Related to Methods and Models	263
23	Waste and Emissions	265
23.1	Non-hazardous Solid Waste	266
23.1.1	Prior to Construction	266
23.1.2	During Construction and Post-construction	266
23.2	Hazardous Waste	266
24	Environmental Protection	268
25	References	272

Tables

Table 1-1: Document overview	12
Table 3-1: Summary of meetings with Potentially Affected Stakeholders	23
Table 3-2: Summary of public concerns and planning considerations	35
Table 3-3: Public and stakeholder engagement plan for the Eastern Bridge	37
Table 4-1: Summary of past Indigenous engagement	38
Table 4-2: Indigenous communities and organizations to be engaged	40
Table 5-1: Other regional and municipal planning documents	48
Table 5-2: Regional environmental studies	49
Table 7-1: Planning and design themes	56
Table 11-1: Project Milestones	84
Table 12-1: Factors and subfactors used in Phase 2 to evaluate new interprovincial crossing corridors	87
Table 12-2: Evaluation results by corridor from the 2023 refresh.	89
Table 12-3: Results of Screening Analysis	94
Table 13-1: Federal properties along the corridor	102
Table 13-2: Gatineau Municipal and Provincial properties along the corridor	105
Table 13-3: Ottawa Municipal and Provincial properties along the corridor	106
Table 13-4: Private properties in Gatineau along the corridor	107
Table 13-5: Private properties in Ottawa along the corridor	110
Table 14-1: Climate statistics in the National Capital Region	115
Table 14-2: Air pollutant concentrations and associated provincial ambient air quality criteria in Ottawa and Gatineau	116
Table 14-3: Seismic site classification within the Project limits	119
Table 14-4: Riverbank characteristics	127
Table 14-5: Aquatic SAR and SoCC with confirmed occurrences or potential to occur within 5 km of the LSA	129
Table 14-6: Flora SAR and SoCC with confirmed occurrences or the potential to occur within 5 km of the LSA	139

Table 14-7: Butternut and Black Ash tree conditions	145
Table 14-8: Bird SAR and SoCC with confirmed occurrences or potential to occur within 5 km of the LSA.	147
Table 14-9: SAR/SoCC observed in the LSA during breeding bird surveys.....	154
Table 14-10: Amphibian SAR and SoCC with confirmed occurrences or potential to occur within 5 km of the LSA .	156
Table 14-11: Reptile SAR and SoCC with confirmed occurrences or potential to occur within 5 km of the LSA	158
Table 14-12: Bat SAR and SoCC within a 5 km radius of the LSA	161
Table 14-13: Insect SAR and SoCC within a 5 km radius of the LSA	164
Table 14-14: SAR and SoCC observed on federal lands	171
Table 15-1: Vulnerability analysis of socio-economic indicators for neighbourhoods in the LSA	177
Table 17-1: Federal permits and approvals relevant to the Eastern Bridge Project	195
Table 17-2: Ontario permits and approvals relevant to the Eastern Bridge Project	198
Table 17-3: Québec permits and approvals relevant to the Eastern Bridge Project.....	200
Table 19-1: Potential effects of the Project on flora SoCC and provincially listed SAR.	229
Table 20-1: Initial assessment of impacts – Changes in the environment	248
Table 22-1: Construction Vehicle & Equipment Emissions (tonnes CO ₂ e/ 5 years).....	255
Table 22-2: Estimated removal by land use type (WSP 2024d).....	256
Table 22-3: Carbon Sink Loss (tonnes CO ₂ e)	256
Table 22-4: Estimated Construction Emissions (tonnes CO ₂ e/5 years)	257
Table 22-5: Preliminary Annual Average Daily Traffic.....	259
Table 22-6: Estimated Operation Emissions (tonnes CO ₂ e)	261
Table 23-1: Wastes expected to be produced by the Project and appropriate handling, storage, and disposal measures	265

Figures

Figure 1-1: Map of the National Capital Region	6
Figure 1-2: Interprovincial Crossing System in the NCR.....	7
Figure 1-3: Ten Short Listed Corridor Options 2006-2009.....	8
Figure 1-4: Three Eastern Sector Corridor Alternatives	9
Figure 1-5: Location and Corridor Boundaries of the Eastern Bridge Project	11
Figure 3-1: Ranking of Topics of Most Importance to Responders	26
Figure 3-2: Summary Ranking of Transportation Benefits	27
Figure 3-3: Summary Ranking of Transportation Impacts.....	28
Figure 3-4: Summary Ranking of Benefits for Communities	29
Figure 3-5: Summary Ranking of Impacts for Communities.....	30
Figure 3-6: Summary Ranking of Environmental Concerns	32
Figure 3-7: Summary Ranking of Economic Opportunities	34
Figure 3-8: Summary Ranking of Economic Impacts	35
Figure 5-1: Capital Urban Lands	44
Figure 5-2: Plan d'Urbanisme, Ville de Gatineau (R 530-2020)	47
Figure 7-1: Planning Segments.....	58
Figure 7-2: Montée-Paiement – South of Autoroute 50.....	59
Figure 7-3: Multi-Use Path – South of Montée-Paiement / Boulevard Maloney	60
Figure 7-4: Ottawa River and Western part of Kettle Island.....	61
Figure 7-5: Aviation Parkway – Between Hemlock Road and Montreal Road	62
Figure 7-6: Aviation Parkway Connection to the Highway Interchange and LRT	63
Figure 7-7: Concept for Montée-Paiement with Frontage Road (Boulevard Maloney to Boulevard la Vérendrye Ouest)	65
Figure 7-8: Concept for Montée-Paiement with Landscaped Boulevard (Boulevard Maloney to Boulevard la Vérendrye Ouest).....	65
Figure 7-9: Concept for New Roadway North of Ottawa River to Boulevard Maloney	66

Figure 7-10: Concept for the New Eastern Bridge	66
Figure 7-11: Concept for Aviation Parkway -Parkway Lanes Together (SGEC Parkway to Ogilvie Road).....	67
Figure 7-12: Cross-section of Aviation Parkway (South of Montreal Road) (existing).....	68
Figure 11-1: Preliminary alignment between construction stages, Impact Assessment Phases and FLUDTA Milestones.....	83
Figure 12-1: Initial Alternative Alignments for the Crossing of the Ottawa River.....	93
Figure 12-2: Options Recommended for the Next Phase	94
Figure 13-1: Location of Project Components – Segment 1	98
Figure 13-2: Location of Project Components – Segments 2 & 3	99
Figure 13-3: Location of Project Components – Segment 4	100
Figure 13-4: Location of Project Components – Segment 5	101
Figure 13-5: Federal Land Ownership in the Corridor – Quebec	103
Figure 13-6: Federal Land Ownership in the Corridor – Ontario	104
Figure 13-7: Districts in Gatineau.....	111
Figure 13-8: Ottawa Communities and Neighbourhoods	111
Figure 13-9: Indigenous Communities	113
Figure 14-1: LSA Used for 2025/26 Biological Studies	120
Figure 14-2: Watercourses in the LSA	122
Figure 14-3: Fish Management Zones in Québec and Ontario	123
Figure 14-4: Aquatic Vegetation Beds	125
Figure 14-5: Ecodistricts	134
Figure 14-6: Ecological Land Classification in the LSA – Gatineau	136
Figure 14-7: Ecological Land Classification in the LSA – Ontario	137
Figure 14-8: Critical Habitat near the Eastern Bridge Corridor.....	155
Figure 14-9: Wetland Environments on Federal Lands.....	170
Figure 14-10: Species at risk and of Conservation Concern – Gatineau	172
Figure 14-11: Species at risk and of Conservation Concern – Ontario	173

Figure 15-1: CMA and NCR Boundaries	175
Figure 15-2: Observed and Projected Population for the NCR	176
Figure 15-3: Vulnerable Communities.....	178
Figure 15-4: Green Spaces in the Eastern Bridge Project Corridor	179
Figure 15-5: Location of Arts, Culture, Recreational, Educational, and Daycare Facilities in Gatineau.....	181
Figure 15-6: Location of Arts, Culture, Recreational, Educational, and Daycare Facilities in Ottawa.	182
Figure 15-7: Pre-Contact Archaeological Potential near the Proposed Crossing.....	186
Figure 15-8: Navigation Channel in Proximity to the Proposed Crossing.....	188
Figure 15-9: NCR Transportation Context (NCC)	190
Figure 15-10: GDP (\$ millions) generated in the Ontario and Québec portions of the Ottawa-Gatineau CMA (Statistics Canada 2025a)	191

Acronyms & Abbreviations

Acronym/Abbreviation	Defined
AADT	Average Annual Daily Traffic
AANTC	Algonquin Anishinabeg Nation Tribal Council
AOO	Algonquins of Ontario
AOPFN	Algonquins of Pikwakanagan First Nation
ARTVS	<i>Act Respecting Threatened or Vulnerable Species</i> (Québec)
CAAQS	Canadian Ambient Air Quality Standards
CDPNQ	Centre de données sur le patrimoine naturel du Québec
CEAA	<i>Canadian Environmental Assessment Act</i>
CHRS	Canadian Heritage Rivers System
CIAR	Canadian Impact Assessment Registry
CMA	Census Metropolitan Area
CNEL	Climate, Nature and Economy Lens
CNWA	<i>Canadian Navigable Waters Act</i>
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CPTED	Crime Prevention Through Environmental Design
CRD	Construction, Renovation and Demolition
CSA	Canadian Standards Association
CVRA	Climate Vulnerability Risk Assessment
CWS	Canadian Wildlife Service
dBA	A-weighted decibels
DFO	Fisheries and Oceans Canada
ECCC	Environment and Climate Change Canada
ELC	Ecological Land Classification
ESC	Erosion and Sediment Control
EV	Electric Vehicle
FLUDTA	Federal Land Use, Design and Transaction Approvals
FMZ	Fisheries Management Zone
FSDS	Federal Sustainable Development Strategy
GBA+	Gender-based Analysis Plus
GDP	Gross Domestic Product
GGs	Greening Government Strategy: A Government of Canada Directive
GHG	Greenhouse Gas
GWP	Global Warming Potential
HDDV	Heavy-duty Diesel Vehicle
HOV	High Occupancy Vehicle
HHRA	Human Health Risk Assessment
IAA	<i>Impact Assessment Act</i>
IAAC	Impact Assessment Agency of Canada
IPCC	Intergovernmental Panel on Climate Change
IPD	Initial Project Description
IPP	Indigenous Participation Plan
IPT	Integrated Project Team

Acronym/Abbreviation	Defined
ITS	Intelligent Transportation System
km	Kilometre
KERWN	King Edward-Rideau-Waller-Nicholas
KZA	Kitigan Zibi Anishinabeg First Nation
LDDT	Light-duty Diesel Truck
LDGV	Light-duty Gasoline Vehicle
LSA	Local Study Area
LTICP	Long-term Integrated Interprovincial Crossings Plan for the National Capital Region
MBCA	<i>Migratory Birds Convention Act, 1994</i>
m	Metre
MCA	Multi-Criteria Analysis
MCC	Ministère de la Culture et des Communications du Québec
MECP	Ontario Ministry of Environment, Conservation, and Parks
MELCCFP	Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs du Québec
MNR	Ontario Ministry of Natural Resources
MNRF	Ontario Ministry of Natural Resources and Forestry
MTCG	Ontario Ministry of Tourism, Culture, and Gaming
MTO	Ontario Ministry of Transportation
MTMD	Ministère des Transports et de la Mobilité Durable du Québec
NAPS	National Air Pollution Surveillance Program
NCC	National Capital Commission
NCR	National Capital Region
NHIC	Natural Heritage Information Centre
NSA	Noise Sensitive Areas
O&M	Operations and Maintenance
O.Reg.	Ontario Regulation
OAAQC	Ontario's Ambient Air Quality Criteria
OD Survey	Origin-Destination Household Travel Survey
PA	Project Area
PAG	Public Advisory Group
PTTW	Permit to Take Water
PSPC	Public Services and Procurement Canada
QAQS	Québec Air Quality Standards
SACC	Strategic Assessment of Climate Change
SAR	Species at risk
SARA	<i>Species at Risk Act</i>
SCA	<i>Species Conservation Act, 2025 (Ontario)</i>
SGEC	Sir George-Étienne Cartier Parkway
SEEA	Strategic Environmental and Economic Assessment
SoCC	Species of conservation concern
STO	Société de transport de l'Outaouais
SWM	Stormwater Management
TAC	Transport Association of Canada
VC	Valued Components

Glossary of Terms

Term	Defined
Active Transportation	Walking, running, cycling, and other physically active modes of transport.
Fish	Organisms defined in s. 2.1 of the <i>Fisheries Act</i> , including fish, shellfish, crustaceans, and marine animals.
Fish habitat	Defined in s. 2.1 of the <i>Fisheries Act</i> as water frequented by fish and any other areas on which fish depend directly or indirectly to carry out their life processes, including spawning grounds and nursery, rearing, food supply, and migration areas.
Greenhouse Gas	Carbon dioxide (CO ₂), methane (CH ₄), and other gases whose emissions contribute to climate change.
Information and Management of Time Limits Regulations	Regulation under the <i>Impact Assessment Act</i> detailing the required content of the Initial Project Description.
Interprovincial	Connections and movement across the Ottawa River between Ontario and Québec.
Migratory bird	Bird species protected under the <i>Migratory Birds Convention Act, 1994</i> .
Monte Carlo Sensitivity Analysis	Statistical method used to evaluate project alternatives with a high level of confidence.
Noise Sensitive Area	Residential areas and other locations where excess noise may affect human health.
Local Study Area	The area encompassing all Project components plus a 300 m buffer to describe valued components and assess potential effects.
Species at risk	Species listed under Schedule 1 of the <i>Species at Risk Act</i> (SARA) or under the Ontario <i>Species Conservation Act, 2025</i> (SCA) as endangered or threatened, or under the Québec <i>Act respecting threatened or vulnerable species</i> (ARTVS) as threatened or vulnerable.
Species of conservation concern	Includes species listed under Schedule 1 of SARA as special concern; assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as endangered, threatened or special concern but not yet listed under SARA; listed under the ARTVS as likely to be designated as threatened or vulnerable; and species considered nationally or provincially rare.
Valued component	Elements of the natural and human environments identified as being important during the impact assessment process and that may be affected by the Project.
Weighted factor	Environmental component considered in the evaluation of project alternatives

Introduction

This Initial Project Description (IPD) is written in compliance with the *Impact Assessment Act* (IAA); Schedule 1 of the *Information and Management of Time Limits Regulations*; and all other related legislations, policies and guidelines.

Public Services and Procurement Canada (PSPC) has worked in close collaboration with the National Capital Commission (NCC) (referred to herein as the Integrated Project Team (IPT)) in leading the Eastern Bridge Project (the Project). The Project includes the construction and operation of a new interprovincial crossing and a corridor to connect provincial highways (Quebec Autoroute 50 and Ontario highway 417/174) in the National Capital Region (NCR).

As part of pre-planning the IPT has undertaken several studies and assessments, as well as consultation with Indigenous communities, key stakeholders, and the public. This report provides a starting point for continued meaningful engagement with Indigenous communities, stakeholders, and the public. It summarizes preliminary findings, and identifies planned avoidance and mitigation measures that may be implemented to minimize the potential impacts of the Project on the environment, Indigenous communities, human health, and social and economic conditions in the NCR.

Given that the Project is located within the NCR, the Project is also subject to the Federal Land Use, Design and Transaction Approval (FLUDTA) process, regulated by the NCC under the *National Capital Act*. Within the NCR, work by federal departments, works on federal lands as well as the sale and/or transfer of federal lands are subject to the NCC's approval.

The IPD for the Project is required as part of the planning phase of the Impact Assessment process. The content herein represents information available at the time of writing.

Part A: General Information

1 Project Overview

The NCR includes the cities of Ottawa (Ontario) and Gatineau (Québec) as well as several surrounding rural municipalities (see Figure 1-1) and covers an area of 4,715 square kilometres (km²) straddling the Ottawa River. In 2025, the region was home to approximately 1,700,014 people (Statistics Canada, 2025). The NCR operates as a single metropolitan area where residents may work and live in different provinces.

The NCR is in the traditional territory of the Anishinabe Algonquin Nation.

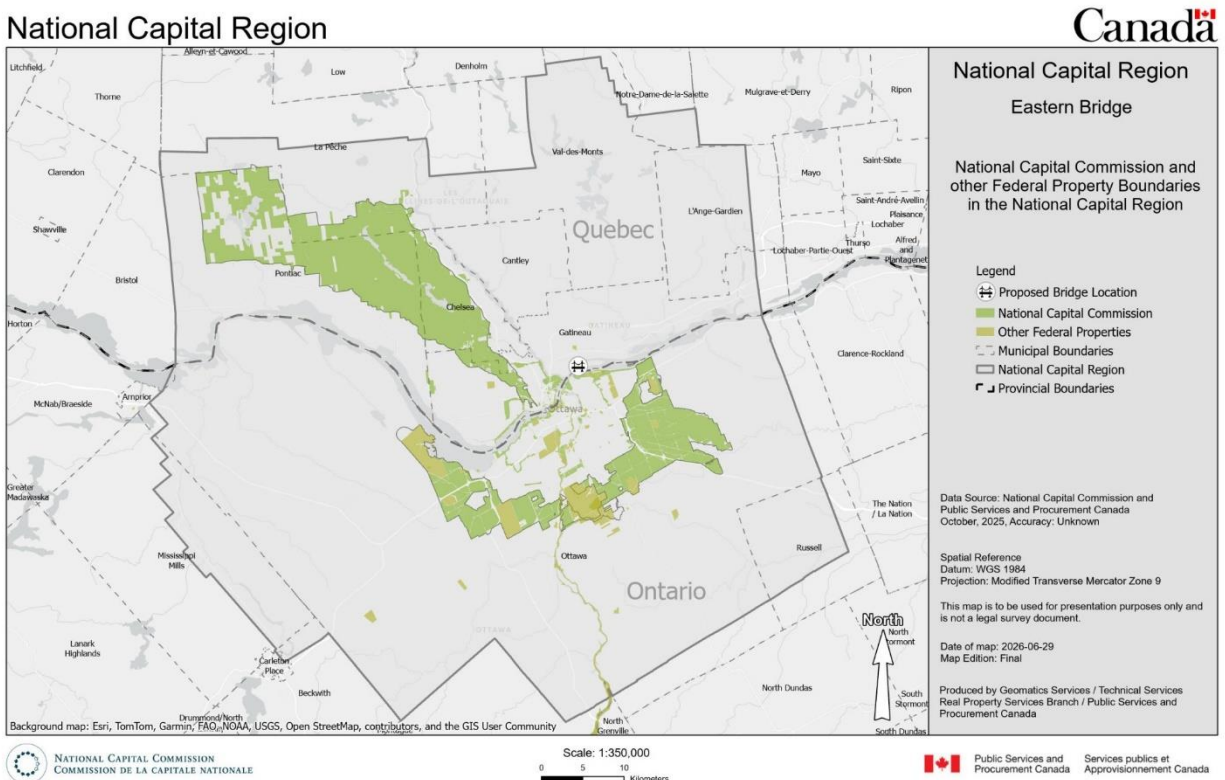


Figure 1-1: Map of the National Capital Region

The interprovincial crossing network in the NCR includes five federally owned multi-modal bridges and one owned by the City of Ottawa (Chief William Commanda Bridge); the latter currently serves active mobility and is open only during the summer and shoulder seasons (see Figure 1-2). The last interprovincial bridge built across the Ottawa River was the Portage Bridge in 1973. Since its commissioning, the region's population has doubled, with demographic and employment forecasts showing continued growth through the 2050 horizon. For decades, the need for an additional interprovincial link to the East of the NCR has been recognized, to further unify Gatineau and Ottawa and to facilitate the efficient integration of various modes of transportation.

Existing Bridges

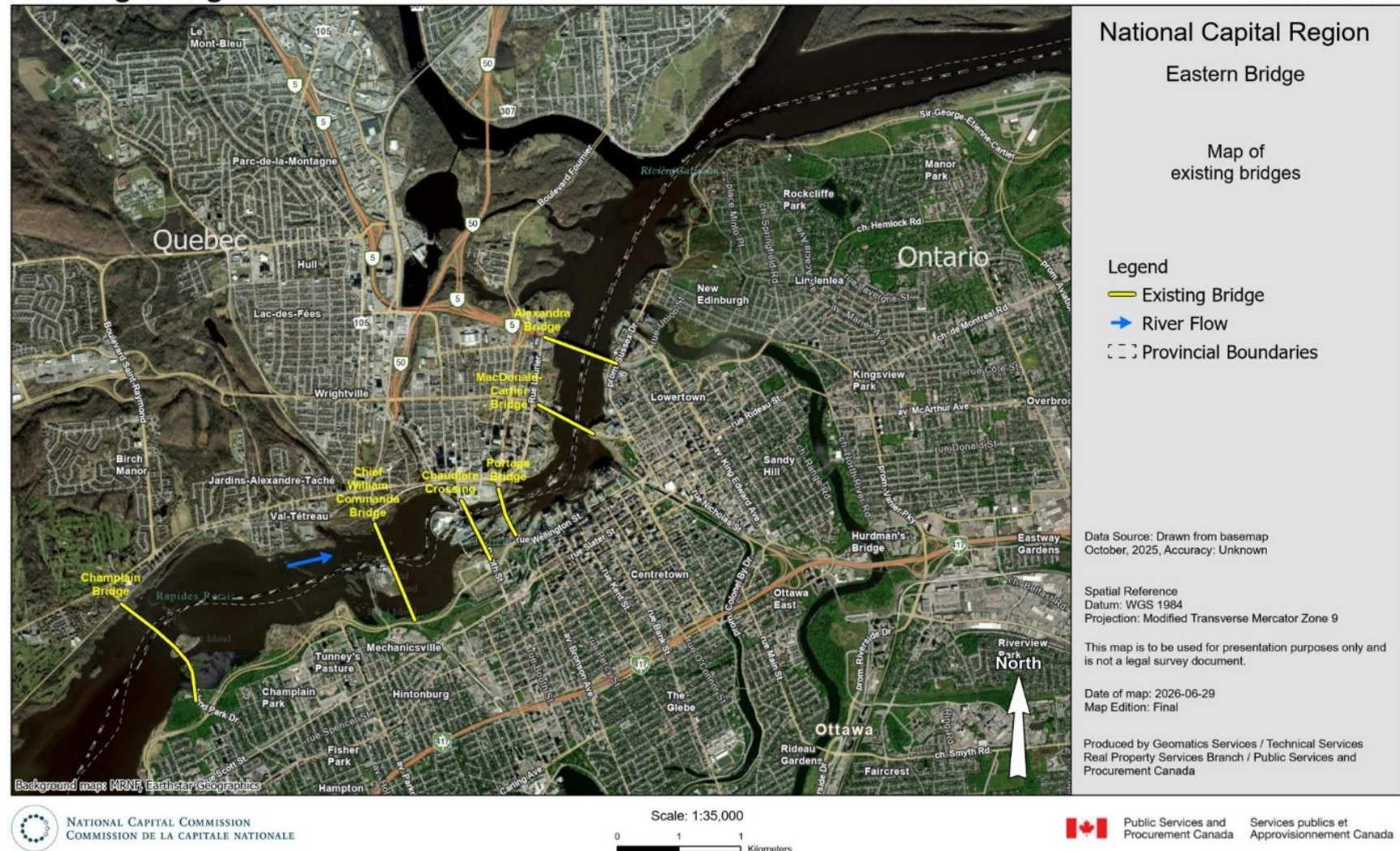


Figure 1-2: Interprovincial Crossing System in the NCR

1.1 History of Key Recommendations

A list of key recommendations related to an interprovincial crossing in the East of the NCR is provided below, spanning from 1915 to 2024.

1915: The Bennett-Holt Plan recommended a bridge East of the Gatineau River, along with a highway network.

1950: The Gréber Plan proposed a bridge East of Kettle Island to connect Ottawa and Gatineau into a federal district.

1976-1977: The Ottawa-Carleton and Outaouais regional plans suggested a bridge over Kettle Island.

1986-1999: Several studies recommended a link that bypasses downtown, identifying Kettle Island as the priority corridor.

2006-2009: (Phase 1) A funding partnership and steering committee was created by the NCC, Ontario's Ministry of Transportation and Québec's Ministère des Transports (currently named Ministère des Transports et de la Mobilité durable). The partnership, in collaboration with the City of Ottawa and the Ville de Gatineau, initiated an environmental assessment to study potential interprovincial crossing alternatives and their associated approach corridors. This first phase identified Project objectives to improve transportation, and societal and economic benefits, while minimizing natural, socio-economic, and cultural impacts. The assessment also evaluated ten potential crossing and two tunnel locations from the eastern to the western limits of the region (Figure 1-3). Three eastern sector corridors were identified as having the highest potential and were carried forward for more detailed assessments. These three alternatives are shown in Figure 1-4: Montée Paiement-Aviation Parkway (Corridor 5), Boulevard Lorrain - Ottawa Road 174 (Corridor 6) and Gatineau Airport - Ottawa Road 174 (Corridor 7).

Short List Corridor Options 2006-2009

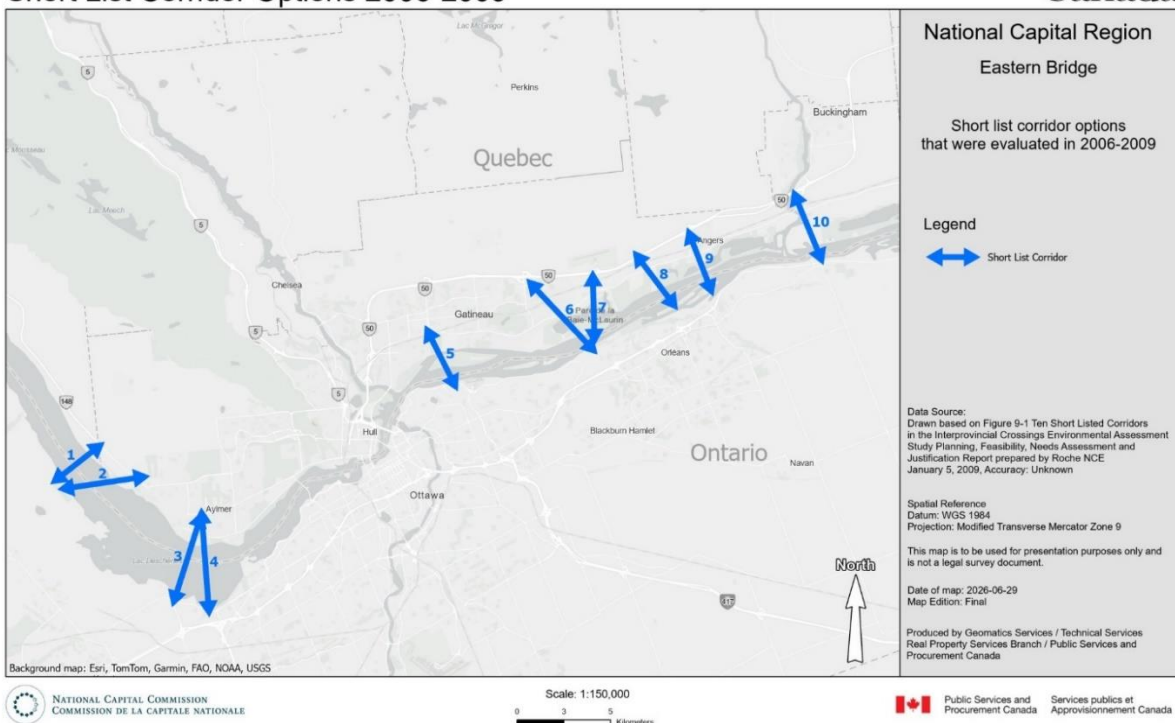


Figure 1-3: Ten Short Listed Corridor Options 2006-2009

Location of corridors 5, 6 and 7

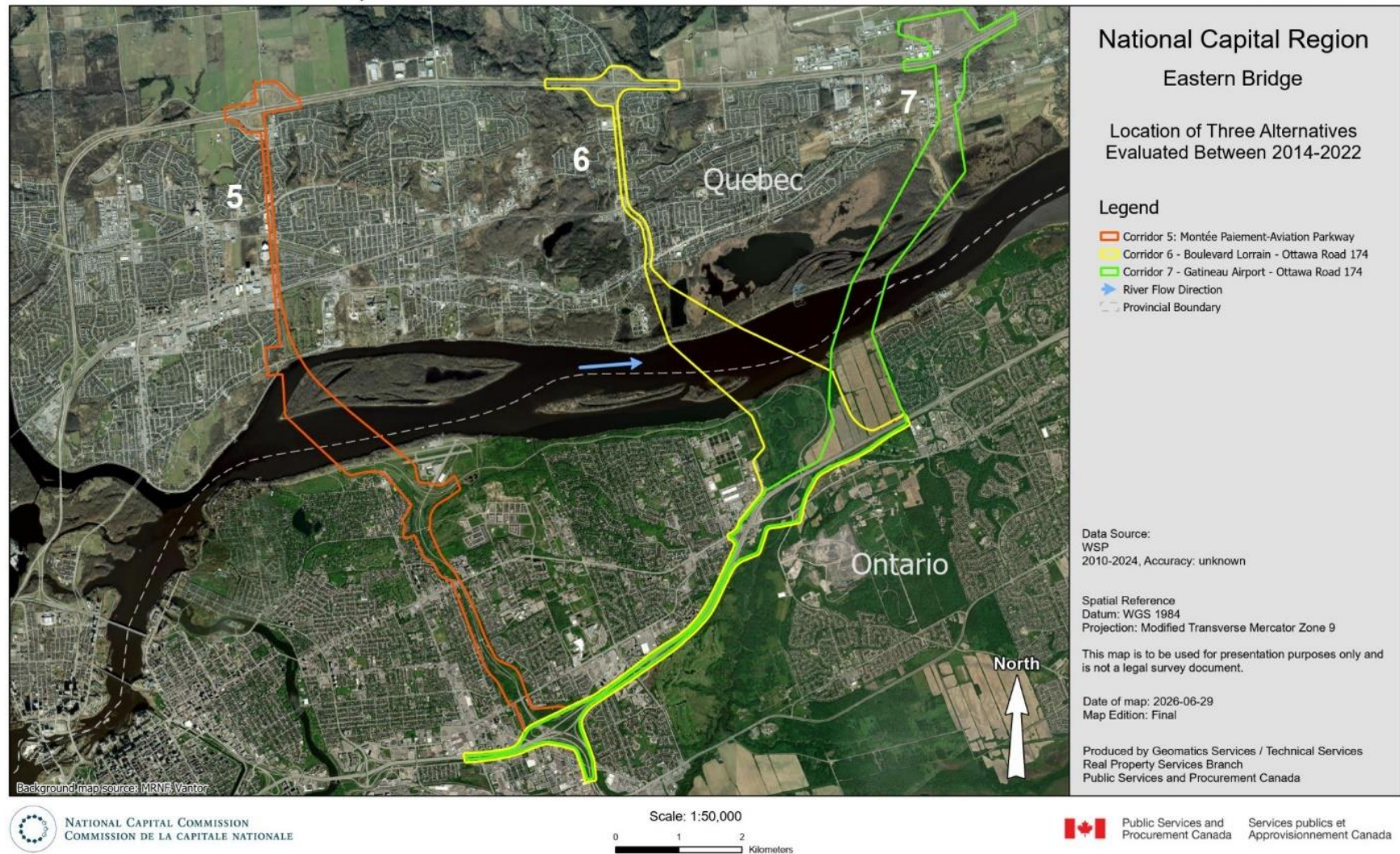


Figure 1-4: Three Eastern Sector Corridor Alternatives

2009-2013: (Phase 2 – A and B) Studies confirmed the need for an additional interprovincial link and proposed the Montée Paiement-Aviation Parkway corridor (Corridor 5) as the technically preferred location while retaining the other two corridors for further examination. This work included detailed assessments and evaluations of the corridors from environmental, social, design, and transportation perspectives. Although the technical analysis and reports were completed, the environmental assessment report was not completed following the decision to stop the process.

2019: In Budget 2019, the federal government announced that it would address the need for an additional NCR crossing. A refresh of the previous technical and environmental studies focused on the same three top-rated corridors was completed, and a summary report was published online in June 2020. This study confirmed the Montée-Paiement-Aviation Parkway corridor as the technically preferred location for the crossing (see Section 7 for details).

2021: Budget 2021 confirmed the creation of an integrated project office for the additional crossing in the NCR. PSPC and the NCC formed an IPT in response to this direction.

2024: NCC refreshed the studies comparing Corridors 5 and 7, focusing on updating select information to align with the requirements of the IAA and replacing outdated information, including personal and commercial travel data. WSP was retained to support this latest round of studies. Key findings reaffirmed previous work, which again validated Corridor 5. Corridor 6 was not included in this latest analysis based on previous evaluations which consistently ranked the corridor as least favourable of the three and noted a lack of effective mitigation strategies to address significant community impacts. In its 2024 Fall Economic Statement, the Government of Canada reiterated its commitment to building an additional multimodal bridge and corridor in the eastern part of the NCR. The Corridor 5 along the Montée-Paiement – Aviation Parkway corridor was selected for the Eastern Bridge Project, which will become the first crossing in the NCR East of the Rideau and Gatineau rivers.

1.2 Eastern Bridge Project

The Eastern Bridge Project is a transportation initiative that includes the planning, design, and construction of a new interprovincial bridge and corridor between Ottawa and Gatineau, spanning the interprovincial boundary on the Ottawa River (Figure 1-5). The Project also includes modifications to existing roads and intersections along the Montée-Paiement-Aviation Parkway corridor.

The Project areas shown in Figure 1-5 are defined as follows

Project Area (PA): Encompasses the anticipated area of physical disturbance associated with the construction and operation of the Project. The conceptual Project footprint was used as the basis for the preliminary assessments conducted during at this stage. As the Project progresses, the PA will be refined, as more detailed information becomes available.

Local Study Area (LSA): Encompasses the PA, the area in which Project-related impacts or effects are anticipated to occur, with a 300m buffer surrounding it.

Project Location

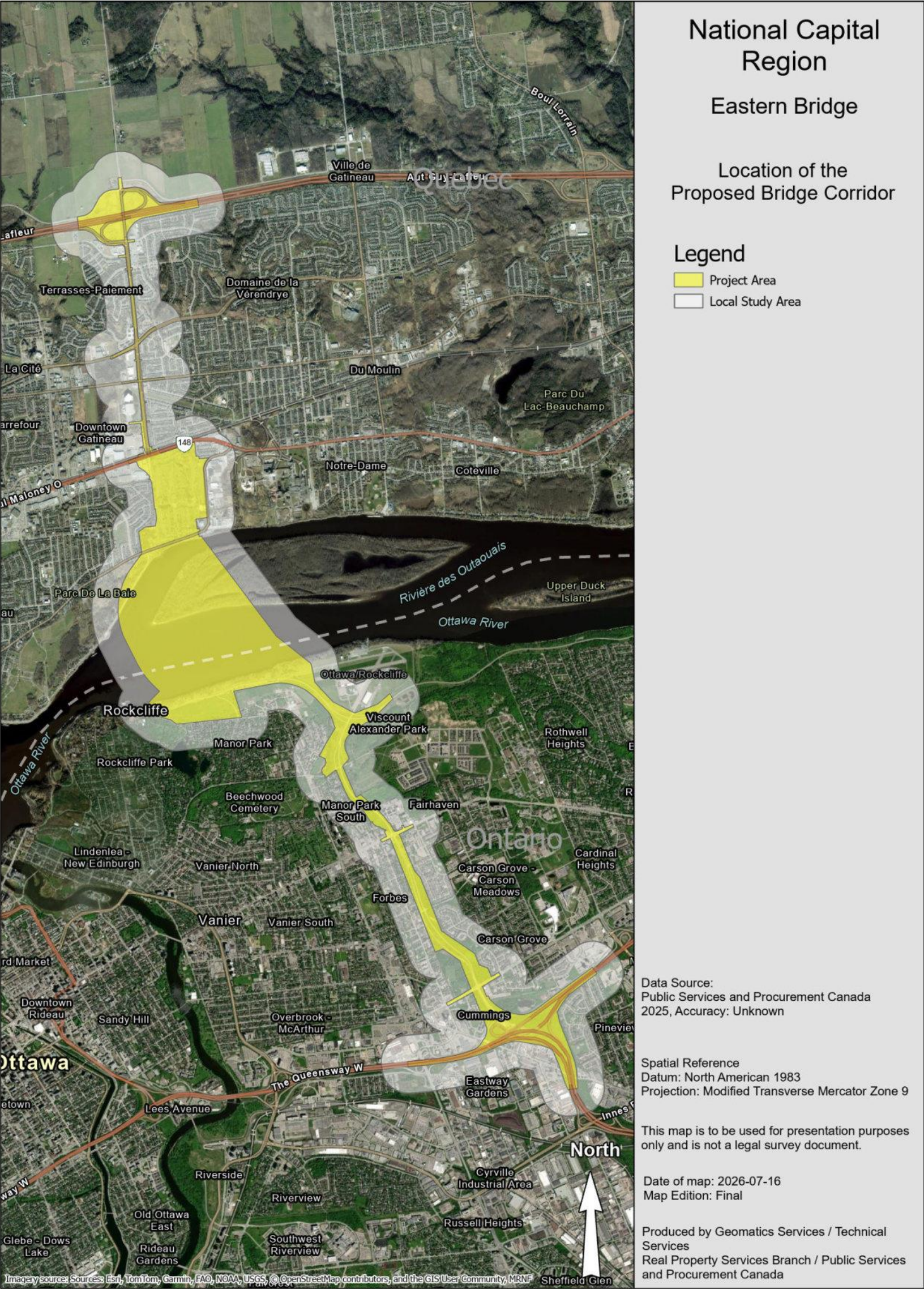


Figure 1-5: Location and Corridor Boundaries of the Eastern Bridge Project

The selected corridor connects Autoroute 50 (Guy Lafleur Highway) via Montée-Paiement in Gatineau with highway 417 (Queensway) via the Aviation Parkway in Ottawa. It is planned to accommodate all modes of transportation including pedestrians, bikes, transit, private, and commercial vehicles.

The corridor is approximately 11 kilometres (km) long, including about 2 km of bridge spanning the Ottawa River. The Project is being conceived in segments to reflect the unique context, communities, and conditions and how they vary along the length of the corridor (see Sections 7 and 13 for details). This approach to segmenting the corridor will allow for a more context-sensitive approach, while balancing the need for a cohesive corridor and connected communities. These segments are presented in more detail in Section 7.3.2, Project Location.

1.3 Document Overview

This IPD structure reflects the requirements of Schedule 1 of the *Information and Management of Time Limits Regulations*. Table 1-1 provides an overview of the content and structure.

Table 1-1: Document overview

Section	Description of Content
1 - Project Overview	Overview of the Project, including the Project's name, type, proposed location, planning background, and a document structure.
2 – Proponent Information	The proponent's (IPT's) names and contact information and the names and contact information of their primary representatives for the purpose of the IPD.
3 – Summary of Engagement	A summary of public and stakeholder engagement undertaken, including a summary of the key issues raised and the results of the engagement, and a brief description of plans for future engagement.
4 – Summary of Indigenous Engagement	A list of the Indigenous groups that may be affected by carrying out the Project, a summary of any engagement undertaken with the Indigenous peoples of Canada, including a summary of key issues raised and the results of the engagement, and a brief description of plans for future engagement.
5 – Environmental Studies and Regional Planning or Assessment	A list and brief description of studies and plans that are relevant to the Project, that are being or have been conducted in respect of the NCR.
6 – Strategic Assessment	A brief description of strategic assessment(s) relevant to the Project that have been or will be carried out under section 95 of the IAA.
7 – Project Purpose and Need	A statement of the purpose of and need for the Project, including the regional planning context, potential benefits, and functional requirements.
8 – Provisions Describing the Designated Project	The provisions in the schedule to the <i>Physical Activities Regulations</i> describing the Project, in whole or in part.
9 – Project Infrastructure	A description of infrastructure, permanent or temporary structures, physical works, and activities that are included in and associated with the construction, operation, and decommissioning of the Project.
10 – Production Capacity	A description of projected traffic volumes and bridge capacity.
11 – Project Schedule	The anticipated schedule for the Project's construction, operation, decommissioning, and abandonment.

Section	Description of Content
12 – Project Alternatives	An overview of the potential alternatives to the Project that have been considered and the potential alternative means of carrying out the Project that are being considered and that are technically and economically feasible.
13 – Project Location Information	A description of the Project's proposed location, including its proposed geographic coordinates, the proposed locations of major ancillary facilities, and a description of the spatial boundaries of the proposed study corridor. Maps that show the Project's proposed general location and the spatial relationship of the Project components. A legal description of land to be used for the Project, including, if the land has already been acquired, the title, deed or document, and any authorization relating to a water lot. The Project's proximity to federal lands. The Project's proximity to residences and to the nearest affected communities. The Project's proximity to land used for traditional purposes by Indigenous peoples of Canada, First Nation land, and land that is subject to a comprehensive land claim agreement.
14 – Physical and Biological Environment	A brief description of the physical and biological environment of the Project location.
15 – Socio-Economic Environment	A brief description of the health, social, and economic context in the region where the Project is located.
16 – Federal Financial Support	A description of financial support that federal authorities are providing to the Project.
17 – Regulatory Jurisdiction	A list of any jurisdictions that have powers, duties, or functions in relation to an assessment of the Project's environmental effects.
18 – Potential Effects on the Environment within Federal Jurisdiction	A list of non-negligible adverse changes to the following components of the environment that are within the legislative authority of Parliament that may be caused by the carrying out of the Project: • fish and fish habitat, as defined in the <i>Fisheries Act</i> • aquatic species, as defined in the <i>Species at Risk Act</i> • migratory birds, as defined in the <i>Migratory Birds Convention Act, 1994</i> Adverse changes to the marine environment that are caused by pollution and that would occur outside Canada are not anticipated for this Project. Carrying out of the Project is not anticipated to cause non-negligible adverse changes to marine plants, as defined in subsection 2(1) of the <i>Species at Risk Act</i>.
19 – Potential Effects on the Environment	A brief description of non-negligible adverse changes to the environment including interprovincial waters that may be caused by the carrying out of the Project. This Project is to be carried out on federal and non-federal lands and is a federal undertaking. This section discusses adverse effects beyond those in typical areas of federal jurisdiction.
20 – Potential Impacts on Physical and Cultural Heritage of Indigenous Peoples	A brief description of non-negligible adverse impacts on physical and cultural heritage, the current use of lands and resources for traditional purposes or any structure, site or thing that is of historical, archaeological, paleontological or architectural significance—with respect to Indigenous peoples of Canada and

Section	Description of Content
	resulting from any change to the environment—that may be caused by the carrying out of the Project.
21 – Potential Impacts on Health or Socio-economic Conditions of Indigenous Peoples	A brief description of non-negligible adverse changes occurring to the health, social or economic conditions of the Indigenous peoples of Canada, that may be caused by the carrying out of the Project.
22 – Greenhouse Gas Emissions	An estimate of greenhouse gas (GHG) emissions associated with the Project.
23 – Waste and Emissions	A list of the types of waste and emissions that are likely to be generated by the Project.
24 – Environmental Protection	A brief description of management plans that will be required for construction and operation of the Project.
25 – References	A list of cited references in the document.
Appendices	Additional information to support the IPD.

2 Proponent Information

The individuals identified in Table 2-1 below should be included in correspondence regarding this Project. Correspondence may be provided to the IPT in either official language.

Table 2-1: Proponent contact information

Proponent	Planning Collaboration
<u>Public Services and Procurement Canada</u> 165 Rue l'Hôtel-de-Ville, phase II, Place du Portage Gatineau (Québec) J8X 0A3 Tel: 1-800-926-9105 Email: questions@tpsgc-pwgsc.gc.ca	<u>National Capital Commission</u> 100-12 York Street Ottawa (Ontario) K1N 5S6 Tel: 1-800-465-1867 Email: info@ncc-ccn.ca
Alanna Jorgensen, Senior Director - NCA Bridges Real Property Services (RPS) Infrastructure Asset Management (IAM) 140 O'Connor St Ottawa (Ontario) K1A 0R5 Email: Alanna.Jorgensen@tpsgc-pwgsc.gc.ca	Julie Lefebvre Chief, Bridges and Environmental Studies 100-12 York Street Ottawa (Ontario) K1N 5S6 Email: Julie.Lefebvre@ncc-ccn.ca
Tina Hearty-Drummond Real Property Services (RPS) Technical Services (TS) 140 O'Connor St Ottawa (Ontario) K1A 0R5 Email: tina.hearty-drummond@tpsgc-pwgsc.gc.ca	Gabriel Bernard-Lacaille Senior Environmental Officer 100-12 York Street Ottawa (Ontario) K1N 5S6 Email: Gabriel.Bernard-Lacaille@ncc-ccn.ca

3 Summary of Engagement

The successful planning and implementation of infrastructure such as this new bridge and access corridor require collaborative efforts with diverse public sector partners, stakeholders, as well as the public. Meaningful engagement across municipal, provincial, and federal levels, as well as with Indigenous communities ensures that the Project is informed by a broad spectrum of perspectives and expertise. Engaging Indigenous communities early and consistently fosters transparency, builds trust, and supports the development of inclusive and sustainable solutions. This process is key to achieving social acceptance and ensuring that community, stakeholder and Indigenous community perspectives are reflected in Project outcomes.

3.1 Institutional Engagement

This section provides information on engagement with transportation partners at the municipal and provincial levels of government. It also provides a summary of engagement with provincial agencies that will play a regulatory function.

3.1.1 Federal Departments

Introductory meetings were held with Fisheries and Oceans Canada (DFO) and Transport Canada as well as NCC's team overseeing the FLUDTA process to provide an overview of the Project and initiate discussions on regulatory requirements. Authorisations or permits will be required from each Federal organisation. Each will be kept informed of progress at major milestones of the Project.

Fisheries and Oceans Canada (DFO) did not have issues of note during the meeting but wished to be informed regularly on Project updates to coordinate required approval details within the ongoing impact assessment.

Discussions with Transport Canada (TC), Nav Canada and the Ottawa/Rockcliff Airport sought to gather information related to airport and waterdrome operations as well as navigation channel constraints that must be considered in the design of the road leading up to as well as the bridge itself.

The alignment of the bridge must consider the preliminary obstacle limitation surface (OLS) for the Ottawa/Rockcliffe Airport (CYRO) which imposes height limitations on the main crossing superstructure. It will also be an important consideration during the construction phase, particularly along the South shore because the use of gantries and cranes for superstructure erection will interfere with it. Further discussions will be required to address potential impacts to the waterdrome operations.

Two navigation channels were identified in the Project Area (PA). The main channel is in the wider portion of the river closest to the Ottawa shoreline while a secondary channel is between Kettle Island and the Gatineau shoreline. Navigational channel requirements will be refined and confirmed once boat surveys are available and submitted to TC Navigation Protection Program for confirmation and approval. Further discussions will be required as the Project progresses to coordinate required information to support approvals.

Potential impacts to Species at Risk will be identified after the alignments have been selected and field studies completed for the entire corridor. This information will be essential to initiate discussions with Environment and Climate Change Canada (ECCC) regarding proposed mitigation strategies and potential permitting required under the *Species at Risk Act* (SARA).

3.1.2 Transportation Partners

Discussions with transportation partners were initiated early in the planning process. Specifically, meetings with Ontario Ministry of Transportation (MTO), Ministère des Transports et de la Mobilité Durable du Québec (MTMD),

City of Ottawa, and Ville de Gatineau were held to introduce the Project and begin discussions regarding potential impacts to municipal and provincial infrastructure. Also invited to these early discussions were both entities responsible for transit in Ottawa and Gatineau, OC Transpo, and the Société de Transport de l'Outaouais (STO).

Key takeaways across all meetings include:

- Strong emphasis on collaboration across the IPT, provincial, and municipal levels. Notably, OC Transpo and STO asked for joint participation in transit-related meetings.
- Transit and infrastructure integration are central to the Project's planning, with ongoing coordination needed. A four-lane cross-section with improvements for sustainable transportation was discussed for Montée-Paiement.
- Concerns about trucking corridors (King Edward-Rideau-Waller-Nicholas and Montée-Paiement).
- Sharing of Project data and studies was emphasized to support the Project planning and coordination.

Key issues raised by the Ministère des Transports et de la Mobilité Durable du Québec:

- Potential interactions between the Project and work planned by MTMDQ on the Montée Paiement-Autoroute 50 Interchange.

Key issues raised by the Ville de Gatineau:

- Potential interactions between the Project and work planned by Ville de Gatineau to widen Boulevard la Vérendrye.

Key issues raised by the Société de transport de l'Outaouais:

- Concern about congestion; wanted to know whether lanes reserved for public transit would be considered. Transit travel times/reliability are priority within STO.

Key issues raised by the Ontario Ministry of Transportation:

- Encroachment permits, right-of-way approvals, and property access agreements will be required.
- Requests to stay involved throughout the Project lifecycle with opportunities to review the designs. Reports, deadlines, and all documentation must be shared for adequate reviews. MTO will participate in the design process once an agreement is in place.
- A concept design and design parameters are needed before drafting an agreement. Final drawings must be provided for review prior to executing the agreement.

Key issues raised by the City of Ottawa:

- Will need details on data/plans that will impact segments of Ottawa traffic, urban integration, transit systems.
- Sharing the forecast of construction projects for the City will contribute to opportunities for coordination.

Key issues raised by the OC Transpo:

- Looking for details on potential impacts on existing transit routes that the Project may create.

3.1.3 Municipal Departments

An introductory meeting was held with representatives from the Ville de Gatineau water treatment plant. Initial discussions focused on the potential bridge alignments in the vicinity of the water intake infrastructure to discuss concerns and potential constraints related to the Project. The feedback helped identify potential risks and inform Project planning.

Key issues raised during the meeting included:

- Scenarios and assumptions used to select the corridor, if the water intake was considered in the analysis.
- Risks related to contaminants, spills, and hazardous materials. Bridge alignment alternatives within the corridor should consider the water source protection zone and associated vulnerabilities related to water quality.
- Need to establish mitigation measures, monitoring to address turbidity and sediments, including acceptable thresholds and containment measures during construction.
- Studies of raw water quality will be required prior to, during, and after construction.
- During construction and in preparation for operation of the bridge, a contingency plan, including alert mechanisms or work stoppage procedures will be required.
- It will be important to discuss the location of stormwater discharge outlets and the capacity of retention structures to take into consideration extreme scenarios such as spill of hazardous materials combined with heavy rainfall events.
- Protocols to manage emergencies that include response times and a system for communicating with the Ville de Gatineau will be required for decisions to shut down the intake.

3.1.4 Provincial Impact Assessment Offices

Introductory meetings were held with members of Québec's Ministère de la lutte contre les changements climatiques, la faune et les parcs (MELCCFP) and Ontario's Ministry of Environment, Conservation, and Parks (MECP)—responsible for provincial impact assessments—to provide an overview of the Project and determine if the provincial legislative process was triggered or applicable.

The road realignment along Montée-Paiement and the footprint of the works within the river area may require an impact assessment under Québec's legislation and further discussions will be required as the Project is better defined.

Changes to the highway 174/417 interchange could require an assessment under a Class Environmental Assessment, if the Project is undertaken by the MTO as a separate component. This will be determined in future discussions with MTO.

3.2 Stakeholder and Public Engagement

3.2.1 Previous Engagement

This section provides an overview of the engagement initiatives and outcomes that occurred prior to the Government of Canada Eastern Bridge announcement in January 2025. Public and stakeholder engagement for a new crossing in the NCR began in 2006, with Phase 1 that continued into 2009. Engagement for Phase 2 A and B ran from 2009 to 2014. The following subsections provide a summary of the outcomes of those engagements. It also describes initial findings from current public and stakeholder engagements and planned future engagements.

The objective for Phase 1 (2006-2009) was to assess the need and justification for a new interprovincial crossing of the Ottawa River. Consultation consisted of 12 public meetings in Ottawa and Gatineau and four rounds of consultation with partners including a Technical Advisory Committee, Public Consultation Group, external agencies,

municipalities, and Indigenous communities. In addition, thousands of individual comments were received via written submissions (e.g., comment sheets, mail, fax, email, or personally delivered).

The key topics of discussion were:

- Round 1—Drafting the terms of reference for the Technical Advisory Committee
- Round 2—Needs analysis
- Round 3—Analysis and evaluation of alternative solutions
- Round 4—Identification and evaluation of alternative corridors

A key outcome was confirmation that, from a regional perspective, the public and other stakeholders generally supported a new interprovincial crossing. Out of ten alternative corridors initially presented, three eastern options were selected for more detailed evaluation and study (see also Section 12).

The objective of consultation for Phase 2A and B (2009-2013) was for communities, stakeholders, and the public to participate in developing methodologies for evaluation of the three retained corridors, impact assessment, and determining mitigation measures. Engagement events consisted of two public consultation sessions, one in Ottawa and a second in Gatineau, an online consultation exercise, and a total of 14 meetings with the following groups:

- Public Consultation Group (three meetings)
- Community consultation groups (six meetings)
- Ottawa's East End and Lowertown communities (two meetings)

Ongoing opportunity for written submissions was also provided throughout the engagement period.

The results of Phase 2A consultation indicated that community stakeholders and the public generally felt a new crossing was necessary: 69% of written correspondence was favourable to the development of a new bridge, 29 % expressed no explicit opinion, and 2% opposed a new crossing. The location of a new link was more contentious, where concerns were raised regarding Corridor 5. Key issues raised are summarized below.

- **Quality of life**—Some community groups expressed concern about increased noise and vibration from the new crossing. Concerns about increased truck traffic and the importance of prohibiting truck traffic on neighbourhood streets were frequent.
- **Community cohesion**—Some communities stressed the importance of maintaining connections within and between neighbourhoods. Bike paths and other trails were highly valued by the community.
- **Transparency and fairness in the planning process**—Some community groups felt their input would be less impactful than that of wealthier, more influential communities. The consultation and engagement processes were criticized by some individuals; specifically, there was concern that certain groups/agencies had too much influence in the process.

Phase 2B included a comprehensive consultation and engagement program. The consultation objectives were for the public to participate in refining the shortlisted corridors and evaluating preliminary concepts based on priorities and values. Engagement methods included a variety of event types delivered over three rounds. A fourth round of engagement was planned but not delivered due to the termination of the Project.

3.2.1.1 Consultation and Engagement Program for Phase 2B

- Round 1—Priorities and values
- Round 2—Evaluation factors, corridor-specific input/functional design, measurement of net effects, completion of evaluation criteria
- Round 3—Ranked corridor input

Through engagement events, 32 values were identified and grouped into five categories:

- Protecting human health
- Maintaining quality of life
- Ensuring safety
- Preserving wildlife
- Optimizing economic impact

Some participants opposed one or more of the alternative corridors or opposed a new interprovincial crossing altogether. Many respondents raised concerns about corridor alignments, frequently citing increased traffic (especially truck traffic) and impacts to public transit. Participants were concerned about the impacts of opening Aviation Parkway to commercial vehicles. Overall, there was concern about the planning process and transparency in how the alternatives would be evaluated. Other issues raised included concerns about impacts to human health, safety, and quality of life.

3.2.1.2 Summary of Key Issues Raised

Key issues that emerged from the previous public engagement processes included concerns about the study process, environmental and socioeconomic impacts, and the justification for a new crossing.

- **Study process**—Throughout Phase 1 and Phase 2A, members of the public expressed a strong desire to participate in the evaluation and had questions about the study methods, planning process, and consultation process. There were questions about the factors and subfactors being used in the evaluation and suggestions for new subfactors or changes in how subfactors should be evaluated. There was an overall desire for fairness and transparency in evaluation methods.
- **Natural and socioeconomic environmental impacts**—Participants expressed concerns about how a new crossing might impact the natural environment. Concerns about how increased traffic, noise, and reduced air quality could affect nearby residents were frequently heard from Ottawa residents. Some residents expressed concern about the potential impacts to residential land values. There were also some concerns about how increased traffic could affect schools, hospitals, community centres, and other institutions.
- **Need and justification for a new crossing**—Some members of the public requested details about why a new crossing was needed over improvements to public transit. Some opposition to any new crossing of the Ottawa River was encountered from Ottawa residents.
- **Cost**—Some participants emphasized the importance of fiscal restraint and suggested that the Project could be funded, or costs recouped, through bridge tolls.
- **Truck traffic**—Increases in truck traffic on roads approaching the new crossing were a frequent concern, especially for residents around Aviation Parkway, which is currently closed to trucks.
- **Design**—Participants expressed the importance of design aesthetics and making the bridge a “world-class” structure within the NCR.
- **Urban integration**—Some participants expressed the importance of integrating the Project with existing infrastructure and ensuring it improves, rather than impedes, community cohesion.
- **Expropriation criteria**—Landowners requested transparency in how lands to be expropriated, if any, would be identified and how compensation would be determined.

3.2.2 Recent Engagement

For this Project, consultation and engagement with the public and stakeholders was initiated early in the planning process to obtain input on the Project's most important benefits, its impacts and potential measures to minimize these impacts.

Engagement will utilise several approaches to reach targeted audiences from diverse backgrounds, stakeholder groups, impacted community and residents with an interest in the Project.

3.2.2.1 Public Advisory Groups

Three Public Advisory Groups (PAG) were established. The PAGs will ensure that a wide range of perspectives, community interests, and stakeholder needs are not only represented, but also given due consideration at every stage of the Project's lifecycle. Members of the PAGs can provide informed input and bring forward the perspectives of their respective organizations and/or communities for the duration of the Project.

The PAGs established for this project are:

- **Ontario PAG**—members of community associations and condo boards located on the Ontario side of the corridor were invited to participate to represent diverse interests with a focus along the Aviation Parkway portion of the Project.
- **Québec PAG**—members of community associations and housing communities located on the Québec side of the corridor were invited to participate to represent diverse interests with a focus along the Montée-Paiement portion of the Project.
- **Environment and Sustainable Transportation PAG**—members of environmental and transportation advocacy groups were invited to participate to represent diverse interests with a focus on the river and shoreline portions of the Project and connectivity to the transportation network. AOPFN and KZA have also expressed an interest in participating in this group.

For the first meeting of each PAG, the Project team discussed the previous studies that were carried out for the corridor selection since 2006, the planning context, including the update to the Long-Term Integrated Interprovincial Crossings Plan (LTIICP) (NCC, 2022 under revision) described in Section 5 and the interprovincial trucking considerations. The PAGs were provided with an overview of engagement including the purpose for the initial round of public consultations, which aims at identifying the key community benefits and impacts, guiding the Project's planning and design principles and informing the impact assessment process. In addition, the Project team shared the draft themes from the planning and design principles that will be developed to guide the technical advisor in the design of the eastern bridge and the road infrastructure along the corridor.

Initial questions and concerns raised by the PAGs:

- How the bridge fits within municipal transportation plans.
- Concerns regarding the need for the Project based on shifting travel in the core area to transit.
- Concerns regarding increased traffic at some intersections where new developments are planned.
- Concerns regarding community safety and human health due to the presence of large commercial vehicles along the corridor.
- Interest in understanding which types of active transportation will be accommodated, as well as the vision for active transportation connections.
- Concerns regarding air and noise pollution along the corridor.
- Concerns raised regarding protections for Kettle Island.

For the second round of meetings with each Public Advisory Group (PAG), the Project team presented a summary of the feedback received during the first round of public participation and outlined how this input is informing the Project moving forward. The PAGs were provided with an update on the planning and design principles, including refinements made since the initial meetings, and an introduction to the design selection framework and options analysis phase that will be used to assess and screen potential bridge and corridor concepts. The Project team also shared updates on the status of technical and ecological studies, clarified next steps in the planning process, and outlined how PAG feedback will continue to inform the development of the Project, including the impact assessment process.

Key questions, comments, and concerns raised by the PAGs included:

Procedural issues

- Suggest that the multicriteria assessment process used in the design selection framework prioritize socio-cultural as well as environmental criteria.
- Question regarding Project governance, costs, funding responsibilities, and the availability and transparency of technical studies and data used to inform decisions.

Environmental concerns

- Environmental concerns related to air quality, noise, induced traffic, energy consumption, and impacts to sensitive ecological features and species along the corridor.
- Significant concerns regarding potential impacts to Kettle Island, including its ecological value, protected status, and cultural significance, as well as request for transparency on bridge alignment, pier locations, and mitigation measures.
- Concerns on potential fragmentation of sensitive natural areas.

Community impacts

- Concerns regarding the volume of anticipated diversion of truck traffic, and whether the Project could shift impacts from the downtown core to neighbourhoods along the corridor.
- Concerns about increased traffic volumes, safety, and human health impacts, particularly near intersections, residential areas, and areas experiencing planned growth or constrained roadway geometry.
- Recommend strengthening principles that reduce environmental and community impacts, reinforce safety for vulnerable users, and better reflect the needs of dense residential areas such as Montée Paiement.

Sustainability concerns (climate change)

- Impacts of climate change on the structures.

Long-term mobility (induced demand, congestion)

- Questions about how the Project aligns with municipal and regional transportation plans, including transit service capacity, interprovincial goods movement, and connections to major highways and transit systems.
- Requests for greater clarity on active transportation infrastructure, including cycling and pedestrian facilities, shoreline connections, winter maintenance, and how active transportation users will be protected from adjacent heavy vehicle traffic.

The next round of PAG meetings on the alignment and early design concepts is anticipated for summer 2026.

3.2.2.2 Potentially Affected Stakeholders

The IPT is organizing meetings with potentially affected stakeholders to understand their specific concerns that may influence the design alternatives under consideration. These meetings form a core component of the broader

engagement strategy, which includes targeted outreach to institutions and relevant landowners along the corridor. Current outreach efforts include engagement with the Montfort Hospital, Canada Aviation and Space Museum, RCMP (Musical Ride), Tecumseh Golf Course, Ottawa/Rockcliffe Airport and Ottawa Flying Club, Library and Archives Canada, as well as various educational institutions, daycare facilities, and other establishments located within the Ontario and Québec segments of the corridor. The IPT is committed to ensuring that stakeholder concerns and potential Project impacts are meaningfully considered and transparently addressed at each key milestone of the Project. To this end, the IPT will meet regularly with stakeholders to gather feedback, document issues raised and incorporate insights into the planning and design process.

The IPT will also carry out targeted outreach with representatives of the trucking industry to better understand the operational realities, challenges, and preferences of freight carriers operating between Ontario and Québec. Insights gathered through these consultations will inform the development of strategic measures to encourage the use of the new bridge and corridor by commercial vehicles, thereby alleviating pressure on existing downtown routes and enhancing the efficiency of regional goods movement. This approach aligns with the Project's broader objectives to reduce truck traffic in the core, improve the public realm, and support economic vitality across the NCR (see Section 7).

Table 3-1: Summary of meetings with Potentially Affected Stakeholders

Stakeholder	Key Issues Raised
Montfort Hospital	Emergency Access: Continued need to allow for access for emergency vehicles, even throughout construction. Redevelopment and Expansion: Montfort has plans for expansion over the coming years; would not want Project to impact construction. Land Acquisition: Current land acquisition for parcel on Aviation. Communication and Engagement: Requested continued updates and engagement throughout the Project lifecycle.
Collège La Cité	Public Transit & Accessibility: Ensure strong public transit connections with a stop near the entrance. Consider campus connectivity and the impact on access routes, including changes to dedicated transit lanes on Montreal Road and Ogilvie. Trucking Growth & Road Capacity: Determine if additional lanes are planned to accommodate intensified truck transport and ensure reasonable commute times and sufficient capacity for growing traffic demand. Student & Staff Accessibility: Many students prefer a quick Uber ride (20 minutes) over an hour on public transit. The college has over 8,000 students and 1,000 staff members.
Canada Aviation and Space Museum	Vibration Risks: Concerns were raised about increased vibrations affecting the museum's varied artifact collection, particularly floor vibrations. Noise Impact: Potential rise in noise levels could negatively affect the visitor experience. Traffic & Access Issues: Aviation Parkway is the sole access route; an off-ramp would improve access. Transit Gaps: Lack of bus service to the museum creates accessibility challenges. A connection to LRT or Rapibus would be highly beneficial.
Rockcliffe Flying Club	Runway Limitations: The Rockcliffe Flying Club emphasized that the existing short runway is critical for operations. They cannot function with a shorter

Stakeholder	Key Issues Raised
	runway and expanding East is considered impossible due to environmental constraints.
	Engine Failure Scenarios: Pilots taking off from runway 27 and experiencing engine failure currently have the RCMP stables field as an emergency landing option, which could be lost.
	Floatplane Operations: The bridge may interfere with the use of the water runway at the waterdrome for floatplanes.
Royal Canadian Mounted Police – The Musical Ride	Traffic & Access Concerns: RCMP emphasized the need to maintain emergency access near their Montreal Road campus during construction.
	Construction Uncertainty: Questions about off-site construction, blasting, and site access were raised.
	Bridge Alignment & Environmental Impact: Concerns about the bridge's alignment and its potential effect on horses at the campus were noted. Further studies on noise, vibration and environmental risks are planned to address these concerns.
Library and Archives Canada	Federal Approval & Process Clarity: Questions raised about whether federal approval means a further decision point or if the Project is still in pre-planning.
	Traffic & Environmental Impact: Concerns about truck traffic along the corridor, potential designation as a truck route, and effects on surrounding land and residents.
	Regulatory Approvals: Questions about FLUDTA approval for Aviation Parkway and other required approvals.
	Parking Concerns: Impact on employee parking needs verification; will be reviewed with technical specialists.
Nature Conservancy of Canada	Bridge Alignment & Environmental Impact: Concerns about the bridge's alignment and its potential impacts to the biophysical values protected under the Provincial <i>Nature Reserve on private lands</i> designation.
Navigation Canada	Assessment of approach procedures: NAV Canada would need to evaluate scenarios.

3.2.2.3 Public outreach

An initial public survey, open from June 19 to July 10, 2025, was conducted to collect public input on the Project's most important benefits and its potential impacts. The online survey received over 7,000 views and a total of 5,113 responses during this period. Understanding the public's perspectives and concerns will lay a strong foundation towards mitigation of potential negative impacts to adjacent communities.

In this first round, the public was invited to:

- identify the Project's most important benefits from a community perspective;
- share their thoughts on the Project's potential impacts on people, places, and the environment;
- propose mitigation measures; and
- help shape the initial planning and design principles that will guide the Project's development.

Several survey respondents expressed hope and optimism about the bridge's potential to improve regional mobility and economic development. These respondents emphasized the urgency of addressing long-standing transportation bottlenecks and perceived the bridge as a necessary step toward modernizing interprovincial infrastructure.

However, feedback also reflected opposition to the Project. Concerns were wide-ranging, with some participants questioning the fundamental need for the bridge, citing it as a costly and potentially disruptive initiative. Others questioned whether the Project was a solution to transportation challenges. Respondents often pointed to the risk of induced traffic (increasing road capacity that could lead to more vehicle travel rather than reducing congestion in the long term), environmental degradation, and negative impacts on residential communities as reasons for their opposition. Several comments emphasized the concerns for impacts to natural areas, increased congestion in already burdened neighbourhoods, and the displacement of traffic problems rather than their resolution. Some respondents advocated for alternative investments, such as expanding public transit systems or improving existing infrastructure, which they felt would offer more sustainable and equitable outcomes.

Diverging perspectives on the Project underscore the importance of ensuring a transparent planning process to address concerns and ensure a variety of stakeholders are heard. The following section provides a summary of the key findings related to the key concerns and potential mitigation from the survey.

The survey results were grouped into the following topics:

- Traffic and Transportation
- Community and Health Impacts
- Environmental Concerns
- Economic and Practical Considerations

Survey Findings

Transportation and Connectivity:

- Ranked as number "1" topic by 48.91% of respondents.
- Clearly the top priority for the majority of participants.

Community and Health Impacts:

- Strong presence across ranks 1 to 3.
- Ranked second by 26.81% of respondents.

Environmental Concerns:

- Most ranked as number "2" by 36.94% of respondents.
- Shows significant concern for environmental factors, though less often ranked as the top priority.

Economic Opportunities:

- Most frequently ranked as fourth by 48.51% of respondents.
- Generally considered less important compared to other topics.

Other (respondents were provided the opportunity to add topics of concern):

- Mostly ranked as #5 by 46.36% of respondents.
- Indicates that predefined categories captured most concerns.

Figure 3-1 illustrates the responses when asked to rank five topics by importance (where 1 is most important). In summary:

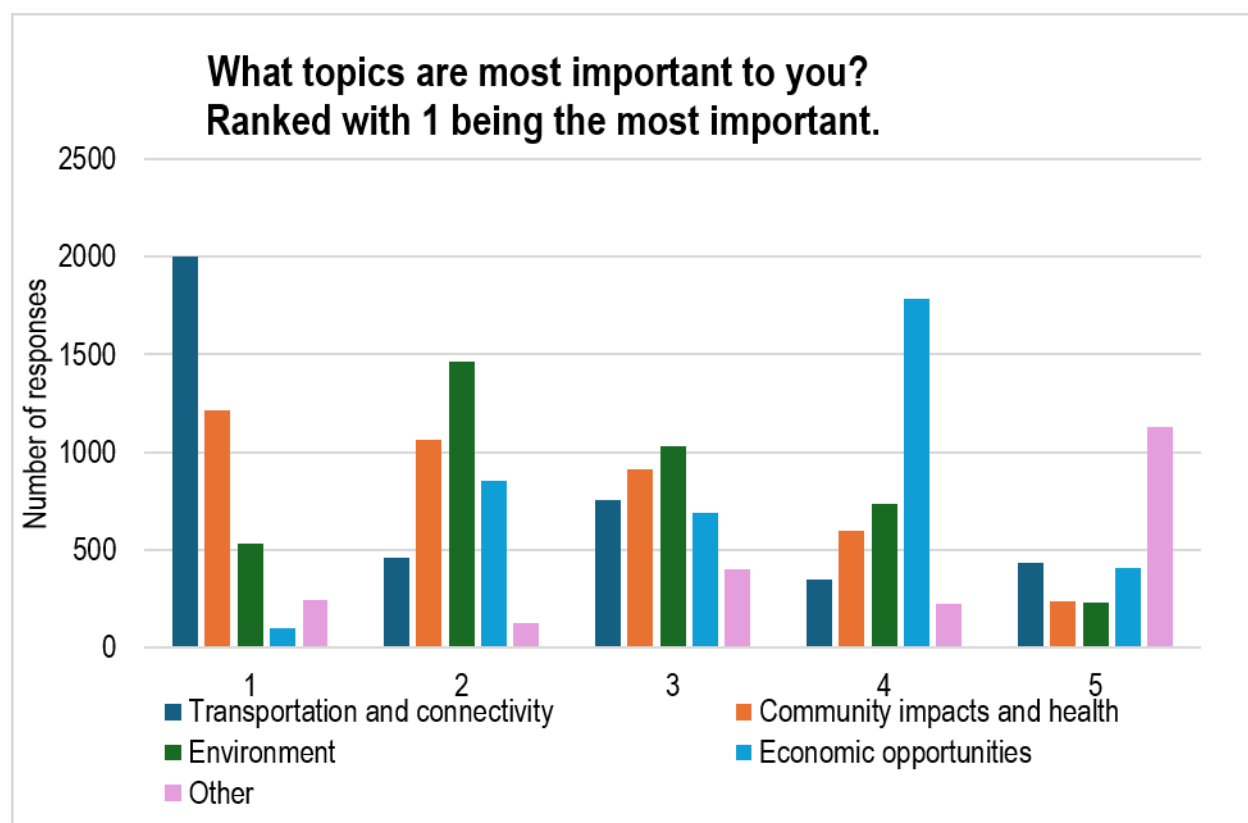


Figure 3-1: Ranking of Topics of Most Importance to Responders

Some respondents ranked 'other' as their number '1' topic. Further analysis of those responses was undertaken to identify additional key considerations for the Project. In their comments, respondents expressed their opposition to or support for the Project. Key concerns and benefits identified in the 'other' category are consistent with the findings from the survey.

An additional concern raised in the comments was the loss of key recreational routes and greenspace (cycling paths, ski trails, river access). This concern was added to the key issues to be considered in the planning and impact assessment process.

Traffic and Transportation

Respondents were asked which aspects of transportation and connectivity would benefit the region, what specific concerns they had, and how those concerns could be mitigated.

Among Project benefits, reducing truck traffic in the downtown core was ranked the most important by 38.5% of respondents. Reducing potential commute times (17.9%) and better options for public transit (14.2%) were the other highest rated benefits.

Respondents expressed strong support for improved integration of transportation modes in the design of the Project. This included a desire to incorporate infrastructure for public transit, as well as safe and accessible cycling and pedestrian routes. Many respondents expressed a strong desire to remove heavy truck traffic from downtown Ottawa, especially along King Edward Avenue, citing safety, noise and air quality concerns.

Considering that respondents could have perceived more than one benefit as important, further analysis was completed to assess the ranking of the top three (3) choices. Figure 3-2 illustrates the summary ranking of the benefits that were selected in respondents' top 3 options which shows consistence with the top ranked benefits identified above.

Quebec residents identified reduced truck traffic in downtown cores as their top benefit (37.97% of responses), as well as reduced commute times (20.57%) and better options for public transit.

Ontario residents indicated that reducing truck traffic was the top benefit (39.76%). They also gave more importance to connections for pedestrians and cyclists (11.26%) than Quebec residents (9.19%).

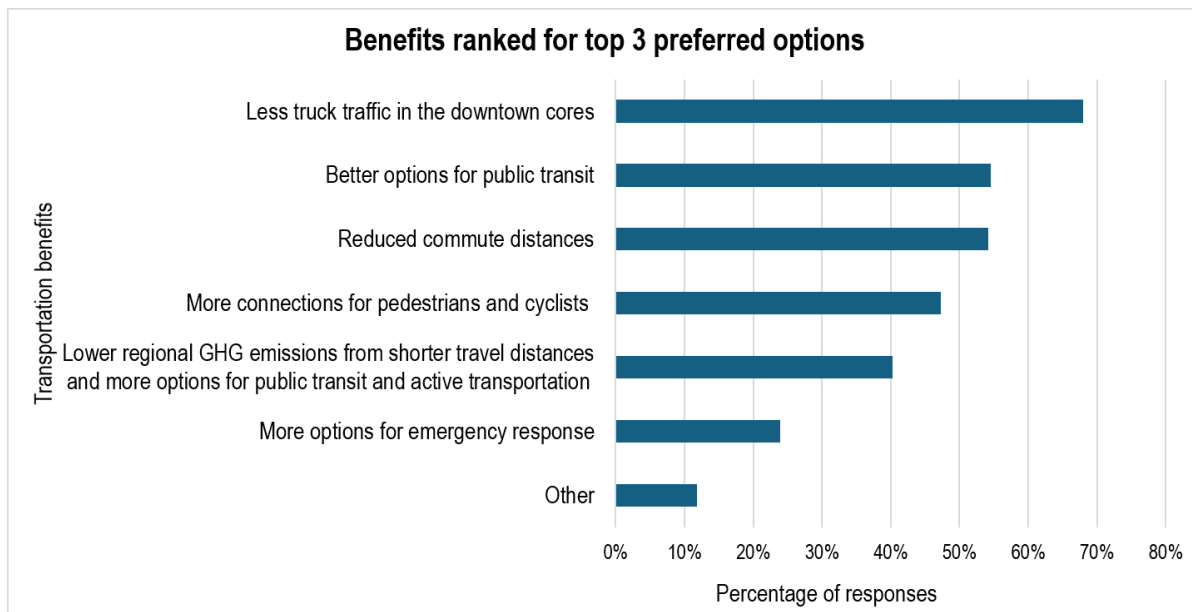


Figure 3-2: Summary Ranking of Transportation Benefits

With respect to concerns, the most common (with 25.6% of respondents ranking it their top concern) was traffic impacts on neighbourhoods. Other concerns ranked as number "1" included the impact of construction activities (18.9%) and the increased congestion on nearby roads (16.9%).

Again, the ranking of the top three (3) concerns was assessed. Figure 3-3 illustrates the summary ranking of the concerns that were selected in respondents' top 3 options which shows consistence with the top ranked concerns identified above.

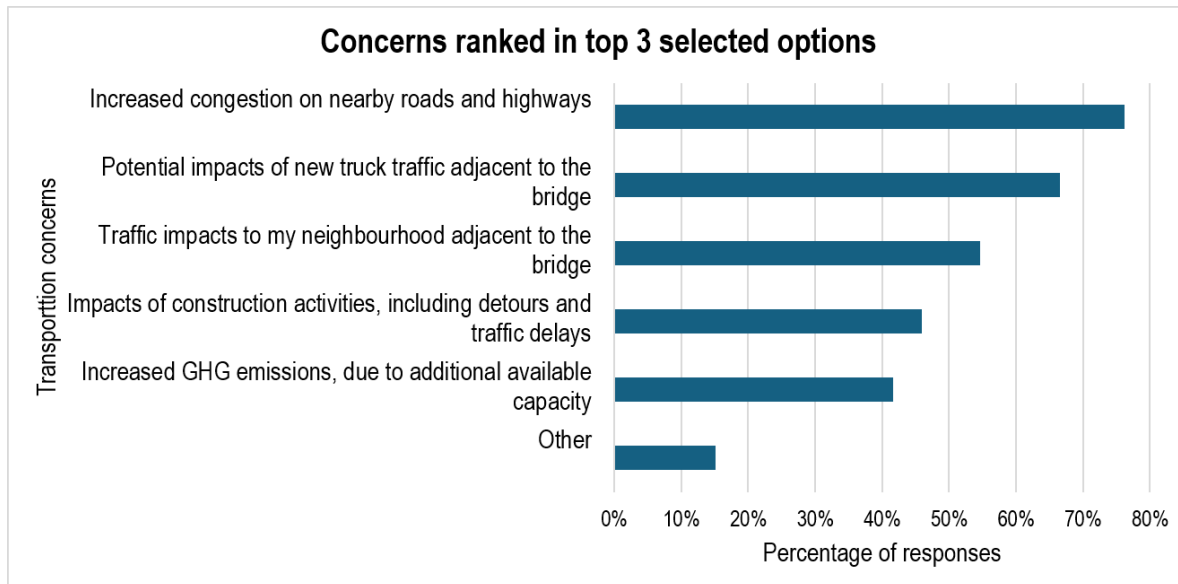


Figure 3-3: Summary Ranking of Transportation Impacts

Among their main concerns, Quebec residents identified the impact of traffic on neighbourhoods (22.85%) and the impacts of construction activities (22.85%).

Ontario residents also expressed concerns about traffic impacts on neighbourhoods (26.18%). Like Quebec residents, Ontario residents listed the impacts of construction activities (19.51%) and increased congestion on nearby roads (17.32%) as their next highest concerns.

Respondent selected the option “other” for both benefits (8.87%) and impacts (11.14%). Further analysis of the responses with “other” was undertaken to identify additional key considerations for the Project. In their comments, respondents expressed both opposition and support for the Project.

Among the comments were:

Opposed:

- Belief that the bridge will not significantly reduce downtown truck volumes and will simply shift the problem to new communities.
- Concerns about induced demand worsening regional congestion and increasing sprawl.
- Concerns regarding the location selected for the crossing.

Support:

- Improved long-term mobility and reduced gridlock between Ottawa and Gatineau
- Perceived as overdue given population growth; urging immediate construction.
- Frustration with decades of studies and political deadlock.

To mitigate the concerns, respondents proposed several strategies:

- Dedicated lanes for active transportation
- Improved coordination with existing transit systems
- Traffic calming strategies in areas adjacent to neighborhoods
- Grade separation at key intersections to reduce congestion and enhance safety for all users

Community and Health Impacts

Respondents were asked which specific community and health factors would result in benefits for the region, what specific concerns they had, and how those concerns could be mitigated.

The most important benefit identified by residents was reducing traffic, noise, and accident impacts on downtown communities (identified in 51% of cases), while 17% of responses noted the bridge potentially reducing the distance to visit family and friends as a benefit.

Again, the ranking of the top three (3) community benefits was assessed. Figure 3-4 illustrates the summary ranking of the benefits that were selected in respondents' top 3 options which shows consistence with the top ranked benefits identified above.

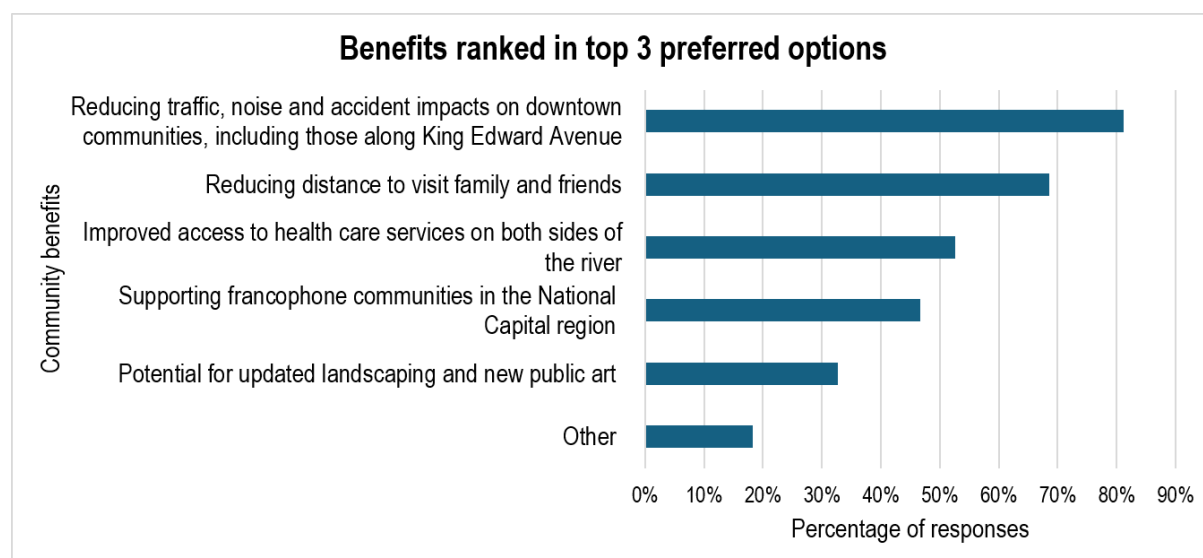


Figure 3-4: Summary Ranking of Benefits for Communities

Quebec residents identified reducing traffic, noise, and accident impacts on downtown communities as their top benefit with 52.0% of them ranking it first). Other benefits were of lesser importance: reducing distance to visit family and friends (16.5%), supporting Francophone communities (4.0%), improved access to health care (3.7%), and landscaping / public art (6.2%). Lastly, 13.2% selected “other” with unique suggestions.

Ontario respondents mirrored Quebec in prioritizing reduced traffic, noise, and accident impacts (51.4% ranked this as their top benefit). Other benefits followed similar patterns: reducing distance to visit family and friends (16.7%), supporting Francophone communities (5.6%), improved health care access (3.8%), and landscaping / public art (3.4%), with “other” at 13.2%.

In terms of impacts, 31% ranked the potential impacts on neighbouring communities through traffic or infrastructure changes resulting from the Project as their top concern. Other primary concerns included potential displacement (16%) and the impact on marginalized communities (12.7%).

Figure 3-5 illustrates the summary ranking of the impacts that were selected in respondents' top 3 options which shows consistence with the top ranked impacts identified above.

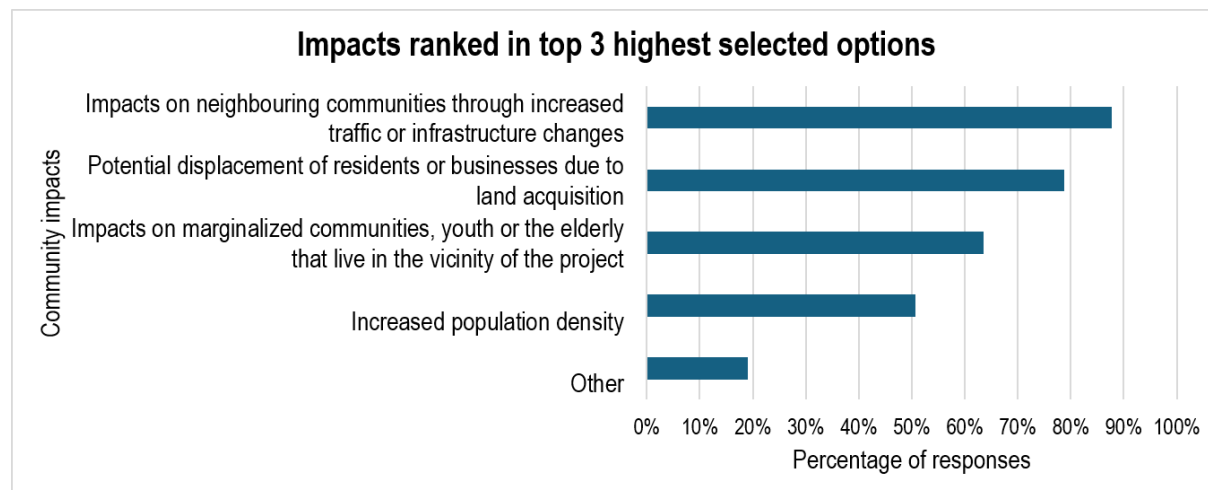


Figure 3-5: Summary Ranking of Impacts for Communities

Among their concerns, Quebec respondents ranked traffic impacts on neighbourhoods highest (39.2%), followed by impacts on marginalized groups (14.8%), and increased population density (9.9%).

Most Ontario responses (50.2%) identified traffic impacts on neighbourhoods as the top issue, followed by displacement (15.5%), marginalized communities (12.7%), and density (7.3%).

Further analysis of the responses with “other” was undertaken to identify additional key considerations for the Project. In their comments, respondents expressed concerns for health impacts associated with air pollution, noise, and vibration. Comments included:

- Increase in vehicle emissions and air pollution for adjacent neighbourhoods.
- Noise pollution from truck engines and traffic
- Light pollution from an illuminated bridge
- Loss of greenspace and access to the river.

To mitigate these concerns, respondents recommended the following:

- Proactive engagement with local communities,
- Transparent communication about construction timelines,
- The inclusion of safety features such as sound barriers and pedestrian crossings,
- Prioritize active transportation, and
- Limit private vehicle use through tolls or restricted access.

Environmental Concerns

Respondents were asked about the Project's potential environmental impacts and to identify the most important aspects to mitigate. As a new infrastructure project would have impacts on the local environment, unlike the previous categories, the survey only provided impacts (rather than benefits) and included a list of 13 potential impacts.

- Effects on the river and riverbed
- GHG emissions related to the future use of the bridge
- Potential water pollution and effects on aquatic wildlife and ecosystems
- Potential impacts on the Kettle Island habitats and wildlife
- Potential impacts of noise and dust during construction
- Carbon footprint of the construction activities and materials
- Potential runoff of winter salt into the river
- Potential impacts on the shorelines
- Potential impacts on species at risks and their habitats
- Potential contribution to air pollution on fish and wildlife
- Potential impacts of noise on fish and wildlife
- Potential impacts of light pollution
- Other

Nearly a quarter (24%) of responses listed marked effects on the river and the riverbed as their top concern, while a similar number were related to water pollution and aquatic ecosystems (11.3%). Another concern was greenhouse gas emissions resulting from future use, ranked the top concern by 12.7% of responses. Finally, construction impacts were also important, as indicated in some responses, with noise and dust during construction (8.2%) and carbon footprint during construction (4.9%) being highlighted.

Many respondents indicated that all environmental aspects were equally important and should be addressed in the planning process.

With a longer list of potential impacts, the ranking of the top five (5) was assessed. Figure 3-6 illustrates the summary ranking of the environmental impacts that were selected in respondents' top 5 options which shows consistence with the top ranked impacts identified above.

In summary:

- Top environmental concerns
 - Potential water pollution and effects on aquatic wildlife and ecosystems
 - Effects on the river and riverbed
 - Potential impacts on the Kettle Island habitats and wildlife
 - Potential impacts on the shorelines
 - Potential impacts on species at risk and their habitats
- Of notable concern
 - Potential runoff of winter salt into the river
 - GHG emissions related to the future use of the bridge
 - Potential impacts of noise and dust during construction
 - Potential contribution to air pollution on fish and wildlife

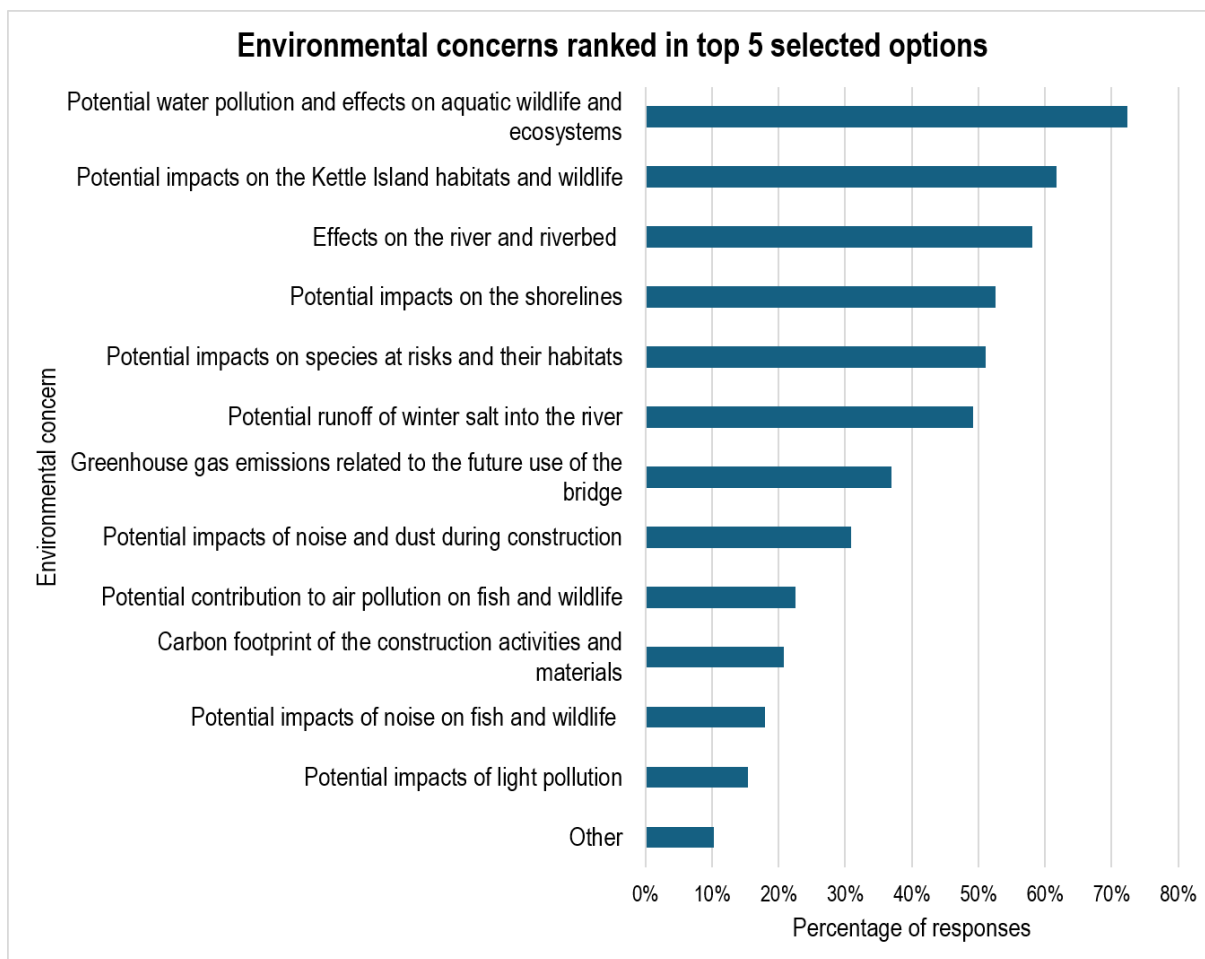


Figure 3-6: Summary Ranking of Environmental Concerns

Quebec respondents placed effects on the river and riverbed at the top of their environmental concerns, with 26.4% ranking it first. Other major concerns included greenhouse gas emissions related to future use (13.9%), water pollution and harm to aquatic wildlife (10.0%), and impacts on Kettle Island habitats (9.5%). Lesser, but notable,

concerns were noise and dust during construction (6.5%), salt runoff into the river (6.5%), and miscellaneous “other” suggestions (6.5%).

Ontario respondents’ top concern was the effects on the river and riverbed, with 23.4% ranking it first. Other top concerns were greenhouse gas emissions (13.6%), water pollution (11.5%), and Kettle Island habitats (10.0%), followed by noise/dust during construction (7.8%), and salt runoff (7.3%). Lower-ranked issues included the carbon footprint (5.8%), species at risk (4.3%), and light pollution (2.4%).

Further analysis of the responses with “other” was undertaken to identify additional key considerations for the Project. In their comments, respondents expressed concerns for:

- Noise, light, and vibration altering a quiet natural area
- Loss of trees, vegetation, and scenic views along the Aviation Parkway and riverfront.

Mitigation suggestions identified by respondents included the following:

- Use of green building materials
- Noise-reducing barriers
- Accelerated construction timelines to limit prolonged disruption
- Support for preserving wildlife corridors
- Ensuring stormwater management systems are in place

Economic and Practical Considerations

Respondents were asked to identify potential economic benefits and concerns related to the Project. While many respondents acknowledged potential economic benefits of the bridge, such as improved movement of goods and regional development, there were also concerns about cost-effectiveness and long-term value.

Responses mostly focused on increased efficiency in the movement of goods resulting from a potential new bridge, with 31% of responses indicating this as their top benefit. Further, 18.5% of responses highlighted that a top benefit would be the removal of trade barriers resulting from a new connection between Ontario and Quebec.

Quebec residents identified the efficient movement of commercial goods as their top priority (27.2% of responses). Other favoured benefits include removing barriers to interprovincial trade (19.7%), improved access to goods and services (10.5%), and rapid project delivery and cost-effective design (12.6%). There was lower support for attracting new investments (4.2%) and widening employment opportunities (7.5%).

Ontario respondents also identified the efficient movement of commercial goods as their top benefit (31.2% of responses). They expressed more modest support for removing trade barriers (18.9%), rapid project delivery and cost-effective design (10.4%), and access to goods and services (6.8%), with relatively few ranking widening employment opportunities (7.1%) or new investments (6.6%) at the top.

Figure 3-7 provides a summary ranking of the opportunities that were selected in respondents’ top 3 options which shows consistence with the top ranked benefits identified above.

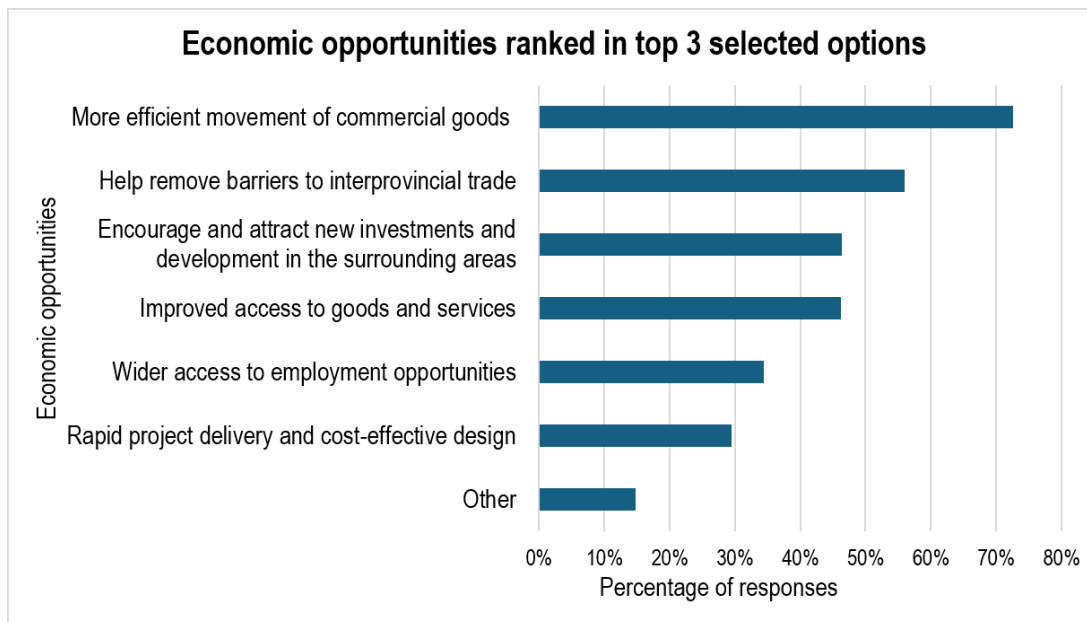


Figure 3-7: Summary Ranking of Economic Opportunities

Concerns included potential impacts on property values, with 28.6% of responses indicating this as their most significant concern resulting from the Project. Another major concern was property taxes (25.6%), which outpaced the other concerns listed in the survey.

As for concerns, Quebec residents were most worried that the Project will increase their property taxes (25.5% ranked it their top concern). Other concerns noted were a negative effect on property values (24.8%), displacement issues (17.9%), and limiting business access.

Ontario residents' concerns centred on negative effects on property value (29.5% ranked it their top concern) and increased property taxes (24.7% ranked it their top concern); displacement and business-access issues register as secondary worries.

Figure 3-8 presents the summary ranking of the impacts that were selected in respondents' top 3 options which shows consistence with the top ranked impacts identified above.

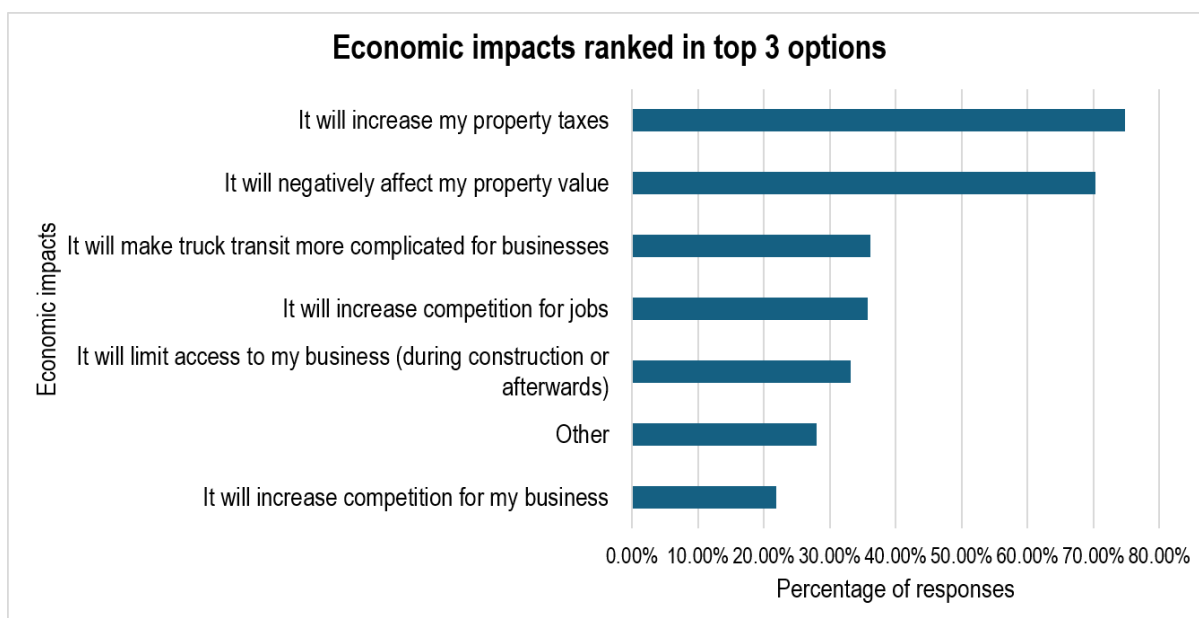


Figure 3-8: Summary Ranking of Economic Impacts

Mitigation suggestions included the following:

- Reassessing the bridge's location to better serve growing communities
- Coordinating with other infrastructure projects
- Ensuring that the bridge supports future economic growth without compromising community well-being

Table 3-2: Summary of public concerns and planning considerations

Questions and concerns	Planning considerations
Traffic and Transportation	
Project justification the need for the Project based on shifting travel in the core area to transit	Projections for interprovincial travel demand remains high. The long-term goal is to maintain lane capacity for general purpose vehicles while increasing lanes and capacity allocated to transit and high-occupancy vehicles, which are considered in the 50-year transportation plan. Section 7 – Project Purpose and Need provides details on the Project justification.
Traffic and congestion - the Project will not reduce congestion but simply relocate the problem to new areas - potential congestion in neighbourhoods	These concerns are being considered in the development of the design. The Project will seek to increase access for all modes while minimizing vehicular cut-through impacts to local residents as much as possible. It is also being developed in line with the LTIICP regional vision.

Questions and concerns	Planning considerations
Regional transportation connectivity • integration of transportation modes including safe and accessible cycling and pedestrian routes • integration with municipal transportation plans • remove heavy truck traffic from downtown Ottawa • increased traffic near residential areas and at intersections where new developments are planned	The IPT is engaging with the cities on the design and are developing a set of project requirements that will guide the Project. An interprovincial truck strategy is being planned to develop recommendations to enhance interprovincial goods movement at the regional level while reducing and/or limiting impacts of truck traffic on adjacent communities. Active transportation options are part of the design. Multiple connection possibilities to regional networks are under consideration, with likely segregation of active transportation modes. Concerns related to efficient regional transportation management were noted and are a consideration as part of the development of the design.
Human Health Concerns	
Concerns regarding air and noise pollution for adjacent neighbourhoods.	This concern is being considered as part of the evaluation of various roadway and bridge design options. Further information on air quality is provided in Section 14.1.1 while potential effects are discussed in 19.1.1
Loss of greenspace and access to the river (loss of recreational/enjoyment opportunities).	This concern is being considered as part of the evaluation of various roadway and bridge design options. Further information regarding evaluation of alternative means of carrying out the Project are described in Section 12.2
Community Concerns	
Concerns regarding community safety and human health due to the presence of trucks along the corridor.	These concerns are being considered as part of the evaluation of various bridge and roadway design options. Assessment of potential impact to community safety and human health are further discussed in Section 18.5.
Environmental Concerns	
Concerns for the protection of Kettle Island, the river's ecosystem integrity and greenspaces.	These concerns are being considered as part of the evaluation of various bridge alternatives and roadway design options.

Questions and concerns	Planning considerations
Concerns regarding minimizing the footprint of the bridge and using environmentally friendly construction practices.	An assessment of potential effects and mitigation strategies are discussed in Section 18.5.
Loss of trees, vegetation, and scenic views along the Aviation Parkway and riverfront (loss of functional wildlife habitat).	
Economic and Practical Considerations	
Concerns for property values and municipal taxes.	This concern will be a consideration as part of the Project planning.
Concerns about project delays, cost overruns, and fiscal responsibility.	

3.2.3 Plans for Future Engagement

Public and stakeholder engagement began in April 2025 and will continue through all phases of the Project, as required. Table 3-3 outlines the public consultation rounds currently planned and the approaches to be used.

Table 3-3: Public and stakeholder engagement plan for the Eastern Bridge

Round	Approaches
Round #2: Impact assessment process and early design concepts Fall 2026	Web update Project newsletter Partner and elected official engagement Public Advisory Group meetings Public online survey Targeted meetings with stakeholders GBA Plus outreach
Round #3: Design option refinement Winter 2027	Public participation summary report Web update Project newsletter Partner and elected official engagement Public Advisory Group meetings Public online survey Targeted meetings GBA Plus Outreach
Round#4: Reference concept 2027	Public participation summary report Web updates Project newsletters Partner and elected official engagement Public Advisory Group meetings Targeted meetings with stakeholders GBA Plus Outreach

4 Summary of Engagement with Indigenous Communities

This section provides an overview of past and ongoing engagement with Indigenous communities for the Project. The earliest meeting with leaders and Elders of Indigenous communities was in 2009 during the Project's Phase 1 to inform the analysis undertaken. Meetings with Indigenous communities continued until at least 2011 during the Phase 2B.

Section 4.2 provides details on the scope and timelines of the current Indigenous engagement program.

4.1 Past Engagement

Table 4-1 provides a summary of past Indigenous engagement meetings for which documentation is available.

Table 4-1: Summary of past Indigenous engagement

Attendees	Key Outcomes and Issues Raised
Algonquins of Ontario Kitigan Zibi Anishinabeg NCC AECOM PACE	- Islands in the Ottawa River are of significance to Indigenous peoples. - Importance of transparency and regular communication with Indigenous communities as the Project progresses. - Financial resources are needed by Indigenous communities to meaningfully participate in consultation. - Location and design of the new crossing should be based on archaeological studies.
Kitigan Zibi Anishinabeg NCC AECOM Delcan	NCC to provide Kitigan Zibi Anishinabeg with a Letter of Intent to provide resources they need to participate in the engagement process.
Algonquins of Ontario and Algonquin Negotiation Representatives JP2G Consultants Inc. NCC AECOM Delcan	- Fisheries and archaeological sites are of importance to Indigenous peoples. - Algonquins of Ontario are interested in participating in the design and construction of the Project. - Memorandum of Understanding agreed upon between NCC and Algonquins of Ontario.
Algonquins of Ontario – Algonquin Negotiation Representatives JP2G Consultants Inc. AECOM Delcan NCC	- The Ottawa River and its islands are of historical, cultural, and spiritual importance to Indigenous peoples. - All corridors under consideration are on Algonquin Traditional Territory and subject to land claim negotiations. - The design of the bridge should celebrate Algonquin history and culture. - Algonquins wish to be involved in developing Terms of Reference for archaeological studies.

Attendees	Key Outcomes and Issues Raised
	- Algonquins wish to participate in developing a communications plan for their communities. - Funding is needed for Algonquins to meaningfully participate in consultation.
Algonquins of Ontario NCC	Requested to draft a letter to Algonquins of Ontario about NCC position on capacity funding.

4.2 Recent Engagement

Engagement with 15 communities and four (4) organizations was initiated to support several bridge related projects in the NCR over the last few years. For this Project, letters were sent on June 19, 2025 to all communities to advise them of the Project and to ensure that each community had the opportunity to identify how the community's Aboriginal rights might be affected, to provide input and express any concerns regarding the potential impacts of this Project on these rights and propose mitigation measures.

For this Project, a focused approach is being used to concentrate efforts on communities whose Indigenous rights could potentially be impacted by the Project. Based on active engagement with Bridges Program projects in the NCR, the IPT will continue to engage with Algonquins of Pikwakanagan First Nation (AOPFN) and Kitigan Zibi Anishinabeg First Nation (KZA). Moreover, it is noted that KZA has undertaken a Title Claim for a vast area that includes Kettle Island. Other communities and organizations will continue to receive regular updates on the progress of the Project. Table 4-2 provides a list of communities in each group and Figure 13-9 shows the location of the communities in relation to the PA.

Table 4-2: Indigenous communities and organizations to be engaged

Groups	Communities/Organizations
Primary groups: The Project is located within lands or within the territory where an Indigenous community, or Indigenous organisation representing communities, currently asserts rights and those rights could potentially be impacted by the Project.	• Algonquins of Pikwakanagan First Nation • Kitigan Zibi Anishinabeg (KZA)
Other communities: The Project is located within an area of interest of an Indigenous community or Indigenous organisation, and such interest could be impacted by the Project, which can include capacity to take contracts, and such contracts may be needed for the Project.	• Algonquin Anishinabeg Nation Tribal Council • Conseil de la Première Nation Abitibiwinni (Pikogan) • Algonquins of Ontario • Kebaowek First Nation • Nation Wendat • Communauté anicinape de Kitcisakik • Long Point First Nation • Nation Anishnabe du Lac Simon • Apitipi Anicinapek Nation (formerly Wahgoshig First Nation) • Algonquin Nation Secretariat • Algonquins of Barriere Lake • Timiskaming First Nation • Wolf Lake First Nation • Métis Nation of Ontario • Mohawk Council of Kanesatake • Mohawk Council of Akwesasne • Mohawk Council of Kahnawà'ke

4.2.1 Collaboration Agreements

Funding is being made available by PSPC to ensure the Indigenous communities and organizations have the capacity to participate throughout the Project. Budget funds have been allocated over a multiyear period. The IPT began working with primary group Indigenous communities in 2025 to develop collaboration agreements that will include five- year budgets and work plans. These agreements will support the community's ability to plan and make commitments for activities. It is understood that the funding and work plans will be revisited as the Project evolves.

The activities eligible for inclusion within a collaboration agreement are extensive giving Indigenous communities flexibility to determine what support they need. Examples of activities identified to date by Indigenous communities include:

- Increasing staff capacity (recruiting), including hiring external consulting expertise
- Training staff and community volunteers
- Purchasing equipment to improve the ability to communicate with community members
- Attending meetings with community members and undertaking studies of importance to the communities
- Expand and build upon existing guardian programs
- Conduct Land Use and Knowledge studies

It is expected that regular meetings with primary group communities will occur once collaboration agreements are signed.

4.2.2 Indigenous Participation Plans

Indigenous communities have stated during engagement meetings on the Alexandra Bridge Replacement Project that IPPs and other targeted approaches are beneficial and that additional actions should be undertaken to increase economic participation for their members:

- Identify the current skills and capacities of community members and businesses
- Compare the current capacity with the opportunities resulting from future bridge work
- Prioritize the development of skills and capacities for members in areas of potential interest
- Increase access to training, development, and apprenticeships
- Foster relations with private sector industry representatives to promote more understanding between the non-Indigenous business world and Indigenous Peoples
- Promote joint ventures between non-Indigenous and Indigenous businesses
- Identify and eliminate barriers that prevent Indigenous businesses from winning Government of Canada contracts
- Identify and eliminate barriers that prevent Indigenous people from accessing training, obtaining certifications, getting hired, and being successful and respected in their places of work

Therefore, plans to create strategies to address the issues above and other aspects will be supported by funding provided through the engagement process.

Support will be provided to Indigenous communities and organizations as they seek funding, collaboration, and other forms of support from other Government of Canada departments and agencies, other levels of government, training and educational institutes, unions, and contractors to increase the economic participation of their members.

4.3 Plans for Future Engagement

4.3.1 Planning & Impact Assessment

Discussions with Indigenous communities and organizations have taken place in the context of bridges projects across the NCR. A preliminary approach to continuing the conversation will be to validate with communities whether the cultural values and valued components that have been shared as part of other Bridges Program projects, such as the Alexandra Bridge Replacement Project, apply in this context as well.

Other activities include identifying community-led activities in support of information gathering for the Eastern Bridge Project. This involves confirming the budget and timing to arrange community activities, as well as undertake or participate in studies.

For the design of the new bridge, engagement involves initiating the conversation on alternative alignments and design principles, as well as identifying preliminary overarching interests regarding design elements. The IPT will seek input on the preliminary design, while continuing the conversation on valued components. These valued components will form part of the development of mitigation measures and follow-up programs for the construction and operation phases of the Project. Early in the Project, discussions were initiated to identify overarching economic development opportunities of interest to Indigenous communities.

A workplan was included in the Collaboration Agreement with the Algonquins of Pikwakanagan First Nation (AOPFN) to ensure funding is available to support community engagement and to fund several studies that the community wishes to undertake to assess potential impacts to Indigenous rights. Efforts are underway to provide similar

opportunities to Kitigan Zibi Anishinabeg (KZA) through the development of a Collaboration Agreement. Engagement and outreach will continue through all phases of the Project.

The studies listed below will be undertaken by AOPFN to support their active engagement and contribution to Project components. Opportunities exist for similar studies to be undertaken by KZA should they wish to do so.

- The Alternative Means Assessment (AMA) study aims to assess alternative alignments proposed to contribute to the selection of a preferred option for the Eastern Bridge. Inputs to the assessment will include a site visit and participation of Knowledge Holders.
- The Socio-Economic, Livelihood and Well-Being Assessment will identify potential impacts and ways to access economic benefits.
- The purpose of the Cultural Impact Study (CIS) is to determine potential impacts of the Project on culture.
- The Navigation Study will draw upon existing information for the Ottawa River in terms of Algonquin values overlapping with the Project Area.
- An Algonquin Knowledge and Land Use Study (AKLUS) will gather members' knowledge on land use in the Eastern Bridge Project Area as well as within the territory.
- A Rights Impact Assessment (RIA) Study will assess potential Project impacts to Indigenous rights. The assessment will address physical and cultural heritage, current land use and traditional resource use, and health, social and economic conditions.

4.3.2 Construction

At the construction phase of the project, Indigenous engagement will center on discussions of the detailed design decision and conditions, alongside economic opportunities. For example, monitoring and follow-up programs that are Indigenous led could be planned and implemented at this stage.

5 Environmental Studies, Regional Plans and Assessments

5.1 Regional Plans

The following policy and planning context situates the proposed Eastern Bridge Project within a comprehensive, long-term framework established by federal and municipal partners. Collectively, these plans articulate a coordinated vision for the NCR that responds to growth, climate change, evolving mobility needs, and socio-economic transformation. Regional plans and aligned municipal planning frameworks form a coherent policy foundation that guides decision-making, prioritizes sustainable outcomes, and supports the development of resilient, efficient, and well-integrated interprovincial transportation solutions.

5.1.1 Plan for Canada's Capital 2017–2067

This plan (NCC, 2017) outlines a clearly defined framework to ensure that the capital continues to represent Canadians shared values, include the Indigenous peoples of Canada, and demonstrate a broad diversity of cultures. The Plan considers emerging challenges of the 21st century now facing the region, including a growing and aging population, continued urbanization, and the resulting pressure to steward our fresh water and green spaces. The challenge of rapid technological change accentuates the growing competitiveness between world city-regions for capital and human resources. The Plan must consider the impacts of climate change and heightened security risks. With these factors in mind, the Plan identifies a series of fundamental policy directions for federal departments and agencies to follow between now and 2067.

A key policy direction for this transportation project is *Milestone 17 - Improved Interprovincial Transportation*:

The NCC will collaborate with the cities, transport authorities and various community groups in the Capital Region to continue the development of multi-modal and interprovincial connections and better transit integration.

5.1.2 Capital Urban Lands Plan

The primary focus of the Capital Urban Lands Plan (NCC, 2025a) is providing planning direction for federal lands within the boundaries shown in Figure 5-1. Federal interests beyond federally owned properties are identified, where relevant. The Capital Urban Lands Plan is a shared reference document for the NCC, its partners, and all stakeholders who are responsible for the stewardship of the Capital's Urban Lands. The Plan provides the requisite flexibility and adaptability to address emerging initiatives and will serve as a collaborative tool. Achieving the vision set forth will require sustained collaboration between all stakeholders.

The Capital's Urban Lands support the vision of an inspiring and dynamic Capital and serve national purposes. A key role for this plan is to *contribute to the building of a liveable Capital Region*, with two goals presented to fulfill this role:

- Enhance the accessibility and integration of federal sites
- Promote sustainable urbanism and active mobility

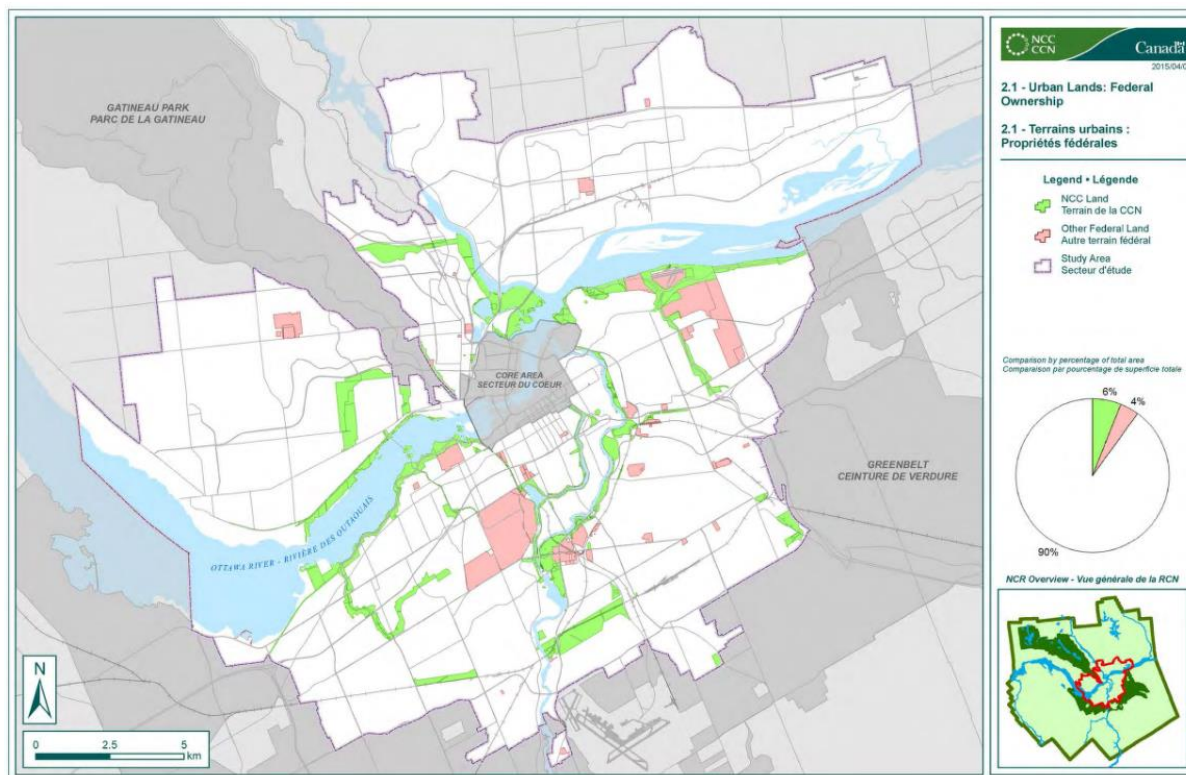


Figure 5-1: Capital Urban Lands

5.1.3 Long-Term Integrated Interprovincial Crossings Plan

The LTIICP (NCC, 2025) sets out the overall direction for interprovincial transportation in the NCR and strategies to achieve the collective vision and objectives of the NCC and its partners. The strategic plan offers the opportunity for the parties to take a greater collaborative approach to prioritize potential strategies, focusing on those that have the best potential to shift the trajectory towards the plan's sustainability vision.

The LTIICP frames the delivery of the shared vision that creates a transportation system in three timelines over the next 30 years:

- **Short-Term / Bold Starts** (immediate to five-year horizon): represents immediate strategies and quick wins that have a very strong potential to move towards achieving goals and objectives.
- **Medium-Term / Initiating Change** (five- to ten-year horizon): represents strategies that can be taken in the near term that can play a greater role in shifting interprovincial travel behaviour.
- **Long-Term / Sustaining Progress** (beyond ten years): represents longer-term strategies where implementation requires further study or where the action may be influenced by the performance of others pursued under bold starts or initiating change.

Two broad categories of alternatives are explored to address these challenges (NCC, 2025):

- **Category 1 - Making better use of existing crossings**—actions, including enhanced transit service, reconfiguration of existing crossings and strong policies to manage interprovincial travel demand.
- **Category 2 - Investing in major infrastructure**—investments in new infrastructure to address 2050 transportation demands, such as a new tramway system or a new multi-modal crossing of the Ottawa River.

5.1.3.1 Key Findings

- Analysis of interprovincial travel indicates that the morning rush hour sees a significantly higher volume of work-related trips from Gatineau to Ottawa than in the opposite direction, with this pattern reversing in the afternoon. This directional imbalance places varying pressure on current crossing infrastructure depending on the time of day, leading to capacity and operational challenges.
- Limited geographical distribution of the crossings, with five of the six, including a dedicated link for active transportation, located in the core area. The latest travel data demonstrates that this generates indirect and inefficient travel routes, with tens of thousands of private vehicles passing through, but neither originating nor terminating in, the core area. It also leads to the majority of the commercial truck traffic using the King Edward, Rideau, Waller, and Nicholas (KERWN) corridor in Ottawa, contributing to quality-of-life concerns for Ottawa downtown core residents, businesses and visitors.
- Future scenario analysis demonstrates that without significant interventions, increased demand for interprovincial travel, associated with a growing population, will exacerbate existing challenges. While opportunities to respond to travel demand by enhancing vehicular capacity in the core area are limited, there are significant opportunities to increase the people-moving capacity of the existing crossings through transit, walking, and cycling.
- The Eastern Bridge scenario includes one general purpose lane and one HOV/transit lane per direction in peak periods as well as active use facilities. The Eastern Bridge Scenario draws trucks away from the KERWN corridor by providing a more direct connection for many truck trips. The added vehicular lane on the bridge also offsets the conversion of one lane to tram downtown, meaning that all net lanes added across the river are for high-occupancy vehicles.

There are several other plans from the NCC, the City of Ottawa and Ville de Gatineau that also provide overall guidance for this Project.

5.1.3.2 Strategic Environmental and Economic Assessment for LTIICP.

The Government of Canada uses Strategic Environmental and Economic Assessments (SEEA) to integrate environmental considerations into new policies, plans, and funding decisions, as guided by the Cabinet Directive. SEEA helps compare the environmental and economic impacts of different options to reduce future risks. The NCC voluntarily applies the Directive's principles to assess its long-term plans.

This SEEA is aligned with the Climate, Nature and Economy Lens (CNEL) standardized question-based template that requires consideration of climate change (mitigation, adaptation, and resiliency), biodiversity, and other social, cultural and economic impacts. This process involves a preliminary screening, followed by a more detailed analysis where impacts are noted. As costs have not yet been developed, a strategic economic analysis was not included in this assessment.

To develop the LTIICP, various future scenarios were studied for their ability to achieve the Plan's vision and address gaps and challenges. These scenarios build upon a baseline scenario, which already includes the regional transportation priorities and investments underway or planned by the regional government agencies and stakeholders (excluding the Eastern Bridge Project), to help assess how additional policy measures or infrastructure projects may impact future outcomes.

Considerations for Decision-makers

The scenarios were designed with a focus to reduce the potential for increased long-term GHG emissions and decrease the reliance on low occupancy vehicles. Allocating more dedicated space for sustainable modes on existing

crossings in the Core Area and limiting the number of general-purpose traffic lanes for all scenarios are two strategies in support of the Strategic Plan's Vision, which also limit the risk of inducing future vehicular demand and urban sprawl.

Scenarios show that the best possible outcomes for sustainable mobility and high quality of life include strong policy measures to divert heavy trucks away from the Ottawa downtown core. New infrastructure projects on their own do not fully yield the same benefits. Bold supporting policy measures will be critical to ensure that the vision is achieved and to improve the outcomes from a sustainable mobility and community well-being perspective.

Modeling is based on several assumptions that may impact sustainability outcomes. The transportation and economic environments are constantly changing, new trends may emerge in the form of new technologies, and post-pandemic return-to-work policies are continuing to evolve. New and emerging trends will need to be monitored and considered in future updates to the Plan. A flexible framework along with regional collaboration with regional partners will also be required to meet the plan's objectives.

Because this is a long-term plan, it will be important to continue to evaluate new data on current mobility trends, climate projections and technological innovation as it becomes available. Additional strategies to mitigate environmental effects and reduce the risk of climate change on projects will need to be considered as scenarios or components of scenarios become new policy or physical projects. Additional strategies to further mitigate emissions and reduce or introduce positive impacts for ecologically sensitive areas, cultural resources, Indigenous rights, community well-being and other socio-economic impacts will need to be developed in subsequent phases of implementation.

5.2 Municipal Plans

5.2.1 Ville de Gatineau

Gatineau developed the *Schéma d'aménagement et de développement* (Gatineau, 2016) to reflect the municipality's new reality and make it a planning tool built around the principles of sustainable development. Gatineau adopted four guiding principles that must direct the implementation of land-use and land-enhancement policies. These guiding principles form the pillars of the revised land-use and development plan.

The structuring improvements target various components that are closely linked to the implementation of the plan's objective from a sustainable development perspective. Referenced in the Schéma's section 3.2.4 *Interventions Structurantes*, the City and the Government of Québec have identified the Kettle Island corridor in their planning documents as the route for the construction of a new interprovincial bridge, and the City is reserving the right-of-way for Montée Paiement.

The *Plan d'urbanisme* of the City of Gatineau (2020) is the planning document that sets out the guidelines for the spatial and physical organization of the municipality by presenting an overall vision for the development within municipal boundaries. It is a planning tool designed to support the implementation of the directions and objectives of the *Schéma d'aménagement et de développement révisé (SADR)* and to guide development across the municipality.

As shown in Figure 5-2, the Eastern Bridge Corridor is identified in the *plan d'urbanisme* and within the *Schéma d'aménagement*.

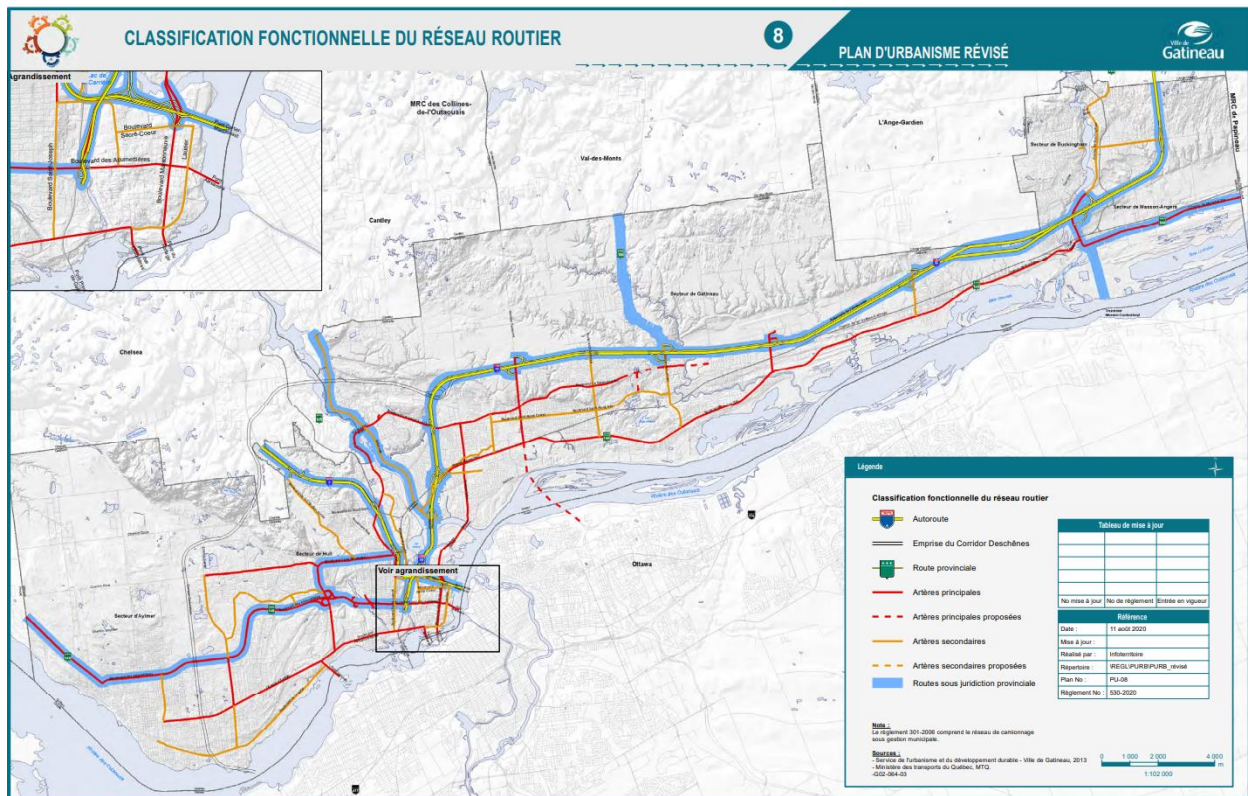


Figure 5-2: Plan d'Urbanisme, Ville de Gatineau (R 530-2020)

5.2.2 City of Ottawa

The City of Ottawa's Transportation Master Plan (2025) provides guidance for the planning and development of its transportation facilities across all modes. In line with overall direction from the Official Plan, the plan describes a key goal to have the majority of trips made by sustainable modes by 2046. A major component of the Transportation Master Plan is its Capital Infrastructure Plan, which outlines the specific investments required to support future growth and achieve its objectives. The Eastern Bridge Project is identified within this plan in the needs-based and priority road networks, as well as in the transit need-based network. This means that the Project is viewed by the City of Ottawa as critical to meeting its objectives based on current funding assumptions and will support access to new development.

Table 5-1: Other regional and municipal planning documents

Name	Type	Year
NCC		
Capital Pathway Strategic Plan	Policy/Plan	2020
Capital Design Guidelines	Guideline/Standard	2023
Accessibility Plan	Policy/Plan	2023–2026
Capital Illumination Plan 2017-2027	Policy/Plan	2017
Parkway Planning and Design Guidelines	Guideline/Standard	In development
Sir George-Étienne Cartier Park Plan	Policy/Plan	2024
City of Ottawa		
City of Ottawa Official Plan	Policy/Plan	2022
Manor Park North and South Secondary Plan	Policy/Plan	Unknown
Wateridge Village Secondary Plan	Policy/Plan	Unknown
City of Ottawa Complete Street	Guideline/Standard	2015
City of Ottawa Multi-Modal Level of Service Guidelines	Guideline/Standard	2025
Ville de Gatineau		
Secondary plan Secteur La Cité	Policy/Plan	2020
Plan Stratégique Municipal	Policy/Plan	2021
Plan des déplacements durables	Policy/Plan	2011
Plan Directeur du Réseau Cyclable	Policy/Plan	2018
Route de camionnage	Policy/Plan	Under revision
Ville de Gatineau Politique Rues Conviviales	Guideline/Standard	2021

5.3 Environmental Studies

Table 5-2 provides a list of studies and plans carried out in the NCR that are relevant to the Project.

Table 5-2: Regional environmental studies

Name	Type	Year
NCC		
Climate Projections for the NCR	Study	2020
Sustainable Development Strategy 2023-2027	Strategy	2023
Climate Adaptation Plan	Strategy	2024
NCC Forest Strategy 2021-2026	Strategy	2021
Bird-Safe Design Guidelines	Strategy	2021
Sir George-Étienne Cartier Park Cultural Landscape Study	Study	2022
Commissioned studies (WSP)		
Regional Climate Hazard Assessment - Climate Science Analysis	Study	2024
Regional Climate Hazard Assessment - Step 1 and Step 2	Study	2024

5.3.1 Climate Projections and Regional Climate Vulnerability Assessment

Under the Federal Sustainable Development Strategy (FSDS) (ECCC, 2019a), the Government of Canada has made a commitment to “take action to understand the wide range of climate change impacts that could potentially affect federal assets, services and operations across the country.” In addition, as stated in the FSDS, “All major real property projects will integrate climate change adaptation into the design, construction and operation aspects.” In addition, a Greening Government Strategy: A Government of Canada Directive (GGS) (Treasury Board, 2024) states that “Departments will ensure that all new buildings and major building retrofits prioritize low-carbon and climate resilience. Investment decisions will be based on total cost of ownership: [...] all new federal buildings, infrastructure and major building retrofits, including significant energy performance contracts, require a climate change risk assessment that incorporates both current and future climate conditions in the analysis”.

As such and in keeping with section 95 of the IAA and the FSDS, a Climate Vulnerability Risk Assessment (CVRA) on Potential Climate and Weather Impacts will be conducted as part of the Project. This assessment will provide a clear picture of the main threats, including nature and severity of the vulnerability of the infrastructure, the level of risk, and the strategies for mitigating the impacts of climate change. Recommendations of the assessment will be considered in the design of the new bridge to enable the construction of a new asset that is more resilient to sudden, extreme and protracted weather events and conditions.

The NCC led a comprehensive climate change projection study (NCC, 2020) for the NCR to predict future changes in temperature, precipitation, wind, and extreme events. Climate projections can be used in climate risk assessments and support adaptation and resiliency planning for multiple sectors. The regional approach to developing climate projections encourages consistency across multiple jurisdictions with overlapping climate impacts and adaptation needs.

Overall, the study projected that the NCR is anticipated to become warmer and wetter. Warming is anticipated in all seasons. An increase in precipitation is anticipated in all seasons, except summer. It is expected that the timing of seasons will shift and that periods of extreme heat will become more common. Rainfall is expected to increase, both

in volume and intensity. Annually, less snowfall and a shorter snow season are projected. Conditions favourable for extreme events such as freezing rain, tornadoes and wildfires are projected to become more common.

The Climate Science Analysis Report (WSP, 2024a), completed as part of the Regional Climate Hazard Assessment, presents a set of parameters describing the climatic and meteorological phenomena relevant to the bridges in the NCR and provides input into the broader Climate Hazard Risk Review. The report discusses historical baselines for each of the shortlisted climate parameter for the assessment and provides a conventional climate data analysis to examine the trends of climate hazards to which the PA is exposed. Justification for selection of a climate parameter was based on the parameter’s potential to affect the vulnerability of the asset (infrastructure and its components), services, and operations. The short list of climate variables assessed included the following:

- | | |
|---|--|
| <ul style="list-style-type: none">• Temperatures• Cold extremes (very cold days, cold waves)• Warm extremes (heat waves, very hot days)• Diurnal temperature variability• Freeze-thaw cycles• Total precipitation (rain and snow)• Annual rainfall (mean)• Heavy precipitation• Drought/dry periods• Winter precipitation• Snow• Winter rain | <ul style="list-style-type: none">• Freezing rain and ice accretion• Extreme snow and blizzards• Extreme events (winds, tornadoes, hails, hurricanes)• Wildfires• Thunderstorms/lightning• Riverine flooding• River shoreline erosion• Biofouling• Fog/visibility• High winds |
|---|--|

A wealth of studies exists regarding an additional crossing in the NCR. Studies to narrow the possible locations of crossings were undertaken from 2006 to 2009. From 2010 to 2013, additional studies were completed on three corridors and provided valuable information about the Project. Additionally, in 2019 and in 2024, a technical refresh of some of the 2010-2013 studies was undertaken to update and validate information in those studies. These environmental and technical studies are grouped into seven broad categories, which provide a better understanding of the existing materials related to the Project:

- | | |
|---|---|
| <ul style="list-style-type: none">• Transportation• Human health• Biophysical factors and the natural environment• Social and cultural environment | <ul style="list-style-type: none">• Land use and property• Economic development• Climate change and vulnerability (2024 only) |
|---|---|

The amount of information provided by these studies has been crucial in the early stages of planning for the Eastern Bridge Project and has helped guide additional detailed environmental and technical studies, as well as the planning, design and conception of the Project.

6 Strategic Assessment

No regional studies, as defined under Section 93 of the IAA, have been or are currently being conducted in the PA or LSA.

6.1 Strategic Assessment (Climate Change)

The Strategic Assessment of Climate Change (SACC) is a federal policy instrument issued under section 95 of the *Impact Assessment Act* that establishes how climate change considerations are to be integrated into project level impact assessments in Canada. It requires proponents and decision makers to assess both how a project may contribute to climate change—primarily through greenhouse gas emissions—and how climate change may affect the project over its lifespan, including risks from extreme weather and changing climatic conditions.

Under the *Impact Assessment Act*, the SACC has practical implications by shaping the scope and content of assessments, informing the public interest determination, and reinforcing alignment with Canada's climate commitments. It elevates climate change from a contextual consideration to a core assessment factor, ensuring that climate resilience, emissions management, and consistency with federal climate objectives are explicitly considered in impact assessment decision making.

This Initial Project Description has considered the SACC as developed by Environment and Climate Change Canada (ECCC), including assessment of net greenhouse gas emissions associated with the Project (see Section 22).

Part B: Project Information

7 Project Purpose and Need

7.1 Purpose of the Project

The purpose of the Project is to create a new interprovincial crossing along the Montée-Paiement-Aviation Parkway corridor that prioritizes multi-modal design for the region's growing population while also reducing the proportion of trucks travelling through Ottawa's downtown core area, boosting economic growth, and contributing to network resiliency and emergency response capabilities.

The Eastern Bridge Project supports the vision described in the LTIICP for the NCR's future transportation network. The new crossing will support all modes of transportation, including active modes, transit, trucks, and private motor vehicles. Furthermore, the Project aims to respond to the anticipated population growth and associated increase in travel demand by providing greater interprovincial person-moving capacity and supporting improved access to the downtown core through sustainable transportation modes on existing crossings.

The additional interprovincial capacity created will allow the conversion of existing vehicular lanes on other interprovincial bridges to dedicated transit and carpooling lanes where the travel demand is the highest. This will be achieved by improving interprovincial connectivity in the eastern part of the NCR as there is no interprovincial crossing East of the Gatineau and Rideau rivers. The Project's Planning and Design Principles (P&DP) developed by the IPT define the Project vision and guide the development of the various components to align with existing policies, plans, guidelines and standards.

The following objectives serve as the basis upon which the Project is being undertaken.

- Reduce downtown truck traffic, improving the public realm and enabling urban housing developments.
- Address regional growth by enhancing interprovincial connectivity in alignment with long-term transportation plans.
- Support multimodal transportation by providing additional interprovincial connections for pedestrians, cyclists, and public transit.
- Stimulate economic growth and job creation while fostering opportunities for collaboration with Indigenous communities.
- Improve network resiliency, facilitating emergency response during climatic or security-related events and major rehabilitation works on the other interprovincial crossings.

7.2 Need for the Project

The most recent interprovincial bridge in the NCR is the Portage Bridge. Since its commissioning in 1973, the region's population has more than doubled. As shown in Figure 15-2, demographic projections to 2050 indicate that population growth is expected to continue into the foreseeable future.

In response, studies were conducted to assess options for expanding the region's interprovincial capacity to move people and goods across the Ottawa River. Collectively, this context and planning background demonstrate the need for the new crossing in the NCR.

7.2.1 Regional Planning Context

In 2022, the NCC published the LTIICP, which establishes a vision and strategies to support the interprovincial movement of people and goods within the NCR. Developed in collaboration with the region's municipal, provincial and federal departments and agencies, stakeholders, and the public, LTIICP considered existing infrastructure as well as potential new infrastructure projects to support anticipated regional growth through a 2050 planning horizon.

The LTIICP vision states that by 2050,

the transportation network to cross the Ottawa River will provide well-connected and sustainable travel options that contribute to a high quality of life and economic prosperity in the National Capital Region. The system of crossings will support equitable mobility and the safe and efficient movement of people and goods, while respecting the region's natural environment and cultural heritage.

The LTIICP establishes a pathway for achieving shared objectives that fall under five strategic pillars:

- One Region (transportation integration)
- Sustainable Use of Crossing Infrastructure
- Environment and Climate Change
- Economy
- Quality of Life

As part of the analysis, optimization of existing crossings was examined as a baseline alongside transportation demand management measures. Multiple scenarios were then evaluated against the plan's goals and objectives, including scenarios with a new eastern interprovincial bridge. All evaluated scenarios, including those featuring an Eastern Bridge scenario were assessed based on their ability to provide equitable mobility and the safe and efficient movement of people and goods, while respecting the region's natural environment and cultural heritage.

Among the key challenges identified in the LTIICP for interprovincial mobility were commuter travel patterns and heavy truck movements through downtown Ottawa.

In 2025, a technical update to the plan was completed to reflect the most recent data, analysis and emerging regional trends. Recent sociodemographic trends continue to indicate that demand on existing crossings will increase over the next decades.

The updated LTIICP identifies six key interprovincial transportation issues:

Congestion on Crossings—Morning peak periods experience heavy traffic, mainly low-occupancy vehicles, leading to congestion and inefficient use of road space.

Indirect Truck Routes—Trucks lack direct highway access between Ontario and Quebec, forcing them through downtown Ottawa and Gatineau to reach one of the two bridges that permit trucks, causing safety, noise, and congestion issues.

Gatineau's Population Growth—The working population exceeds the number of available jobs, a condition that is expected to continue beyond 2050. As a result, many people need to commute across the river for work. This can

result in significant travel delays on the crossings and highlights the need to accommodate growth in ways that ensure equitable access to employment opportunities.

Sustainable Transportation Limitations—Public transit is generally oriented to provide large capacities to downtown areas but does not connect suburb-to-suburb travel as conveniently, particularly for interprovincial trips. Active mobility networks (walking/cycling) are poorly connected across the river.

Space Constraints at Crossings—Urban density and heritage/ecological considerations limit expansion of bridge approaches downtown because of a lack of space at the entrances and exits to the existing crossings. As a result, additional capacity must be focused on greater use of transit and active modes.

Governance and Coordination—While agencies collaborate on cross-river transit, there remains opportunities to improve regional collaboration and coordination to help guide and prioritize transportation capital investments.

Heavy truck traffic routed through downtown neighbourhoods to access interprovincial crossings has negative impacts on residents' health, safety, and quality of life. The LTIICP explores various alternatives to reduce impacts from heavy trucks in the downtown core. A new interprovincial crossing in the East, combined with multijurisdictional policy measures to limit heavy trucks from targeted corridors, would be the most effective means of diverting heavy trucks from the core area. Improving logistics for the movement of goods and shifting deliveries to smaller trucks and different times of day were also highlighted as a means of reducing impacts.

The Eastern Bridge would also enable the conversion of some vehicle lanes on Portage Bridge to transit, thereby increasing this crossing's people moving capacity, while maintaining the number of general-purpose lanes for interprovincial trips.

The Eastern Bridge Project is identified as one of the solutions to the interprovincial transportation issues and the new infrastructure supports the plan's five main pillars.

7.2.1.1 Supporting Transportation Studies

The Origin-Destination Household Travel Survey (OD Survey) is conducted every 5 to 10 years by TRANS, a technical transportation planning committee composed of regional agencies from the City of Ottawa, Ville de Gatineau, MTO, MTMD, NCC and STO. The latest OD survey was completed in 2022. The results indicated a regional decrease in work and school trips, with an increase in discretionary trips. However, more recent, post-pandemic, traffic counts indicate an increase in peak period travel relative to the 2022 OD survey and a return towards pre-pandemic levels, partly associated with revised return-to-work policies. Consequently, by the 2050 planning horizon, trips to both shores of the Ottawa River are expected to increase substantially, in line with recent demographic projections.

The NCC undertook a comprehensive data collection initiative of interprovincial truck trips in 2023, which provided insight on commercial goods movements in the NCR. The results are summarized in the Interprovincial Truck Mobility Data Collection report.

The data collection included four key components:

- Truck counts across interprovincial bridges and throughout the NCR
- A roadside truck survey (roadside and establishment) to gather detailed interprovincial trip-level information
- An innovative video survey, conducted in collaboration with Carleton University, along the KERWN corridor to identify local and through movements, truck types, and hazardous materials transport
- Aggregate commercial vehicle GPS data to assess regional truck desire routes

The study concluded that approximately 3,500 trucks cross the Ottawa River daily, with more than half of these having origins or destinations East of the Rideau and Gatineau Rivers. Currently, trucks ranging from small delivery vehicles to large tractor trailers have two options to cross the Ottawa river. The majority travel from Autoroute 5 to Highway 417 via the Macdonald-Cartier Bridge, which funnels them through the KERWN corridor. This route is favored in part due to the highway connection on the Gatineau side, which is well-suited for heavy truck traffic. Although most interprovincial truck trips use the KERWN corridor, this corridor functions primarily as a through-route rather than an origin or a destination.

This concentration of truck traffic in KERWN has raised significant concerns in Ottawa, where no viable alternative exists to divert trucks away from the downtown core. In this context, the proposed Eastern Bridge presents a strategic opportunity to provide an alternative interprovincial truck route, helping to alleviate pressure on the KERWN corridor and addressing one of the key challenges identified in the LTIICP.

7.2.2 Justification

In its project announcement, the Government of Canada outlined why the new crossing is essential to support growth and interprovincial mobility. Four main reasons were outlined:

Reducing Downtown Heavy Truck Traffic

The corridor will create an alternative freight corridor to divert heavy trucks away from Ottawa's downtown core, and reduce concerns related to safety, noise levels, and congestion. The new route is strategically designed to accommodate some of the interprovincial truck trips that currently rely on existing bridges, as well as some of the trips that begin or end East of the Gatineau River. Together with a comprehensive review with partners and stakeholders of truck routes, policies and measures to attract freight movement, this corridor will help redistribute truck traffic on a regional scale and reduce the reliance on other areas such as KERWN. By promoting more efficient freight movement, the Project not only fosters economic growth but also helps preserve the livability of NCR's downtown core.

Accommodating Growing Interprovincial Traffic

In 2019, Ottawa–Gatineau's interprovincial crossings supported roughly 51,000 morning peak trips and, by 2023, had recovered to 90 percent of pre-pandemic volumes. The Macdonald-Cartier and Champlain bridges operate at full capacity. Heavy trucks push traffic beyond the Macdonald-Cartier Bridge's limit of 4,800 vehicles per hour. Moreover, two to three times more commuters travel from Québec to Ontario than in the opposite direction, a directional imbalance described in Section 5.1.3.1 that is expected to worsen congestion through 2050.

The Project prepares the NCR for its expected population growth from 1.6 million in 2024 to nearly 2 million by mid-century, enhances interprovincial mobility and commuter flows driven from Gatineau to Ottawa.

Stimulating Economic Development

By expanding capacity for interprovincial travel, economic benefits of the Project include the creation of jobs, more effective mobility to access work nodes from areas of residential density and proximity to industrial and institutional land uses with vacancies to attract new businesses. Improved transportation infrastructure will support urban densification near the Montée Paiement–Aviation Parkway corridor and facilitate the fluid movement of people and goods.

Additional incidental benefits include making downtown Ottawa more attractive for pedestrians and tourists and strengthening the ties between Francophone communities across the river, East of the core area.

Connecting Multimodal Transportation Networks

The Eastern Bridge will create a new multimodal corridor connecting Ottawa's and Gatineau's public transit networks by providing dedicated facilities for active transportation users and offering possibilities for a HOV lane during peak periods. By including exclusive space for buses and active transportation users, the crossing will encourage

sustainable travel choices and lower car dependency. These enhancements directly respond to the mobility options set out in the LTIICP ensuring that the region's future transportation needs are met.

7.3 Planning and Design Principles

Planning and design principles are an essential component of any major infrastructure project as they define the vision for the Project and will guide its development. Establishing a comprehensive understanding of existing policies, plans, guidelines, and standards is critical when developing planning and design principles. This ensures that all these documents have been reviewed and that their content is considered and included into the planning and design of the Project, where applicable.

7.3.1 Themes and Principles

The Planning and Design Principles document contains four themes to guide the Project. The themes represent the broad ideas and commitments based on the relevant policies, plans, guidelines, resource documents, and inputs received. For each theme, a series of principles have been identified which are intended to articulate commitments and design guidelines including avoidance and mitigation measures for potential impacts. Table 7-1 below presents the themes and their related principles.

Table 7-1: Planning and design themes

Theme	Principle	Summary
1. Connected Locally & Regionally	1. Accommodate Increased Travel Demand	Design the corridor to prioritize sustainable modes and trucking, and to limit vehicular cut-through traffic.
	2. Promote Efficient Movement of Trucks and Goods	Facilitate freight movement while reducing truck impacts on sensitive urban areas.
	3. Expand Active Transportation Networks	Integrate safe, direct, and connected pedestrian and cycling routes across the corridor.
	4. Improve Public Transit Operations & Connectivity	Ensure transit services using and crossing the corridor are fast, reliable, and well-integrated with regional hubs.
	5. Anticipate and Adapt to Future Mobility Trends	Designed to support intelligent transportation systems.
2. Sustainable & Resilient	1. Design for the Long-Term and Mitigate Risk	The Project should seek to reduce climate vulnerability while balancing durability and cost-effectiveness.
	2. Minimize Environmental Impacts	Avoid or minimize and mitigate the Project's potential temporary and permanent impacts.
	3. Adapt for Future Operational Demands	The corridor should remain functional during future rehabilitation works.
3. Safe & Equitable	1. Design for Personal Safety and Security	Apply Crime Prevention Through Environmental Design (CPTED) principles to minimize risks and enhance user comfort.
	2. Designed for all Ages and Abilities	Ensure infrastructure is barrier-free and comfortable for users of all abilities.
	3. Minimize Impacts to Residents	Reduce negative effects on nearby communities through thoughtful design and communication.
4. Public Realm	1. Enhance Public Realm and Placemaking	Create vibrant, accessible public spaces that reflect local identity and foster community.

Theme	Principle	Summary
	2. Adapt to Context Specific Conditions	Tailor design to seasonal, environmental, and urban conditions across corridor segments.
	3. Respect Natural Resources	Protect biodiversity and natural habitats through green infrastructure including an increase in the tree canopy.
	4. Celebrate Archaeology, Heritage and Culture	Highlight and preserve cultural landmarks and Indigenous heritage throughout the corridor.

7.3.2 Segment Descriptions

For planning and design purposes, the corridor is divided into five segments to reflect distinct communities, strategic priorities, mobility needs, areas of importance, and varied requirements on both sides of the river. The segments better reflect the unique context and provide a clearer understanding of how planning options can be evaluated. Criteria to select the segments included the following:

- Road jurisdiction—reflect the differences in practices, policies, and standards, among federal, provincial, and municipal transportation agencies that need to be considered.
- Road classifications—highways, arterials, collectors, and local roads all play varying roles within the transportation system. Policies related to corridor management, intersection spacing, access locations and density, speed limits, are all based on a roads classification.
- Land use—the environment surrounding a roadway, whether predominantly residential, commercial, or industrial, demands different priorities from the roadway.
- Equity needs— socio-economic factors such as age or economic status can play a significant role in how a community can and does use the transportation network. Certain land use areas may benefit from enhanced active transportation and transit access while some other areas may rely on primarily vehicle focused transportation regardless of the level of access to other modes of transportation.
- Existing and future planning framework—look at understanding the impacts and how the Project can be integrated into the existing transportation network and relied upon for future integration of capital planning for the greater surrounding communities.

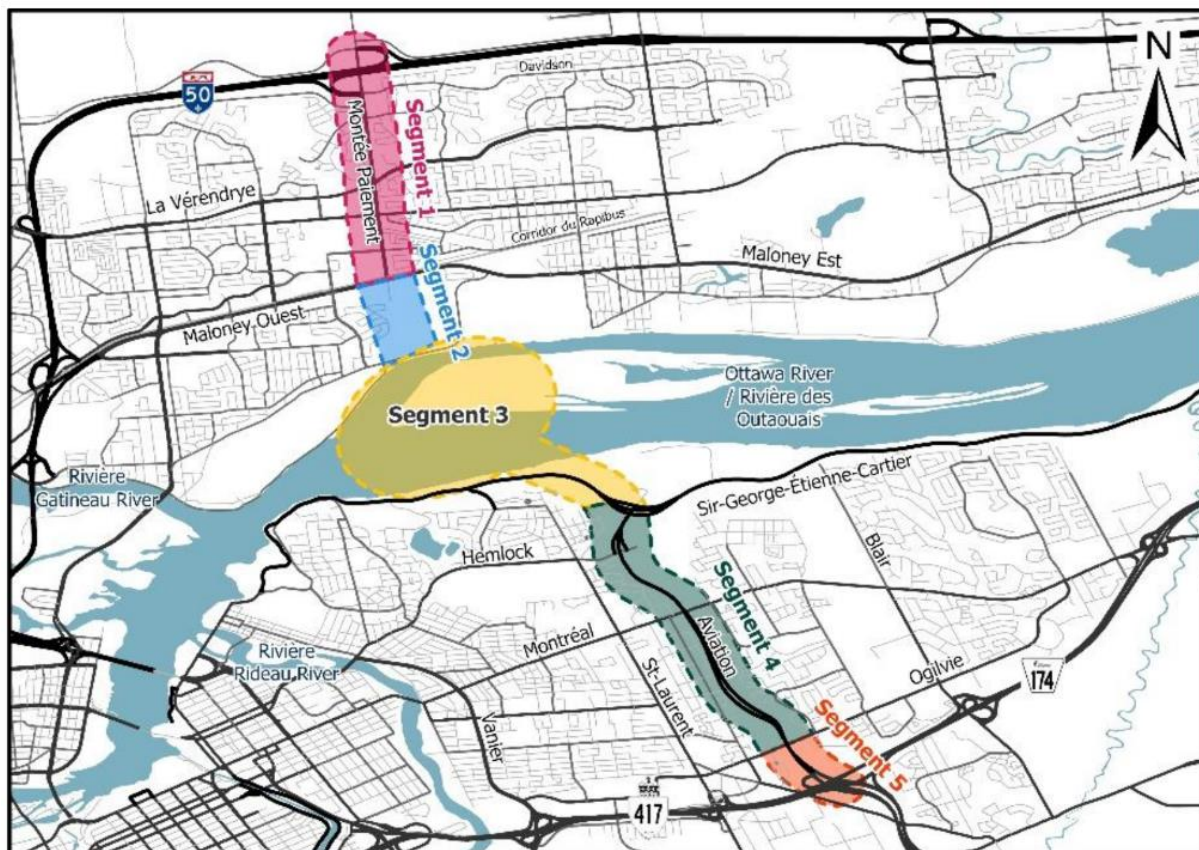


Figure 7-1: Planning Segments

The five segments are as follows:

- **Segment 1:** Autoroute 50 to Boulevard Maloney (Route 148)
- **Segment 2:** Boulevard Maloney (Route 148) to northern Ottawa River shoreline
- **Segment 3:** Interprovincial Crossing
- **Segment 4:** Aviation Parkway to Ogilvie Road
- **Segment 5:** Ogilvie Road to Highway 417/174 Interchange

The following section provides a brief description of the key features, landmarks, and characteristics of the areas along the corridor.

7.3.2.1 Segment 1: Autoroute 50 to Boulevard Maloney

This segment includes Montée-Paiement from Autoroute 50 to the intersection with Boulevard Maloney. Roads in this segment are under the jurisdiction of the MTMD and the Ville de Gatineau. Montée-Paiement is classified as an arterial road, providing service to Autoroute 50.

The lands North of the Autoroute 50/Montée-Paiement interchange are undeveloped, while each side of Montée-Paiement to the South have mixed land uses including residential neighbourhoods and commercial areas with a few community green spaces.

The residences on the West side of Montée-Paiement back onto the road. Those on the East side, between Rue Filiatreault and Boulevard Maloney, they have direct front access driveway entrances from Montée-Paiement. Both are important considerations in the design of the road (See Figure 7-2).



Figure 7-2: Montée-Paiement – South of Autoroute 50

7.3.2.2 Segment 2: Boulevard Maloney to northern Ottawa River shoreline

Montée-Paiement becomes a two-lane road for a short distance South of Boulevard Maloney and provides access to the shopping complex on the West side of the road. South of the shopping complex is a residential area where homes back onto the corridor. The Tecumseth Golf Course is located on the East side (see Figure 7-3).

The right-of-way then has a multi-use path that connects to Rue Saint-Louis. The multi-use path provides an essential active mobility link to the Route Verte, a multi-use path that follows the Ottawa River.

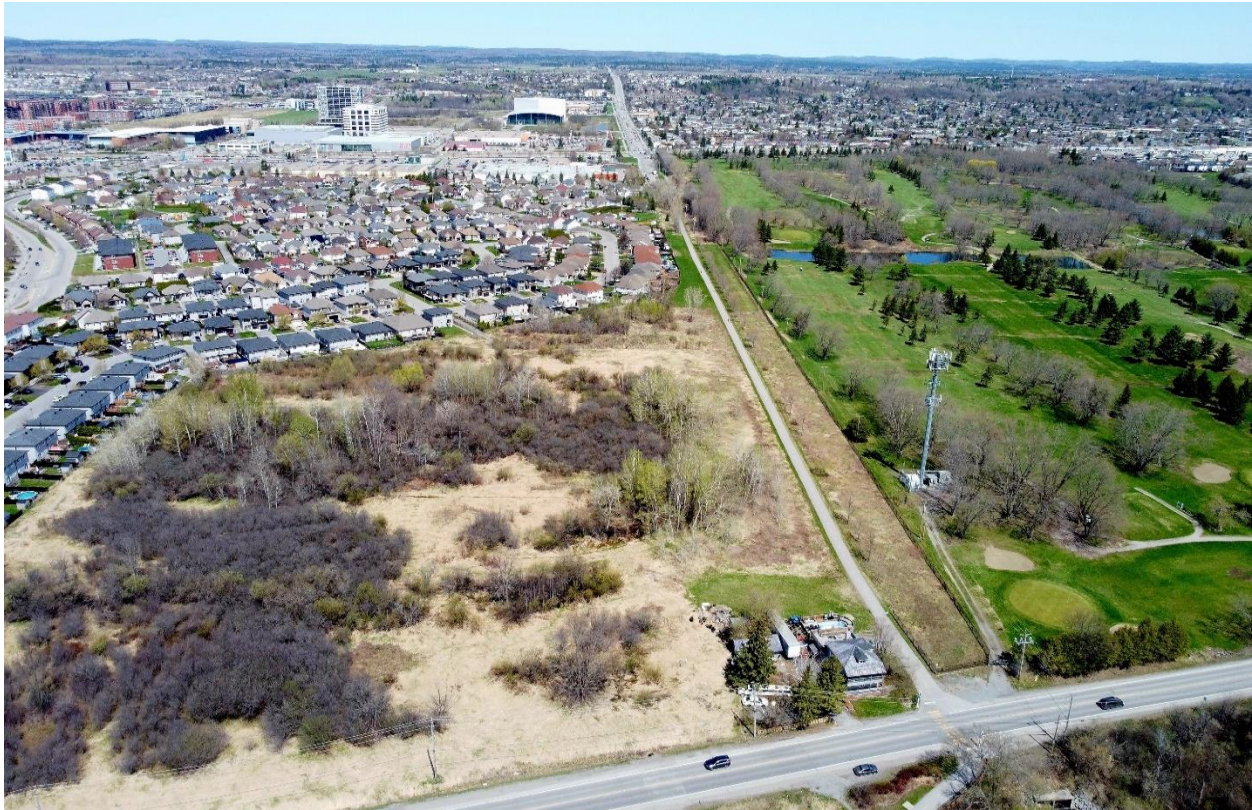


Figure 7-3: Multi-Use Path – South of Montée-Paiement / Boulevard Maloney

7.3.2.3 Segment 3: Interprovincial Crossing

This segment begins at Rue Saint-Louis and includes the Ottawa River and Kettle Island and ends at the intersection of the Sir George-Étienne Cartier and Aviation parkways.

Key features along this segment include Kettle Island, the RCMP Musical Rides Stables, the NCC's Sir George-Étienne Cartier and Aviation parkways, the Ottawa/Rockcliffe Airport (CYRO), and the Canadian Aviation and Space Museum (see Figure 7-4).

Kettle Island is mostly owned by the Nature Conservancy of Canada, with several small parcels owned by other landowners. It is designated as a *Nature Reserve on private lands* under Québec's *Loi sur la conservation du patrimoine naturel*.

A Ville de Gatineau drinking water intake is located on the North shore of Kettle Island. There is a source water protection zone which extends 500 m upstream from the intake.

There are constraints for the design of the bridge due to navigational clearance for watercrafts and height restrictions to avoid potential impacts to the flight operations at the nearby Ottawa/Rockcliffe Airport (CYRO).

Lands immediately surrounding Sir George-Étienne Cartier and Aviation parkways are owned by the NCC. West of the corridor is the community of Manor Park and the RCMP Musical Rides Stables. East of the corridor is the Ottawa/Rockcliffe Airport (CYRO), and the Canadian Aviation and Space Museum.



Figure 7-4: Ottawa River and Western part of Kettle Island

7.3.2.4 Segment 4: Aviation Parkway to Ogilvie Road

Between Sir George-Étienne Cartier and Montreal Road, Aviation Parkway is a two-lane road. This section will be widened to match the remainder of the corridor (see Figure 7-5). South of Montreal Road, the Aviation Parkway has four lanes divided by a median.

Heading South along Aviation Parkway are the neighbourhoods of Manor Park on the West and Wateridge on the East side. Hemlock road provides access to both communities where traffic-calming and cut-through traffic prevention features are being considered in the roadway design.

The Monfort Hospital is a notable institution East of Aviation Parkway and North of the intersection with Montreal Road. South of the Montreal Road intersection are the neighbourhoods of Overbrook on the West and Carson Grove-Carson Meadows on the East side of Aviation Parkway.

Aviation Parkway intersects with Montreal and Ogilvie roads, two significant East-West city arterials.

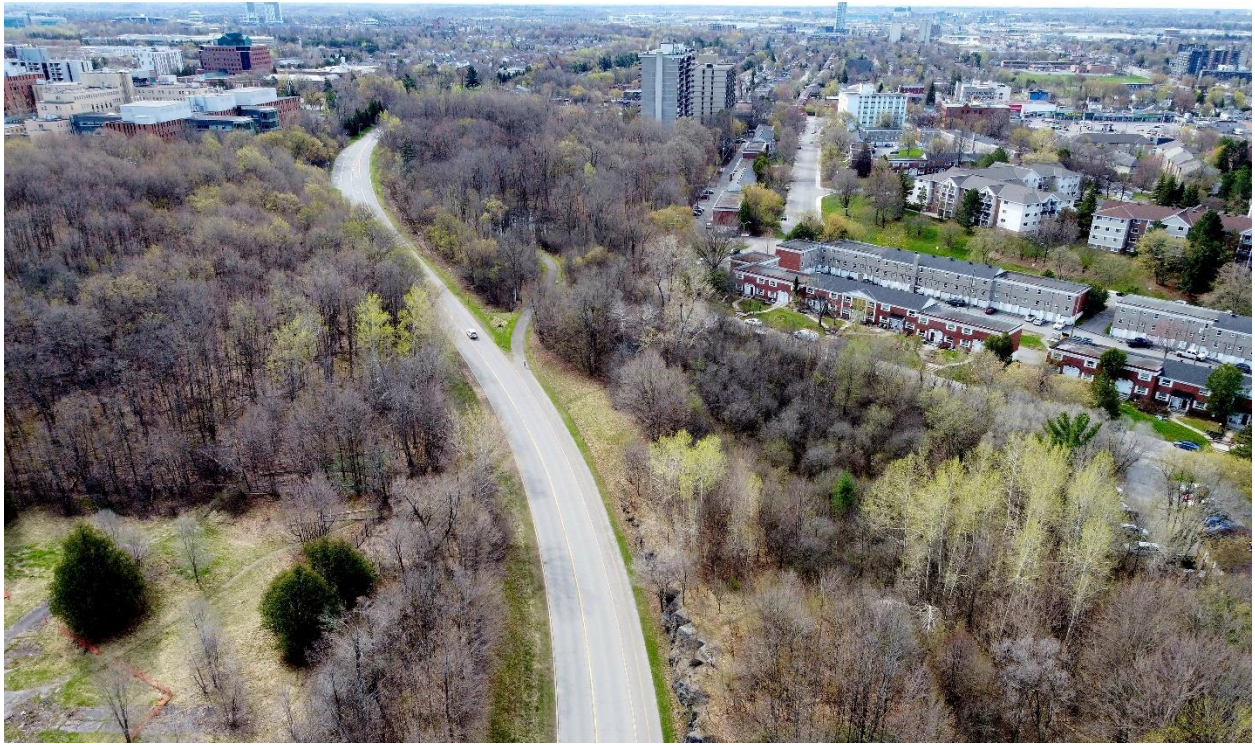


Figure 7-5: Aviation Parkway – Between Hemlock Road and Montreal Road

7.3.2.5 Segment 5: Ogilvie Road to Highway 417/174

Aviation Parkway is an NCC roadway, while the highway network on the South end falls under the jurisdiction of the MTO. The expansion of access including the addition of more ramps will be analyzed, including consideration of the interaction with the O-Train right-of-way (see Figure 7-6). The movements that are currently absent from the interchange's configuration include:

- From Aviation Parkway – southbound access to W Hwy 417
- From Aviation Parkway – southbound access to E Hwy 174
- From Hwy 417 – westbound access to N Aviation Parkway
- From Hwy 417 – eastbound access to N Aviation Parkway

Connections to existing East-West active use facilities will also be important to increase the utility of the corridor for active users.



Figure 7-6: Aviation Parkway Connection to the Highway Interchange and LRT

7.3.3 Functional Requirements

The design of the corridor must accommodate the use of different transportation modes, including active modes (walking and cycling), public transit, trucks, and private motor vehicles. The design must also integrate them in a way that they provide transportation choice to users and provide facilities that are both comfortable and reduce safety risk for all ages and abilities. Although functional requirements will vary throughout the corridor, the following overall planning constraints apply:

- Allocation of four through traffic lanes along the corridor, prioritizing HOV and transit during peak commuter periods south of Boulevard Maloney. Additionally, the corridor must accommodate heavy commercial vehicles and transit vehicles as well as provide high quality active transportation facilities.
- The corridor must minimize the distance across the Ottawa River while respecting environmental, cultural, social, and economic interests. Furthermore, the crossing must be designed to minimize the impacts on the shorelines of the Ottawa River and Kettle Island, including both the surrounding lands and views of the Ottawa River.
- Widening beyond the existing four through lanes on Montée-Paiement as part of the Eastern Bridge Project must demonstrate alignment with the NCC's LTIIICP and relevant stakeholder's plans and policies while also showing significant benefits relative to environmental, social, and economic impacts.
- The corridor within the Aviation Parkway must continue to be limited to four through lanes. The corridor must continue to express its character as a parkway.
- The entire corridor must be planned to protect greenspace where possible and provide a high-quality design. Furthermore, the corridor must minimize the footprint of the roadway to maximize opportunities for impact mitigation and provide improvements to the public realm.

- The connection of the interprovincial bridge to the SGEC Parkway must be designed to limit vehicular access to the parkway during peak times, protect its parkway purpose and characteristics while also encouraging access to the pathways for active users.

The design of the corridor should also consider and accommodate the continued operation of the Ottawa/Rockcliffe Airport and navigation of the Ottawa River.

While some preliminary applications of the planning and design principles have been developed, further options analysis will be undertaken to select the alternative to be carried through the concept design. The following section describes design applications for each segment and presents various alternatives that illustrate how they can be achieved.

7.3.3.1 Segment 1: Autoroute 50 to Boulevard Maloney (Route 148)

The section of the corridor between Autoroute 50 and Boulevard Maloney should be designed as a four-lane arterial with the ability to provide property access (directly or indirectly). This section will be maintained as an urban arterial roadway with complete street elements added, including the addition of active transportation facilities along the corridor and safety improvements at intersections.

There are two demonstration design concepts that have been developed to highlight the variability of options anticipated for this segment of the corridor. Both demonstration designs are considered to meet the requirements and address the needs of the residences that front onto Montée-Paiement.

The first concept (see Figure 7-7) provides the opportunity for formal mitigation such as a noise barrier between the through lanes and the community. The construction of a new frontage road would provide indirect access to the arterial for residential properties, facilitating local traffic and reducing the number of direct accesses to Montée Paiement. In this case, cycling facilities would be included within the frontage road, off the main arterial roadway.

The second concept (Figure 7-8) maintains a highly permeable neighbourhood with enhanced landscaping on both sides as well as dedicated cycling and pedestrian facilities. Separation between residential development and the roadway would be through wide landscaped boulevards.

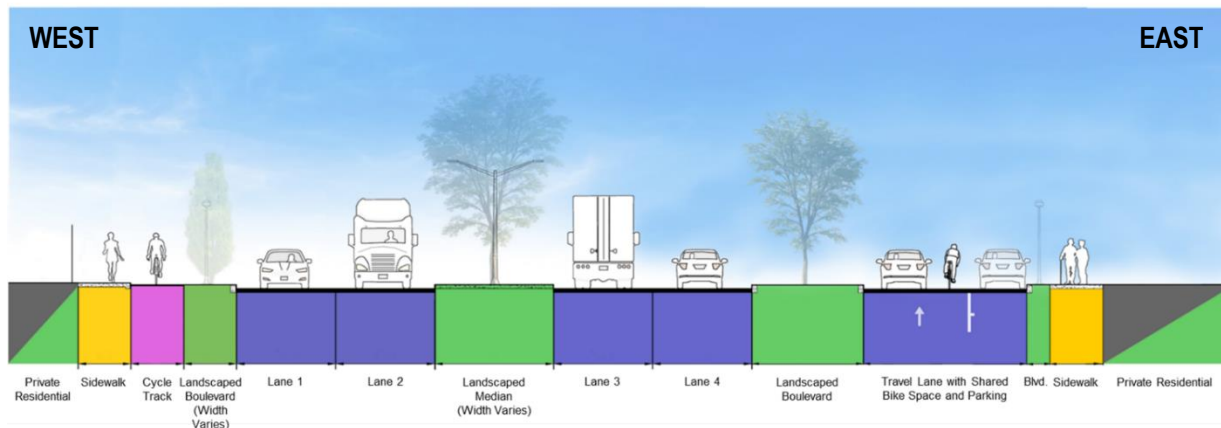


Figure 7-7: Concept for Montée-Paiement with Frontage Road (Boulevard Maloney to Boulevard la Vérendrye Ouest)

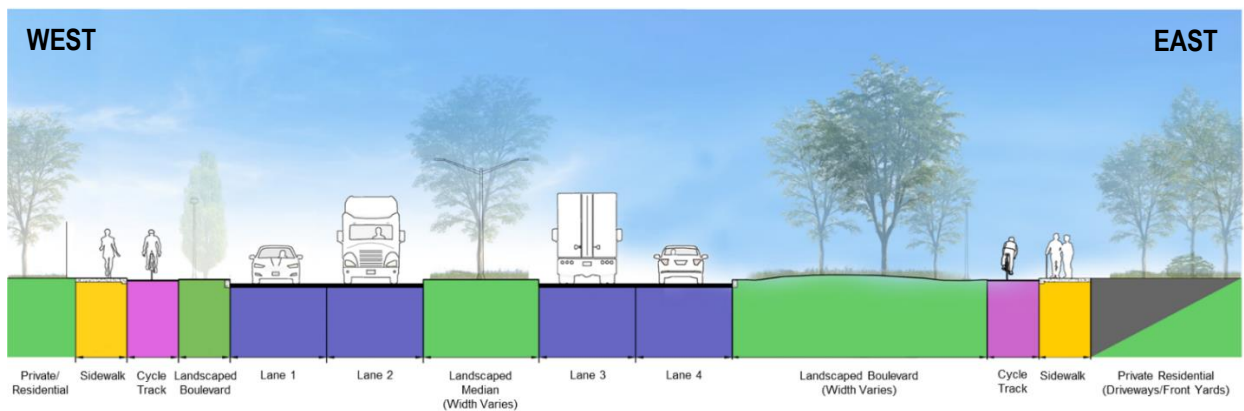


Figure 7-8: Concept for Montée-Paiement with Landscaped Boulevard (Boulevard Maloney to Boulevard la Vérendrye Ouest)

7.3.3.2 Segment 2: Boulevard Maloney (Route 148) to Northern Ottawa River shoreline

The section of the corridor between Boulevard Maloney and the northern shoreline of the Ottawa River (Figure 7-9) is a new road carrying the four-vehicle lane cross section including one general-purpose vehicle lane and one dedicated high occupancy vehicle (HOV)/transit lane in each direction during peak periods in addition to a shared multi-use pathway and active connection to la Route Verte and Rue Saint-Louis.

The point of transition between Segment 1 and Segment 2 is the intersection of Boulevard Maloney and Montée-Paiement. The Rapibus corridor, a two-way bus rapid transit system generally running East-West, runs parallel to the North side of Boulevard Maloney and crosses Montée-Paiement. While seldom in use, the existing rail line adjacent to the Rapibus corridor must be maintained, as per an agreement with the provincial government. In this concept, this intersection is where active transportation facilities transition from a combined multi-use pathway on the South side of Boulevard Maloney to separated cycling facilities and sidewalks on the North side of the corridor.

The intersection is expected to undergo modifications to minimize impacts to the Rapibus corridor, incorporate increased demands by vehicles, transit, and trucking while promoting safety and comfort for active modes. Possible design treatments to accommodate these new demands include grade separation.

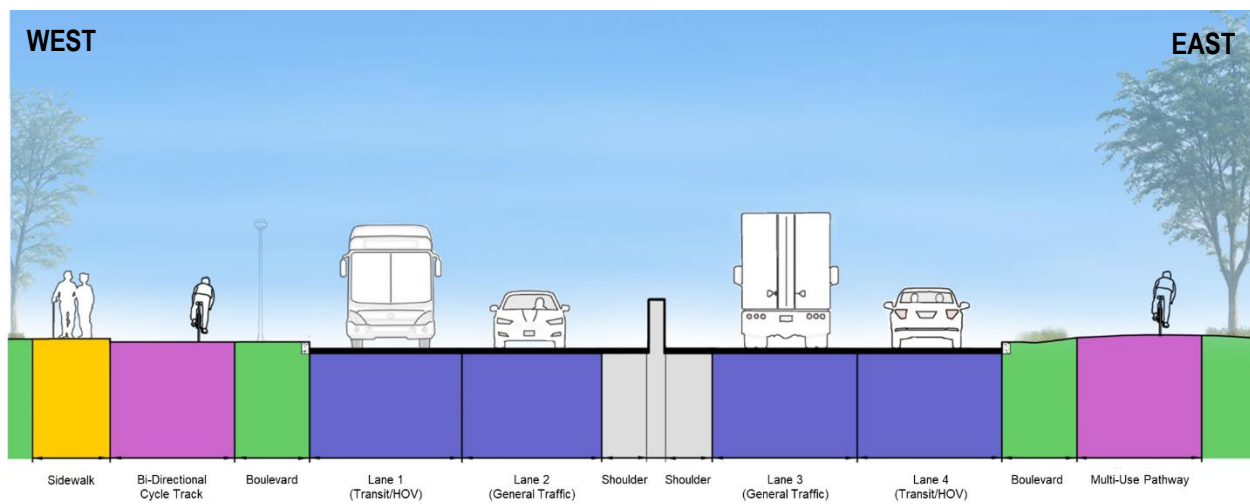


Figure 7-9: Concept for New Roadway North of Ottawa River to Boulevard Maloney

7.3.3.3 Segment 3: New Eastern Bridge

The new bridge concept proposes a lit four-lane divided roadway (Figure 7-10). Active modes are to be separated from the vehicle lanes with a raised barrier. While anticipated volumes would suggest the active use facilities are needed only on one side, facilities on both sides could be constructed if justified. The active transportation facilities should be of sufficient width to provide comfortable passing options and to remain at the same level as the road infrastructure; this could be accomplished with a multi-use pathway or separated pedestrian or cycling facilities. There should be provision of seating, rest points, observation decks, and lighting to provide user comfort while applying CPTED principles.

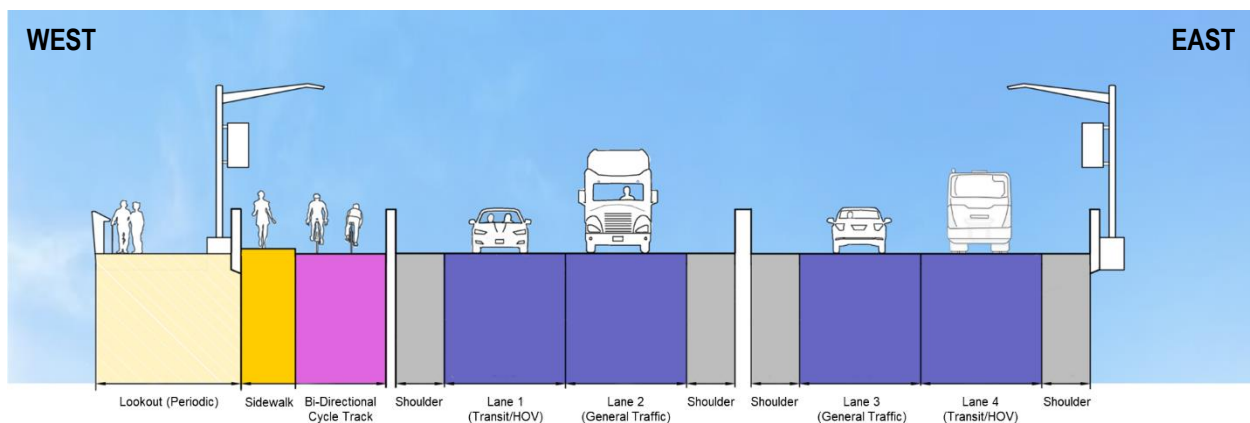


Figure 7-10: Concept for the New Eastern Bridge

7.3.3.4 Segments 4 and 5: Aviation Parkway from Sir George-Étienne Cartier Parkway to Highway 417/174 Interchange

Portion from Sir George-Étienne Cartier Parkway to Montreal Road

The new corridor concept for the Aviation Parkway between the Eastern Bridge and the Highway 417/174 interchange must continue to meet Parkway Planning and Design guidance while maintaining existing permeability and improving conditions for active modes on crossing roads and developments adjacent to the corridor.

The new cross section would have four lanes (Figure 7-11), two per direction including a dedicated transit/HOV Lane during peak periods in the peak direction. This would involve a widening of Aviation Parkway between the SGEC Parkway and Montreal Road from its current two-lane configuration.

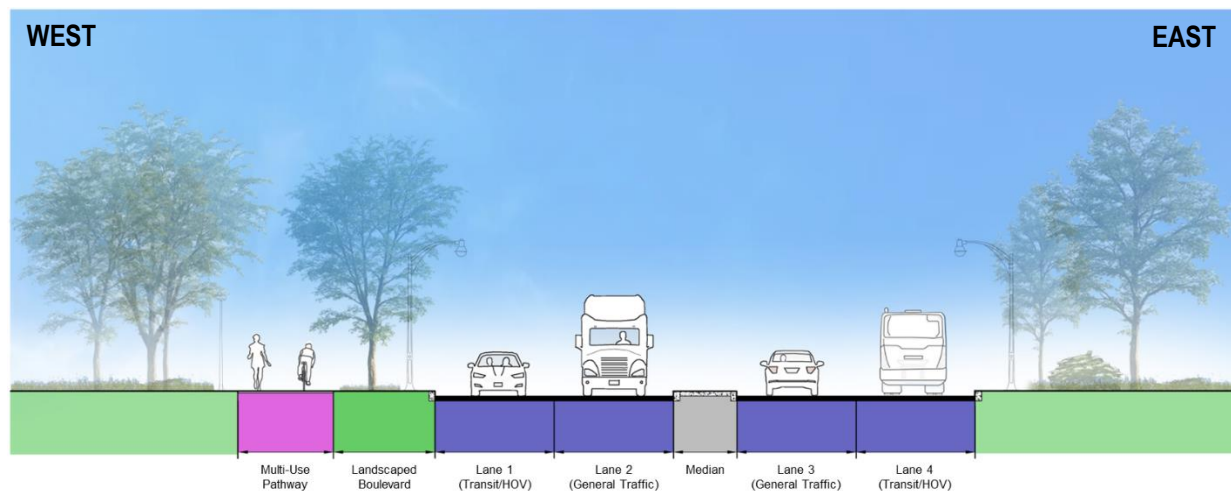


Figure 7-11: Concept for Aviation Parkway -Parkway Lanes Together (SGEC Parkway to Ogilvie Road)

The future vehicular connection between the SGEC Parkway and Canadian Aviation and Space Museum to the interprovincial bridge has not yet been defined. Providing vehicular access to these sites from the bridge may be desirable outside of peak periods, but further study is required to determine design options that could promote access to sites of national significance (NCC River House, Sir George-Étienne Cartier Park, Aviation Museum, and the RCMP Musical Ride grounds and stables) from the bridge without adding commuter or trucking impacts to SGEC Parkway.

There are ramps that currently connect Hemlock Road to the Aviation Parkway. To reduce the impact on residents from vehicle cut-through, a possible design option would be to remove the ramps. Alternatively, to provide direct transit connection to the Eastern Bridge corridor, the ramps could be provided and designated for transit vehicles only during peak periods. This would provide a transit connection to the Wateridge Development and link key destinations.

Portion from Montreal Road to Highway 417/174 Interchange

The Aviation Parkway between Montreal Road and Highway 417/174 could reflect the same cross-section shown in Figure 7-12, providing divided four-lane cross section with potential transit/HOV lanes during peak periods in the peak direction.

Moving the lanes together in this section would shift the vehicle lanes away from the edges of the Parkway corridor and from some residential development. It could provide opportunities for public realm or other park improvements in line with the draft Aviation Parkway Design Guide. Alternatively, maintaining the wide vegetated median similar to what exists today, as seen in Figure 7-12, may also be considered in some sections as it reduces the impact of removal of the existing, mature vegetation and allows for different drainage options for the roadways.

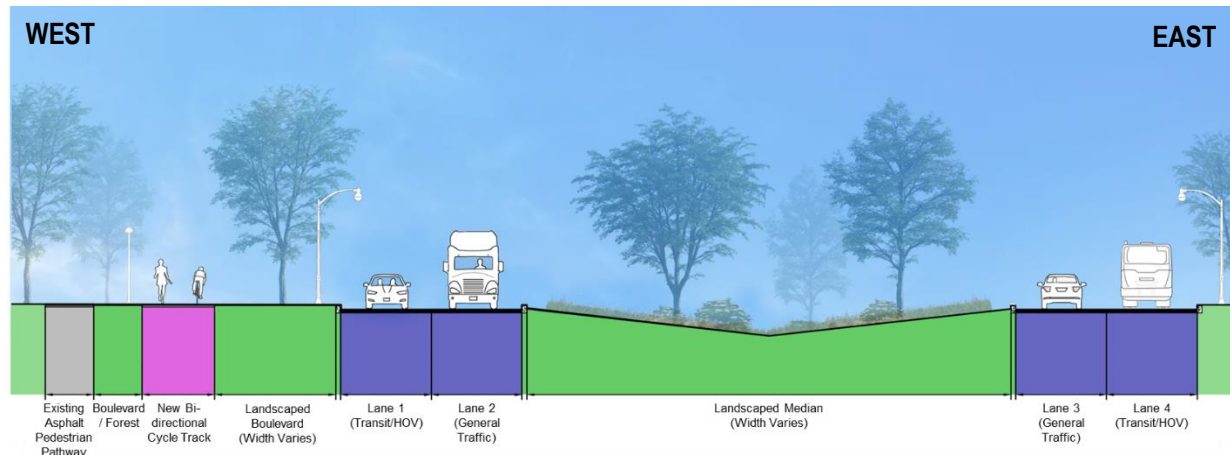


Figure 7-12: Cross-section of Aviation Parkway (South of Montreal Road) (existing)

The Aviation Parkway would remain on the West side of the parkway with added capacity through improvement of facilities for cyclists and pedestrians, which could include separation. Where vegetation exists, the cycling facility could be moved closer to the vehicle lanes to avoid the removal of mature landscape features while maintaining adequate modal separation. Connections to the corridor from the adjacent communities would be considered for the length of the corridor including dedicated crossings for vulnerable users. Alternatively, a more thorough redesign could involve replanting vegetation to achieve a unified corridor design for this segment of the Parkway.

8 Provisions Describing the Designated Project

The Eastern Bridge Project includes the planning and construction of a new interprovincial crossing and access corridor between Ottawa and Gatineau. A new bridge will span the interprovincial boundary of Québec and Ontario across the Ottawa River (Figure 1-5). The Project corridor is approximately 11 km long and includes both new and modifications to existing municipal, provincial and federal transportation infrastructure, as outlined below.

8.1 Designated and Incidental Portions

The IAA defines a **designated project** to mean one or more physical activities that:

- (a) are carried out in Canada or on federal lands; and
- (b) are designated by regulations made under paragraph 109(b) or designated in an order made by the Minister under subsection 9(1).

It includes any physical activity that is incidental to those physical activities, but it does not include a physical activity designated by regulations made under paragraph 112(1)(a.2).

These *Physical Activities Regulations* made pursuant to the IAA identify the physical activities that constitute **designated projects** that are subject to the IAA and may require an impact assessment by the Agency.

Section 48 of the regulations identify the construction, operation, decommissioning and abandonment of either of the following as physical activities and designated projects: (a) a new international or interprovincial bridge or tunnel

As described above, the interprovincial crossing includes additions and modifications to existing infrastructure to ensure delivery of the Project's objectives. As currently proposed, the Project would not have potential triggers under Ontario legislation for transportation projects because it is a project proposed by the Federal Government. Discussions with the Provincial office will aim to coordinate the impact assessment under the Federal process, if required.

The Project could require an environmental impact assessment (EIA) under Québec legislation. There are two potential triggers that will be further discussed with the Québec provincial Office. Under chapitre Q-2,

r. 23.1 of the *Règlement relatif à l'évaluation et l'examen des impacts sur l'environnement de certains projets*,

s9 (1) The Minister may, on request or on the Minister's own initiative, by order, designate a physical activity that is not prescribed by regulations made under paragraph 109(b) if, in the Minister's opinion, the carrying out of that physical activity may cause adverse effects within federal jurisdiction or direct or incidental adverse effects.

s109 The Governor in Council may make regulations

(b) for the purpose of the definition designated project in section 2, designating a physical activity — or class of physical activities — the carrying out of which may, in the Governor in Council's opinion, cause adverse effects within federal jurisdiction or direct or incidental adverse effects and specifying which physical activity or class of physical activities may be designated by the Minister under paragraph 112(1)(a.2);

s112 (1) The Minister may make regulations

(a.2) designating, for the purposes of section 112.1, a physical activity or class of physical activities from among those specified by the Governor in Council under paragraph 109(b), establishing the conditions that must be met for the purposes of the designation and setting out the information that a person or entity — federal authority, government or body — that is referred to in subsection (3) must provide the Agency in respect of the physical activity that they propose to carry out.

Schedule 1, List of Projects Subject to the Environmental Impact Assessment and Review Procedure, Part 2 – Subject Projects:

Article 2. Work in Wetlands and Bodies of Water

Projects or programs including the carrying out of any of the following work are subject to the procedure:

1° dredging, clearing, filling, or levelling off work, for any purpose whatsoever, within the 2-year flood line of a river or lake,

- a) in the case of bank or shore stabilization work carried out over a cumulative distance equal to or greater than 1,000 m or over a cumulative area equal to or greater than 15,000 m², for a same river or lake;*
- b) in other cases, over a cumulative area equal to or greater than 15,000 m², for a same river or lake;*

Article 5. Road Infrastructure

The following projects are subject to the procedure:

4° the widening of a road designed for 4 lanes or more or whose right of way has a width equal to or greater than 35 m over a minimum length of 2 km situated within an urbanization perimeter indicated in the land use planning and development plan applicable to the territory concerned or to an Indian reserve.

For the purposes of this section, the calculation of the right of way of a road includes its appurtenances, such as interchanges, access ramps, service roads and facilities required for drainage. In addition, the minimum length is equal to a contiguous length.

Discussions will continue with the Québec office as the Project is further defined to confirm triggers and determine coordination opportunities with the Federal IA process.

The Project could require an environmental assessment (EA) under Ontario legislation. Discussions will continue with the Ontario EA office as the Project is further defined to confirm triggers and determine coordination opportunities with the Federal IA process.

9 Project Description

This section provides a description of all activities, infrastructure, permanent or temporary structures and physical works to be included in and associated with the construction, operation, and decommissioning of the Project.

9.1 Project Segments

The corridor is divided into five segments to reflect distinct aspects for planning and design purposes. The sequence of development of each segment will be defined as the Project design advances and in collaboration with transportation partners.

Segment 1: Autoroute 50 to Boulevard Maloney (Route 148)

Modification to the interchange (bridge and ramps) at Autoroute 50 under jurisdiction of the MTMD.

- Modification of the alignment of Montée-Paiement under jurisdiction of the Ville de Gatineau.
- Modification of intersections with municipal roads, particularly Boulevard la Vérendrye and Boulevard Maloney to accommodate the new road alignment.

Segment 2: Boulevard Maloney (Route 148) to Northern Ottawa River shoreline

Construction of a new segment at the South end of Montée-Paiement including the bridge abutment.

Segment 3: Interprovincial Crossing

Construction of a new interprovincial crossing across the Ottawa River from Rue Saint-Louis (Gatineau, Québec) to connect to Aviation Parkway (Ottawa, Ontario). Some modifications to the SGEC Parkway may be needed to accommodate the connection between the bridge and Aviation Parkway, depending on the bridge alignment.

Segment 4: Aviation Parkway to Ogilvie Road along the Aviation Parkway

- Modification of the alignment of Parkway corridor, federal lands under jurisdiction of the NCC.
- Widening of Aviation Parkway from two to four lanes North of Montreal Road.
- Modification of intersections at SGEC, Hemlock Road, Montreal Road, Ogilvie Road, and other accesses to Aviation Parkway (including Montfort Hospital, CMHC and Cité Collégiale).

Segment 5: Ogilvie road to Highway 417/174 Interchange

- Modification of the configuration of access at the highway 417/174 Interchange under the jurisdiction of Ontario Ministry of Transportation (MTO) and City of Ottawa respectively. May require class EA by MTO.

9.2 Infrastructure Description

This section describes the Project's infrastructure including the interprovincial crossing as well as the associated modifications to the roadways, intersections, and interchanges in Québec and Ontario.

9.2.1 Permanent Infrastructure

9.2.1.1 Interprovincial Crossing

The new crossing will be designed in accordance with the standards and best practices for highway bridge design in Canada in place at the time of the design and in particular, in accordance with the Canadian Highway Bridge Design Code, MTO, and MTMD regulations. A non-exhaustive list of applicable standards includes the following:

- Canadian Standards Association (CSA). 2019. Canadian Highway Bridge Design Code, CSA S6-25 and the Commentary on the Canadian Highway Bridge Design Code, CSA S6.1-25.
- MTMD, Manuel de Conception des Structures
- MTMD, Manuel de Construction et Réparation des Structures
- MTMD, Ouvrages Routiers, Tome III – Ouvrages d'Art
- MTMD, Ouvrages Routiers, Tome VII – Matériaux
- MTMD, Ouvrages Routiers, Tome VIII – Dispositifs de Retenue
- Transportation Association of Canada (TAC), Guide to Bridge Hydraulics
- MTO, Structural Manual
- MTO, Structural Steel Coating Manual
- MTO, Rehabilitation Manual
- MTO, Ontario Provincial Standard Specifications
- MTO, Designated Sources for Materials
- MTO, Geometric Design Standards for Ontario Highways
- MTO, Roadside Design Manual
- MTO, MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads
- MTO, Ontario Traffic Manual, Books 1 through to 19
- TAC, Geometric Design Guide for Canadian Roads
- CSA W59, Welded Steel Construction
- Climate Change Provisions for CSA S6:25 Canadian Highway Bridge Design Code: Findings and Recommendations - CSA Group

The bridge is currently at the conceptual design stage, where key parameters and configurations are being established based on preliminary assessments. This design will be developed and further refined during the detailed design phase, subject to the completion of the alternatives analysis selecting the preferred crossing, such that any technical requirements and site-specific considerations are thoroughly addressed. The detailed design will also allow a better understanding of the potential effects of the Project and the identification of appropriate mitigation to avoid or reduce the significance of such effects.

9.2.1.2 Roadway Alignments, Cross-Sections, and Profiles

The design and evaluation of roadway alignments, cross-sections, and profiles are crucial components in ensuring safe and efficient transport infrastructure. These elements determine lane configurations, shoulder widths, and overall geometry, all of which directly affect vehicle flow and driver safety. Careful consideration is given to traffic volumes, sight distances, gradients, and drainage to maintain optimal performance under varying conditions.

At this conceptual design stage, the available information is limited; therefore, further refinement and development will be completed as more detailed data is gathered. This iterative approach allows for the final design to comprehensively address any technical requirements and site-specific constraints.

Functional requirements for roadway cross-sections have been developed for each of the five segments through the planning and design principles and serve as guidance for the conceptual design on the roadway segments. Demonstrative cross-section examples are presented in section 7.3.3 Functional Requirements.

An extension of Montée-Paiement will be added South of Boulevard Maloney to connect to the new interprovincial crossing. Further, modifications to Aviation Parkway and Montée-Paiement are anticipated to accommodate traffic. Additional lanes are expected to be added to sections of Aviation Parkway. While no lanes are expected to be added to Montée-Paiement, the addition of, or modification to, turning lanes, access lanes, and other changes are anticipated. The location and extent of these changes will be confirmed through detailed design.

9.2.1.3 Intersections and Interchanges

To accommodate projected traffic volumes, Aviation Parkway and Montée-Paiement will be modified and connections with intersecting roadways, interchanges, and bridges will be replaced or modified. The following intersections / interchanges may be modified:

- Québec
 - Montée-Paiement and Autoroute 50 (interchange)
 - Montée-Paiement and Boulevard la Vérendrye
 - Boulevard Saint René and Montée-Paiement
 - Boulevard Maloney (Route 148) and Montée-Paiement
- Ontario
 - Aviation Parkway, Sir George-Étienne Cartier Parkway, and Rockcliffe Parkway
 - Aviation Parkway and Hemlock Road
 - Aviation Parkway and Montreal Road
 - Aviation Parkway and Ogilvie Road
 - Highway 417, OR 174, and the Aviation Parkway (interchange)

Other changes to the existing configuration and access to Montée-Paiement may also be required subject to the completion of design, including intersection modifications (i.e., Montée-Paiement intersections with Rue Filiatreault, Boulevard de la Vérendrye, Rue Nobert, and boulevard Gréber) and access to Montée-Paiement (i.e., Boulevard du Carrefour, Rue St Luc, Rue Harris, and Rue Lahaie).

Options are still being evaluated, including access from Montée-Paiement at Rue Saint-Louis or from Aviation Parkway at Hemlock Road.

9.2.1.4 Drainage and Stormwater Management

Maintaining effective drainage and providing stormwater management infrastructure forms a vital component of the Project, ensuring proper conveyance of surface water and protection of surrounding environments. In addition to the main crossing of the Ottawa River, other watercourse crossings (e.g., culverts, bridges) will be implemented to convey natural watercourses beneath proposed roadways.

Runoff from the land segments of the corridor will be collected and managed through a series of catch basins, storm sewers, and grassed swales. Stormwater management (SWM) practices, such as ponds, oil-grit separators, or low-impact development measures, will be employed where required to meet water quality, water quantity, and water balance criteria.

The proposed bridge deck will incorporate SWM features to direct runoff from the bridge surface to reduce the potential contaminants from directly entering the Ottawa River. The SWM for the bridge over the channel between the Gatineau shoreline and Kettle Island will be designed to avoid potential impacts to the water quality in the source water protection zone for the drinking water intake located adjacent to the island. The SWM system will be developed in later stages of the Project, including confirmation of stormwater discharge locations.

The details of the bridge SWM system will be developed during the design phase. As is done in typical bridge SWM systems, the bridge SWM system will likely include catch basins distributed along the length of the bridge built into the road deck to collect surface runoff. The catch basin design could consider the use of Goss traps at the outlet of each catch basin.

It is expected that SWM on the bridge and throughout the corridor will limit or eliminate negative effects to the environment resulting from surface drainage waters.

9.2.1.5 Utilities

The construction of the Project will involve relocating existing utilities, connecting new utilities, and removing temporary utilities from staging and laydown areas. Utilities that may be present within this corridor include, but are not limited to, hydro, natural gas, steam and condensate, telecommunications (such as internet, television, and fibre), watermain, sewers (sanitary, storm, and combined), streetlighting and signals. Utility relocations are expected as part of the Project; however, details concerning the scope, timeline, and nature of these relocations have not yet been determined. Additional information will be provided as the design advances and coordination with utility providers continues.

Adverse effects related to utilities relocation are expected to be limited.

9.2.1.6 Lighting

Lighting provisions within the corridor will be carefully considered to ensure adequate illumination for both vehicular and pedestrian traffic, enhancing safety and visibility during evening and night-time hours. Illumination/lighting of the bridge and surrounding area(s) will follow the principles and guidelines described in the Capital Illumination Plan (NCC, 2017), particularly to address safety concerns. In particular, the Ottawa River is designated as a dark sky zone as per the National Capital Illumination Plan (NCC, 2017), any lighting for the bridge will consider this designation, as well as the NCC Bird-Safe Design Guidelines (NCC, 2021) and the City of Ottawa's Bird-friendly Design Guidelines (City of Ottawa, 2021). The illumination objectives of dark zones are as follows:

- Reduce the harmful effects of artificial lighting on fauna, flora, and the dark sky.
- Contribute to showcasing the urban components of the nighttime scenery by providing contrasting dark areas.

As the Project advances, further coordination with local authorities and stakeholders will inform the detailed lighting design to address specific site requirements while reducing potential impacts on surrounding communities and environments.

9.2.1.7 Noise Barriers

Preliminary investigations have concluded that noise mitigation measures may be necessary in some areas to meet established noise criteria. Past studies (WSP, 2020) estimated that nearly 5,000 metres (m) of sound barriers, placed in various locations of the corridor, with an average height of 3.0 m, will be required based on technical and economic feasibility. The specific requirements for noise control (including location and extent) will be further determined during the design phase.

More information on the acoustic environment, potential impacts to the acoustic environment and mitigation strategies can be found in Sections 14.1.2, 19.1.2, and 20.2.

9.2.1.8 Landscaping

Landscaping of disturbed areas is a crucial aspect of the Project, aimed at restoring and enhancing the visual appeal and ecological value of sites impacted by construction activities. This process involves the careful selection and planting of native vegetation to stabilise soils, reduce erosion, and support local biodiversity. Planting will be associated with stormwater management infrastructure and for mitigation (i.e., visual and/or sound screening). Consideration for effects of climate change, such as urban heat islands, will be part of the process. Progressive restoration of areas disturbed during construction will be implemented once construction in such areas is complete.

In addition, landscaping measures will help to blend new infrastructure into its surroundings, providing a more attractive and environmentally sensitive outcome. Efforts will be made to ensure that landscaping solutions are sustainable and tailored to the specific characteristics of the site. More information on potential landscape mitigation strategies to address terrestrial effects on flora can be found in Section 19.1.5.3 and those on human health are in Section 19.3.

9.2.2 Temporary Construction Components

9.2.2.1 Temporary Staging and Laydown Areas

The Project will require temporary facilities to foster effective site organization. Due to the urban setting and limited staging areas adjacent to the proposed bridge location, multiple sites within the general area will likely be needed to accommodate trailers, laydown area, and parking for construction equipment and personnel. Staging locations have not yet been confirmed, and they will be carefully evaluated to avoid or reduce any potential impacts on areas proposed.

The first steps in the organization of the site may include the following:

- Site delimitation with security fencing
- Vegetation and environmental protection measures
- Geotextile/granular pads over grass, construction of access roads
- Set-up construction trailers, tools, and equipment
- Temporary storage of materials, machinery, and equipment
- Temporary electrical hookup and site lighting
- Temporary causeway construction if needed
- Parking for office and construction staff
- Provision of temporary toilets and water supply
- Site services (e.g., fuelling, waste management, utilities, and security)

Locations previously used as temporary staging or laydown areas for the Alexandra Bridge Replacement Project could be considered for this Project subject to timing and availability for this Project to reduce potential impacts.

9.2.2.2 Temporary Road Diversions

Temporary road diversions will be implemented, when needed to maintain safe and efficient traffic flow during key phases of the Project. These diversions are necessary to accommodate construction activities, such as road, interchanges and bridge building, and utility relocation and installations, while reducing disruption to local commuters and emergency services. The design and placement of these routes will be coordinated with municipal authorities and guided by traffic management plans to ensure accessibility and safety for all road users.

9.2.2.3 Work In and Around Watercourses

Work in and around watercourses, particularly at the crossing of the Ottawa River, will be a critical component of the Project to maintain the conveyance of water beneath the roadway and crossing infrastructure. Activities along

Montée Paiement and Aviation Parkway may also include new culverts or culvert extensions to maintain or enhance the flow of smaller tributaries intersected by the construction zone, as well as temporary or permanent watercourse diversions to facilitate bridge building and associated infrastructure. These interventions are necessary to ensure that construction activities can proceed safely and efficiently, while reducing disruption to natural water flow and aquatic habitats. Beyond the proposed crossing of the Ottawa River, there are nine crossings of tributaries of the Gatineau and Ottawa rivers as described further in Section 14.2.1.

All work near the Ottawa River and its tributaries will be carefully planned and executed in compliance with federal and provincial environmental regulations. Standard mitigation measures (e.g., sediment and erosion controls, isolation, and dewatering of work areas) and monitoring activities (e.g., water quality, impacts to fish habitat) will be implemented to avoid and reduce potential impacts to the environment.

Coordination with regulatory agencies and stakeholders will guide the design and placement of watercourse modifications, ensuring that fish passage, riparian vegetation, and downstream water users are considered throughout the Project. Upon completion of construction, any temporary diversions will be removed and disturbed areas will be rehabilitated to restore natural functions and support long-term environmental health.

9.3 Project Activities and Phasing

9.3.1 Construction Phase

The sequencing of project activities will be progressively developed as the design advances and key constraints are further defined. A phased approach is anticipated, encompassing planning, design development, permitting, procurement, and construction, with sequencing refined to account for interdependencies across jurisdictions, technical requirements, and stakeholder considerations.

9.3.1.1 Construction of the Interprovincial Crossing

Activities associated with the construction of the new interprovincial crossing will include activities common to construction projects, including:

- Site grading, including cut and fill earthworks, to accommodate the proposed equipment and laydown areas and to create a level working area
- Construction of a temporary dock for barges for water access
- Installation of coffer dams (if required) in the river at location of new piers
- Installation of steel caissons through riverbed down to bedrock
- Removal of sediments within the caissons, down to bedrock
- Disposal of sediments off site
- Drilling into bedrock and removal of bedrock material
- Disposal of bedrock material
- Installation of piles
- Installation of reinforced concrete within caissons
- Dewatering of coffer dam
- Construction of concrete footings
- Construction of new reinforced concrete piers
- Removal of cofferdams (if required)
- Erect structural bridge spans
- Construction of the bridge deck
- Installation and connection of utilities (lighting, drainage, communications)
- Line painting, installation of signage, installation of pedestrian furniture and fit-up of observation decks and rest areas
- Site restoration, stabilization of disturbed soils, and restoration and enhancement activities

Once constructed, the new crossing will be open to the public. Demobilization of the site will then include the following:

- Removal of barges
- Clean up of staging areas, removal of access roads, restoration of sites, removal of fencing, removal of temporary utilities, removal of vegetation protection, etc.
- Landscaping of disturbed areas as required by mitigation measures

9.3.1.2 Construction of the Roadway Modifications

Activities associated with the construction of the roadway modifications, including interchanges and intersections, will include activities common to road construction projects:

- Set-up traffic control measures (i.e., signage and temporary lanes reductions)
- Relocate and/or protect existing utilities (i.e., water, gas, hydro, telecom lines)
- Clearing and removal of trees and brush
- Stripping of all surficial organics and topsoil
- Site grading, including cut and fill earthworks, to accommodate the proposed equipment and laydown areas and to create a level working area
- Extend, replace, or install culverts
- Place and compact granular base layers (granular A and B)
- Install asphalt driving surface
- Pour curbs, sidewalks, cycling facilities, medians, and bus pads as needed
- Install or modify traffic signals, including poles, controllers, and detection systems
- Install signage and signals
- Apply lane and crosswalk and cycling markings
- Install and connect utilities (lighting, drainage)
- Site restoration, stabilization of disturbed soils, and restoration and enhancement activities
- Removal of any temporary road diversions or traffic controls
- Clean up of staging areas, removal of access roads, restoration of sites, removal of fencing, removal of temporary utilities, removal of vegetation protection, etc.
- Landscaping of disturbed areas as required by mitigation measures

9.3.1.3 Description of Key Project Activities

A further description of some of the key Project activities is provided below.

Site Preparation

Site preparation encompasses activities such as tree clearing, vegetation removal, grubbing, and topsoil stripping on the PA to facilitate construction preparations. Soils designated for reuse in construction will be stockpiled, while surplus soils will be managed according to applicable regulations. Additionally, this phase includes the installation of utility infrastructure, such as temporary power, along with preliminary site grading and the installation of security fencing.

Utility Relocation

Utility relocation may be required to facilitate the construction and operation of the Project, particularly where existing power lines, communication cables, water mains, or gas pipelines intersect the proposed work area. Prior to commencing major site activities, a thorough assessment will be conducted to identify utilities that could be impacted by excavation, grading, or new infrastructure installation. Coordination with utility providers will ensure that any necessary adjustments, temporary rerouting, or permanent relocations are planned and executed with minimal disruption to local services. This process will also involve implementing safety measures and regulatory compliance to protect workers, the public, and the environment during all phases of utility relocation.

Contaminated Soils Management

If contaminated soils are discovered during site preparation activities, that were not identified during the planning process, work in the affected area will be halted immediately to prevent the spread of contaminants. A qualified environmental professional will be engaged to assess the extent and nature of the contamination, and a remediation plan will be developed in accordance with provincial and federal regulations. The contaminated material will be

excavated, securely contained, and transported to an approved facility for treatment or disposal, ensuring all handling and documentation requirements are met. Continuous monitoring and verification will be implemented throughout the process to safeguard environmental and worker safety, and to ensure compliance with all relevant legislation and best practice guidelines.

Construction Equipment Operation

During the construction phase, a wide array of heavy equipment will be utilized to support various project activities and ensure efficient progress. Key machinery expected to be in operation includes excavators, backhoes, bulldozers, cranes, skyjacks, boats, and barges, which are essential for tasks such as earthmoving, material handling, and transportation across the Project site. In addition, specialized equipment such as caisson installation equipment, concrete pumps, trucks, sheet pile installation equipment, generators, and dewatering pumps will be employed to facilitate the installation of foundational elements, concrete placement, temporary structural supports, and site dewatering. The selection and deployment of this equipment will be carefully coordinated to optimize workflow, maintain safety standards, and reduce environmental impacts during all phases of construction.

Equipment will operate in different areas of the construction site at different times during the construction period. Construction will take place between 7:00 AM and 9:00 PM, but the majority of the activities will likely occur between 7:00 AM and 7:00 PM. Construction activities will comply with the City of Ottawa and City of Gatineau municipal noise bylaws. Major construction activities will be planned for daytime hours.

Grading Activities

Grading activities during the construction phase will involve the levelling and sculpting of the Project site to achieve the specified elevations and slopes required for both temporary access and permanent infrastructure. This process typically includes the movement and compaction of soil using heavy machinery, such as bulldozers and graders, to establish stable surfaces for roads, work areas, and foundation pads. Careful consideration will be given to drainage patterns and erosion control measures throughout grading to ensure environmental protection and compliance with regulatory standards.

Refueling of Construction Vehicles

Refuelling activities for construction vehicles and equipment will be conducted with strict adherence to environmental protection measures. Refuelling will take place at designated areas located at least 30 m away from any water bodies, drainage ditches, or environmentally sensitive zones to reduce the risk of fuel spills contaminating surface or groundwater. These designated refuelling zones will be equipped with spill containment materials and clearly marked to ensure that all personnel are aware of the procedures and locations. Additionally, trained staff will supervise refuelling operations to ensure compliance with safety and environmental protocols, supporting both worker safety and regulatory requirements throughout the construction phase.

Construction of Bridge Abutments, Piers and Footings

Pier and abutment construction will consist of installation and subsequent removal of formwork, placement of reinforcing steel and placement of concrete. Foundation installation for piers is assumed to require pile driving equipment placed on barges. Pile driving equipment for the abutment foundation construction will be situated on land in the immediate vicinity of the abutments.

Pier construction is expected to occur inside the cofferdams, which will be installed and dewatered to facilitate construction. In-water activities will follow the mitigation strategies described in Section 18.1. Removal of cofferdams will be carried out once the new piers are constructed. Some of the piers could be constructed using caissons/drilled

shaft socketed into bedrock and that extend all the way up to the pier caps. These caissons would include a steel liner that could extend above the water level and include reinforced concrete placed using the tremie method.

Material delivery could occur via barge. If the bridge is proposed across Kettle Island, a temporary bridge may be proposed to support delivery of material and to provide access to a construction area on Kettle Island to facilitate construction of the bridge.

Construction of the bridge approaches and embankments will consist of placement/compaction of granular material and installation of asphalt pavement. Depending on the alignment options, retaining walls may be required for the approach roadways.

The approach will be to reduce the amount of in-water construction and to time such activities during periods when flows are low and that consider species timing windows that to avoid construction-related impacts to fish species during their most sensitive/vulnerable life cycles (i.e., during reproduction and early development stages of offspring).

Construction of the Bridge Superstructure

Erection of the bridge spans and deck are expected to be carried out by cranes placed on barges.

Deck construction will consist of installation and subsequent removal of formwork, placement of reinforcing steel and placement of concrete. Alternative deck options (i.e., precast panels or segmental concrete construction) may be considered. Miscellaneous items, such as bridge railings, will be installed after the concrete deck has cured via trucks.

Waste Management Activities

The following discharges and waste are anticipated during the various stages of the Project. More detailed information can be found in Section 22:

- During the construction phase, it is expected that a variety of non-hazardous solid waste will be produced because of site preparation and construction activities. This waste primarily consists of surplus construction materials, general domestic refuse, and miscellaneous debris generated on-site. All solid waste will be managed in accordance with applicable provincial and federal regulations and in accordance with PSPC and waste management practices for projects of this scope, ensuring proper sorting, transport, and disposal, and supporting the Project's commitment to responsible waste management and environmental stewardship.
- Liquid discharges generated during construction are expected to originate primarily from runoff associated with precipitation events, as well as from sanitary and sewage sources generated by on-site workforce facilities. To mitigate the potential for suspended solids, contaminants, and other environmental impacts, standard erosion and sediment control (ESC) measures will be put in place, alongside appropriate management, and treatment of sanitary and sewage effluent in accordance with applicable regulations.
- Any hazardous waste encountered or produced—including chemical waste, oil, paint, bitumen, gasoline, diesel, oil and grease, contaminated soil, and any associated empty containers—will be handled, transported, stored, and disposed of in accordance with all relevant provincial and federal legislation, as well as supplier or manufacturer guidelines. Should hazardous waste be generated or discovered, it will be managed in compliance with the *Environment Quality Act* and the *Regulation Respecting Hazardous Materials*. Transport of hazardous materials will conform to the *Transportation of Dangerous Goods Act* and its associated regulations.

9.3.2 Operation Phase

Once constructed, the new interprovincial crossing will function as part of the region's transportation infrastructure, conveying vehicles across the Ottawa River between Ontario and Québec.

Maintenance and repair operations will be performed during the entire service life of the structure. At present, the bridge design has not reached a phase where comprehensive maintenance and operational plans can be defined; nevertheless, standard maintenance procedures for a new bridge generally encompass the following activities:

- Monthly and annual inspections as required
- Detailed inspections scheduled every five years, or as required
- Routine maintenance, including maintenance of water management structures, and minor repairs or interventions after accidents
- Cleaning above and below the deck, inside box girders (if necessary), waterway banks, and around foundation units
- Drain cleaning
- Patching/re-paving, painting, snow removal, and expansion joint replacement
- Asphalt crack repair and concrete surface crack sealing
- Major rehabilitation activities, including deck replacement, concrete repairs, waterproofing, structural steel repairs, and painting

9.3.3 Decommissioning Phase

No Decommissioning phase is anticipated for the Project. Once established, it is anticipated that the new crossing will operate for its planned life span and be subject to on-going maintenance and rehabilitation as required based on design service life of project components. The current life span of the bridge is estimated to be for 75 to 125 years, with efforts being made to ensure a minimum life span of 100 years. It is anticipated that restoration and/or rehabilitation of the existing bridge is the most likely scenario, which may include options up to and including complete removal and reconstruction of the bridge, to maintain an existing crossing at this location in perpetuity. The activities required to restore, rehabilitate, or reconstruct the bridge would be similar to those anticipated during construction (as described in Section 9.3.1), plus any activities associated with the demolition of the bridge deck, piers, and abutments (e.g., cut and methodically remove pieces in reverse order of construction) and corresponding reuse / recycling or disposal of bridge material at an approved facility. If the Project ceases to operate, the Government of Canada, or other infrastructure owner, would be responsible for decommissioning any project infrastructure in accordance with applicable regulations as required at the time.

10 Production Capacity

This project is a transportation project intended to accommodate vehicle traffic across the Ottawa River. There is no production as a result of this project and therefore no maximum production capacity to report.

11 Project Schedule

The Project is currently in the planning and design phase. A range of engineering, environmental, and technical studies are underway to support the bridge design, assess potential environmental effects, and inform the Impact Assessment and regulatory permitting processes. These studies will continue as the design advances and additional information becomes available.

Construction of the new bridge is currently anticipated to begin in 2031 and be completed by 2035. Once operational, the bridge is expected to provide a safe and reliable transportation crossing for at least 100 years. Throughout its service life, the bridge will undergo routine inspections, maintenance, and periodic rehabilitation activities as needed to ensure its long-term performance and safety.

Given the anticipated lifespan of the bridge and the ability to extend its useful life through ongoing maintenance and rehabilitation, there are currently no plans or defined timelines for decommissioning the structure. The bridge is expected to remain in service for the foreseeable future.

Figure 11-1 and Table 11-1 provide a summary of key project milestones and the overall Project timeline based on information currently available, noting that the specific timing of various activities are subject to change.

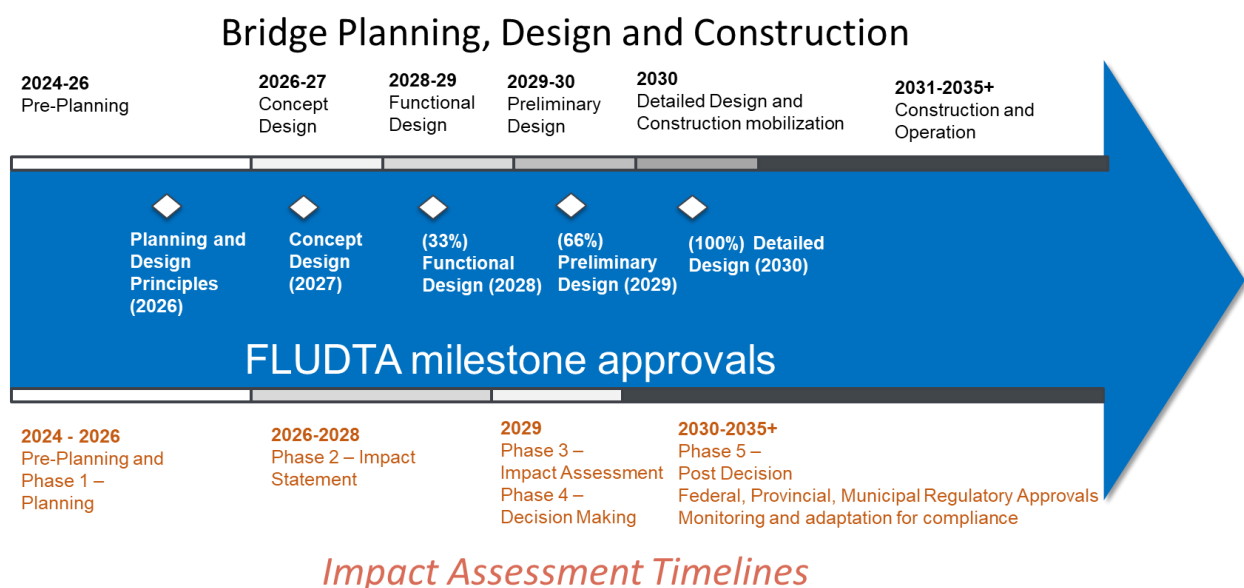


Figure 11-1: Preliminary alignment between construction stages, Impact Assessment Phases and FLUDTA Milestones

Table 11-1: Project Milestones

Project Milestone / Task	Estimated Completion
Pre-Planning	
Eastern Bridge Planning and Design Principals approved by NCC Board	June 2026
Impact Assessment Process	
PSPC submits IPD to IAAC	August 2026
IAAC posts IPD to the Registry for Public Comment Period	August / September 2026
IAAC issues Summary of Issues	Fall 2026
PSPC issues Response to Summary of Issues	Fall 2026 / Winter 2027
IAAC issues Tailored Impact Statement Guidelines and Notice of Commencement	Winter 2027
Initiation of Impact Statement and Supporting Technical Studies	Winter 2027 / Spring 2027
PSPC submits Impact Statement to IAAC	Fall 2028
IAAC completes Draft Impact Assessment for Public Comment Period	Fall 2029
Minister issues Decision Statement for the Eastern Bridge	Winter 2029
Bridge and Roadway / Intersection Design Process	
Completion of Options Analysis (Pre-Design Alternatives)	Winter 2027 / Spring 2027
Completion of Conceptual Design	Fall 2027
Completion of Detailed Design	2031
Construction Phase	
Mobilization and Site Preparation	2030
Commencement of Construction	2031
Completion of Construction	2035
Operation Phase	
Operation of the new bridge crossing and roadway / intersection updates	2035+

It is anticipated that follow-up and monitoring activities will be conducted during each of the Project phases to confirm predicted effects and the effectiveness of mitigation measures, and to inform the implementation of any adaptive management measures.

12 Project Alternatives

Section 12.1 describes the historical work (2006 to 2013) undertaken to identify a preferred corridor for an additional crossing in the NCR. This section outlines the process followed to identify the Montée-Paiement-Aviation Parkway Corridor as the preferred technical choice. It also describes additional work done between 2019 and 2024, leading to the current Eastern Bridge Project.

Section 12.2 describes alternative means of carrying out the Project including the evaluation process using a multi-criteria analysis tool to select a preferred bridge and road alignment.

12.1 Alternatives to the Project

Discussions about transportation solutions in the NCR, including the possible construction of a new interprovincial bridge, have been ongoing for decades. The Eastern Bridge Project has emerged from several iterations of studies which began in 2006. Through these iterations, the Montée Paiement-Aviation Parkway corridor has consistently ranked as the technically preferred alternative.

12.1.1 Initial Corridor Selection

Phase 1, initiated in 2006, evaluated alternative planning solutions to improve transportation capacity across the Ottawa River in the NCR:

- A status quo or “do nothing” approach where existing transportation infrastructure and management approaches were maintained
- Travel Demand Management strategies to shift demand away from peak times and towards alternative modes of transportation
- Transit improvements, including improved service and new facilities
- Transportation Systems/Supply Management measures such as transit prioritization, contra-flow lanes, high occupancy vehicle lanes, and signal improvements
- Land use controls to reduce demand by managing growth areas and providing incentives to work from home
- Pay as you go policies such as restrictive road pricing, parking management, or tolling
- Diversion of goods movement away from core areas of the NCR
- Improvements to existing interprovincial networks such as widening of existing bridges
- New interprovincial network facilities including the construction of new bridge or tunnel

A preliminary evaluation by Roche NCE (2009) carried forward all alternative planning solutions except “status quo”, the pay as you go policies and widening existing bridges. The other alternatives were recommended as transportation strategies to include in a 50-year strategic plan which led to the development of the LTIICP (NCC 2022; Updated in 2025). Of the six strategies retained, the alternative to construct a new interprovincial crossing, was recommended as the preferred option.

Work began to complete a coarse screening of potential locations (Roche NCE 2009) starting with a long list from which a shortlist of 10 corridors was selected for detailed evaluation (Figure 1-3). A total of 12 alternatives (10 bridge corridors plus two tunnel corridors) were evaluated against defined factors and subfactors and using sensitivity tests to calculate a range of performance metrics for each corridor (see the 2009 Roche NCE Analysis and Evaluation report for details about how corridors were ranked).

The analysis and evaluation determined that Corridor 5 (Montée-Paiement-Aviation Parkway, formerly named “Kettle Island”) as the preferred corridor, followed by Corridor 6 (Boulevard Lorrain - Ottawa Road 174) and Corridor 7 (Gatineau Airport - Ottawa Road 174). Descriptions of the three alternative corridors (See Figure 1-4) are as follows:

- **Corridor 5 (Montée Paiement-Aviation Parkway):** This corridor extends from the interchange of Autoroute 50 and Montée-Paiement in Gatineau to the interchange of Highways 417 and 174 in Ottawa. The Project would utilize mostly existing roads in Ontario (e.g., Aviation Parkway) and involve the construction of a new interprovincial bridge and new extension of Montée-Paiement in Québec.
- **Corridor 6 (Boulevard Lorrain - Ottawa Road 174):** This corridor extends from the interchange of Autoroute 50 and Boulevard Lorrain in Gatineau to a new interchange of Highway 174 and Promenade Sir George-Étienne Cartier in Ottawa.
- **Corridor 7 (Gatineau Airport - Ottawa Road 174):** This corridor extends from a new interchange with Autoroute 50 near the Gatineau Airport to a new interchange of Highway 174 and Promenade Sir George-Étienne Cartier in Ottawa. The alignment on the Ontario side would be similar to Corridor 6.

Phase 2, initiated in 2010, assessed the three alternative corridors carried forward from Phase 1 using 58 weighted factors and subfactors (see Table 12-1) which were similar to the original work with some differences based on further analysis and stakeholder engagement (Roche Genivar 2013a). The 2013 analysis and evaluation applied two complementary comparison methods to compare alternatives: a quantitative pair-wise analysis and a qualitative reasoned argument analysis.

Table 12-1: Factors and subfactors used in Phase 2 to evaluate new interprovincial crossing corridors

Factors	Subfactors
Traffic and Transportation	- Truck traffic - Transit operations - Non-commercial traffic - Downstream effects on level of service - Traffic safety - Non-motorized connectivity - Emergency medical services
Natural Environment	- Species of special status and their habitat federally and provincially designated - Total emission burden for criteria contaminants - Regional air quality screenline effects - Total emission burden for GHG contaminants - Regional air quality screenline effects for GHG - Fish habitat features including spawning, rearing, nursery, and feeding areas - Extent of aquatic vegetation - Project footprint on fish habitat (outside of aquatic vegetation and floodplain areas) - Off-channel fish habitats – floodplain - Off-channel fish habitat – Total width of tributaries crossed - Water quantity (surface) - Ground-water recharge area - Loss of floodplain storage - Wetlands impacted – federal and provincial - Migratory bird nesting or staging area impact - Federal/provincial significant or rare natural areas - Regionally significant or rare natural areas - Inland wildlife corridor - Wildlife habitat, including, reptiles, mammals, amphibians, and flora - Unstable soils
Cultural Environment	- Built heritage sites impacted - Historic archaeological potential areas impacted - Cultural landscape features - Prehistoric archaeological potential areas impacted
Social Environment	- Community impacts-roadway impacts - Contribution to livable communities - Visual intrusion of new crossing - Degree of change from existing viewscales - Visual impact due to noise mitigation - Air quality impacts on human health - Noise impacts on human health - Scenic parkways - Active recreation lands impacted - Multi-use pathways impacted - Ability to accommodate float planes - Boating activities
Water Use and Resources	Risk to Gatineau water treatment plant
Economic Environment	Economic development in proximity to the new corridor
Land Use and Property	- Conformity with official plans urban sprawl/ sustainable development potential effects - Impact on future development - Contribution to cumulative impacts on Greenbelt

Factors	Subfactors
	Passive recreation lands impacted Partial residential property impacted Full residences impacted Commercial/industrial property required Institutional property required (excl. Greenbelt) Class 1 to 3 agricultural property required Class 4 to 7 agricultural property required Fragmentation of farmland Impact on potentially contaminated sites (soil/ sediment) Impacts to land-based airport activities
Cost	Capital, operating, and maintenance costs

The results of both methods identified Corridor 5 as the Technically Recommended Corridor, confirming the results of the Phase 1 assessment. Corridor 5 was preferred as it performed best in the Traffic and Transportation, Natural Environment, Economic Environment, Land Use and Property, and Cost factors. While it performed less favourably in the Cultural Environment, Social Environment, and Water Use and Resources factors, it nonetheless outperformed Corridors 6 and 7 overall when pair-wise comparisons were calculated.

The reasoned argument analysis provided qualitative evaluations of each corridor's performance, with the results reflected in the quantitative pair-wise analysis (Roche Genivar 2013). Summaries outlining why Corridor 5 was preferred or not preferred under each evaluation factor are provided below.

- **Traffic and Transportation**—The most valued subfactors agreed upon by the evaluation committee were transit operations, non-motorized connectivity, and non-commercial traffic, and Corridor 5 was preferred for all three. Corridor 5 was also predicted to reduce most traffic overall, including diverting commercial trucks from downtown Ottawa and Gatineau, although Corridor 6 was predicted to perform slightly better on that subfactor. Overall, the evaluation committee preferred Corridor 5 because it would provide more options for improving public transit.
- **Natural Environment**—Corridor 5 was the preferred corridor for the natural environment because it would impact the smallest total area of natural habitats and was predicted to have the smallest GHG footprint.
- **Cultural Environment**—Corridors 6 and 7 were tied in preference under cultural environment subfactors and Corridor 5 was least preferred. This was primarily due to its proximity to a large number of known archaeological sites and therefore having high archaeological potential.
- **Social Environment**—The most important subfactors agreed upon by the evaluation committee were roadway impacts, contribution to livable communities, visual intrusion, degree of change from existing viewscales, and visual impact of noise mitigation (e.g., noise barriers). Corridor 7 was preferred for these subfactors and was the preferred corridor for the social environment overall. Corridor 5 was not preferred, largely due to its proximity to existing residential areas.
- **Water Use and Resources**—Corridors 6 and 7 were tied in preference under water use and resources. Corridor 5 was slightly less preferred due to its proximity to the Gatineau Water Treatment Plant.
- **Economic Environment**—Corridor 5 was the preferred corridor for the economic environment because it was predicted to provide more opportunities for economic development.
- **Land Use and Property**—Corridor 5 was the preferred corridor for land use and property because it would impact the fewest private properties and was predicted to encourage intensification more than urban sprawl.
- **Cost**—The cost analysis considered whole life cycle costs, including maintenance and operation of the Project. Corridor 5 was predicted to have the lowest cost, while Corridors 6 and 7 were predicted to cost more.

Although Corridor 5 was not preferred for Social Environment, Cultural Environment, and Water Use and Resources subfactors, it was retained as preferred overall, and the evaluation committee noted that potential impacts on those subfactors were mitigable. The risk to the Gatineau water treatment plant was considered low and potential archaeological impacts could be mitigated by completing more detailed investigations and involving Indigenous communities closely in the planning and design stages.

12.1.2 Evaluation Refresh

The Project was dormant until Budget 2019, when the federal government announced that it would address the need for an additional NCR crossing by refreshing the previous technical and environmental studies for the three retained corridors. Building on studies undertaken between 2006 and 2013, refreshed technical and environmental studies were completed and a summary report was published online in June 2020 (WSP. 2020d). These studies addressed a wide variety of topics such as the natural environment, the aquatic environment, the land use, the air quality, noise, transportation studies and the economic development potential.

This 2020 updated corridor evaluation report used the latest technical information and measurement adjustments. It generally followed the 2013 approaches, carrying forward the factors, sub-factors, pairwise, and reasoned argument methods, as well as the category weightings. A change was made to the sensitivity analysis in 2020 with the introduction of a Monte Carlo assessment which provided further statistical analysis. This provided opportunities to assess 10,000 variations on the factor and sub-factor weightings to better understand the variability of the results. The Monte Carlo assessment identified that the Montée-Paiement-Aviation Parkway corridor would be preferable in 69% of the variations, whereas Corridor 7 would be preferable in the remaining variations. Corridor 6 was never identified as the preferable corridor.

In 2023, the Project team initiated another targeted refresh of studies on potential corridors for an additional crossing. This latest refresh focused on updating select information to align with requirements under the revised *Impact Assessment Act* and replacing outdated, pre-pandemic information, including personal and commercial travel data. With this new information, WSP (2024) completed an assessment and evaluation refresh for Corridors 5 and 7 only. Corridor 6 was not included based on previous evaluations which consistently found that it scored lowest overall and identified some significant community impacts to be unmitigable.

A Monte Carlo Sensitivity Analysis was carried out based on seven factor groups: transportation, biophysical and natural environment, social and cultural environment, human health, land use and property, economic, and climate change and vulnerability (WSP, 2024). This analysis confirmed that Corridor 5 remains the technically preferred alternative. Table 12-2 presents a summary of the comparative analysis results. The following sections provide an overview of the evaluation results for Corridors 5 and 7 (see Figure 1-4 for a map of the corridors).

Table 12-2: Evaluation results by corridor from the 2023 refresh.

Factor	Corridor 5	Corridor 7
Transportation	Scored higher on all transportation subfactors. Predicted to provide more benefits for public transit and reduce traffic congestion more substantially than Corridor 7. Would also allow for more connections with non-motorized infrastructure.	Scored lower on all transportation subfactors. Its location farther away from core areas of Gatineau and Ottawa means it would provide fewer opportunities for transit expansion, active transportation connectivity, and other types of transportation.
Biophysical and Natural Environment	Scored higher on all biophysical and natural environment subfactors, primarily because it overlaps with the smallest area of terrestrial and aquatic habitats.	Scored lower on all biophysical and natural subfactors, primarily because it would have a larger footprint and overlap with larger areas of undeveloped terrestrial and aquatic habitats. Would result in substantial habitat loss in the Baie McLaurin wetland complex.

Factor	Corridor 5	Corridor 7
Social and Cultural Environment	Scored higher on visual intrusion and Indigenous interests but scored lower on other subfactors. Because it is located in a more populated area closer to the cores of Gatineau and Ottawa, this alternative could potentially impact community cohesion and social equity. However, this can be mitigated by providing multimodal connectivity between communities on either side of the corridor.	Scored lower on visual intrusion and Indigenous interests, primarily because of its larger footprint. Scored higher on most social and cultural environment subfactors, primarily because it is located away from core urbanized areas of Gatineau and Ottawa and is therefore less likely to affect community cohesion and social equity.
Human Health	Scored higher for air quality impacts and tied on impacts to water treatment. Scored lower on most human health subfactors because its location in proximity to a large urban population means that more people may be exposed to noise and vibration from the Project.	Scored lower for air quality impacts and tied on impacts to water treatment. Scored higher on most human health subfactors, primarily because it is located away from heavily populated areas and would therefore expose fewer people to increased noise and vibration.
Land Use and Property	Scored higher on most land use and property subfactors. Exceptions were on impacts to private properties and aviation, because it may require land acquisition of residential properties. Its proximity to the Ottawa/Rockcliffe Airport may affect aircraft flight paths and require eastward extensions on runways, but this is still being studied.	Scored lower on other land use and property subfactors. It is the only alternative which would require acquisition of agricultural land. Scored higher on impacts to private properties and aviation because it will not require acquisition of residential properties and will not affect airport runways.
Economic Environment	Scored higher on economic subfactors. Corridor 5 will have lower construction, operation, and maintenance costs, although both alternatives will have comparable economic development benefits. .	Scored lower on economic subfactors because of the estimated higher overall cost of construction, operation, and maintenance.
Climate Change and Vulnerability	Scored higher on climate resilience/adaptation because it has a smaller footprint and will result in less loss of green spaces and wetlands. Scored marginally lower on climate mitigation (GHG emissions) because construction is estimated to have slightly higher carbon emissions, but this can be mitigated to a degree by making use of electrified vehicles and equipment where possible. The alternatives were tied on emergency preparedness.	Scored marginally higher on climate mitigation, tied on emergency preparedness and scored lower on climate resilience/adaptation.

12.2 Alternative Means of Carrying out the Project

Design options for the five corridor segments (shown in Figure 7-1) consider context characteristics such as land use, community, natural and cultural characteristics, planning frameworks and transportation structures. A multi-step design selection framework is planned to assess alternative options and to retain a single preferred concept for all segments. Options for roadway intersections and highway interchanges as well as active mobility pathways will be part of the overall evaluation process.

The interprovincial bridge segment (segment 3 in Figure 7-1) is more multifaceted and follows a modified process to address the complexity of options. The design process started with many possible alignments, requiring an initial screening analysis before moving forward. As a result, the first phase of analysis focused exclusively on this segment. Other segments and Project elements along the corridor will be carried forward directly into an evaluation at the pre-design stage. Overall, the selection framework has the following phases:

- Options Analysis: Initial alignment options for the crossing of the Ottawa River were evaluated, leading to a shortlist of alignments for further refinements. This phase included a Part 1 screening of multiple technically feasible options followed by a Part 2 optimization and evaluation to determine three broad concepts for further design in the next phase.
- Pre-Design Analysis: Refined concepts will be developed and evaluated to retain a single detailed concept design for the bridge segment that include bridge types.
- Concept Design Analysis: A single preferred concept for the entire corridor is selected through a refined Design Selection framework.

The Design Selection Framework uses a multi-criteria analysis (MCA) tool. The development of the MCA tool follows a structured, iterative approach. Use of this tool provides opportunities to document the assessment process for evaluating design choices and the basis for decisions.

The MCA tool includes six categories that apply to all segments of the Project. Each category utilises several criteria that will be tailored to the context of each segment, recognizing that distinct components may require unique evaluation factors. As the design of the other segments advances, each one will be assessed using criteria relevant to their characteristics and challenges. The criteria outlined below specifically apply to Segment 3, the bridge crossing.

- Biophysical Environment: how each option may affect the natural systems in and around the LSA, including, but not limited to, potential changes to aquatic and terrestrial habitat, vegetation communities, and species at risk.
- Costs: including upfront construction costs and financial implications or materials and construction methods, and any specialized equipment or expertise required.
- Design and Engineering: how each option meets functional needs and fits within the site considering user experience, aesthetic qualities, and the technical complexity of constructing the crossing.
- Maintenance and Operations: requirements to keep the infrastructure safe and functional over its lifespan including frequency and ease of maintenance, potential disruptions during maintenance activities, durability risks, and lifecycle costs.
- Schedule: approximate duration required to construct the bridge segment of each option with an emphasis on the number of years to achieve substantial completion of the river crossing.

- Social, Cultural, and Human Health Considerations: how each option may affect communities and cultural and archaeological resources. Also includes impacts to lands along and access to both shorelines and Kettle Island in the Ottawa River.

Engagement with partners, stakeholders, Indigenous communities, and the public to obtain feedback at key milestones is an important component of the evaluation process. Feedback obtained will be used in subsequent steps of the process.

As the Project progresses and design advances, additional alternatives may be considered as it relates to construction methodologies, management of excavated materials, siting of specific components, and other activities associated with the Project.

12.2.1 Alternative Alignments for the Bridge Crossing

Technically feasible crossing options were developed at a demonstrative level to illustrate potential alignments. These options considered a broad spectrum of potential alternatives. The options varied in horizontal and vertical alignment, interaction with Kettle Island, and approach configurations on both riverbanks. Below-grade tunnel alternatives were also considered.

In this first stage of analysis, each option retained flexibility in positioning, curvature, span arrangement, pier placement, and approaches. As design progresses, this will support refinements informed by ongoing technical studies, regulatory requirements, and further engagement with stakeholders and Indigenous communities to address potential risks and impacts through design and mitigation strategies.

A high-level screening of these options was undertaken to eliminate options with comparatively higher and/or unmanageable risks or impacts across the six categories of the MCA tool.

A set of crossing alignments were developed and grouped based on their relative location and potential interaction with Kettle Island and the Ottawa river. The initial screened options were:

- Options W1 and W2 – Bridge Crossing to the West, avoiding Kettle Island. Their primary distinguishing characteristic is their southern approach on the Sir George-Étienne Cartier parklands.
- Options C1 and C2 – Bridge Crossing to the western tip of Kettle Island. Their primary distinguishing feature is that the alignments avoid direct interaction with Kettle Island.
- Option E – Bridge Crossing further East with interactions with Kettle Island
- Option S – Bridge Crossing with the straightest connection between shores with interactions with Kettle Island
- Options T1 and T2 – Tunnel Crossing beneath the Ottawa River.

The high-level alternatives are shown in Figure 12-1.

Initial Alternative Alignments

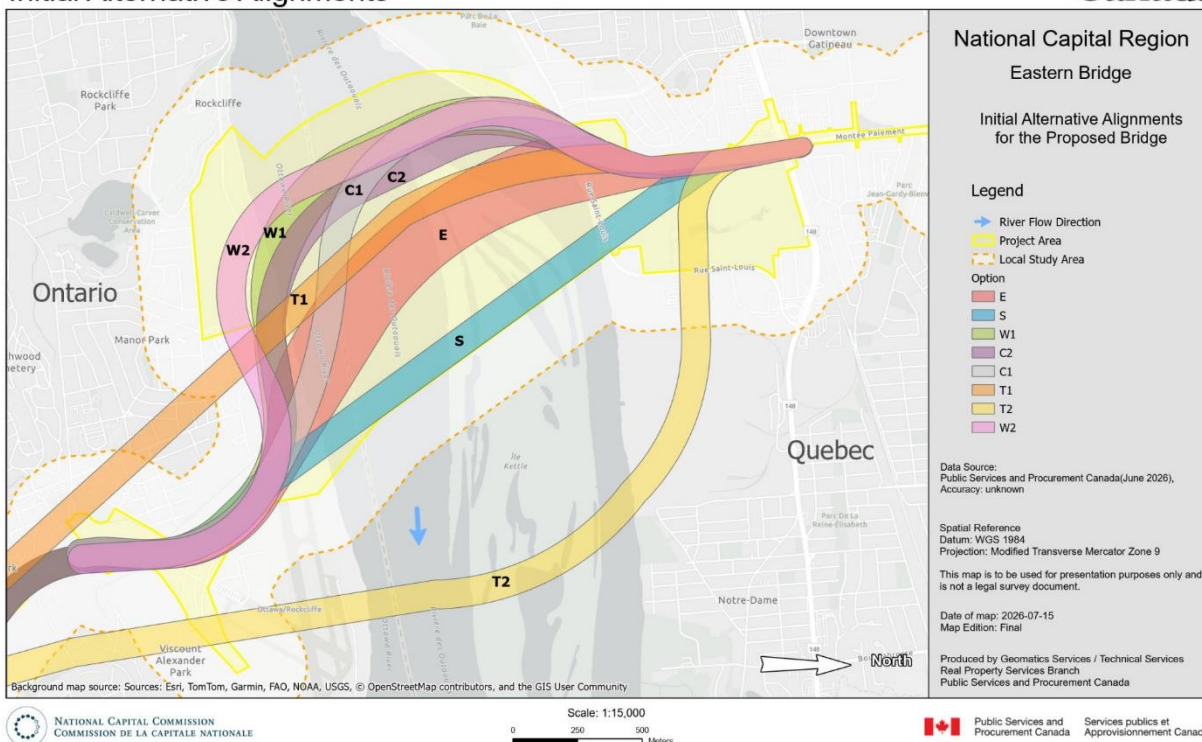


Figure 12-1: Initial Alternative Alignments for the Crossing of the Ottawa River

The initial screening of these options included an evaluation against the six evaluation categories. The intent was to identify categories where an option presents notably higher risks or impacts relative to the other options for each category, and where such risks are considered sufficiently significant to screen the option out.

Categories shown in grey in the Table 12-3 indicate that the anticipated risk profile is broadly comparable across options, or the level of available information does not allow for meaningful differentiation. This analysis should be understood as reflecting relative similarity, rather than an absence of risk or impact. Evaluation boxes highlighted in red identify categories where an option clearly demonstrates elevated or disproportionate risks or impacts relative to other options. These risks or impacts reflect characteristics that make the option an outlier in a specific category.

Table 12-3: Results of Screening Analysis

		Option							
		W1	W2	C1	C2	E	S	T1	T2
Evaluation Category	Biophysical								
	Costs								
	Design and Engineering								
	Maintenance and Operations								
	Schedule								
	Social, Cultural and Health								

Six of the eight options presented comparatively higher risk in one or more evaluation categories relative to the other options. The options recommended to be carried forward solely based on this assessment are the Straight (S) and East (E) alignment options. Option W1, while identified as having a comparatively higher risk from a social and cultural perspective, represents the lowest-risk option among those that do not cross Kettle Island. The complete list of options recommended for advancement includes (see Figure 12-2):

- Option S, or “Straight Alignment Option”
- Option E, or “East Alignment Option”
- Option W1, or “West Alignment Option”

Recommended Alignments Options

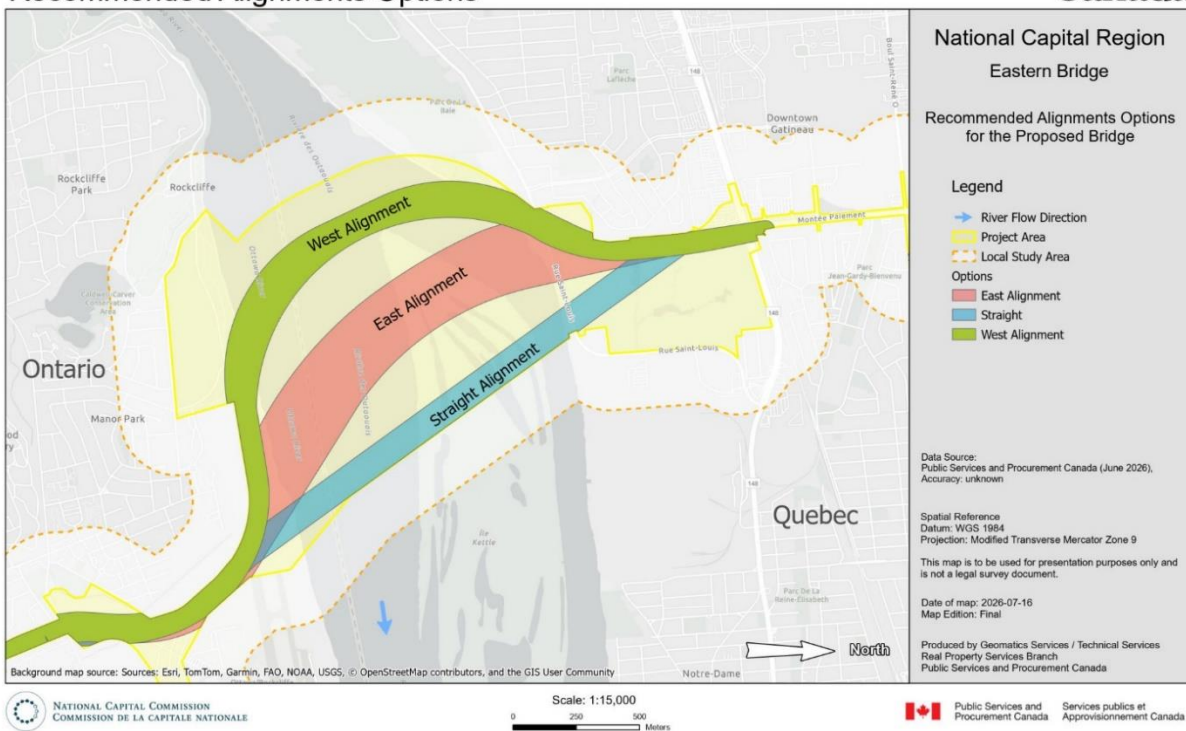


Figure 12-2: Options Recommended for the Next Phase

Each of these three options was brought forward to Pre-Design Analysis phase. Optimized alignments within each option were identified so that all three options can be evaluated.

12.2.2 Alternative Interchange/Intersection Designs

Alternative interchange design options are being considered for the interchanges along Montée-Paiement and Aviation Parkway. Options currently under consideration include the following:

- Autoroute Interchange
 - existing condition with reconfigured ramps
 - current reference design
 - double roundabout interchange
- Major Intersections, including Boulevard Maloney-Montée-Paiement, Hemlock Road-SGEC parkway, Montréal Road-Aviation Parkway, and Ogilvie Road-Aviation Parkway
 - At grade intersection (existing)
 - Grade separated interchange
- Highway 417, OR174 and Aviation Parkway Interchange
 - N-W under Cyrville Road
 - W-N ramp over OR174
 - N-E ramp accommodated on the existing structure; consolidate W-N, E-N, S-N movements in advance of Ogilvie using a series of structures over OR174 and LRT
 - Consolidate W-N, N-W, N-E, and E-N movements on one curved ramp structure over Highway 417

Additional alternatives may be identified for consideration as the assessment of alternative measures progresses.

12.2.3 Alternative Road Configurations

Alternative road configurations are also being considered for Montée-Paiement, Aviation Parkway, and SGEC Parkway. Options currently under consideration include:

- Montée-Paiement:
 - Realign roadway West to provide additional space between residential properties and arterial road. Driveway access on East side of road is maintained.
 - Realign the roadway West to provide a new service roadway to connect driveways. This would allow for a sound barrier to be provided between the service road and arterial road in some locations.
- Aviation Parkway and SGEC Parkway:
 - Maintain existing alignment and add additional N-S lanes to meet functional requirements
 - Realign roadway and narrow median to promote opportunities for public realm improvements, protection of environmental features, or impact mitigation measures

12.2.4 Alternative Construction Staging Locations

Alternative construction staging areas will be considered for the staging of construction equipment, material storage and access to the Ottawa River. It is anticipated that some of the staging areas used for the construction of the Alexandra Bridge will be considered for use in constructing the Project, depending on timing and availability. These areas will be further identified and evaluated within the Impact Statement.

12.2.5 Alternatives for Ancillary or Temporary components

Other ancillary or temporary components of the Project may be identified if required. These components will be further identified and evaluated within the Impact Statement.

12.2.6 Process for Assessment of Alternatives

Over the next months, the MCA tool will be further developed for each of the remaining segments of the corridor based on input received from engagement with stakeholders, PAGs (see Section 3.2.2) and Indigenous communities. The categories are expected to remain consistent across the entire corridor. The specific criteria within each category are currently adapted for the bridge crossing. Criteria will continue to be refined for the road configuration including intersections and interchanges as the project advances and as additional information becomes available.

Input from PAGs and Indigenous communities will help inform how the criteria are defined and weighted in the comparative assessment of design options for all segments of the corridor. Input from Indigenous communities, including outcome from the community-led assessment of alternative bridge crossings based on Indigenous Knowledge perspective will also contribute to the assessment process.

Part C: Location Information and Context

13 Project Location Information

13.1 Project Location

The corridor extends from the interchange of Autoroute 50 and Montée Paiement in Gatineau to the interchange of Highways 417 and 174 in Ottawa (see Figure 13-1 to Figure 13-4). The exact location of the new interprovincial bridge near the western end of Kettle Island is still under assessment (see Figure 1-5 for a map of the full corridor).

Description of the project's proposed geographic coordinates based on information available:

- Segment 1: from 45.510295, -75.677918 to 45.482992, -75.674228
- Segment 2 and 3: from 45.482992, -75.674228 to 45.457584, -75.649055
- Segment 4: from 45.457584, -75.649055 to 45.428000, -75.627027
- Segment 5: from 45.428000, -75.627027 to 45.416674, -75.613029

Project Components - Segment 1

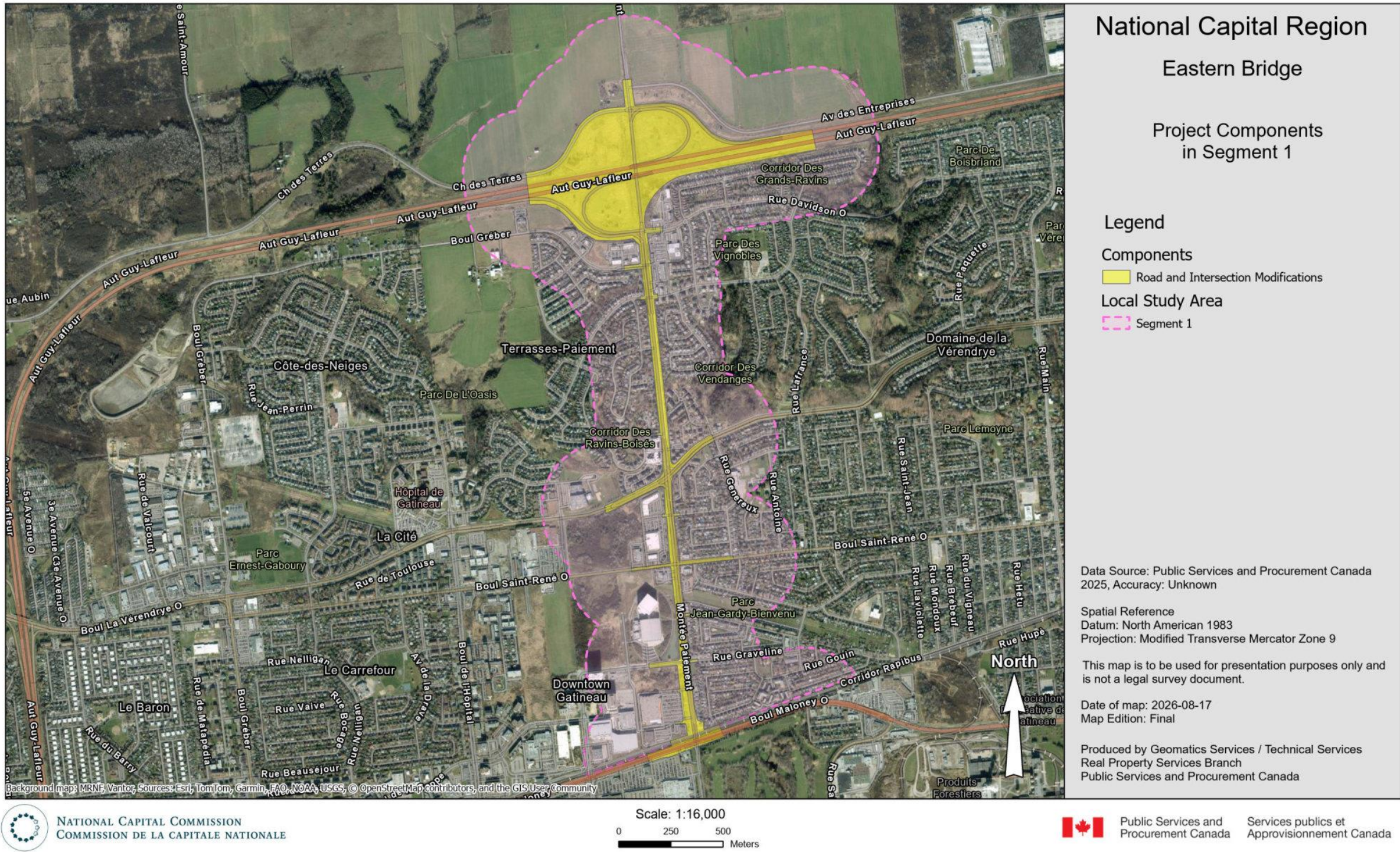


Figure 13-1: Location of Project Components – Segment 1

Project Components - Segments 2 & 3

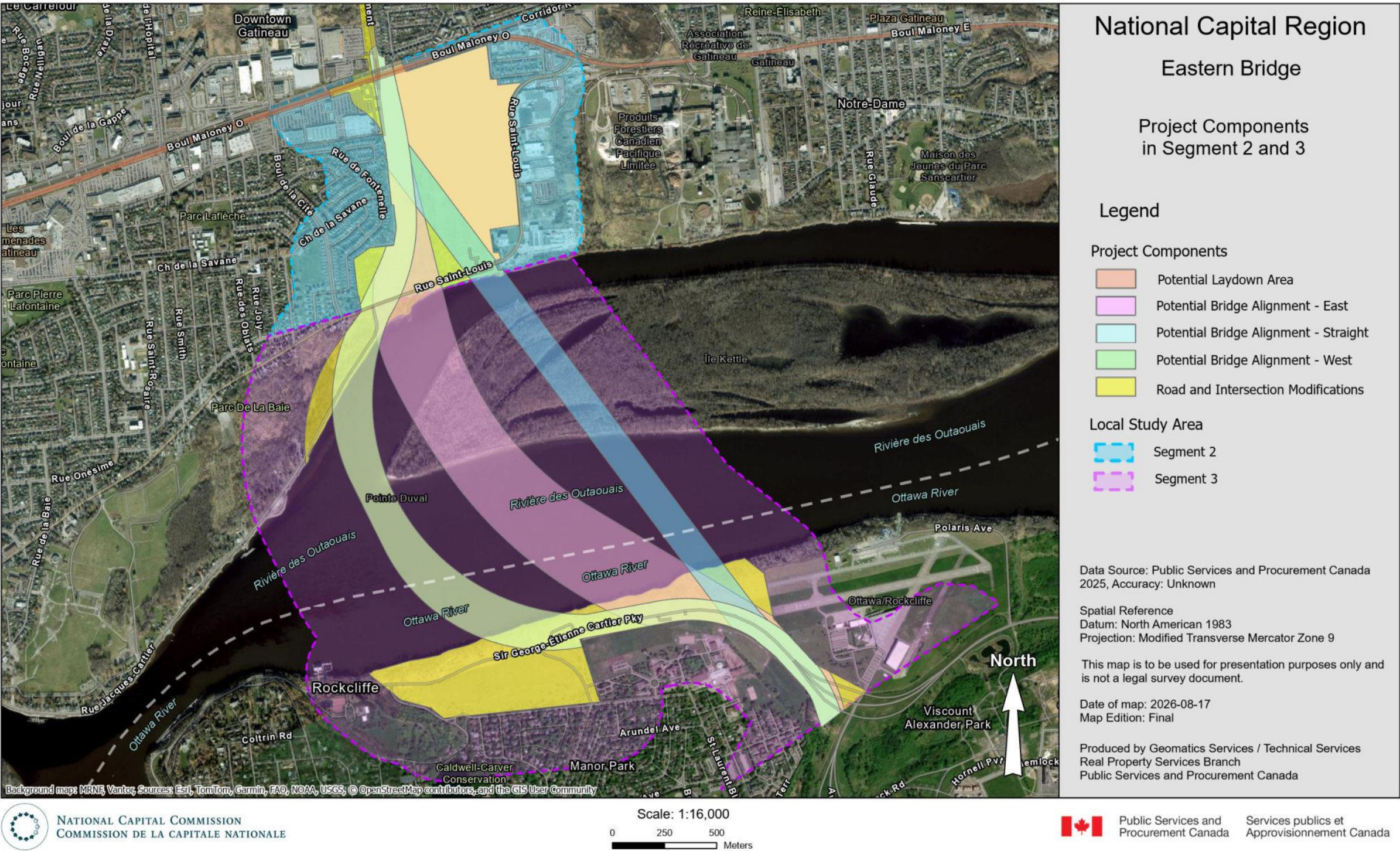


Figure 13-2: Location of Project Components – Segments 2 & 3

Project Components - Segment 4

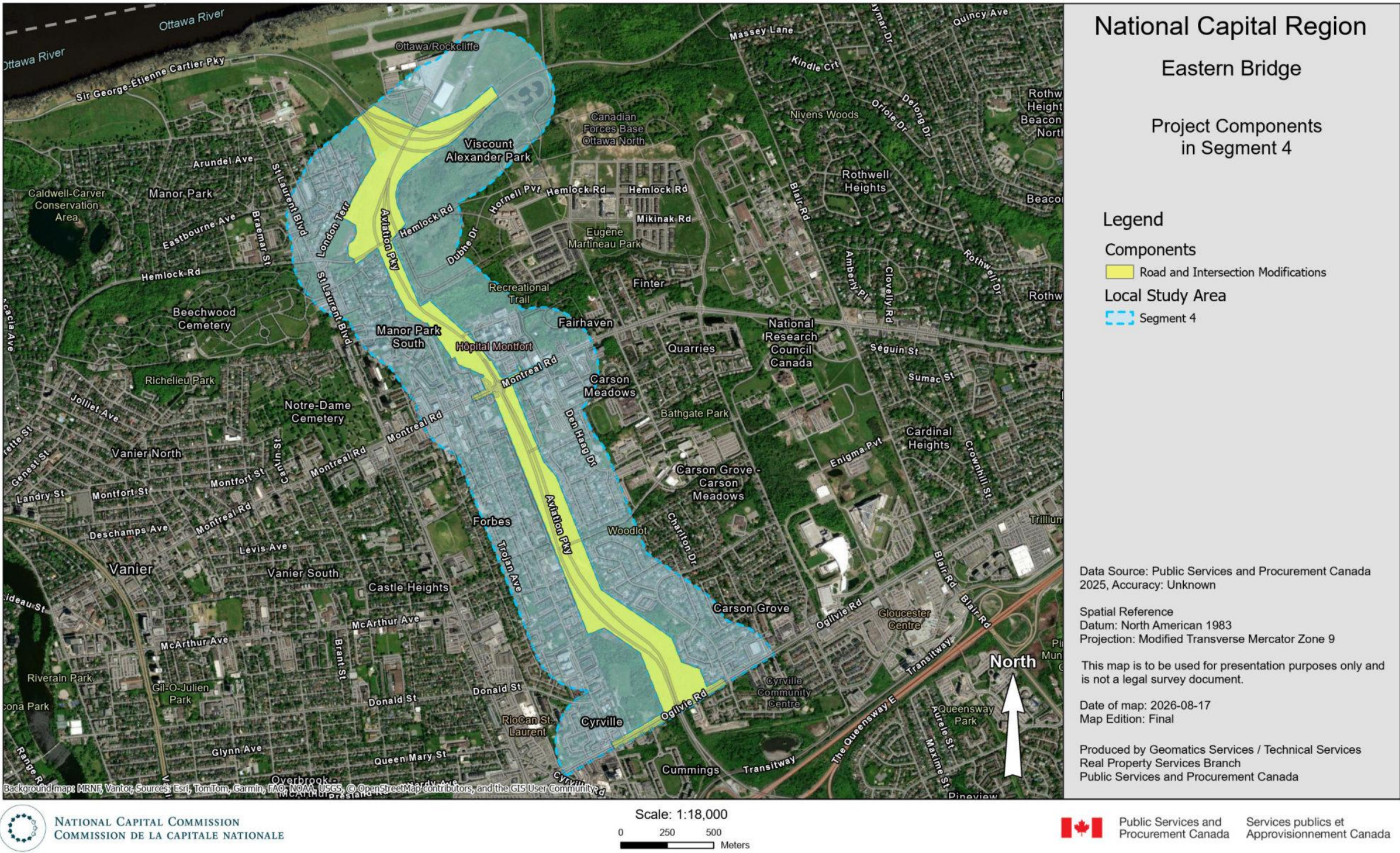


Figure 13-3: Location of Project Components – Segment 4

Project Components - Segment 5

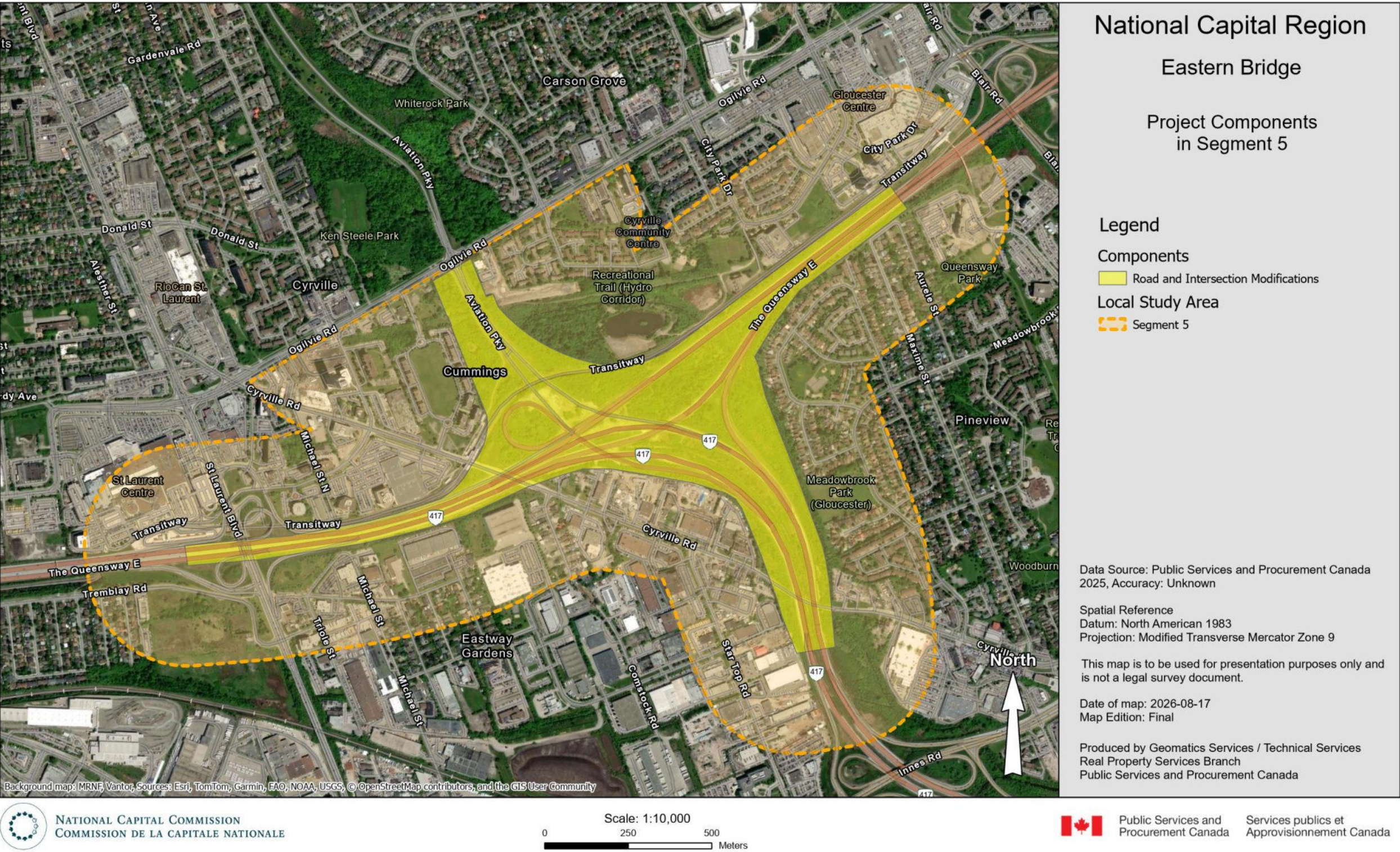


Figure 13-4: Location of Project Components – Segment 5

13.2 Federal Land Ownership

Land ownership along the corridor in Gatineau includes a mix of federal, provincial, municipal, and private lands. Properties information provided in Table 13-1 is from the Directory of Federal Real Property (DFRP).

Table 13-1: Federal properties along the corridor

DFRP Property No.	Name (Custodian)	Primary Use
27337	Preservation Campus (Library and Archives Canada)	Archival Storage Space
14995	Vacant Land (Facing the Preservation Centre)	Unused Land
08734	Canadian Police College (Royal Canadian Mounted Police)	Police Training Facility
04118	SGEC parkway, land surrounding the Aviation Museum (National Capital Commission)	Transportation Corridors
27330	Canadian Aviation and Space Museum (Canada Science and Technology Museum)	Museum
04162	Aviation Parkway (National Capital Commission)	Transportation Corridors
04479	(unnamed) (National Capital Commission)	Transportation Corridors
04217	(unnamed) (National Capital Commission)	Transportation Corridors
04218	(unnamed) (National Capital Commission)	Transportation Corridors
03379	(unnamed) (National Capital Commission)	Transportation Corridors
08629	CMHC National Office (Canada Mortgage and Housing Corporation)	Office Building

Figure 13-5 and Figure 13-6 show federal land ownership within and adjacent to the PA.

Federal Land Ownership - Quebec

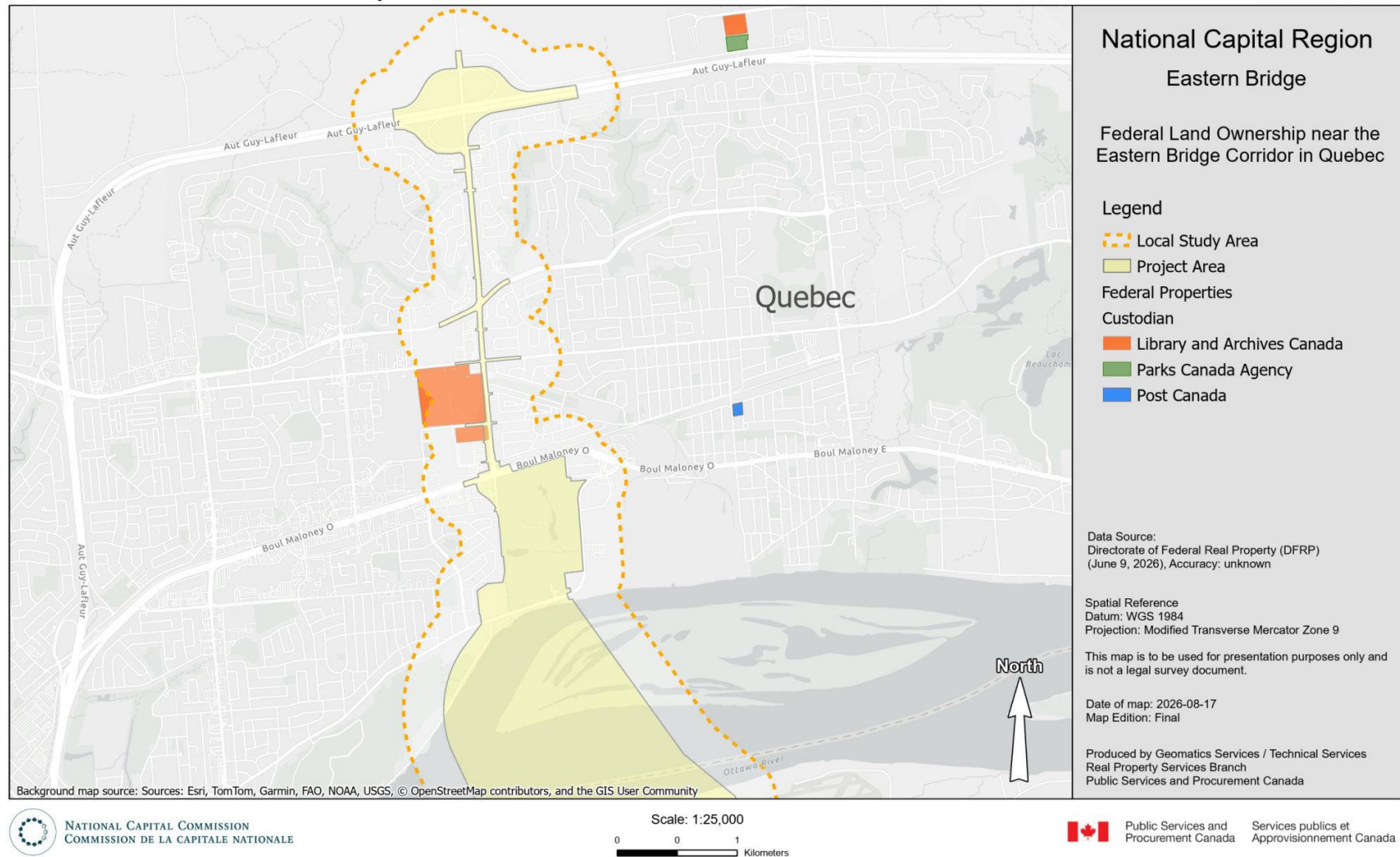


Figure 13-5: Federal Land Ownership in the Corridor – Quebec

Federal Land Ownership - Ontario

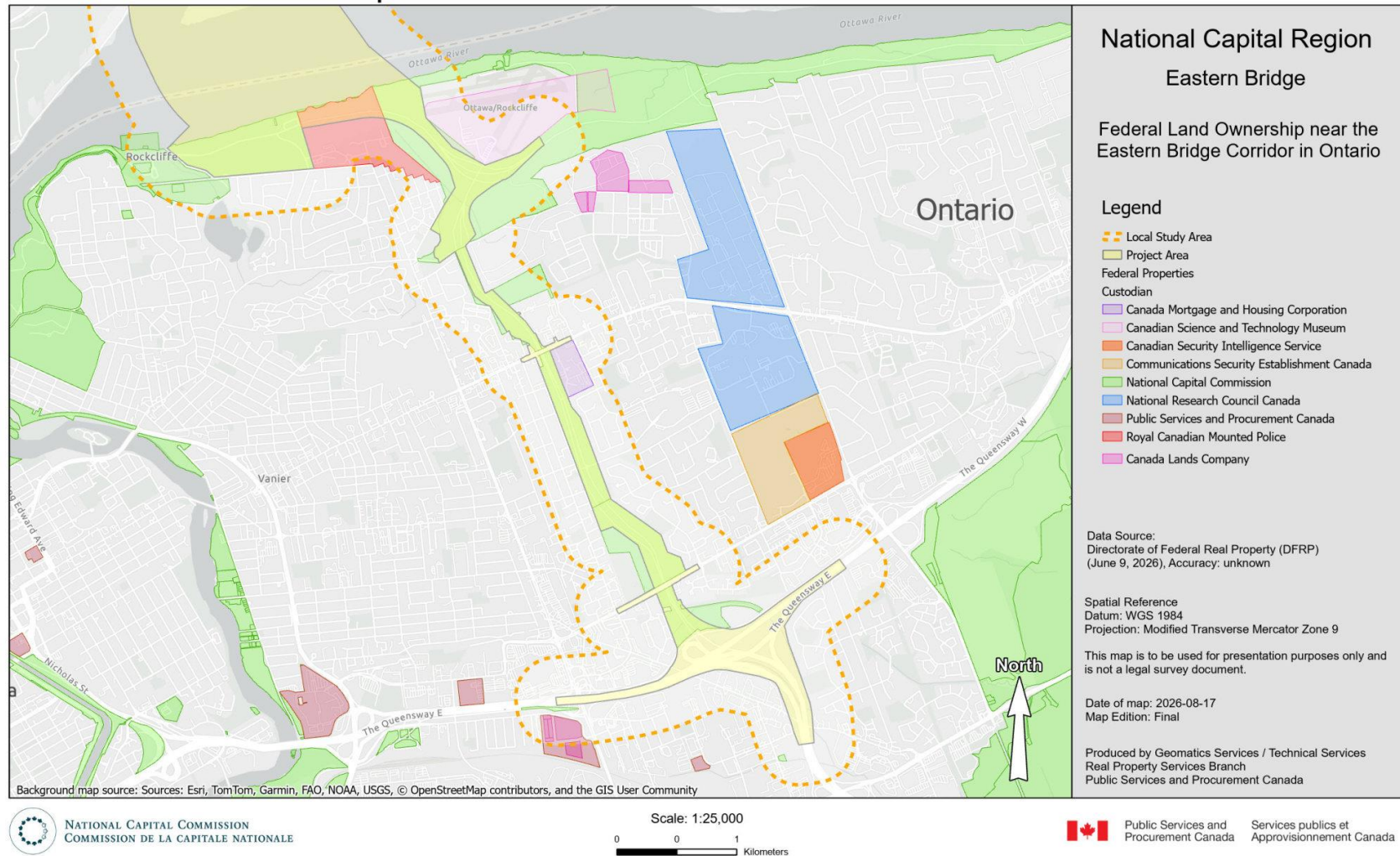


Figure 13-6: Federal Land Ownership in the Corridor – Ontario

13.3 Municipal and Provincial Land Ownership

In Gatineau, municipal and provincial lands are scattered along the corridor including the interchange with Autoroute 50 (Table 13-2).

In Ottawa, most of the lands are federally owned except for road intersections and the interchange of Aviation Parkway and Highway 417 which are under municipal and provincial ownership respectively (Table 13-3).

Table 13-2: Gatineau Municipal and Provincial properties along the corridor

Type	Lot	Matricule
Public - Municipal	1 273 241	6937-46-0775
Public - Municipal	1 273 244	
Public - Municipal	1 273 497	
Public - Municipal	1 273 642	
Public - Municipal	1 273 731	
Public - Municipal	1 273 732	
Public - Provincial	1 273 733	
Public - Municipal	1 767 485	6938-37-4088
Public - Municipal	1 767 486	6938-37-4088
Public - Municipal	1 770 085	
Public - Municipal	1 770 302	6940-14-7988
Public - Municipal	1 770 307	6939-24-9407
Public - Municipal	1 770 308	6840-79-0503
Public - Municipal	1 770 334	6938-35-9045
Public - Provincial	1 770 448	
Public - Municipal	1 934 614	7037-03-2259
Public - Municipal	2 209 914	6939-22-3864
Public - Municipal	2 555 719	6937-46-0775
Public - Municipal	2 555 720	6937-46-0775
Public - Municipal	3 419 811	
Public - Municipal	3 891 620	
Public - Municipal	3 891 621	
Public - Municipal	3 891 622	
Public - Municipal	4 014 980	
Public - Municipal	4 075 855	
Public - Municipal	4 473 028	6836-98-9052
Public - Municipal	4 473 030	6836-98-9052
Public - Municipal	5 515 891	6936-09-8538

Table 13-3: Ottawa Municipal and Provincial properties along the corridor

Type	Property Identification Number (PIN)
Public - Provincial	42640700
Public - Provincial	42690130
Public - Municipal	42730198
Public - Provincial	43610241

13.4 Private Land Ownership

The following is a preliminary list of private properties (Table 13-4 and Table 13-5) that could be required for infrastructure of the project. The list is intentionally broad as several possible design options are still being studied. It is based on the information available now and identifies properties that may potentially be affected under one or more of the options being reviewed. Inclusion on the list does not necessarily mean that a property will need to be acquired. As the project advances and the options are further refined, properties currently on the list may be removed (partially or fully) and additional properties, or parts of properties, may be added if they are required for the updated design.

The Government of Canada is committed to affecting as few private properties as possible and minimizing those impacts where they cannot be avoided. Reducing impacts on private property is one of the factors that will be used to compare and choose among the project options taking into account technical, environmental, financial and safety considerations.

Once a preferred design is chosen and confirmed, property owners will be contacted individually and consulted if all or part of their property may be required for the project. At that time, they will be informed of the potential impacts on their property and the proposed approach for any required acquisition.

Table 13-4: Private properties in Gatineau along the corridor

Type	Lot	Matricule
Private	1 273 240	6937-44-4412
Private	1 273 243	6938-12-1142
Private	1 273 247	6938-33-0268
Private	1 273 701	6937-34-5084
Private	1 767 447	6939-30-0987
Private	1 767 448	6939-30-0893
Private	1 767 449	6939-30-0899
Private	1 767 450	6939-30-1171
Private	1 767 451	6939-30-1076
Private	1 767 452	6939-30-1082
Private	1 767 453	6939-30-1262
Private	1 767 454	6938-35-7316
Private	1 767 457	6938-36-6034
Private	1 767 458	6938-36-6214
Private	1 767 459	6938-36-6124
Private	1 767 460	6938-36-6304
Private	1 767 461	6938-35-6685
Private	1 767 462	6938-35-6595
Private	1 767 463	6938-35-6775
Private	1 767 464	6938-35-6866
Private	1 767 465	6938-35-6956
Private	1 767 466	6938-35-7047
Private	1 767 472	6938-37-4930
Private	1 767 473	6938-37-5115
Private	1 767 474	6938-36-5492
Private	1 767 475	6938-36-5672
Private	1 767 476	6938-36-5763
Private	1 767 477	6938-36-5943
Private	1 767 478	6938-36-5853
Private	1 767 487	6938-37-4753
Private	1 767 488	6938-37-4843
Private	1 767 500	6938-38-2752
Private	1 767 501	6938-39-2827
Private	1 767 502	6938-39-2916
Private	1 767 503	6938-38-3195
Private	1 767 504	6938-39-3006
Private	1 767 505	6938-38-3285
Private	1 767 506	6938-38-3374
Private	1 767 507	6938-38-3854
Private	1 767 524	6939-30-1724

Type	Lot	Matricule
Private	1 767 525	6939-30-1635
Private	1 767 526	6939-30-1813
Private	1 767 527	6939-30-1902
Private	1 767 528	6938-39-2091
Private	1 767 529	6938-39-2281
Private	1 767 530	6938-39-2459
Private	1 767 531	6938-39-2370
Private	1 767 532	6938-39-2548
Private	1 767 533	6938-39-2638
Private	1 768 127	6939-24-7635
Private	1 768 128	6939-24-7717
Private	1 768 129	6939-23-8094
Private	1 768 130	6939-23-8276
Private	1 768 131	6939-23-8956
Private	1 768 132	6939-25-6809
Private	1 768 133	6939-24-7090
Private	1 768 134	6939-24-7272
Private	1 768 135	6939-24-7454
Private	1 768 137	6939-25-6349
Private	1 768 142	6940-20-3860
Private	1 768 143	6940-20-3860
Private	1 768 144	6940-20-3860
Private	1 768 145	6940-20-3860
Private	1 768 146	6940-20-3860
Private	1 768 147	6940-20-3860
Private	1 768 148	6940-20-3860
Private	1 768 149	6940-20-3860
Private	1 768 150	6940-20-3860
Private	1 768 151	6940-20-3860
Private	1 768 152	6940-20-3860
Private	1 768 153	6940-20-3860
Private	1 768 154	6940-20-3860
Private	1 768 155	6940-20-3860
Private	1 768 156	6940-20-3860
Private	1 768 157	6940-20-3860
Private	1 768 158	6940-21-3808
Private	1 768 159	6939-32-1503
Private	1 768 167	6939-33-0527
Private	1 768 220	6939-37-0227
Private	1 768 223	6939-37-0227
Private	1 768 985	6940-14-8435
Private	1 768 986	6940-14-8344

Type	Lot	Matricule
Private	1 768 994	6940-15-7123
Private	1 768 995	6940-15-6841
Private	1 768 996	6940-14-7976
Private	1 768 997	6940-14-8163
Private	1 768 998	6940-14-8254
Private	1 768 999	6940-15-7901
Private	1 769 002	6940-22-0638
Private	1 769 003	6940-22-0827
Private	1 769 004	6940-22-1012
Private	1 769 005	6940-21-1494
Private	1 769 006	6940-21-2471
Private	1 769 015	6940-22-0195
Private	1 769 016	6940-22-0180
Private	1 769 017	6940-22-0267
Private	1 769 018	6940-22-0457
Private	1 769 019	6940-22-0548
Private	1 769 020	6940-23-1007
Private	1 769 039	6940-14-8525
Private	1 769 040	6940-14-8707
Private	1 769 041	6940-14-8616
Private	1 769 042	6940-13-8988
Private	1 769 043	6940-13-8897
Private	1 769 044	6940-13-9077
Private	1 769 045	6940-13-9265
Private	1 769 046	6940-13-9650
Private	1 770 093	6939-37-0227
Private	1 770 249	6938-70-0913
Private	1 934 616	7037-00-4393
Private	1 934 618	7036-17-9632
Private	1 934 620	7036-27-0319
Private	1 934 621	6937-93-5112
Private	1 934 622	6937-92-5993
Private	1 934 623	6937-92-6575
Private	1 934 624	7137-01-9862
Private	1 935 149	7137-01-9862
Private	1 936 691	7137-01-9862
Private	1 936 692	7137-01-9862
Private	1 989 837	
Private	1 989 839	
Private	1 989 841	
Private	2 409 678	6939-32-0663
Private	2 659 521	

Type	Lot	Matricule
Private	3 913 829	6939-14-5332
Private	3 913 829	6939-15-4082
Private	3 913 830	6939-15-4082
Private	3 913 831	6939-14-5332
Private	4 014 979	6939-22-0133
Private	4 074 913	6840-59-1444
Private	4 075 856	6840-34-3536
Private	4 371 970	6939-13-9931
Private	4 473 037	6937-21-2547
Private	4 610 190	
Private	4 610 191	6939-28-5366
Private	4 610 192	6939-28-5366
Private	4 610 193	6939-28-5366
Private	4 610 194	6939-28-5366
Private	4 610 195	6939-28-5366
Private	4 610 200	6939-28-5366
Private	4 610 201	6939-28-5366
Private	4 610 202	6939-28-5366
Private	4 610 203	6939-28-5366
Private	4 610 204	6939-28-5366
Private	4 610 205	6939-28-5366
Private	4 610 441	6939-28-5366
Private	4 610 442	6939-28-5366
Private	4 621 467	6940-20-6217
Private	4 621 468	6940-20-6217
Private	4 621 469	6940-20-6217
Private	4 621 470	6940-20-6217
Private	4 621 471	6940-20-6217
Private	4 621 472	6940-20-6217
Private	4 621 473	6940-20-6217
Private	4 621 474	6940-20-6217
Private	4 621 475	6940-20-6217
Private	4 621 476	6940-20-6217
Private	4 621 477	6940-20-6217
Private	4 621 478	6940-20-6217
Private	4 621 479	6940-20-6217
Private	4 621 480	6940-20-6217
Private	4 621 481	6940-20-6217
Private	4 621 482	6940-20-6217
Private	4 621 483	6940-20-6217
Private	4 621 484	6940-20-6217
Private	4 621 485	6940-20-6217

Type	Lot	Matricule
Private	4 621 486	6940-20-6217
Private	4 621 487	6940-20-6217
Private	4 621 488	6940-20-6217
Private	4 621 489	6940-20-6217
Private	4 621 490	6940-20-6217
Private	4 621 491	6940-20-6217
Private	4 621 492	6940-20-6217
Private	4 621 493	6940-20-6217
Private	4 621 494	6940-20-6217
Private	4 621 495	6940-20-6217
Private	4 621 496	6940-20-6217
Private	4 621 497	6940-20-6217
Private	4 621 498	6940-20-6217
Private	4 818 279	
Private	4 818 300	6939-07-9204
Private	4 818 301	6939-07-9204
Private	4 818 302	6939-07-9204
Private	4 818 303	6939-07-9204
Private	4 818 304	6939-07-9204
Private	4 818 305	6939-07-9204
Private	4 818 306	6939-07-9204
Private	4 818 307	6939-07-9204
Private	5 054 888	6937-34-5084
Private	5 054 889	6937-34-5084
Private	5 284 076	6840-88-0818
Private	5 284 077	6840-78-6270
Private	5 509 834	6840-88-0818
Private	5 515 890	6936-07-3331
Private	5 515 892	6937-21-2547
Private	5 592 033	7038-71-1724
Private	5 799 645	6938-70-0913
Private	6 267 671	6937-21-2547
Private	6 289 436	
Private	6 559 326	6840-28-6450
Private	6 559 344	6840-39-3413
Private	6 564 272	6840-39-3413
Private	6 564 273	6840-39-3413
Private	6 564 274	6840-39-3413
Private	6 564 275	6840-39-3413
Private	6 564 276	6840-39-3413

Table 13-5: Private properties in Ottawa along the corridor

Type	Property Identification Number (PIN)
Private	42220167
Private	42690127
Private	42690128
Private	42690982
Private	42691869
Private	42730244
Private	42730248
Private	42730253
Private	42730419
Private	43610253
Private	43610254
Private	43610407
Private	43610409
Private	43610410
Private	43610432
Private	43610433

13.5 Nearby Communities and Residences

The Project is within the urban areas of the cities of Gatineau, Québec and Ottawa, Ontario, and is in proximity to many surrounding neighbourhoods with a population of approximately 30,000 within 1 km of the corridor (WSP 2025). In Gatineau, the corridor crosses the District du Carrefour-de-L'Hôpital, District de Bellevue, District du Versant, District de la Pointe Gatineau, and District du Lac Beauchamp (Figure 13-7). In Ottawa, the corridor crosses the neighbourhoods of Rockliffe Park, Manor Park, Wateridge Village, Overbrook, Carson Grove-Carson Meadows, Riverview, and Pineview (Figure 13-8).

Communities - Gatineau

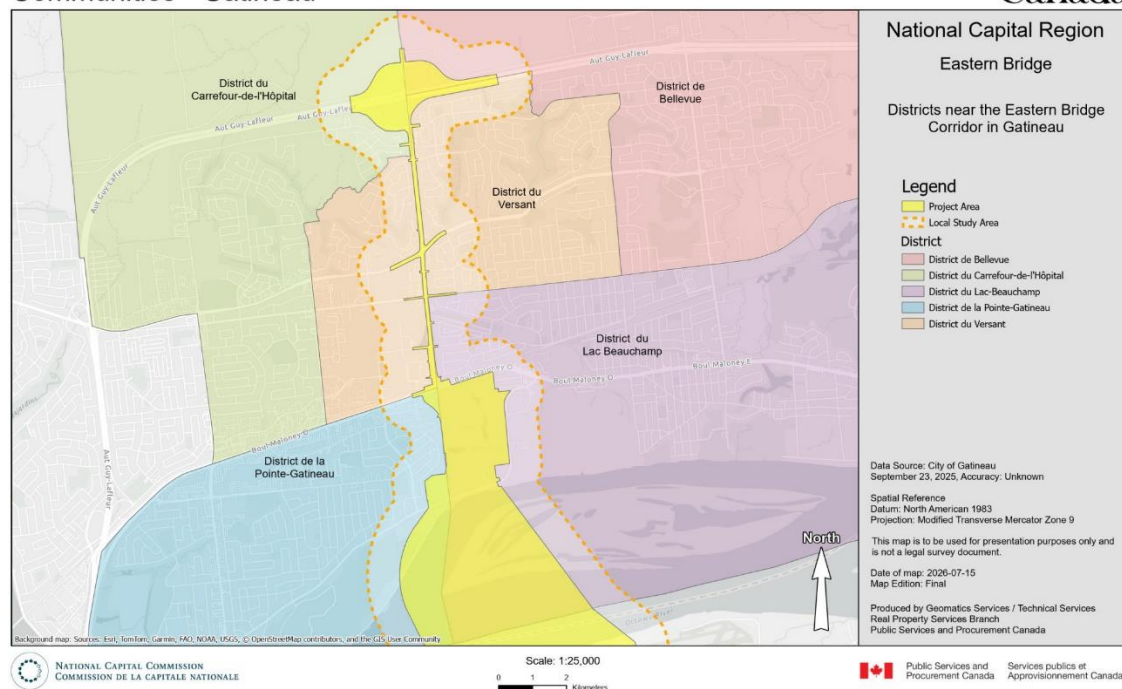


Figure 13-7: Districts in Gatineau

Communities - Ottawa

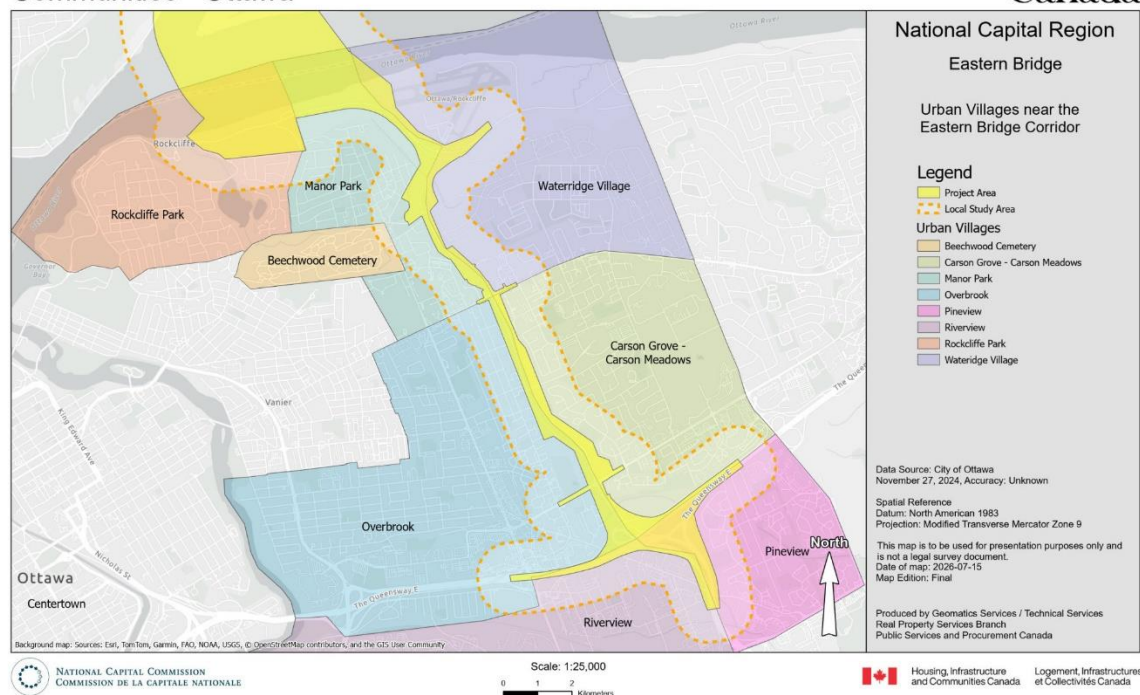


Figure 13-8: Ottawa Communities and Neighbourhoods

13.6 Proximity to Indigenous Lands and Communities

The area in the vicinity of the Project has been a place of gathering, trade, harvesting, and transportation for Indigenous peoples for thousands of years prior to European settlement (Walker 2018). Indigenous communities and organizations listed in Section 4.2 consider that the Eastern Bridge Project is within their traditional territories. The location of the Eastern Bridge and the watershed of the Ottawa River and its tributaries have been identified by Indigenous communities as subject to land claims, assertions of title, modern treaty negotiations and court cases to establish the existence of Indigenous rights.

The Project is within the traditional territories of 15 communities and four (4) organizations. The locations of the business centres of the communities are shown in Figure 13-9.

Indigenous Communities

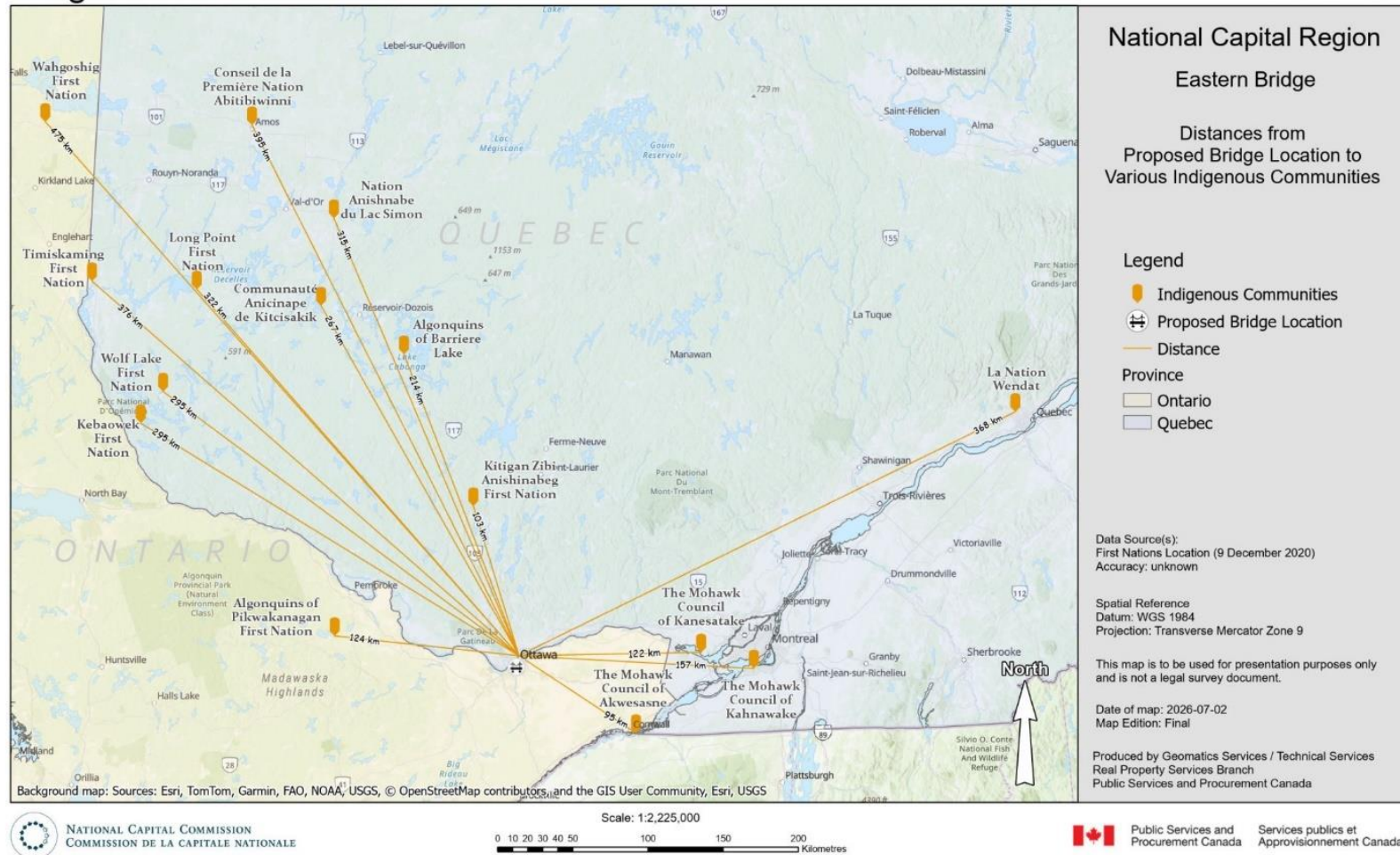


Figure 13-9: Indigenous Communities

14 Physical and Biological Environment

This section provides a description of the physical and biological environment of the LSA, based on existing information and studies that have been completed for the Project. Additional studies planned for field seasons in 2026-2027 and beyond are also described.

During the corridor selection phase of the Project, the NCC contracted several consultants to complete biophysical studies. Roche Genivar completed studies in 2012 for the Phase 2 assessment (Roche Genivar 2012b,c). This information was updated for Corridors 5, 6, and 7 in studies completed by WSP in 2019. Recently, WSP completed an updated natural environment report for the analysis and evaluation refresh of Corridors 5 and 7 (WSP, 2024b). This was primarily a desktop exercise that referenced existing databases.

Aki Ressources was contracted by the IPT in 2025-2026 to complete ecological field studies for a portion of the corridor to better understand the biological environment. The results from these studies, along with other background information where appropriate, have been compiled into a description of the physical and biological environment. The physical and biological study area for this IPD is shown in Figure 1-5.

14.1 Physical Environment

14.1.1 Atmospheric Environment

14.1.1.1 Climate

The Köppen climate classification system is widely used to sort the world's climates into different types based on patterns of temperature and precipitation as reflected in native vegetation (National Oceanic and Atmospheric Administration, 2013). The NCR is in Köppen climate zone Dfb, which is a humid continental climate characterized by mild summers, cold winters, and relatively even precipitation through the year (Beck et al. 2018). Climate statistics for the NCR based on Environment and Climate Change Canada (ECCC) data collected from 1991 to 2020 (ECCC, 2025) from stations in Ottawa (Ottawa Airport and Ottawa City) and Gatineau (Angers) are provided in Table 14-1.

Table 14-1: Climate statistics in the National Capital Region

Climate Statistic	Station Records		
	Gatineau (Angers) ¹	Ottawa (City)	Ottawa (Airport)
Temperature			
Average daily temperature	5.3 °C	6.8 °C	6.5 °C
Average daily minimum temperature	-0.3 °C	1.9 °C	1.4 °C
Average daily maximum temperature	11.2 °C	11.7 °C	11.6 °C
Precipitation			
Total Precipitation	-	938.1 mm	757.2 mm
Extreme daily rainfall	105.4 mm	108.6 mm	135.4 mm
Extreme daily snowfall	34.0 cm	37.0 cm	35.6 cm
Wind			
Prevailing wind direction	-	West	West
Average wind speed	-	11.5 km/h	13.5 km/h
Extreme wind speed	-	54.0 km/h	65.0 km/h
Extreme gust speed	-	107.0 km/h	100.0 km/h
Snow and Frost			
Frost-free days	119	158	160
Average date of first snowfall	November 13	November 10	November 16
Average date of last snowfall	April 4	April 10	April 15

¹Note that climate statistics provided by ECCC are incomplete for this station.

14.1.1.2 Air Quality

Air quality in the LSA was inferred from measurements taken for the National Air Pollution Surveillance Program (NAPS) at two stations in Gatineau and Ottawa (WSP 2019a). WSP analyzed NAPS measurements of background concentrations of particulate matter, sulphur dioxide, nitrogen dioxide, carbon monoxide, ozone, benzene (Ottawa only), and 1,3 butadiene (Ottawa only) and updated the assessment in 2024 (WSP 2024a). Background pollutant levels were all well below the thresholds of provincial air quality standards in Ontario and Québec and were typical of urban environments. Data in Table 14-2 is adapted from WSP 2019a. There are no notable point sources of air pollution in the LSA. Local air quality reflects air quality at the regional scale, which is influenced by traffic and industrial activity. Sporadic extreme weather events can diminish air quality (e.g., smoke traveling to the region from wildfires elsewhere in North America).

Table 14-2: Air pollutant concentrations and associated provincial ambient air quality criteria in Ottawa and Gatineau

Pollutant	Period	Ottawa Concentration ($\mu\text{g}/\text{m}^3$)	Ontario's Ambient Air Quality Criteria ($\mu\text{g}/\text{m}^3$)	Gatineau Concentration ($\mu\text{g}/\text{m}^3$)	Québec Air Quality Standards ($\mu\text{g}/\text{m}^3$)	Canadian Ambient Air Quality Standards ($\mu\text{g}/\text{m}^3$)
Particulate matter	PM10	24 hr	20.7	50	24.5	--
	PM2.5	24 hr	18.7	27	23.0	30
		Annual	6.3	8.8	7.7	--
	TSP	24 hr	38.3	120	45.3	120
		Annual	20.9	60	25.3	--
Sulphur dioxide	4 min	--	--	4.98	1,050	--
		1 hr	2.62	40 ppb (*106)	2.62	65 ppb (*173)
	24 hr	2.62	--	1.89	288	--
	Annual	0.77	4 ppb (*10.6)	0.50	52	4.0 ppb (*10.6)
Nitrogen dioxide	1 hr	30	400	26	414	42 ppb (*80)
	24 hr	28	200	22	207	--
	Annual	14	--	11	103	12.0 ppb (*23)
Carbon monoxide	1 hr	344	36,200	344	34,000	--
	8 hr	304	15,700	304	12,700	--
Ozone	1 hr	79	165	80	160	60 ppb (*120)
Benzene	24 hr	0.76	2.3	--	10	--
	Annual	0.36	0.45	--	--	--
1,3 butadiene	24 hr	0.06	10	--	--	--
	Annual	0.11	2	--	0.02	--

*where 1 ppb of sulphur dioxide is equal to $2.66 \mu\text{g}/\text{m}^3$ (at 20.0°C and 1 atmosphere); where 1 ppb of nitrogen dioxide is equal to $1.914 \mu\text{g}/\text{m}^3$ (at 20.0°C and 1 atmosphere); and where 1 ppb of ozone is equal to $1.9967 \mu\text{g}/\text{m}^3$ (at 20.0°C and 1 atmosphere)

14.1.2 Acoustic Environment

Noise in the LSA is typical of urban environments and is largely generated by traffic (WSP 2020c). WSP conducted acoustic studies in 2019 and recorded daytime sound levels of 52 to 65 A-weighted decibels (dBA) on the Ontario side of the LSA and 49 to 75 dBA on the Québec side (WSP 2020c). WSP also reported nighttime sound levels in Gatineau at 47 to 48 dBA. Noise was greatest along Montée-Paiement in Gatineau and Aviation Parkway in Ottawa, which are both arterial roads conveying commuter traffic and therefore expected to generate noise within these ranges.

WSP (2020c) modeled noise and vibrations which may be produced by the Project. The predicted noise and vibrations associated with construction and operation of the Project—and potential effects on the acoustic environment—are summarized in Section 19.

14.1.3 Geophysical Environment

14.1.3.1 Geology, Hydrogeology and Physiography

Subsurface conditions vary along the proposed alignment within each segment outlined in Section 13.1. The following section presents a high-level summary of the geology, hydrogeology, and physiography of each segment.

Segment 1: This Segment extends along Montée-Paiement from Autoroute 50 to Boulevard Maloney in Gatineau. The surficial geology generally consists of deep-water fine-grained glaciomarine sediments. These sediments were deposited in the post-glacial Champlain Sea and are mainly composed of massive to well-laminated grey clayey silt to silty clay. The clay deposit is generally overlying a non-cohesive glacial till deposit underlain by bedrock. The available data mostly consist of seismic refraction tests, cone penetrometer tests and field vane shear tests with few boreholes confirming the inferred stratigraphy. Based on the bedrock geological mapping, bedrock in this area consists of Quarzitic bedrock of Cairnside Formation (equivalent to the Nepean formation in Eastern Ontario) from Boulevard Maloney to about 500 m South of Autoroute 50 and consists of paragneiss, quartzite and pelitic bedrock at the Autoroute 50 intersection. The depth to bedrock is anticipated to range from about 15 m to 21 m near Boulevard Maloney, decreasing to a minimum of about 10 m near Boulevard Saint-René and Boulevard la Vérendrye, and increasing again to 27 m to 50 m near Autoroute 50.

The depth to groundwater is expected to vary according to topography and soil type. Between Boulevard Maloney and Boulevard la Vérendrye, the water table is expected in the upper 3 to 5 m. The shallowest groundwater in this zone is likely at or just North of Boulevard la Vérendrye, at the toe of the 40 m high slope. Drainage features have cut 10 to 20 m deep erosion valleys into the side of this slope to the East and West of Montée Paiement, indicating that this is a groundwater discharge area. Higher groundwater flows would be anticipated in the non-cohesive glacial till compared to the surficial clayey soils.

Segment 2: This Segment covers the North shore of the Ottawa River between the Ottawa River and Boulevard Maloney along Montée-Paiement in Gatineau. The surficial geology generally consists of deep-water fine-grained glaciomarine sediments. These sediments were deposited in the post-glacial Champlain Sea and are mainly composed of massive to well-laminated grey clayey silt to silty clay. The clay deposit generally overlies a non-cohesive glacial till deposit underlain by bedrock. Based on the bedrock geological mapping, bedrock in this area consists of dolomite of the Beauharnois Formation (equivalent to the Oxford Formation in eastern Ontario). The depth to bedrock is anticipated to range from about 35 m near chemin Saint-Louis going up to 15 to 21 m near Boulevard Maloney. Groundwater is expected in the upper 3 to 5 m.

Segment 3: This zone is limited to the Ottawa River along the bridge alignment from Gatineau to Ottawa. Based on the WSP Kettle Island geotechnical report (WSP 2024I), the subsurface condition generally consists of sand that extends to depths of about 15 m over either silty sand or silty clay, over a non-cohesive glacial till deposit underlain by bedrock. The sand and glacial till deposit was found to be liquifiable. Bedrock was encountered at depths ranging from 26 m to 49 m and was described as very strong limestone, dolostone and sandstone. The geological mapping of this segment is variable and somewhat inconsistent between Ontario, Québec, and federal sources. There is limited hydrogeological information in this zone, though the entire subsurface is below the water table. The sand, silty sand, and non-cohesive glacial till are aquifers, and the silty clay is an aquitard.

Segment 4: This segment extends from SGEN Parkway to Ogilvie Road along Aviation Parkway. The geology within this segment is divided into two distinct zones:

- From the SGEN Parkway to about 300 m South of Hemlock Road: the subsurface conditions generally consist of a surficial deposit of silty sand or alluvium over a thick silty clay deposit that extends to depths ranging from 11 m to 50 m over sandy silt glacial till or sand underlain by bedrock. According to the bedrock mapping, the bedrock in this area consists of dolostone of the Oxford Formation, sandstone, limestone, and shale of the Rockcliffe

Formation, and, further to the South, limestone of the Bobcaygeon Formation. The bedrock depth is highly variable. It typically deepens from the South (where bedrock outcrops are present) to North, and changes abruptly at the intersection of Hemlock Road (i.e. from a depth of about 12 m East of intersection to more than 34 m West of intersection).

- From 300 m South of Hemlock Road to Ogilvie Road: the surficial geology mainly consists of fine-textured glaciomarine deposits consisting of silt and clay. Near Montreal Road, the surficial geology is comprised of sand, sand and gravel and silt-sand deposits. According to the bedrock mapping, the bedrock in this area consists of shale of Billings Formation. Bedrock depths vary from being near the surface with bedrock cuts/outcrops present in localized areas of the existing Aviation Parkway corridor on the North of Montreal Road; near Montreal Road, bedrock becomes deeper (up to 7 m depth) and to the South of Montreal Road bedrock becomes shallower again at depths ranging from 3 to 5 m North of Ogilvie Road.

Groundwater is shallow throughout this zone due to the low permeability clays on the river terrace and around Hemlock Road, and due to the shallow shaley bedrock from Montreal Road to Ogilvie Road. The shallowest groundwater likely exits just North of Hemlock Road, where emergent streams on either side of Aviation Parkway indicate groundwater discharge. Boreholes drilled southeast of Aviation Parkway and Hemlock Road indicate the water table at 2 m depth and the presence of a sand layer beneath approximately 5 m of silty clay. Saturated sands are present in the upper 5 m at Montreal Road.

Segment 5: This segment extends from Ogilvie Road to Highway 417/174. Many boreholes from the MTO Geocres database at the interchange as well as some historical LRT boreholes were advanced within this segment. According to these boreholes, the subsurface conditions in the southern portion of this segment generally consist of surficial layers of topsoil, fill and/or clay overlying sandy silt to sand till over shallow shale bedrock. Bedrock was generally encountered at depths ranging from 2 m to 5 m below original grades but was shallower in some areas.

Groundwater is encountered in the upper 1 m to 3 m in non-cohesive deposits over shallow shale bedrock. The Aviation Parkway / Highway 417 / Ottawa Road (OR) 174 interchange is in a topographic depression with a few surface drainage features which likely collect shallow groundwater in addition to runoff.

14.1.3.2 Seismic Site Classification

The Eastern Bridge alignment falls within the Western Québec (WQ) seismic zone according to the Geological Survey of Canada. The WQ zone constitutes a large area which encompasses the urban areas of Montreal, Ottawa-Gatineau and Cornwall. Within the WQ zone, recent seismic activity has been concentrated in two subzones: one along the Ottawa River and another more active subzone along the Montreal-Maniwaki axis. Two major earthquakes have occurred in the WQ zone: the 1935 Témiscaming event, which had a magnitude (i.e., a measure of the intensity of the earthquake) of 6.2, and the 1944 Cornwall-Massena event, which had a magnitude of 5.8. Therefore, there is potential for earthquakes to affect the Project.

According to the Natural Resources Canada Ottawa-Gatineau seismic site classification mapping (Hunter et al. 2012), the Eastern Bridge alignment falls under different site classification zoning. Table 14-3 presents the changes in the site classification over the entire alignment and at each segment. Table 14-3 also provides the expected Peak Ground Accelerations (PGAs) within each segment in accordance with the 2020 National Building Code of Canada Seismic Hazard Tool. The site class provided in this table was confirmed for Segment 3, where WSP (2024m) carried out shear wave velocity measurements and provided site-specific response analysis. According to the WSP Kettle Island Design report, the North and South sides of Segment 3 can be considered as Site Class D and the middle area in the Ottawa River is considered to be a Site Class F.

Table 14-3: Seismic site classification within the Project limits

Segment	Site Class ^{*,**}	PGA
Segment 1	Site Class D for most of this segment, except for a small area from North of Boulevard la Vérendrye to South of Autoroute 50 which is Site Class E.	PGA(X_E)=0.402 PGA(X_D)=0.372
Segment 2	Site Class D	PGA(X_D)=0.371
Segment 3 ^{***}	Site Class D on the North and South approach areas. Site Class F applies within the Ottawa River, where liquifiable soils are present and will require a Site-Specific Ground Response Analysis to determine the applicable PGA. The Site Class E PGA is provided as a relative comparison only.	PGA(X_D)=0.371 PGA (X_E)= 0.402
Segment 4	Site Class B from North of Ogilvie Road to about 300 m South of Hemlock Road, where the site class changes to Site Class C before quickly changing again to Site Class D near the Hemlock intersection through to the SGENC Parkway.	PGA(X_B)=0.316 PGA(X_C)=0.358 PGA(X_D)=0.376
Segment 5	Site Class B	PGA(X_B)=0.321

Notes:

*It should be noted that it is possible that class F site conditions may be found within the areas mapped as Site Class D through E

**some areas mapped as classes A and B may instead be class C if more than 3 m of soil underlies the bottom of the foundation elements.

*** Site Class and PGA values are reported based on the WSP Kettle Island Design report (however, value is not available for kettle Island itself)

14.1.4 Hydrological Environment

The Ottawa River is the predominant geographic feature in the LSA. The river's 140,000 km² watershed supports ecological and human systems in a large area of Québec and Ontario (ECCC, 2019b). In 2016, a 590-km section of the Ottawa River along the Ontario-Québec border was designated part of the Canadian Heritage Rivers System (CHRS), a federal-provincial-territorial partnership that works to protect and monitor rivers of natural, cultural, and recreational importance (Canadian Heritage Rivers System, 2025). In addition, the governments of Canada, Ontario, Québec, and several municipalities have policies, programs, and initiatives aimed at protecting the Ottawa River and its watershed.

HCCL Coastal and River Engineering conducted a Hydrotechnical Assessment of Functional Designs for Alternative Corridors in 2012 as part of Phase 2B, including a review of existing drainage conditions through field inspection and desktop review of topography, drainage infrastructure and watercourses (Roche Genivar 2012b). The study area followed the alignment along Montée-Paiement in Gatineau and the Aviation Parkway in Ottawa.

Most of the existing drainage infrastructure is urban, consisting of curb and gutter systems. Open ditch channels are present near the Highway 417/Ottawa Road 174 interchange, along Rockcliffe Parkway, and at the Autoroute 50 interchange. In Ottawa, surface drainage within the LSA generally discharges to Green's Creek in the South (via the Cote-Martin Municipal Drain) and the Ottawa River in the North. In Gatineau, runoff is conveyed through piped systems within the Montée-Paiement right-of-way, discharging South of Boulevard Maloney towards the Ottawa River. At the northern limits near Autoroute 50, drainage flows southwest via open ditch channels before entering downstream urban systems.

14.2 Biological Environment

D.F. Brunton (2008) conducted preliminary biological studies based on desktop sources for the Phase 1 analysis. Field work to document terrestrial and aquatic species and habitats was initiated in 2010 and completed by Roche Genivar and others (Roche Genivar 2012c,d). WSP updated information about valuable components in the aquatic environment using desktop resources in 2019 as part of the analysis and evaluation refresh. Information about terrestrial valued components was updated in 2020 (WSP 2020b). In 2024, WSP prepared an updated Natural Environment (Aquatic, Terrestrial, and Species at Risk) Report based on new information from existing databases and further regulatory changes (e.g., new additions to *Species at Risk Act* (SARA) and provincial Species at Risk (SAR) legislation).

Further, in 2025-2026, Aki Ressources was contracted by the IPT to conduct ecological field studies in the river portion of the LSA to better understand the biological environment and identify potential constraints for the bridge alignment. The partial LSA used by Aki Ressources is shown in Figure 14-1. Aki Ressources undertook surveys of fish, mussels, and benthic fauna and characterization of the aquatic environment and fish habitat in the partial LSA. They conducted vegetation surveys, ecological land classification (ELC), and terrestrial habitat characterization, and surveys of birds, reptiles, amphibians, mammals, and insects.

The information in the following sections is primarily taken from the 2024 Natural Environment Report by WSP and results from the 2025-2026 Aki Ressources studies, supplemented with details from older reports or more recent data from external sources where appropriate. Information on aquatic and terrestrial environments are presented in sections 14.2.1 and 14.2.2.1, respectively. In section 14.2.2, an additional sub-section 14.2.2.4 will present wetlands and species that are present on federal lands to align with IAAC requirements.

Aki Ressources Study Area in 2025-2026

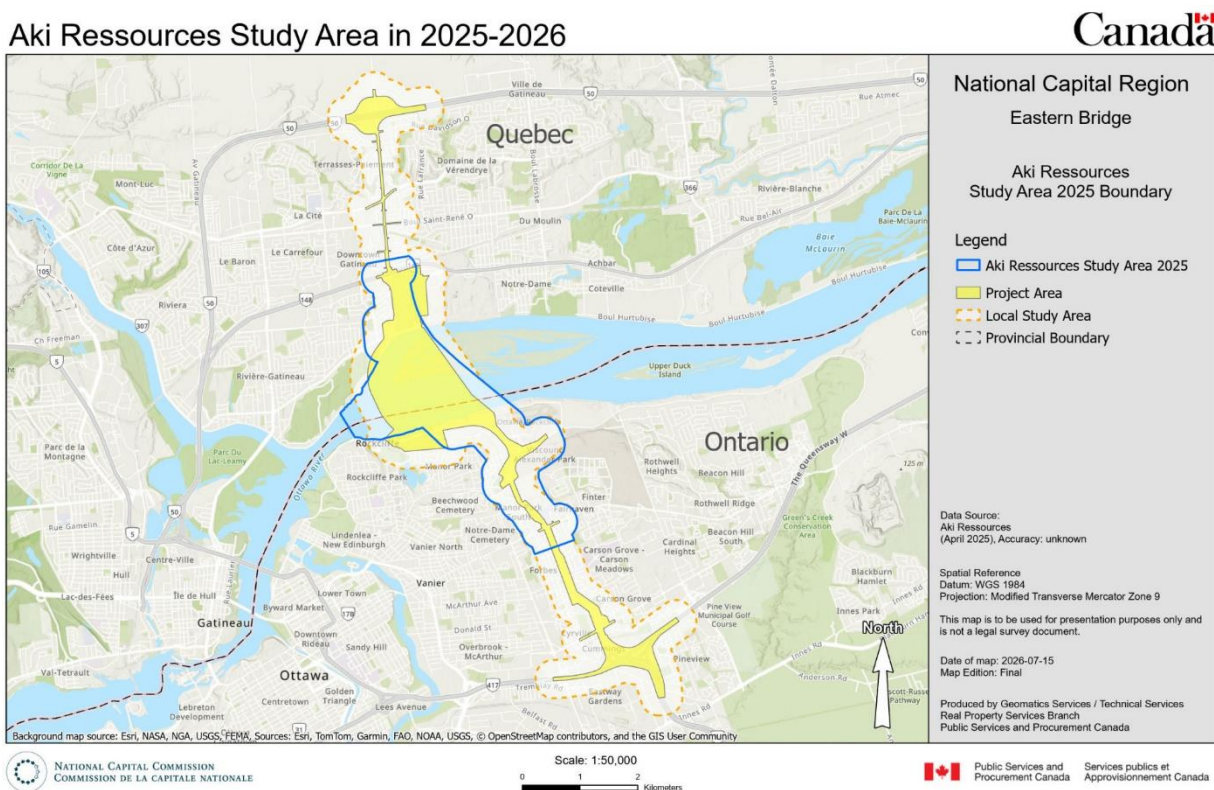


Figure 14-1: LSA Used for 2025/26 Biological Studies

SAR are defined as species that are protected under federal or provincial legislation:

- Listed under Schedule 1 of the *Species at Risk Act* (S.C. 2002, c.29) (SARA) as endangered or threatened
- Listed under the *Ontario Species Conservation Act, 2025* (S.O. 2025, c.4, Sched. 10) (SCA) as endangered or threatened
- Listed under the *Québec Act respecting threatened or vulnerable species* (ARTVS) as threatened or vulnerable

A wider group of species of conservation concern (SoCC) is also considered:

- Listed under Schedule 1 of SARA as special concern
- Assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as endangered, threatened or special concern but not yet listed under SARA
- Listed under the ARTVS as likely to be designated as threatened or vulnerable
- Ranked as S1 (Critically Imperiled), S2 (Imperiled) and S3 (Vulnerable) by Ontario's Natural Heritage Information Centre (NHIC) or Québec's Centre de données sur le patrimoine naturel du Québec (CDPNQ)

14.2.1 Aquatic Environment

14.2.1.1 Fish and Fish Habitat

The Ottawa River is the largest surface water feature and by far the largest aquatic habitat feature in the LSA. In addition to the Ottawa River, waterbodies on Kettle Island could contain fish and there are four additional watercourses that could be fish-bearing (Figure 14-2):

- An unnamed tributary to the Gatineau River in the vicinity of the intersection of Montée-Paiement and Boulevard Gréber.
- An unnamed tributary to the Ottawa River, which has its source at the Montée-Paiement interchange on Autoroute 50 and its outlet South of the intersection of Saint-Louis and Montée-Paiement.
- Two unnamed tributaries of the Ottawa River crossing Rue Jacques-Cartier (southwest of Jacques-Cartier and Saint-Louis intersection).
- An unnamed tributary to the Ottawa River that is crossed by a cycling path and Rue Saint-Louis and connects to a stormwater outfall with riprap protection in the alignment of the North/South bike path.
- Two crossings of a small unnamed tributary of the Ottawa River (located West of the Ottawa/Rockcliffe Airport), including one crossing of SGEC Parkway and one crossing of Aviation Parkway.
- Two crossings of the tributaries of Greens Creek at the 417 / 174 interchange, including one crossing of Aviation Parkway North of the 417, one crossing of Highway 417. Two tributaries running parallel to Highway 417 that may be impacted by interchange modifications.

Rivers and Tributaries

Canada

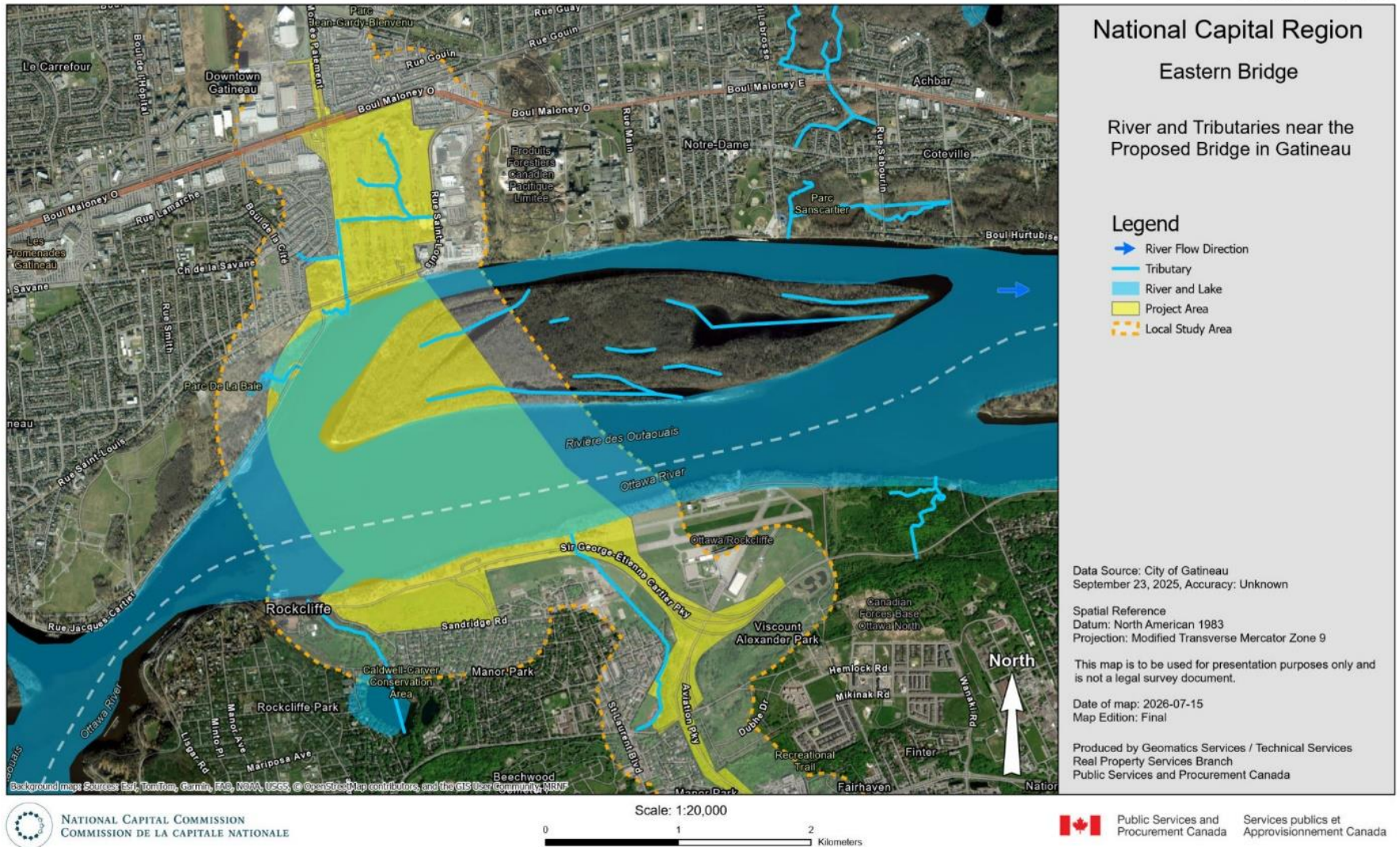


Figure 14-2: Watercourses in the LSA

The reach of the Ottawa River within the LSA is in Fisheries Management Zone (FMZ) 12 as defined by the Ontario Ministry of Natural Resources and Forestry (MNR) and Fishing Zone 25 as defined by the Québec Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs (MELCCFP) (see Figure 14-3). More specifically, it is in Reach 10 (Lac Dollard-des-Ormeaux) of FMZ 12, which extends from the Chaudière Generating Station in Ottawa to the Carillon Generating Station downstream of Hawkesbury, Ontario.

Fish Management Zones

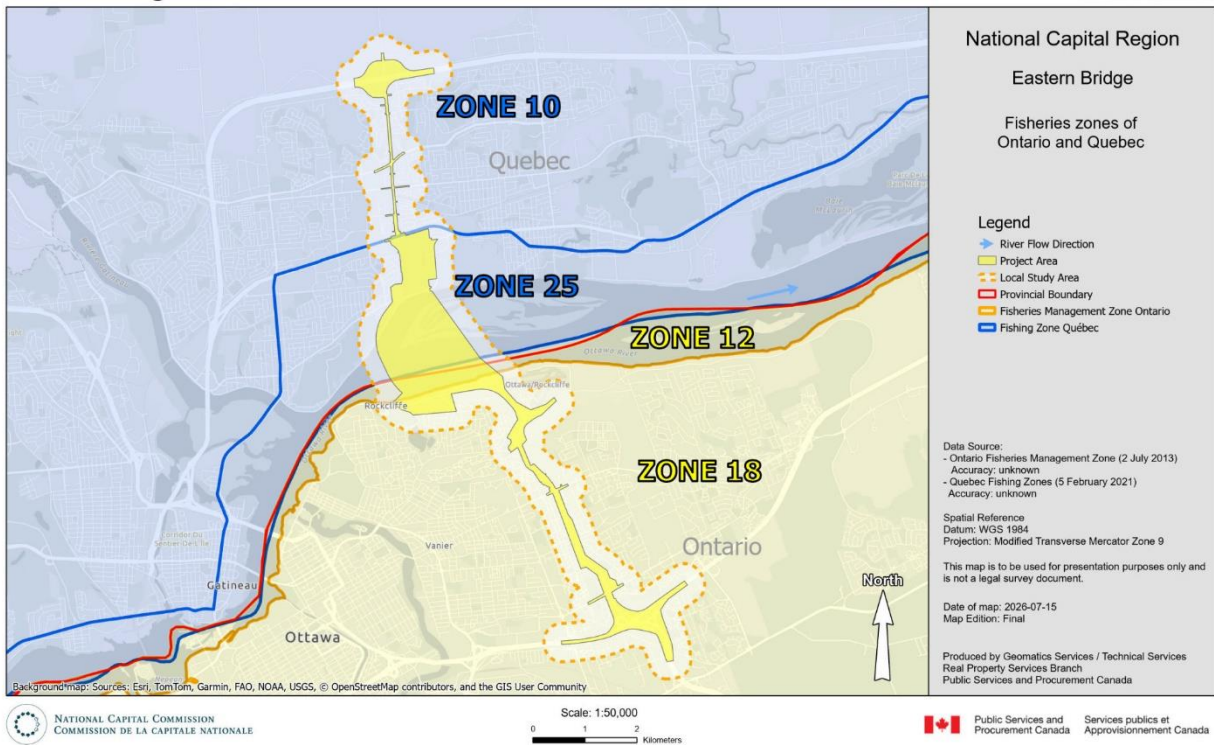


Figure 14-3: Fish Management Zones in Québec and Ontario

Ontario's Ministry of Natural Resources (MNR) (2022) does not map any Fish Activity Areas within the LSA. However, approximately 1.5 km downstream of the LSA, there are known spawning areas for at least seven fish species:

- Bluegill (*Lepomis macrochirus*)
- Brown Bullhead (*Ameiurus nebulosus*)
- Common Carp (*Cyprinus carpio*)
- Largemouth Bass (*Micropterus nigricans*)
- Northern Pike (*Esox lucius*)
- Pumpkinseed (*Lepomis gibbosus*)
- Rainbow Smelt (*Osmerus mordax*)

Studies conducted in 2025 using bathymetric surveys revealed that the depth of the Ottawa River within the LSA generally ranges between 4.5 and 10 m (Aki Ressources, 2025). The maximum depth is found in a pool over 11 m deep located in the center of the river near the upstream portion of the LSA. The depth in the North channel near Kettle Island (Québec side) rarely exceeds 5 m, while the South channel (Ontario side) shows depths close to 10 m. The riverbed has a much steeper slope on the South bank compared to the North bank, where the slope is gentler.

The aquatic environment characterization in the LSA covers approximately 2,500 m along the Ottawa River. The characterization conducted in 2025 described the banks, water quality parameters, and riverbed composition within the LSA (Aki Ressources, 2025). These data were then used to describe fish habitat.

This section of the river features a lotic to lentic channel characterized by a wide, deep flow with moderate velocity. At the upstream end of the LSA, the river initially forms a relatively narrow channel that gradually widens approaching Kettle Island, then splits into two distinct channels. The water quality during the spring 2025 survey was good, with conditions favorable to aquatic life. Concentrations obtained for various water quality parameters did not appear problematic for the protection of aquatic life, based on criteria from MELCCFP (2025a), the Canadian Council of Ministers of the Environment (CCME, 2025), and MECP (2021). However, exceedances of criteria for aluminum, iron, mercury and copper were observed.

The littoral zone was characterized by a near absence of aquatic vegetation in the spring and a substrate composed mainly of clay, sometimes mixed with sand. These conditions offer limited opportunities for fish, but the habitat may still be suitable for feeding or movement of several species. Near the banks, the clay substrate typically gives way to gravel, cobble and blocks. This coarse substrate provides shelter and nursery habitats for certain fish species. Additionally, some shoreline areas with gravel substrates could serve as spawning grounds for lithophilic species such as Smallmouth Bass (*Micropterus dolomieu*).

As mentioned previously, aquatic vegetation beds were rare in the LSA at the time of the surveys, making the habitat unsuitable for phytophilic species during the spring spawning period. However, an emergent vegetation bed mainly composed of young cattails was observed on the North bank near Jacques-Cartier Street. This bed, covering an area of approximately 530 m², had shallow water during the visit, which may be limiting for some species. Nonetheless, it is possible that the bed is fully flooded earlier in the spring, potentially serving as a spawning site for early spring species such as Northern Pike (*Esox lucius*).

During the summer months, numerous aquatic plant beds composed mainly of floating and submerged vegetation were observed in the LSA. Groupings of aquatic vegetation are shown in dotted green line on Figure 14-4. Near the North shore, the plant beds consist mainly of Fragrant Water Lily (*Nymphaea odorata*), Yellow Pond-lily (*Nuphar variegata*), Floating Bur-reed (*Sparganium fluctuans*), and Amphibious Smartweed (*Persicaria amphibia*). On the North bank, the plant beds are primarily composed of American eelgrass (*Vallisneria spiralis*) and Hermaphrodite Water-starwort (*Callitriche hermaphrodita*). It should also be noted that some of these plant beds cover large areas, notably bed H05, which spans nearly 35,000 m². In addition to contributing to habitat quality for feeding and nursery grounds for many species, they provide interesting potential spawning sites for summer phytophilic species, such as the Bridle shiner (*Notropis bifrenatus*).

Aquatic Vegetation and Bathymetry

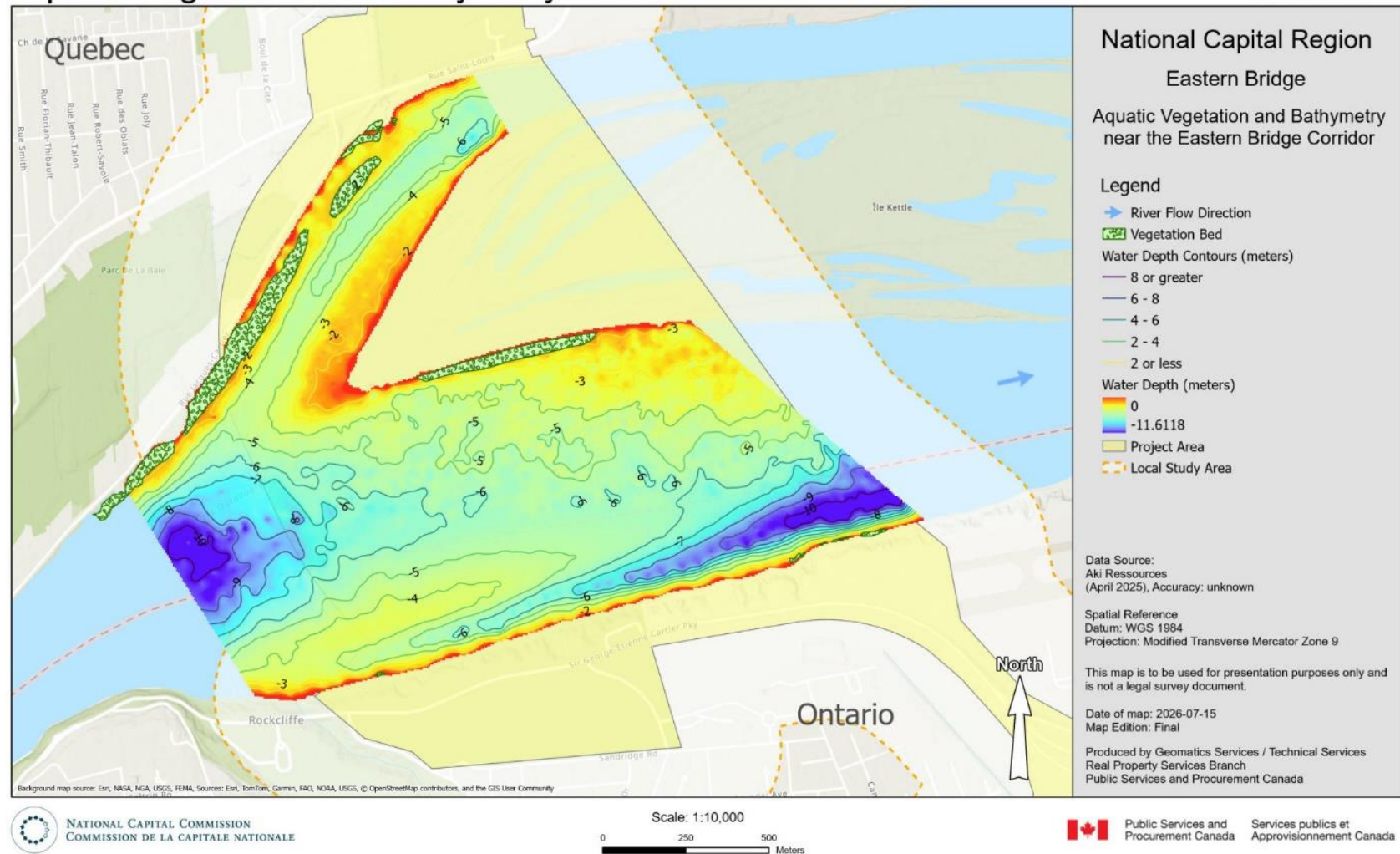


Figure 14-4: Aquatic Vegetation Beds

In autumn, the coarse substrate along the shorelines could possibly serve as spawning grounds for certain cold-water lithophilic species, such as Lake Cisco (*Coregonus artedii*) even if no ideal spawning habitat was observed. The existing substrate and hydrological conditions are not conducive to salmonid spawning. Finally, it should be noted that the coarse substrate offers shelter opportunities as well as nursery habitats for certain fish species. The river channel is also used for the movement of many fish species.

The banks on both sides of the Ottawa River and around Kettle Island were characterized and separated into seven (7) distinct homogeneous segments. The segments describe areas that share similar characteristics and appearances, facilitating identification of important fish habitat. Habitat potential was classified into four categories (nil, low, moderate and good) and analysed with respect to its suitability for rearing, feeding and spawning.

Table 14-4 provides a summary of each homogeneous segment (Aki Ressources 2025). SH1 is characterized by the presence of a sandy beach which extends for approximately 5m below water and contains some aquatic vegetation. It has a nil or low potential of spawning, rearing and feeding habitat. Segment SH2 has a substrate of cobbles and an absence of aquatic vegetation. It has a nil or low potential for rearing and feeding habitat but is considered moderate for feeding. Segment SH3 is characterized by fine sediment and three vegetation beds. In the spring and summer, it has a moderate potential for spawning. SH4's substrate is dominated by cobbles and contains three vegetation beds. It has moderate potential for spawning and rearing in the summer, maintaining this moderate potential for rearing in the fall. SH5 substrate has a substrate characterized by gravel and pebbles and has good potential habitat for spawning and rearing in the summer. SH6 substrate is mostly composed of boulders and a vegetation bed, which explains its good potential for spawning and rearing in the summer. Finally, SH7 is also characterized by boulders and multiple small vegetation beds, with mostly low potential of habitat for spawning, but moderate potential for rearing and feeding.

Table 14-4: Riverbank characteristics

Segment	Position	Substrate	Period	Presence of Aquatic Vegetation	Habitat potential		
					Spawning	Rearing	Feeding
SH1	Kettle Island	Sand	Spring	Nil	Nil	Low	Low
			Summer	0-25%	Low	Low	Low
			Fall	0-25%	Nil	Nil	Low
SH2	North bank	Cobble	Spring	Nil	Low	Low	Moderate
			Summer	Nil	Nil	Low	Moderate
			Fall	Nil	Nil	Low	Moderate
SH3	North bank	Fine sediment	Spring	> 25 %	Moderate	Low	Moderate
			Summer	> 25 %	Moderate	Low	Low
			Fall	> 25 %	Nil	Nil	Low
SH4	North bank	Cobble	Spring	Nil	Low	Low	Moderate
			Summer	> 25 %	Moderate	Moderate	Moderate
			Fall	> 25 %	Nil	Moderate	Moderate
SH5	North bank	Gravel and pebble	Spring	Nil	Low to moderate	Low	Moderate
			Summer	> 25 %	Good	Good	Moderate
			Fall	> 25 %	Nil	Moderate	Moderate
SH6	North bank	Boulders and small boulders	Spring	Nil	Low	Moderate	Moderate
			Summer	> 25 %	Good	Good	Moderate
			Fall	> 25 %	Nil	Moderate	Moderate
SH7	South bank	Boulders and small boulders	Spring	Nil	Low	Moderate	Moderate
			Summer	0-10%	Low to moderate	Moderate	Moderate
			Fall	0-10%	Nil	Moderate	Moderate

Targeted spawning site surveys

Targeted spawning site surveys were conducted in the spring and in the fall (Aki Ressources, 2025). During the spring survey in early June 2025, the entire LSA was inspected for potential or confirmed spring spawning sites, and no substrate-based spawning grounds were found due to the sediment type and moderate current velocity. A vegetation bed (H03) near the North bank was identified as a potential spawning habitat for phytophilous species, even though no direct signs of spawning were observed. In the fall, two thorough shoreline surveys (October 9 and November 13, 2025) were conducted to detect signs of spawning or spawning behavior in the 0–2 m depth zone. Despite water temperatures suitable for cold-water species during the November visit, no indicators of spawning activity were detected.

Further, approximately 5 km upstream of the LSA there are constructed spawning beds for Lake Sturgeon (*Acipenser fulvescens*) (Portage Power, 2025).

14.2.1.2 Aquatic Species at Risk and Species of Conservation Concern

To determine the potential presence of aquatic SAR or SoCC, several databases were consulted, including the CDPNQ, NHIC, MELCCFP, and an interactive map from DFO.

There is no critical habitat for aquatic SAR in the LSA (DFO 2025). However, data from the CDPNQ, MELCCFP, NHIC, and DFO confirm occurrences of 14 freshwater fish or mussel species of SAR or SoCC within a 5 km radius of the LSA: American Eel (*Anguilla rostrata*), Channel Darter (*Percina copelandi*), Cutlip minnow (*Exoglossum maxillingua*), Lake Sturgeon (*Acipenser fulvescens*), Margined Madtom (*Noturus insignis*), Northern Brook Lamprey (*Ichthyomyzon fossor*), River Redhorse (*Moxostoma carinatum*), Silver Lamprey (*Ichthyomyzon unicuspis*), Yellow Bullhead (*Ameiurus natalis*), Fragile Papershell (*Leptodea fragilis*), Hickorynut (*Obovaria olivaria*), Pink Heelsplitter (*Potamilus alatus*), Spike (*Eurynia dilatata*) and Strong-toothed Eliptio (*Elliptio crassidens*).

The aquatic SAR and SoCC with confirmed occurrences—or the potential to occur—within a 5 km radius of the LSA were evaluated for their likelihood of presence within the LSA itself. This evaluation was based on a comparison between the available habitat observed during the spring surveys and the preferred habitat typically associated with these species. Table 14-5 provides a list of these species from work undertaken by Aki Ressources 2025, WSP 2024b, Roche Genivar 2012b. It includes the species legal status in Québec, Ontario, and Canada, their preferred habitat, and their potential for occurrence within the LSA.

Table 14-5: Aquatic SAR and SoCC with confirmed occurrences or potential to occur within 5 km of the LSA

English Name	Scientific Name	SARA Status	COSEWIC Status	Ontario Status	Québec Status	Preferred Habitat	Occurrence Reference	Likelihood of Occurrence in the LSA
Fish								
American Eel	<i>Anguilla rostrata</i>	–	Threatened	Endangered	Susceptible	Wide variety of freshwater and saltwater habitats. LSA suitable for feeding and migration.	NHIC, WSP	Confirmed
Yellow Bullhead	<i>Ameiurus natalis</i>	–	–	–	Susceptible	Shallow parts of streams, rivers, lakes, ponds, and bays with slow current and dense vegetation. Unsuitable habitat in the LSA.	CDPNQ	Low
Cutlip Minnow	<i>Exoglossum maxillingua</i>	Special Concern	Special Concern	Threatened	–	Clear small to medium-sized streams with rocky bottoms and slow current. Unsuitable habitat in the LSA.	DFO	Low
Stonecat	<i>Noturus flavus</i>	–	–	–	Vulnerable	Moderate to large streams with fast current and rocky or gravelly bottoms. Unsuitable habitat in the LSA.	None	Low
Margined Madtom	<i>Noturus insignis</i>	–	Data Deficient	–	Susceptible	Clear running waters with gravel or rocky zones. LSA unsuitable for spawning.	CDPNQ	Low to Moderate
River Redhorse	<i>Moxostoma carinatum</i>	Special Concern	Special Concern	–	Vulnerable	Flowing waters of medium to large rivers. Unlikely to spawn in the LSA but suitable for feeding and migration.	CDPNQ, DFO	Moderate

English Name	Scientific Name	SARA Status	COSEWIC Status	Ontario Status	Québec Status	Preferred Habitat	Occurrence Reference	Likelihood of Occurrence in the LSA
Lake Sturgeon	<i>Acipenser fulvescens</i>	–	Threatened	Endangered	Susceptible	Large rivers and lakes. Unlikely to spawn in the LSA but suitable for feeding and migration.	CDPNQ, NHIC, Roche Genivar	Confirmed
Channel Darter	<i>Percina copelandi</i>	Special Concern	Special Concern	–	Vulnerable	Sandy or gravelly shores of lakes or rivers with slow current and sparse vegetation. Sandy substrate near Kettle Island may be suitable for spawning.	CDPNQ, NHIC, DFO	Moderate
Silver Lamprey	<i>Ichthyomyzon unicuspis</i>	Special Concern	Special Concern	–	–	Silty-bottom streams. Spawns in shallow areas with moderate current and gravel bottom. Historical observations near the LSA; may be suitable for feeding.	NHIC, DFO	Moderate
Northern Brook Lamprey	<i>Ichthyomyzon fossor</i>	Special Concern	Special Concern	–	Threatened	Streams and rivers with gravel or sandy bottoms. Sandy substrate near Kettle Island may be suitable.	CDPNQ, NHIC, DFO	Moderate
Bridle Shiner	<i>Notropis bifrenatus</i>	Special Concern	Special Concern	–	Vulnerable	Marshes and aquatic vegetation beds along large rivers and the St. Lawrence River. Unsuitable habitat in the LSA.	None	Low

English Name	Scientific Name	SARA Status	COSEWIC Status	Ontario Status	Québec Status	Preferred Habitat	Occurrence Reference	Likelihood of Occurrence in the LSA
Brassy Minnow	<i>Hybognathus hankinsoni</i>	–	–	–	Susceptible	Slow-moving streams with high suspended organic matter; near peatlands or agricultural zones. Smaller tributary outlets in the LSA may be suitable.	None	Moderate
Rosyface Shiner	<i>Notropis rubellus</i>	–	–	–	Susceptible	Larger, clear, fast-flowing streams and small rivers with clean gravel substrate. Unsuitable habitat in the LSA.	None	Low
Mussels								
Elktoe	<i>Alasmodonta marginata</i>	–	–	–	Susceptible	Small to large streams with gravel bottoms and swift current. Unsuitable habitat in the LSA.	None	Low
Alewite Floater	<i>Utterbackiana implicata</i>	–	–	–	Threatened	Habitats with moderate to no current and sandy/gravel substrate. Unsuitable habitat in the PSA.	None	Low
Fragile Papershell	<i>Leptodea fragilis</i>	–	–	–	Susceptible	Bays of large rivers, areas with slow current. Suitable habitat may be present in the LSA.	CDPNQ, Aki Ressources	Confirmed

English Name	Scientific Name	SARA Status	COSEWIC Status	Ontario Status	Québec Status	Preferred Habitat	Occurrence Reference	Likelihood of Occurrence in the LSA
Hickorynut	<i>Obovaria olivaria</i>	Endangered	Endangered	–	Threatened	Sandy, gravelly, or silty substrates in moderate to fast current; large rivers, occasionally medium/small streams. Suitable habitat may be present in the LSA	CDPNQ, DFO, Aki Ressources	Confirmed
Spike	<i>Eurynia dilatata</i>	–	–	–	Susceptible	Found in medium streams to larger rivers. Usually found in shoals	Aki Ressources	Confirmed
Strong-toothed Eliptio	<i>Elliptio crassidens</i>	–	–	–	Susceptible	Found in mud, sand or fine gravel in relatively large rivers.	Aki Ressources	Confirmed
Pink Heelsplitter	<i>Potamilus alatus</i>	–	–	–	Susceptible	Typically found in bays of large rivers where its host species (freshwater drum) is present. Suitable habitat may be present in the LSA.	CDPNQ, Aki Ressources	Confirmed

Observed Species

Biologists captured a Lake Sturgeon in the LSA during fish community surveys in 2011 (Roch Genivar 2012c). In 2024, Ontario MNRF captured American Eel (*Anguilla rostrata*) (endangered in Ontario) in the LSA (WSP 2024b). Other aquatic SAR are known from this reach of the Ottawa River and could occur in the LSA (see Table 14-6).

Mussels

Freshwater mussel surveys were completed in August 2025 (Aki Ressources, 2025). These were targeted surveys executed by qualified divers with the objective of identifying mussel species. 26 sites were surveyed and mussels were found in 22 sites.

The surveys confirmed the presence of nine mussel species: Strong-toothed Elliptio (*Elliptio crassidens*), Eastern Elliptio (*Elliptio complanata*), Spike (*Eurynia dilatata*), Plain Pocketbook (*Lampsilis cardium*), Eastern Lampmussel (*Lampsilis radiata*), Fragile Papershell, Black Sandshell (*Ligumia recta*), Hickorynut, and Pink Heelsplitter. Among these species, Pink Heelsplitter, Fragile Papershell, the Strong-toothed Elliptio, and Spike are species of conservation concern that may be designated as threatened or vulnerable in Québec. In addition, the Hickorynut—listed as endangered in Canada and threatened in Québec—was observed. Each station characterized the substrate and measured water depth, but neither water depth nor substrate type appears to be a limiting factor for mussel presence in the LSA.

The Eastern Elliptio was found at 18 stations, the Plain Pocketbook at 15 stations, the Black Sandshell at 10 stations, the Pink Heelsplitter, Eastern Lampmussel, and Hickorynut at 5 stations, and the Fragile Papershell, Strong-toothed Elliptio, and Spike at one station. Of the 377 individuals identified, 279 were live mussels and 98 were shells. The station with the greatest species diversity was TM01, where seven species—including three species of conservation concern—were recorded. Overall, species diversity per station was low, with an average of three species per station.

14.2.2 Terrestrial Environment

14.2.2.1 Terrestrial Habitats

The Project is located within the Mixedwood Plains (Ontario) and Boreal Shield (Québec) ecozones of Canada (see Figure 14-5). Within the Mixedwood Plains ecozone, the LSA is part of the Great Lakes–St. Lawrence Lowlands ecoprovince, the St. Lawrence River Lowlands ecoregion, and the Ottawa Valley Plain ecodistrict. Within the Boreal Shield ecozone, the LSA is part of the southern Boreal Shield ecoprovince, the southern Laurentians ecoregion, and the Mont-Laurier Depression ecodistrict (Canadian Soil Information Service 2023). The region is characterized by broad-leaved forests dominated by Sugar Maple (*Acer saccharum*) and American Beech (*Fagus grandifolia*), and forests in the LSA are expected to reflect this composition.

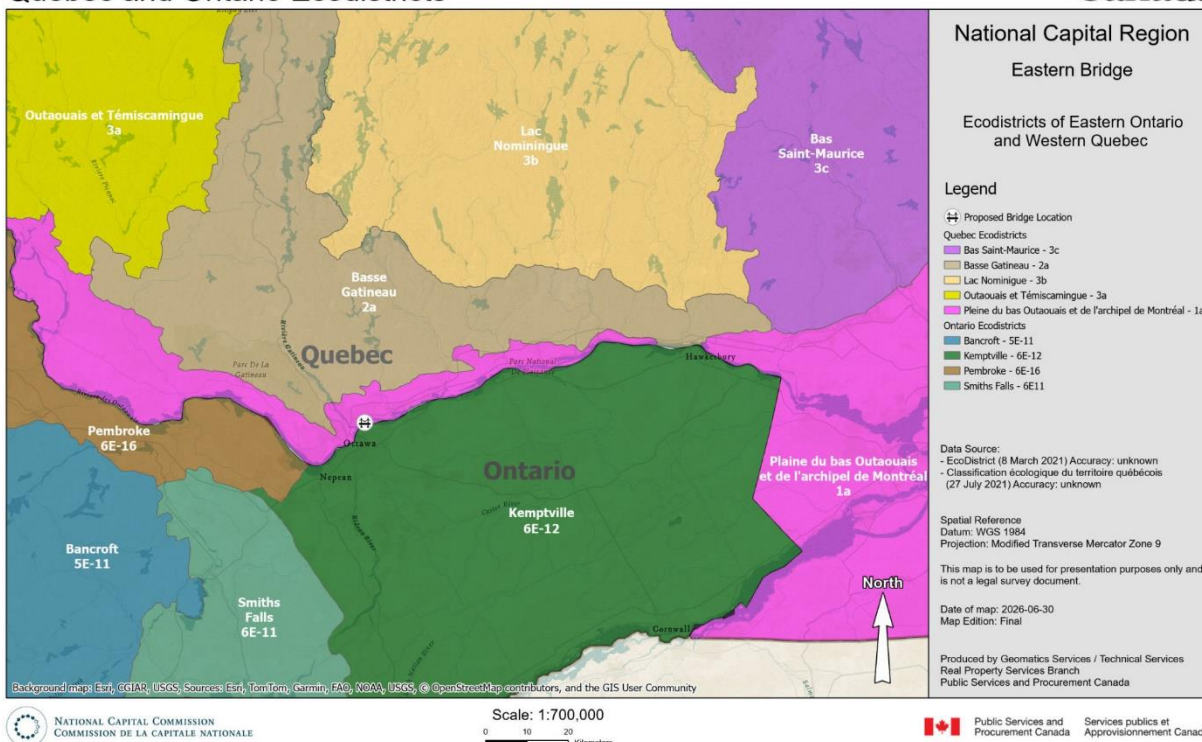


Figure 14-5: Ecodistricts

The largest natural terrestrial habitat feature in the LSA is Kettle Island, a nature reserve of which 98% is owned by the Nature Conservancy of Canada and formally recognized under Québec's Natural Heritage Conservation Act. Access to Kettle Island is prohibited for the general public and is limited to scientific or habitat management purposes. Kettle Island contains the largest deciduous swamp in the NCR and is also the largest alluvial island in the Ottawa River (Roche Genivar 2012d). Terrestrial habitats on the island include shorelines where turtles could bask or nest, and forests which could support breeding birds and wildlife SAR or SoCC. Large trees on the island could provide roosting or maternity habitat for bats.

There is limited terrestrial vegetation on both the Ontario and Québec sides of the Ottawa River. On the Ontario side, riparian vegetation consists of young deciduous forest dominated by Sugar Maple (*Acer saccharum*) and invasive Glossy Buckthorn (*Frangula alnus*). Similar forests and green spaces occur on both sides of Aviation Parkway between SGENC Parkway and Highway 417. The Monfort Woods and a wooded area along Aviation Parkway North and South of Ogilvie Road provide larger areas of natural habitat. The LSA overlaps with a small section of the Airbase Woods Valued Natural Habitat near the SGENC - Aviation Parkway interchange. This urban forest was designated by the NCC due to its size, biodiversity and connection to the Ottawa River. The riparian habitats and green spaces in the Ottawa portion of the LSA may function as an important movement corridor for wildlife within an otherwise highly urbanized environment, but they are highly fragmented due to the presence of several transportation corridors.

The Québec portion of the LSA contains a narrow strip of natural riparian vegetation along a human-modified shoreline. Vegetation on the Québec shoreline consists of landscaped and manicured green spaces and various types of anthropogenic land cover. Other natural vegetation features located just outside the LSA in Gatineau are thickets surrounding the Library and Archives Canada Preservation Facility on the West side of Montée-Paiement. A wetland on that property provides important habitat for wildlife (see Section 14.2.2.3).

An ecological land classification was completed in 2025 to further define its wetlands and terrestrial environments. Fourteen different wetlands were identified. These included wet meadows, marshes, ponds, shrub swamps, and wooded swamps. Among the terrestrial environments, treed meadows, shrubby meadows, meadows, deciduous stands and coniferous stands were confirmed within the LSA. The locations of these wetlands and terrestrial environments are shown in Figure 14-6 and Figure 14-7.

Ecological Land Classification - Gatineau

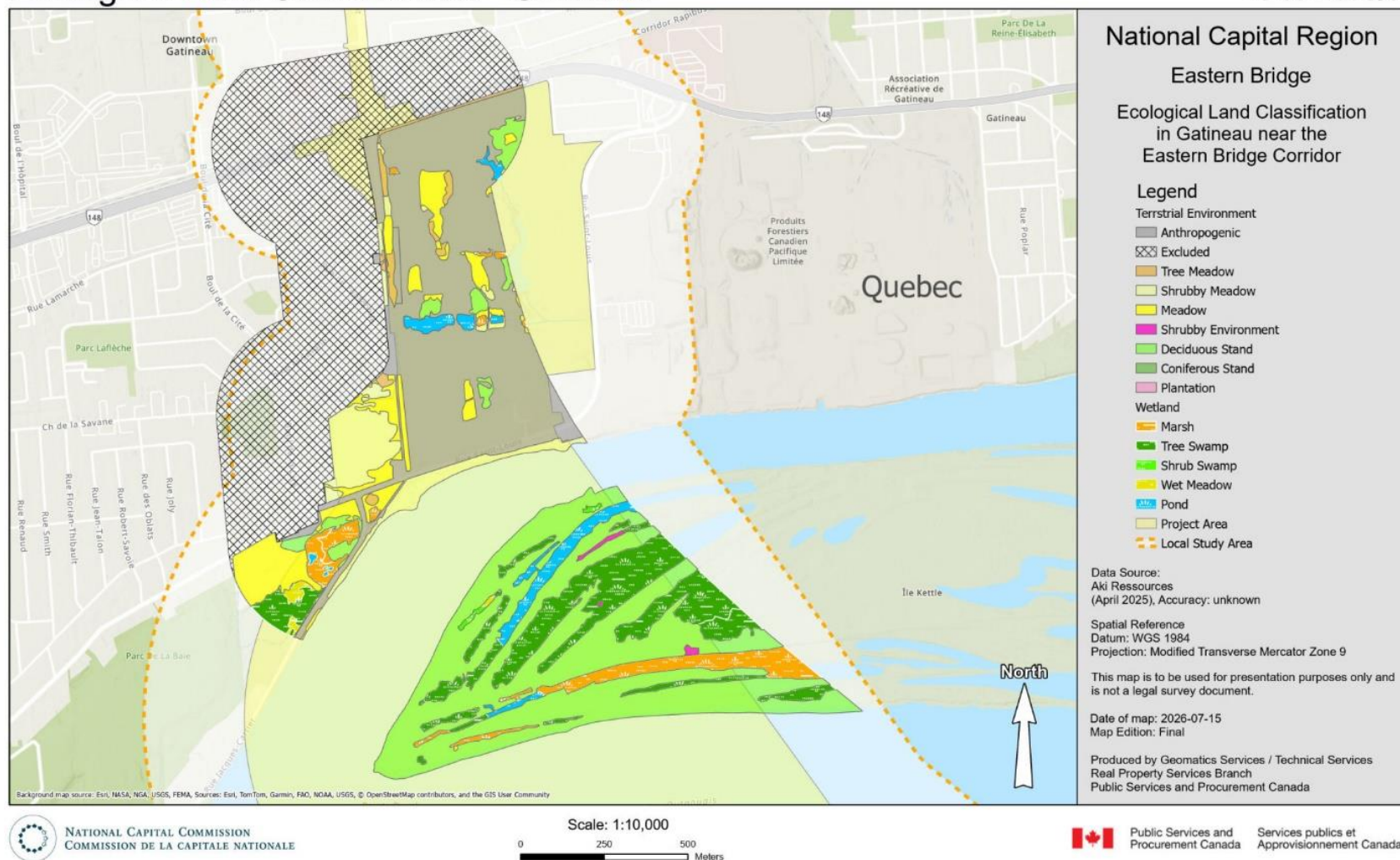


Figure 14-6: Ecological Land Classification in the LSA – Gatineau

Ecological Land Classification - Ottawa

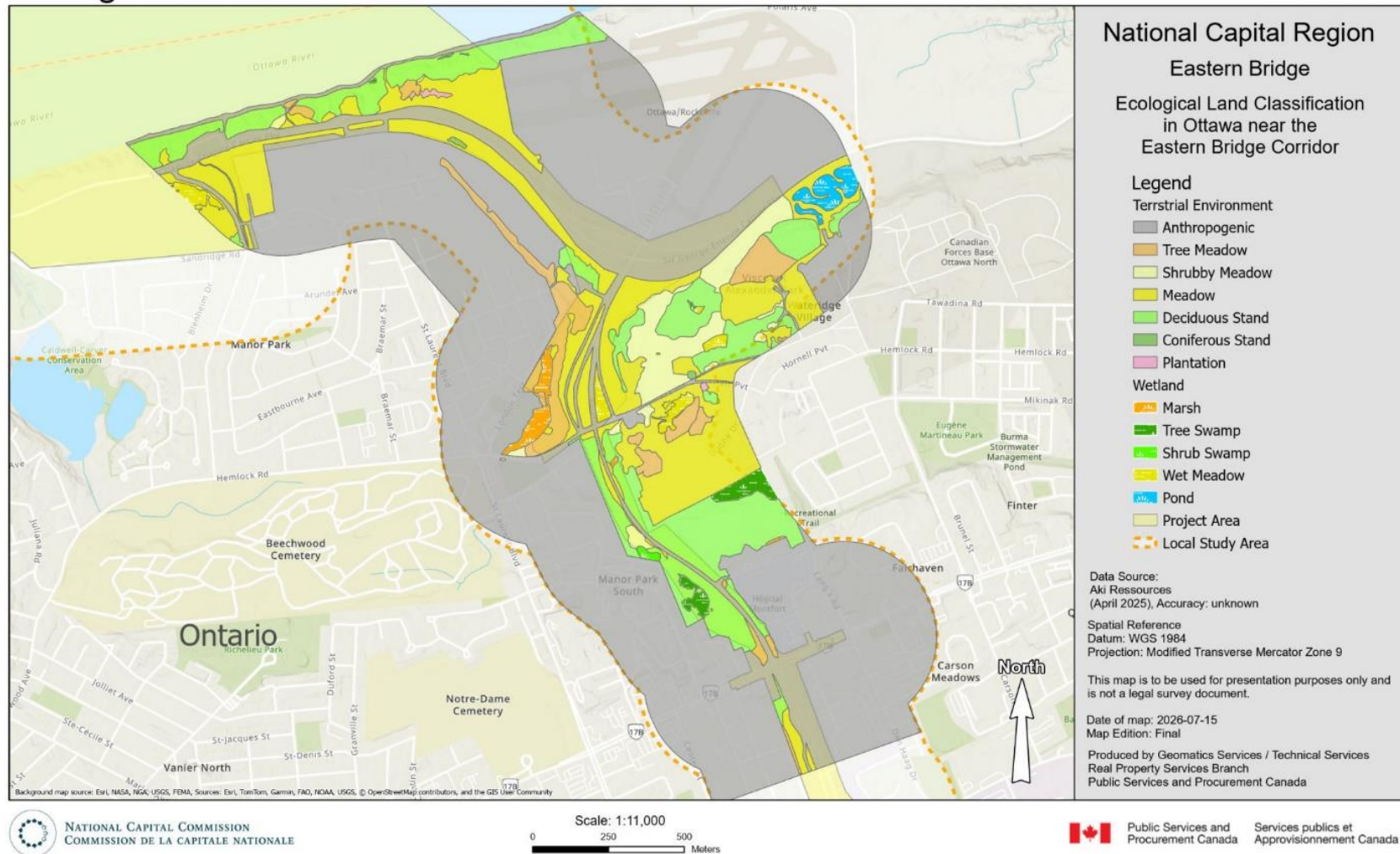


Figure 14-7: Ecological Land Classification in the LSA – Ontario

14.2.2.2 Flora

Detailed botanical studies are being completed in 2025 to identify floristic species within the LSA. Studies completed in the spring focused on spring ephemerals, SAR/SoCC and invasive species. The following sections summarize the results of the spring studies.

Spring Ephemerals and other Spring Flora

Surveys conducted in 2025 confirmed the presence of two species of spring ephemerals: Trout Lily (*Erythronium americanum*) and Wild Leek (*Allium tricoccum*), a SAR. These species were mostly observed in the woodland North of Montfort Hospital. Moreover, more than 120 species or genus of plants were observed during the spring surveys. Focus in the IPD will be given to SAR/SoCC and invasive species, but a full list of observed species can be found in Aki Ressources, 2025.

Species at Risk and Species of Conservation Concern

Data from CDPNQ and NHIC were consulted to identify plant SAR and SoCC near the LSA. Confirmed occurrences have been documented for 28 species within a 5 km radius of the Project: American Ginseng (*Panax quinquefolius*), Black Ash (*Fraxinus nigra*), Black Maple (*Acer nigrum*), Bulbous Bittercress (*Cardamine bulbosa*), Butternut (*Juglans cinerea*), Canada Lily (*Lilium canadense*), Canada Wild Ginger (*Asarum canadense*), Cattail Sedge (*Carex typhina*), Ebony Spleenwort (*Asplenium platyneuron*), Halberd-leaved Tearthumb (*Persicaria arifolia*), Horn-leaved Riverweed (*Podostemum ceratophyllum*), Large-flowered Bellwort (*Uvularia grandiflora*), Lizard Crystalwort (*Riccia beyrichiana*), Many-headed Sedge (*Carex sychnocephala*), Narrow-leaved Glade Fern (*Homalosorus pycnocarpus*), Ostrich Fern (*Matteuccia struthiopteris* var. *pennsylvanica*), Pinedrops (*Pterospora andromedea*), Poison Sumac (*Toxicodendron vernix*), Rock Elm (*Ulmus thomasi*), Rusty Flatsedge (*Cyperus odoratus*), Striped Coralroot (*Corallorhiza striata* var. *striata*), Swamp White Oak (*Quercus bicolor*), Two-leaved Toothwort (*Cardamine diphylla*), Vasey's Pondweed (*Potamogeton vaseyi*), Virginia Chain Fern (*Anchistea virginica*), Walking-fern (*Asplenium rhizophyllum*), White Trillium (*Trillium grandiflorum*) and Wild Leek (*Allium tricoccum*) (Aki Ressources 2025). Flooded Jellyskin Lichen (*Leptogium rivulare*), Ostrich Fern (*Matteucia struthiopteris*), and Swamp White Oak (*Quercus bicolor*) have also been observed near the LSA (NCC, 2025b).

The plant SAR and SoCC with confirmed occurrences—or the potential to occur—within a 5 km radius of the LSA were evaluated for their likelihood of presence within the LSA itself. This evaluation was based on a comparison between the available habitat observed during the spring surveys and the preferred habitat typically associated with these species. Table 14-6 provides a list of these species (Aki Ressources 2025), including their legal status in Québec, Ontario, and Canada, their preferred habitat, and their potential for occurrence within the LSA.

Table 14-6: Flora SAR and SoCC with confirmed occurrences or the potential to occur within 5 km of the LSA

English Name	Latin Name	SARA Status	COSEWIC Status	Ontario Status	Quebec Status	Preferred Habitat	Occurrence Reference	Likelihood of Occurrence in the LSA
Northern Maidenhair Fern	<i>Adiantum pedatum</i>	-	-	-	Vulnerable	This plant is generally found in rich, shaded maple groves.	None	Moderate
Wild Leek	<i>Allium tricoccum</i>	-	-	-	Vulnerable	Wild garlic grows in forests dominated by sugar maple trees located halfway up slopes, at the bottom of slopes, or along riverbanks. This species prefers well-drained, mineral-rich soils.	CDPNQ	Confirmed – Observed on federal lands
Green Dragon	<i>Arisaema dracontium</i>	-	Special Concern	-	Threatened	Green dragon is found along watercourses that run through wet forests, especially those dominated by maple, red ash, and American elm.	None	High
Canada Wild Ginger	<i>Asarum canadense</i>	-	-	-	Vulnerable	This plant is found on rocky substrates in rich habitats of hickory or basswood maple groves.	Aki Ressources	Confirmed – Observed on federal lands
Interior Butterfly Milkweed	<i>Asclepias tuberosa</i> var. <i>interior</i>	-	-	-	Threatened	This milkweed is found in alvars, open rocky and dry habitats, and limestone shores.	None	Moderate
Pringle's Aster	<i>Symphyotrichum pilosum</i> var. <i>pringlei</i>	-	-	-	Susceptible	This species occupies dry and open sites, including disturbed areas and pastures.	None	High
Narrow-leaved Glade Fern	<i>Homalosorus pycnocarpus</i>	-	-	-	Susceptible	This species is found in calcareous forest habitats along the edges of swamps.	CDPNQ	High
Bulbous Bittercress	<i>Cardamine bulbosa</i>	-	-	-	Vulnerable	This species is found in wooded swamps dominated by silver maple or black ash, or in shrub swamps dominated by speckled alder or willow.	CDPNQ	High
Many-headed Sedge	<i>Carex sychnocephala</i>	-	-	-	Susceptible	This species is found in open habitats (wet to dry), rocky and calcareous.	CDPNQ	High
Cattail Sedge	<i>Carex typhina</i>	-	-	-	Susceptible	This sedge is found along the shores of large rivers.	CDPNQ, Aki Ressources	Confirmed, not observed on federal lands

English Name	Latin Name	SARA Status	COSEWIC Status	Ontario Status	Quebec Status	Preferred Habitat	Occurrence Reference	Likelihood of Occurrence in the LSA
Shagbark Hickory	<i>Carya ovata</i> var. <i>ovata</i>	-	-	-	Susceptible	This species grows in rich woodlands with clay or rocky soils.	None	Low
New Jersey Tea	<i>Ceanothus americanus</i>	-	-	-	Susceptible	This species is found in open and dry, sandy or rocky environments, such as riverbanks and clearings.	None	High
Spotted Wintergreen	<i>Chimaphila maculata</i>	Threatened	Threatened	Threatened	Susceptible	This plant is found in mixed oak forests and woodlands on cool, dry soils.	None	Low
Swamp White Oak	<i>Quercus bicolor</i>	-	-	-	Susceptible	This species grows in lowland wetlands, at the edges of marshes and swamps, and in silver maple groves.	CDPNQ	High
American Cancer-root	<i>Conopholis americana</i>	-	-	-	Vulnerable	This species is found in thick, moist soils where its host plant, red oak, is present.	None	None
Striped Coralroot	<i>Corallorhiza striata</i> var. <i>striata</i>	-	-	-	Susceptible	This plant grows in cedar groves, mixed or coniferous forests with calcium-rich soils.	CDPNQ	High
Ram's-head Lady's-slipper	<i>Cypripedium arietinum</i>	-	-	-	Vulnerable	This plant grows along the edges of water bodies, in cedar groves, fir forests, and forests dominated by white pine and red oak. It grows on thin soils and limestone substrate.	None	Low
Two-leaved Toothwort	<i>Cardamine diphylla</i>	-	-	-	Vulnerable	The species grows in humus-rich environments that are very moist in spring. It is mainly found in sugar maple, hickory, basswood, or yellow birch forests.	Aki Ressources	Confirmed – not observed on federal lands
Walking-fern	<i>Asplenium rhizophyllum</i>	-	-	-	Susceptible	This species grows in maple forests with a substrate of shaded and mossy limestone rocks.	CDPNQ	None
American Wallrue Spleenwort	<i>Asplenium ruta-muraria</i> var. <i>cryptolepis</i>	-	-	-	Threatened	This plant is found in rock crevices made of limestone or marble under an open or semi-open forest canopy.	None	Low
Ebony Spleenwort	<i>Asplenium platyneuron</i>	-	-	-	Susceptible	This species is found in open to shaded woods, clearings, and thickets with limestone substrate.	CDPNQ	High

English Name	Latin Name	SARA Status	COSEWIC Status	Ontario Status	Quebec Status	Preferred Habitat	Occurrence Reference	Likelihood of Occurrence in the LSA
Wright's Spikerush	<i>Eleocharis diandra</i>	-	-	-	Threatened	This species grows on exposed sandy shores of rivers and lakes.	None	High
Black Maple	<i>Acer nigrum</i>	-	-	-	Vulnerable	This maple grows in sugar maple forests, on moderately moist soils and on limestone substrate.	CDPNQ	High
Black Ash	<i>Fraxinus nigra</i>	-	Threatened	Endangered	-	This species is found in swamps, marshes, and floodplains.	Aki Ressources	Confirmed, not observed on federal lands
Showy Orchid	<i>Galearis spectabilis</i>	-	-	-	Susceptible	This species preferably inhabits rich maple forests.	None	None
American Ginseng	<i>Panax quinquefolius</i>	Endangered	Endangered	Threatened	Threatened	This species is found in rich, moist, undisturbed, and relatively mature deciduous forests.	NHIC	Moderate
Downy Rattlesnake-plantain	<i>Goodyera pubescens</i>	-	-	-	Vulnerable	This plant grows in mature forests (deciduous or mixed), on acidic, dry, or well-drained soils.	None	High
Woodland Sunflower	<i>Helianthus divaricatus</i>	-	-	-	Vulnerable	This species is generally found on steep, South-facing slopes in open and dry oak forests. It may also occur, to a lesser extent, in dry and sandy open habitats along forest roads or highways.	None	Moderate
Torrey's Rush	<i>Juncus torreyi</i>	-	-	-	Susceptible	This species is found in anthropogenic habitats, marshes, floodplains, and along river or lake shores.	None	High
Canada Lily	<i>Lilium canadense</i>	-	-	-	Vulnerable	This species is found in swamps, marshes, alder stands, moist forests, and semi-shaded, humid open areas.	Aki Ressources	Confirmed – Observed on federal lands
Flooded Jellyskin Lichen	<i>Leptogium rivulare</i>	Special Concern	Special Concern	-	-		NCC	Confirmed – Observed on federal lands
Fragrant Macewort	<i>Mannia fragrans</i>	-	-	-	Susceptible	This species is encountered on calcareous soil and on bright, rather dry escarpments.	None	Low
Mountain Liverwort	<i>Marchantia polymorpha</i> subsp. <i>montivagans</i>	-	-	-	Susceptible	This species is found on various moist substrates (stones, rocks, soil,	None	High

English Name	Latin Name	SARA Status	COSEWIC Status	Ontario Status	Quebec Status	Preferred Habitat	Occurrence Reference	Likelihood of Occurrence in the LSA
						humus, and even sand), often along small streams, in spring areas, in zones of superficial runoff from melting snow in hollows, and along trails. It prefers acidic and sunny environments.		
Ostrich Fern	<i>Matteuccia struthiopteris</i> var. <i>pensylvanica</i>	-	-	-	Vulnerable	This fern is found in rich, shaded, and humid deciduous forests, in floodplains, and in ditches. Its optimal forest cover is between 60% and 90%.	Aki Ressources	Confirmed – Observed on federal lands
Butternut	<i>Juglans cinerea</i>	Endangered	Endangered	Endangered	Susceptible	Butternut is found in floodplains, stream banks, terraces, and ravine slopes with well-drained soils. Since it requires light, it is observed in openings, riparian zones, and forest edges.	CDPNQ, NHIC	Confirmed – Observed on federal lands
Prairie Sundrops	<i>Oenothera pilosella</i>	-	-	-	Susceptible	This species seeks cool meadows, forest and roadside edges, alvars, bogs, and willow thickets.	None	High
Rock Elm	<i>Ulmus thomasii</i>	-	-	-	Threatened	Rock elm generally grows in open environments such as field and roadside edges, outcrops, escarpments, and pavements of limestone, dolomite, or marble.	CDPNQ	High
Philadelphia Panic Grass	<i>Panicum philadelphicum</i>	-	-	-	Susceptible	This species is found in open and rocky environments.	None	High
Switchgrass	<i>Panicum virgatum</i>	-	-	-	Susceptible	This species is found in open and rocky environments.	None	High
Purple Cliffbrake	<i>Pellaea atropurpurea</i>	-	-	-	Threatened	This species occupies habitats that are unsuitable for most plants, such as cliffs, escarpments, scree slopes, rocky shores, on limestone or marble.	None	High
Obedient Plant	<i>Physostegia virginiana</i> subsp. <i>virginiana</i>	-	-	-	Susceptible	This species grows in sunny estuarine environments composed of freshwater.	None	Moderate

English Name	Latin Name	SARA Status	COSEWIC Status	Ontario Status	Quebec Status	Preferred Habitat	Occurrence Reference	Likelihood of Occurrence in the LSA
Eastern Prairie Fringed Orchid	<i>Platanthera leucophaea</i>	Endangered	Endangered	Endangered	-	This plant is found in marshes, swamps, tallgrass prairies, and sometimes in ditches.	None	Low
Horn-leaved Riverweed	<i>Podostemum ceratophyllum</i>	-	-	-	Susceptible	This species is found on rocks or stones in fast-flowing and shallow waters.	CDPNQ	High
Vasey's Pondweed	<i>Potamogeton vaseyi</i>	-	-	-	Susceptible	This species is found in calm, shallow waters along lake or river shores and in swamps.	CDPNQ	High
Pinedrops	<i>Pterospora andromedea</i>	-	-	-	Threatened	This species grows in white pine or cedar forests, near a body of water, and on limestone or marble.	CDPNQ	High
Halberd-leaved Tearthumb	<i>Persicaria arifolia</i>	-	-	-	Susceptible	This species grows in wet environments, including well-flooded swamps.	CDPNQ	High
Douglas' Knotweed	<i>Polygonum douglasii</i>	-	-	-	Vulnerable	This plant is found on bare rocky summits or in open oak stands on steep South-facing slopes.	None	Low
Cavernous Crystalwort	<i>Riccia cavernosa</i>	-	-	-	Susceptible	This species is found in the wet mud of lakes, ponds, and moist depressions in fields.	None	High
Lizard Crystalwort	<i>Riccia bifurca</i>	-	-	-	Susceptible	This species is found on sandy shores, exposed rocky outcrops, calcareous fields, and barren areas.	CDPNQ	High
Purple Crystalwort	<i>Riccia beyrichiana</i>	-	-	-	Susceptible	This species inhabits a wide variety of environments with fine-grained or sandy, moist, and bare substrates, rarely in full sun, such as stream banks and abandoned fields. It is also found on rock covered with a thin layer of soil.	None	High
Bloodroot	<i>Sanguinaria canadensis</i>	-	-	-	Vulnerable	This plant is found in hickory and basswood maple groves rich in humus.	None	High
Peach-leaved Willow	<i>Salix amygdaloides</i>	-	-	-	Susceptible	This species grows in sunny to shaded swamps.	None	High

English Name	Latin Name	SARA Status	COSEWIC Status	Ontario Status	Quebec Status	Preferred Habitat	Occurrence Reference	Likelihood of Occurrence in the LSA
Rusty Flatsedge	<i>Cyperus odoratus</i>	-	-	-	Susceptible	This plant can be observed on sandy or muddy shores of rivers, lakes, or streams, as well as marsh edges.	CDPNQ	High
Fragrant Sumac	<i>Rhus aromatica</i>	-	-	-	Vulnerable	This species grows in dry, open environments such as escarpments, sandy or rocky areas, and upper shores.	None	High
Slender Bulrush	<i>Schoenoplectus heterochaetus</i>	-	-	-	Susceptible	This calcicolous species is found in calm, shallow waters.	Aki Ressources	Confirmed, not observed on federal lands
Poison Sumac	<i>Toxicodendron vernix</i>	-	-	-	Susceptible	This plant is found in forests, wooded or shrubby fallows, and marsh edges.	CDPNQ	High
White Trillium	<i>Trillium grandiflorum</i>	-	-	-	Vulnerable	This species grows in hickory maple groves and sometimes in basswood groves.	Aki Ressources	Confirmed - Observed on federal lands
Large-flowered Bellwort	<i>Uvularia grandiflora</i>	-	-	-	Vulnerable	This species is found exclusively in hickory or basswood maple groves.	Aki Ressources	Confirmed – Observed on federal lands
Hoary Vervain	<i>Verbena stricta</i>	-	-	-	Susceptible	This species is found in dry, sunny terrestrial environments.	None	High
Long-spurred Violet	<i>Viola rostrata</i>	-	-	-	Susceptible	This plant grows in rocky woods and shaded, calcareous slopes.	None	Moderate
Arrow-leaved Violet	<i>Viola sagittata</i> var. <i>sagittata</i>	-	-	-	Susceptible	This species is found on sandy soils, often in somewhat disturbed habitats such as formerly cultivated areas, excavated zones, prairies, or disturbed sandy plains.	None	High
Smooth Arrowwood	<i>Viburnum recognitum</i>	-	-	-	Susceptible	This plant can be observed in wet environments, swampy and semi-open woods, forest edges, and upper shores.	None	High
Blunt-lobed Woodsia	<i>Woodsia obtusa</i> subsp. <i>obtusa</i>	Threatened	Threatened	Endangered	Threatened	This species is found in gently open sloped forests, on South-facing calcareous rock substrates.	None	Moderate
Virginia Chain Fern	<i>Anchistea virginica</i>	-	-	-	Susceptible	This species is found in bogs, swamps, and moist forests.	CDPNQ	High

Observed Species

Eleven plant SAR/SoCC were confirmed in the LSA. Wild Leek was observed during the spring 2025 surveys and several dozen Butternut trees were also observed, most of which were on Kettle Island. Occurrences of Canada Lily, Canada Wild Ginger, Cattail sedge, Large-flowered Bellwort, Ostrich Fern, Black Ash, Two-leaved Toothwort, Slender Bulrush (*Schoenoplectus heterochaetus*) and White Trillium were also documented.

Many individual SAR trees were observed during vegetation surveys. Most trees were Butternuts, but some Black Ashes were also observed. Details on the number of individuals, their general condition and whether they were affected by the butternut canker (*Ophiognomonia clavignenti-juglandacearum*) are presented in Table 14-7.

Table 14-7: Butternut and Black Ash tree conditions

Species	General Condition	Number of individuals	With canker	Without canker
Butternut	Good	94	52	41
	Dying	160	144	16
	Nearly dead	8	8	0
	Dead	53	9	33
	Undefined	18	2	4
Black Ash	Good	4	0	4

Invasive Species

Ten invasive plant species were observed in the LSA during field surveys in spring 2025. These include Black Dog-strangling Vine (*Vincetoxicum nigrum*), Common Reed (*Phragmites australis* subsp. *australis*), Dog-strangling Vine (*Vincetoxicum rossicum*), Garlic Mustard (*Alliaria petiolata*), Japanese Knotweed (*Reynoutria japonica*, syn. *Fallopia japonica*), Purple Loosestrife (*Lythrum salicaria*), and Reed Canary Grass (*Phalaris arundinacea*). Invasive trees and shrubs such as Glossy Buckthorn (*Frangula alnus*), European Buckthorn (*Rhamnus cathartica*), and Norway Maple (*Acer platanoides*) were also observed. Invasive species are found throughout the LSA, and their exact locations are documented in Aki Ressources, 2025.

14.2.2.3 Fauna

Fauna studies being completed in the LSA include bird, amphibian, reptile, mammal (including bats) and insect surveys. Studies completed in spring 2025 focused on migratory birds, Pileated Woodpeckers (*Dryocopus pileatus*) and SAR/SoCC. The following sections summarize the results of the spring studies and provide preliminary results from the summer/fall 2025 surveys of amphibians and reptiles (Aki Ressources, 2025).

Migratory Birds and Resident Birds

The Ottawa River supports large numbers of waterfowl during spring and fall migration and supports breeding populations of American Black Duck (*Anas rubripes*), Canada Goose (*Branta canadensis*), Common Merganser (*Mergus merganser*), Hooded Merganser (*Lophodytes cucullatus*), Mallard (*Anas platyrhynchos*), and Wood Duck (*Aix sponsa*) (Birds Canada 2025).

Bird Species at Risk and Species of Conservation Concern

Data from CDPNQ and NHIC were consulted to identify bird SAR and SoCC near the LSA. Confirmed occurrences have been documented for 17 species within a 5 km radius of the Project: Bald Eagle (*Haliaeetus leucocephalus*), Bank Swallow (*Riparia riparia*), Barn Swallow (*Hirundo rustica*), Bobolink (*Dolichonyx oryzivorus*), Canada Warbler (*Cardellina canadensis*), Chimney Swift (*Chaetura pelagica*), Common Nighthawk (*Chordeiles minor*), Eastern

Grasshopper Sparrow (*Ammodramus savannarum pratensis*), Eastern Meadowlark (*Sturnella magna*), Eastern Whip-poor-will (*Antrostomus vociferus*), Eastern Wood-pewee (*Contopus virens*), Least Bittern (*Ixobrychus exilis*), Olive-sided Flycatcher (*Contopus cooperi*), Peregrine Falcon (*Falco peregrinus*), Rusty Blackbird (*Euphagus carolinus*), Sedge Wren (*Cistothorus platensis*), and Wood Thrush (*Hylocichla mustelina*) (Aki Ressources 2025).

The bird SAR and SoCC with confirmed occurrences—or the potential to occur—within a 5 km radius of the LSA were evaluated for their likelihood of presence within the LSA itself. This evaluation was based on a comparison between the available habitat observed during the spring surveys and the preferred habitat typically associated with these species. Table 14-8 provides a list of these species (Aki Ressources 2025; NCC 2025b), including their legal status in Québec, Ontario, and Canada, their preferred habitat, and their potential for occurrence within the LSA.

Table 14-8: Bird SAR and SoCC with confirmed occurrences or potential to occur within 5 km of the LSA.

English Name	Latin Name	SARA Status	COSEWIC Status	Ontario Status	Québec Status	Preferred Habitat	Occurrence Reference	Likelihood of Occurrence in the LSA
Harlequin Duck	<i>Histrionicus histrionicus</i>	Special Concern	Special Concern	-	Vulnerable	Found along coasts and on coastal islands.	None	Low
Golden Eagle	<i>Aquila chrysaetos</i>	-	-	Endangered	Vulnerable	Found in central and eastern Québec. It winters in southern Québec or in the central and western United States.	None	Low
Hudsonian Godwit	<i>Limosa haemastica</i>	-	Threatened	Threatened	-	Breeds in the subarctic and boreal regions of Canada and Alaska	None	Low
Red Knot (subspecies <i>rufa</i>)	<i>Calidris canutus rufa</i>	Endangered	Endangered	Endangered	Threatened	Found in bare Arctic habitats such as wind-swept ridges and slopes. Migratory stopovers are large coastal areas flooded twice daily by tides (sandy beach or mudflat).	None	Low
Buff-breasted Sandpiper	<i>Tryngites subruficollis</i>	Special Concern	Special Concern	-	-	During migration, mainly occupies short-grass prairies, fields, golf courses, airport runways, and pastures.	None	High
Nelson's Sparrow	<i>Ammospiza nelsoni</i>	-	-	-	Susceptible	Found primarily in saltwater or brackish marshes along coastlines or islands	None	Low
Eastern Grasshopper Sparrow	<i>Ammodramus savannarum pratensis</i>	Special Concern	Special Concern	-	Threatened	Found in prairies, pastures, and mowed meadows.	NHIC	Moderate

English Name	Latin Name	SARA Status	COSEWIC Status	Ontario Status	Québec Status	Preferred Habitat	Occurrence Reference	Likelihood of Occurrence in the LSA
Eskimo Curlew	<i>Numenius borealis</i>	Endangered	Endangered	-	-	During fall migration, found in salt marshes, meadows, pastures, old fields, intertidal zones, and sand dunes. In spring, found in tall grass-dominated prairies and cultivated fields.	None	Low
Eastern Whip-poor-will	<i>Antrostomus vociferus</i>	Threatened	Special Concern	-	-	Nests in habitats with sparse canopy cover (semi-open forests or forests with clearings).	NHIC	High
Common Nighthawk	<i>Chordeiles minor</i>	Special Concern	Special Concern	-	Susceptible	Nests in open to semi-open habitats (clearings, burned areas, prairies, peatlands, naturally rocky or sandy areas, and disturbed zones).	NCC	Confirmed, observed on federal lands
Peregrine Falcon	<i>Falco peregrinus</i>	-	-	-	Vulnerable	Nests on cliffs near large bodies of water and on tall buildings in urban areas.	CDPNQ	Low
Bobolink	<i>Dolichonyx oryzivorus</i>	Threatened	Special Concern	-	Vulnerable	Nests in prairies, meadows, grassy peatlands, alvars, abandoned fields, and marshes.	NHIC, NCC	Confirmed, observed on federal lands
Horned Grebe	<i>Podiceps auritus</i>	Endangered	-	-	Threatened	Nests primarily in western Canada as far east as northwestern Ontario. It winters mainly along the Atlantic coast.	None	Low
Bicknell's Thrush	<i>Catharus bicknelli</i>	Threatened	Threatened	-	Vulnerable	Found in dense coniferous forests (mainly fir) over 2 m tall and located above 600 m elevation.	None	None

English Name	Latin Name	SARA Status	COSEWIC Status	Ontario Status	Québec Status	Preferred Habitat	Occurrence Reference	Likelihood of Occurrence in the LSA
Wood Thrush	<i>Hylocichla mustelina</i>	Threatened	Threatened	-	-	Nests in secondary forests and mature deciduous and mixed forests. Mainly found in large forest mosaics but can also nest in small forest fragments.	NHIC, Aki Ressources	Confirmed, not observed on federal lands
Evening Grosbeak	<i>Coccothraustes vespertinus</i>	Special Concern	Special Concern	-	-	Nests in mature, open mixed forests dominated by fir or white spruce.	None	None
Black Tern	<i>Chlidonias niger</i>	-	-	Endangered	-	Found in shallow marshes mainly composed of cattails.	None	None
Short-eared Owl	<i>Asio flammeus</i>	Special Concern	Threatened	Threatened	Susceptible	Nests in open habitats of at least 50 to 100 ha (prairie, tundra, wetlands).	None	None
Gray-Cheeked Thrush	<i>Catharus minimus minimus</i>	-	Threatened	-	-	The Grey-cheeked Thrush breeds in wind-swept, stunted coastal conifer forests, old mountainous conifer forests, regenerating clear-cut areas, and coniferous scrub	None	Low
Bank Swallow	<i>Riparia riparia</i>	Threatened	Threatened	-	-	Found in vertical banks, cliffs along lakes and oceans, quarries, trenches, roads, or piles of soil and sand.	CDPNQ, Aki Ressources	Confirmed – Observed on federal lands
Barn Swallow	<i>Hirundo rustica</i>	Threatened	Special Concern	-	-	Nests on human-made structures (barns, stables, houses, sheds, bridges, etc.). Feeds over open habitats (prairies, fields, shores, clearings, wetlands, dunes, roads).	NCC, Aki Ressources	Confirmed - Observed on federal lands
Chimney Swift	<i>Chaetura pelagica</i>	Threatened	Threatened	-	Threatened	Nests in urban and rural areas with chimneys or similar structures.	Aki Ressources	Confirmed – not observed on federal lands

English Name	Latin Name	SARA Status	COSEWIC Status	Ontario Status	Québec Status	Preferred Habitat	Occurrence Reference	Likelihood of Occurrence in the LSA
Olive-sided Flycatcher	<i>Contopus cooperi</i>	Special Concern	Special Concern	-	Vulnerable	Found at forest edges (coniferous or mixed) near open areas (rivers, wetlands, burns, etc.).	NHIC	High
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	Threatened	Threatened	-	Threatened	Found in regenerating areas with young shrubs surrounded by mature forest, herbaceous plant patches, forest and field edges, swamps, marshes, powerline corridors, recent cuts, beaver ponds, and intermittently cultivated or burned areas.	None	High
Cerulean Warbler	<i>Setophaga cerulea</i>	Endangered	Endangered	-	Threatened	Found in large areas of mature deciduous forest with large trees and sparse understory.	None	Low
Kirtland's Warbler	<i>Setophaga kirtlandii</i>	Endangered	Endangered	-	-	Found in large (over 32 ha), young, even-aged, dense stands of jack pine or red pine with small clearings.	None	None
Canada Warbler	<i>Cardellina canadensis</i>	Threatened	Special Concern	-	Susceptible	Breeds mainly in moist mixed forests with well-developed shrub layers, also in riparian shrub forests on slopes and ravines, and regenerating stands.	NHIC	Moderate
Louisiana Waterthrush	<i>Parkesia motacilla</i>	Threatened	Threatened	-	Susceptible	This species strongly prefers relatively intact headwater streams and wetlands within large tracts of mature forest.	None	None
Prothonotary Warbler	<i>Protonotaria citrea</i>	Endangered	Endangered	-	-	This warbler breeds in large swampy deciduous forests or seasonally flooded woodlands in river floodplains.	None	None

English Name	Latin Name	SARA Status	COSEWIC Status	Ontario Status	Québec Status	Preferred Habitat	Occurrence Reference	Likelihood of Occurrence in the LSA
Lesser Yellowlegs	<i>Tringa flavipes</i>	-	Threatened	Threatened	-	Nests on dry ground near wetlands in the boreal forest During migration and in winter, uses coastal saltwater marshes, estuaries, ponds, lakes, freshwater wetlands, and human-modified environments (flooded rice fields, wastewater treatment ponds, ect...).	None	Low
Least Bittern	<i>Ixobrychus exilis</i>	Threatened	Special Concern	-	Vulnerable	This species breeds in marshes dominated by emergent vegetation surrounded by open water.	CDPNQ	Low
Red-necked Phalarope	<i>Phalaropus lobatus</i>	Special Concern	Special Concern	-	-	During migration, this species frequents saline lakes rich in invertebrates and ponds.	None	Moderate (during migration)
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	Endangered	Endangered	-	Threatened	Found in a wide variety of habitats: deciduous forests, open woodlands, parks, golf courses, cemeteries, wooded urban/agricultural areas, prairies with scattered trees, riparian forests, wetlands, beaver ponds, burned areas, forest edges, and roadsides.	None	High
Loggerhead Shrike (Eastern subspecies)	<i>Lanius ludovicianus ssp.</i>	Endangered	Endangered	-	Threatened	Found in open grasslands with scattered trees and shrubs, with a preference for areas with hawthorn.	None	Moderate
Eastern Wood-pewee	<i>Contopus virens</i>	Special Concern	Special Concern	-	-	Found in forest canopy openings and edges of deciduous or mixed forests.	Aki Ressources	Confirmed – Observed on federal lands

English Name	Latin Name	SARA Status	COSEWIC Status	Ontario Status	Québec Status	Preferred Habitat	Occurrence Reference	Likelihood of Occurrence in the LSA
Piping Plover (circumcinctus subspecies)	<i>Charadrius melodus circumcinctus</i>	Endangered	Endangered	-	-	Nests just above the average high tide line on exposed sandy or gravel beaches.	None	High
Bald Eagle	<i>Haliaeetus leucocephalus</i>	-	-	-	Vulnerable	Nests in mature forests with trees over 20 m tall near large bodies of water. Hunts in open areas like lakes, fast-flowing rivers, or large artificial reservoirs.	Aki Ressources	Confirmed (likely migratory) – Not observed on federal lands
Rusty Blackbird	<i>Euphagus carolinus</i>	Special Concern	Special Concern	-	Susceptible	Found along the edges of wetlands in the boreal forest and pasture margins.	NCC, Aki Ressources	Confirmed (likely migratory) – Not observed on federal lands
King Rail	<i>Rallus elegans</i>	Endangered	Endangered	-	-	Found in freshwater marshes and shrubby swamps with shallow, unobstructed water connecting to shrubby zones.	None	High
Yellow Rail	<i>Coturnicops noveboracensis</i>	Special Concern	Special Concern	-	Threatened	Nests mainly in marshes dominated by sedges, grasses, and rushes with little standing water. Also found in wet fields, meadows, river floodplains, bogs, salt marshes, and estuaries.	None	Low
Eastern Meadowlark	<i>Sturnella magna</i>	Threatened	Threatened	-	-	Found in native prairies, non-native pastures, hayfields, and grassy areas along fences and airfields.	NHIC, Aki Ressources	Confirmed – Observed on Federal lands
Sedge Wren	<i>Cistothorus platensis</i>	-	-	-	Susceptible	Found in wet sedge meadows with scattered shrubs, wet fields, and bog edges.	CDPNQ	None

Observed Species

Eight bird SAR/SoCC were observed in LSA during the 2025 field surveys: Bald Eagle, Bank Swallow, Barn Swallow, Chimney Swift, Eastern Meadowlark, Eastern Wood-pewee, Rusty Blackbird, and Wood Thrush (Aki Ressources, 2025). Past observations have also confirmed the presence of Bobolink and Common Nighthawk within the LSA (NCC 2025b). Nesting critical habitat for Bank Swallow is present within the Eastern Bridge Corridor, mostly concentrated around Kettle Island (Figure 14-8: Critical Habitat). Although Bank Swallow critical habitat is present within the study area, Bank Swallow observations were limited to the Ottawa portion of the Eastern Bridge Corridor, with no individuals observed within the critical habitat polygon.

Migratory Stopover Surveys

Migratory stopover surveys conducted in spring and fall 2025 led to the observation of 97 bird species and confirmed that certain portions of the LSA are used as migratory stopovers (Aki Ressources, 2025). There were 58 of the 97 observed species located on federal lands. Although most observations during the spring surveys involved solitary birds, pairs, or small groups of fewer than 10 individuals, some species were observed in larger groups. This is a likely indicator of migratory activity or of the site being used as a feeding or resting area. This was the case for Bufflehead (*Bucephala albeola*), Canada Goose, Ring-billed Gull (*Larus delawarensis*), and Ring-necked Duck (*Aythya collaris*), all of which were observed in groups of more than 10 individuals on at least one occasion during the surveys. Nesting was confirmed in the LSA for Canada Goose, Great Blue Heron (*Ardea Herodias*) and Ring-billed Gull.

Four of the observed species were SAR/SoCC: Barn Swallow was observed on the Ontario shore of the Ottawa River. Chimney Swift was observed near the Québec shore in proximity of wetlands as well as in Ontario grasslands. Rusty Blackbird was observed on Kettle Island and near the Québec shoreline. Finally, two observations of Bald eagles in flight occurred during surveys.

During surveys of Pileated Woodpecker nesting cavities in spring 2025, six trees with a total of 28 cavities were identified. However, no active nesting was confirmed. Five of the 6 trees located in the LSA were located on federal lands. An individual was observed nesting in July 2025, but was located just outside the LSA. The location of the tree will be monitored if modifications to the LSA occur.

Breeding Bird Surveys

Breeding bird surveys occurred from May to July 2025 (Aki Ressources, 2025). Conditions were good to excellent during surveys, and 64 species of breeding birds were observed, including three SAR/SoCC species (Table 14-9). There were 56 of the 64 species observed on federal lands. All observations were categorized into four broad categories:

- **Observed species:** Species observed during its breeding period, but in habitat unsuitable for nesting (no evidence of nesting).
- **Possible breeding:** Species observed during its breeding period in suitable nesting habitat, or an individual singing or producing sounds associated with reproduction heard during the species' breeding period in suitable nesting habitat.
- **Probable breeding:** Agitated behavior or alarm calls by an adult during the species' breeding period, or a pair observed during the breeding period in suitable nesting habitat, or a presumed territory based on hearing songs or sounds associated with reproduction (e.g., calls, drumming), or the observation of an adult bird on two different days at least one week apart during the nesting period.

- **Confirmed breeding:** Construction of a nest, including the transport of nesting material, or observation of active nests; adult occupying, leaving, or arriving at a probable nesting site (visible or not) and whose behavior indicates an occupied nest. Observation of recently fledged young.

Table 14-9: SAR/SoCC observed in the LSA during breeding bird surveys

English Name	Latin Name	Months Observed	Breeding Evidence Category
Wood Thrush	<i>Hylocichla mustelina</i>	May	Possible breeding
Eastern Wood-Pewee	<i>Contopus virens</i>	May, June, July	Possible breeding
Eastern Meadowlark	<i>Sturnella magna</i>	July	Possible breeding

Breeding for 13 species was confirmed in the LSA: American Robin (*Turdus migratorius*), Black-capped Chickadee (*Parus atricapillus*), Canada Goose, Chipping Sparrow (*Spizella passerina*), Common Grackle (*Quiscalus quiscula*), Common Raven (*Corvus corax*), Common Starling (*Sturnus vulgaris*), Fox Sparrow (*Passerella iliaca*), Mallard, Northern Cardinal (*Cardinalis cardinalis*), Northern Flicker (*Colaptes auratus*), Song Sparrow (*Melospiza melodia*), and Tree Swallow (*Iridoprocne bicolor*).

Specific surveys were conducted to evaluate the presence of the Common Nighthawk and the Eastern whip-poor-will. No observations were recorded.

Amphibians

The terrestrial and aquatic habitats within the LSA provide habitat for many species of amphibians, with species such as the American Bullfrog (*Lithobates catesbeianus*), American Toad (*Anaxyrus americanus*), Gray Treefrog (*Hyla versicolor*), Green Frog (*Lithobates clamitans*), Northern Leopard Frog (*Lithobates pipiens*), Spring Peeper (*Pseudacris crucifer*), Wood Frog (*Lithobates sylvaticus*), Blue-spotted Salamander (*Ambystoma laterale*), and Eastern Red-backed Salamander (*Plethodon cinereus*) found within the Ottawa River watershed (ORHDC, 2005; iNaturalist 2025).

Amphibian Species at Risk and Species of Conservation Concern

Data from CDPNQ and NHIC were consulted to identify amphibian SAR and SoCC near the LSA. Two species have been documented within a 5 km radius of the Project: Western Chorus Frog (*Pseudacris triseriata*) and Four-toed Salamander (*Hemidactylium scutatum*) (Aki Ressources 2025). Pickerel Frog (*Lithobates palustris*) has also been observed near the LSA (NCC, 2025b). Critical habitat for Western Chorus Frog (*Pseudacris triseriata*), a species designated as threatened federally and in Québec, is present within the Eastern Bridge corridor, specifically West of Montée-Paiement near the Library and Archives Canada Preservation Center and West of the Tecumseh golf course in Gatineau (Figure 14-8).

Critical Habitats

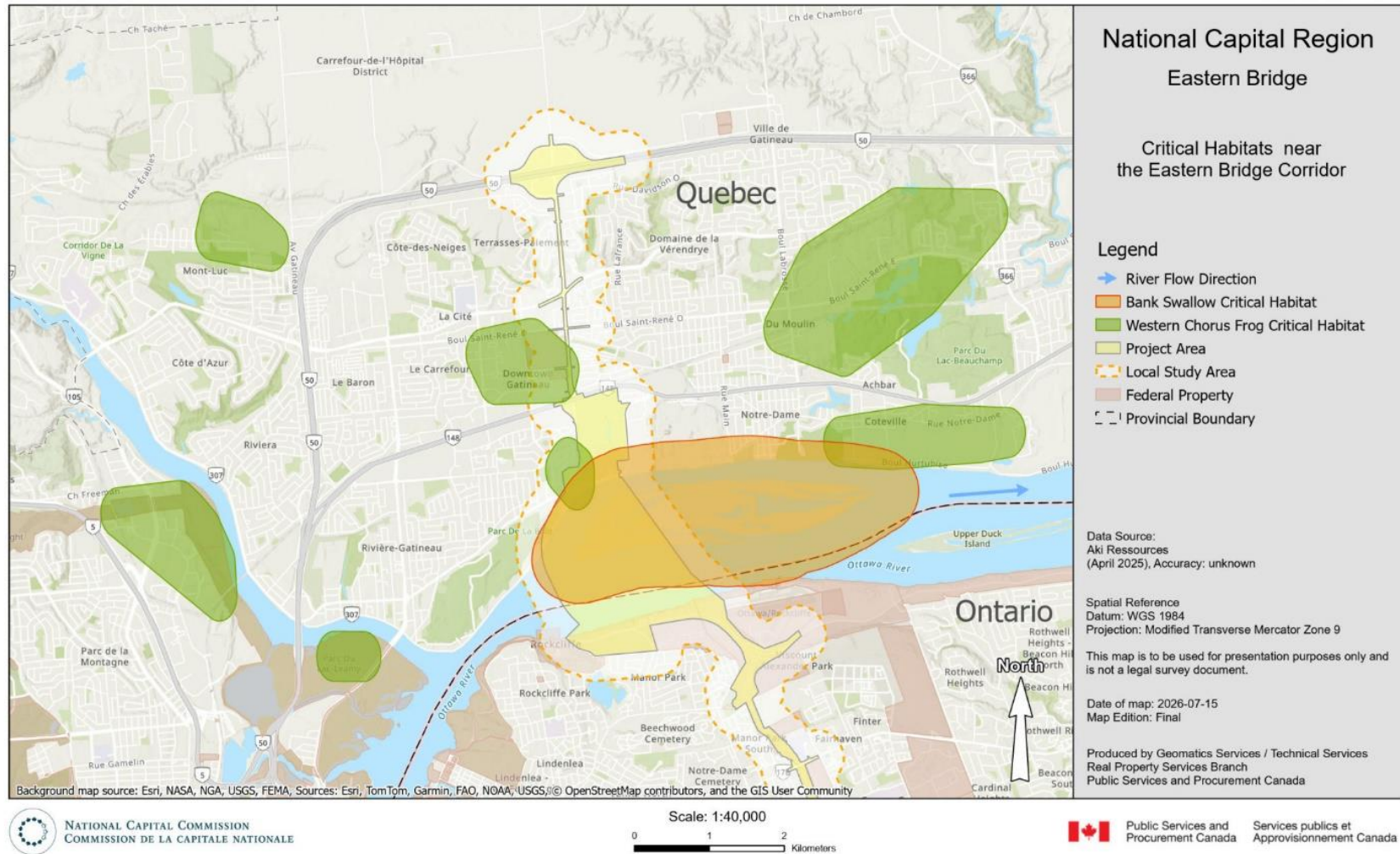


Figure 14-8: Critical Habitat near the Eastern Bridge Corridor

The amphibian SAR and SoCC with confirmed occurrences—or the potential to occur—within a 5 km radius of the LSA were evaluated for their likelihood of presence within the LSA itself. This evaluation was based on a comparison between the available habitat observed during the spring 2025 surveys and the preferred habitat typically associated with these species. Table 14-10 provides a list of these species (Aki Ressources 2025), including their legal status in Québec, Ontario, and Canada, their preferred habitat, and their potential for occurrence within the LSA.

Table 14-10: Amphibian SAR and SoCC with confirmed occurrences or potential to occur within 5 km of the LSA

English Name	Latin Name	SARA Status	COSEWIC Status	Ontario Status	Québec Status	Preferred Habitat	Occurrence Reference	Likelihood of Occurrence in the LSA
Pickerel Frog	<i>Lithobates palustri</i>	-	-	-	Susceptible	This frog is most often observed near wetlands (beaver ponds and sphagnum bogs) and aquatic environments (clear-water streams, river branches, and lakes) in mountainous terrain.	NCC	Low
Western Chorus Frog	<i>Pseudacris triseriata</i>	Threatened	Threatened	-	Threatened	Found in humid environments (grassy or wooded) with nearby temporary ponds.	CDPNQ, Aki Ressources	High*
Four-toed Salamander	<i>Hemidactylium scutatum</i>	-	-	-	Susceptible	This salamander species frequents sphagnum swamps, bogs, grassy pond edges, and moss-rich forests.	CDPNQ	Moderate

* Species confirmed on federal lands, just outside of the LSA.

Observed Species

Surveys targeting the Western Chorus Frog were conducted in spring 2025. During this period, the species was heard at two survey stations: one reference station (approximately 2.5 km outside the LSA but within the LSA) and one station near Library and Archives Canada's Preservation Facility (approximately 550 m outside the PA). No occurrences were recorded within the LSA, despite favorable weather conditions during the surveys.

Other surveys completed in 2025 confirmed the presence of American Bullfrog (*Lithobates catesbeianus*), American Toad (*Anaxyrus americanus*), Gray Treefrog (*Hyla versicolor*), Green Frog (*Lithobates clamitans*), Northern Leopard Frog (*Lithobates pipiens*), Blue-spotted Salamander (*Ambystoma maculatum*) and Eastern Red-backed Salamander (*Plethodon cinereus*), all common species in the LSA.

Reptiles

The terrestrial and aquatic habitats within the LSA provide habitat for various reptiles. Turtles and snakes may nest along the shoreline of the Ottawa River and Kettle Island or in upland habitat and may use both the shoreline and exposed rocks or trees for basking. The LSA may also be used by reptiles as foraging and overwintering habitat and/or as a movement corridor. Common species such as the Red-eared Slider (*Trachemys scripta elegans*), an invasive species, the Eastern Gartersnake (*Thamnophis sirtalis sirtalis*), and the Red-bellied Snake (*Storeria occipitomaculata*) have been observed near the LSA (iNaturalist 2025).

Reptile Species at Risk and Species of Conservation Concern

Data from CDPNQ and NHIC were consulted to identify reptile SAR and SoCC near the LSA. Seven species have been documented within a 5 km radius of the Project: Blanding's Turtle (*Emydoidea blandingii*), Eastern Milksnake (*Lampropeltis triangulum*), Eastern Musk Turtle (*Sternotherus odoratus*), Midland Painted Turtle (*Chrysemys picta marginata*), Northern Map Turtle (*Graptemys geographica*), Northern Watersnake (*Nerodia sipedon*), and Wood Turtle (*Glyptemys insculpta*) (Aki Ressources, 2025). Snapping Turtle (*Chelydra serpentina*) has also been observed near the LSA during past studies (Roche Genivar 2012d; NCC 2025b). While there is no critical habitat for reptile SAR and SoCC within the LSA, the MELCCFP has identified this reach of the Ottawa River as suitable habitat for the Spiny Softshell (*Apalone spinifera*) due to historical occurrences (NCC, 2025b).

The reptile SAR and SoCC with confirmed occurrences—or the potential to occur—within a 5 km radius of the LSA were evaluated for their likelihood of presence within the LSA itself. This evaluation was based on a comparison between the available habitat observed during the spring surveys and the preferred habitat typically associated with these species. Table 14-11 provides a list of these species (Aki Ressources 2025; NCC 2025b; Roche Genivar 2012c), including their legal status in Québec, Ontario, and Canada, their preferred habitat, and their potential for occurrence within the LSA.

Table 14-11: Reptile SAR and SoCC with confirmed occurrences or potential to occur within 5 km of the LSA

English Name	Latin Name	SARA Status	COSEWIC Status	Ontario Status	Québec Status	Preferred Habitat	Occurrence Reference	Likelihood of Occurrence in the LSA
Northern Ringneck Snake	<i>Diadophis punctatus edwardsii</i>	-	-	-	Susceptible	This snake seeks forested environments with multiple shelters (leaf litter, flat stones, pieces of bark, etc.).	None	High
Eastern Hog-nosed Snake	<i>Heterodon platirhinos</i>	Threatened	Threatened	Threatened	-	This snake is found in open forests, brushy areas, and forest edges, preferably near a water body. The soil must be well-drained and loose or sandy.	None	Low
Northern Watersnake	<i>Nerodia sipedon</i>	-	-	-	Vulnerable	This snake is found along rivers, streams, ponds, and lakes.	CDPNQ	High
Eastern Ribbonsnake	<i>Thamnophis sauritus</i>	Special Concern	Special Concern	-	Susceptible	This snake frequents marshes, bogs, ponds, lake shores, and wet meadows.	None	High
Eastern Milksnake	<i>Lampropeltis triangulum</i>	Special Concern	Special Concern	-	Vulnerable	This snake is found in a wide variety of habitats: open areas (rock outcrops and meadows), barns, sheds, and forests with significant canopy cover.	CDPNQ, NHIC, Aki Ressources	Confirmed, not observed on federal lands
Smooth Green Snake	<i>Opheodrys vernalis</i>	-	-	-	Susceptible	This snake inhabits open and moist areas, including fields, wastelands, pastures, bog edges, and wetlands.	None	High
Wood Turtle	<i>Glyptemys insculpta</i>	Threatened	Threatened	Endangered	Vulnerable	This turtle is found near winding rivers and streams with moderate current and sandy or gravel substrate. Terrestrial habitats include forest mosaics and open cover areas (meadows, pastures, farmland, etc.).	CDPNQ	Moderate
Northern Map Turtle	<i>Graptemys geographica</i>	Special Concern	Special Concern	-	Vulnerable	This turtle is found near watercourses and shallow lakes with soft bottoms and surface objects for basking.	CDPNQ, NHIC, Aki Ressources	Confirmed, not observed on federal lands

English Name	Latin Name	SARA Status	COSEWIC Status	Ontario Status	Québec Status	Preferred Habitat	Occurrence Reference	Likelihood of Occurrence in the LSA
Spiny Softshell	<i>Apalone spinifera</i>	Endangered	Endangered	Endangered	Threatened	This turtle inhabits rivers, swampy streams, oxbows, lakes, and reservoirs. These environments must have soft substrates, sparse aquatic vegetation, and sandbars or mudflats.	None	None
Blanding's Turtle	<i>Emydoidea blandingii</i>	Endangered	Endangered	Threatened	Threatened	This turtle seeks wetlands with clear, nutrient-rich waters.	CDPNQ, NHIC	High
Eastern Musk Turtle	<i>Sternotherus odoratus</i>	Special Concern	Special Concern	-	Threatened	This turtle is found in littoral zones and shallow water bodies (rivers, lakes, bays, streams, ponds, canals, swamps) with slow currents and soft substrates.	CDPNQ	High
Midland Painted Turtle	<i>Chrysemys picta marginata</i>	Special Concern	Special Concern	-	-	This turtle frequents wetlands and shallow water bodies with slow currents, abundant vegetation, and basking sites.	NHIC, Aki Ressources	Confirmed, not observed on federal lands
Spotted Turtle	<i>Clemmys guttata</i>	Endangered	Endangered	Endangered	Susceptible	This turtle is found in bogs, marshes, swamps, and wet meadows. These habitats must have unpolluted, slow, shallow waters with abundant aquatic and emergent vegetation.	None	None
Snapping Turtle	<i>Chelydra serpentina</i>	Special Concern	Special Concern	-	-	This turtle is found in wetlands or aquatic environments with slow currents, soft, muddy bottoms, and dense aquatic vegetation.	NHIC, Roche Genivar, NCC, Aki Ressources	Confirmed, not observed on federal lands

Observed Species

Active searches were conducted in spring 2025 to inventory the presence of snakes within the LSA. These searches led to the observation of several occurrences of Eastern Gartersnake and Red-bellied Snake, and confirmed the presence of one SAR/SoCC: the Eastern Milksnake. During the same period, active searches were also carried out to document the presence of turtles in the LSA. These efforts confirmed the presence of three SAR/SoCC: the Midland Painted Turtle, Northern Map Turtle and Snapping Turtle. No other turtle species were observed (Aki Ressources, 2025).

Mammals

The LSA contains potential migratory and nesting habitat for a variety of species of bats. The LSA contains areas such as wooded stands, water bodies, and wetlands that represent habitats of interest for these woodland bat species. The vacant lands southwest of the Tecumseh Golf Course, the mature forest stands on Kettle Island, the shores of the Ottawa River, and the wooded area to the North and West of Montfort Hospital are among these habitats. Migratory species could also use the LSA as a corridor, given the numerous potential feeding and resting areas throughout.

Mammal Species at Risk and Species of Conservation Concern

Data from the CDPNQ and NHIC were consulted to identify bat SAR and SoCC near the LSA. However, neither database contains mentions of any recorded bat occurrences within a 5 km radius of the LSA.

Bat SAR and SoCC with the potential to occur within a 5 km radius of the LSA were evaluated for their likelihood of presence within the LSA itself. This evaluation was based on a comparison between the available habitat observed during the spring surveys and the preferred habitat typically associated with these species. Table 14-12 provides a list of these species, including their legal status in Québec, Ontario, and Canada, their preferred habitat, and their potential for occurrence within the LSA.

Table 14-12: Bat SAR and SoCC within a 5 km radius of the LSA

English Name	Latin Name	SARA Status	COSEWIC Status	Ontario Status	Québec Status	Preferred Habitat	Occurrence Reference	Likelihood of Occurrence in the LSA
Silver-haired Bat	<i>Lasionycteris noctivagans</i>	-	Endangered	Endangered	Susceptible	Forested regions along lakes, ponds, and watercourses.	*	Confirmed, observed on federal lands
Hoary Bat	<i>Lasiurus cinereus</i>	-	Endangered	Endangered	Susceptible	Coniferous or deciduous forest; feeds above bodies of water.	*	Confirmed, observed on federal lands
Northern Myotis	<i>Myotis septentrionalis</i>	Endangered	Endangered	Endangered	Threatened	Boreal forest. Nests in buildings or tree cavities. Hibernates in small caves and rock crevices.	*	Moderate
Eastern small-Footed Myotis	<i>Myotis leibii</i>	-	-	Endangered	Susceptible	Mountainous regions, in forested areas, or sometimes near agricultural zones. Rests in tree hollows, under bark, in rock crevices, or beneath stone blocks.	*	Moderate
Eastern Red Bat	<i>Lasiurus borealis</i>	-	Endangered	Endangered	Vulnerable	Coniferous and mixed forests; feeds above rivers and is well adapted to urban environments.	*	Confirmed, observed on federal lands

English Name	Latin Name	SARA Status	COSEWIC Status	Ontario Status	Québec Status	Preferred Habitat	Occurrence Reference	Likelihood of Occurrence in the LSA
Little Brown Myotis	<i>Myotis lucifugus</i>	Endangered	Endangered	Endangered	Threatened	Under loose tree bark; in holes and cracks in tree trunks; in rock crevices; under rock shelters; or in buildings. Uses mature deciduous forests for foraging.	*	Confirmed, observed on federal lands
Tri-colored Bat	<i>Perimyotis subflavus</i>	Endangered	Endangered	Endangered	Threatened	Natural cavities, foliage, and lichen. Hibernation takes place in abandoned mines and cavities such as caves and caverns. Avoids fragmented habitats.	*	Confirmed, observed on federal lands

Observed Species

The presence of five bat species was confirmed during acoustic field surveys in 2025 (Aki Ressources, 2025). These include the Eastern Red Bat (*Lasiurus borealis*), the Hoary Bat (*Lasiurus cinereus*), the Little Brown Myotis (*Myotis lucifugus*), the Silver-haired Bat (*Lasionycteris noctivagans*), and the Tri-colored Bat (*Perimyotis subflavus*). Some recordings collected during the surveys could only be identified to the genus *Myotis* and could not be resolved to the species level. Therefore, it is possible that the Northern Myotis (*Myotis septentrionalis*) and the Eastern Small-footed Myotis (*Myotis leibii*) occur within the LSA, which overlaps with their known distribution ranges. These species are generally associated with mountainous regions or boreal forest; therefore, their likelihood of occurrence in the LSA is considered moderate.

A tree survey was also conducted within the LSA, to identify potential roosting habitats for bats. A total of 83 trees with cavities meeting the predefined selection criteria were identified. Most of these trees were snags, although some were living trees with natural cavities or trunk fissures that could serve as microhabitats for tree-roosting species such as the Hoary Bat and the Eastern Red Bat, as well as for certain cavity-roosting species such as the Silver-haired Bat and *Myotis* species. Of the 83 trees identified, 18 were assessed as having a high roosting potential, 23 a moderate potential, and 42 a low potential. All high-potential trees were located on Kettle Island. 38 of the 83 trees were located on federal lands.

Among the bat species recorded within the LSA, the Hoary Bat, Silver-haired Bat, and Eastern Red Bat are migratory species. They are present in the LSA only during the summer period or during spring and fall migratory movements. The Little Brown Myotis and the Tri-colored Bat are generally considered forest-dwelling species and are typically found in forested environments, along trails and at the forested edges of waterbodies.

The LSA contains habitats suitable for a variety of bat species based on collected data and observed species. The mature stands of Kettle Island, wooded patches, wetland and riparian environments serve as foraging and possible breeding habitats for some of the observed species. In addition, the LSA appears to be located within a migratory corridor used by non-resident species. Finally, even disturbed and fragmented areas of the LSA, such as forest edges, may be suitable for species with less demanding habitat requirements, such as the Hoary Bat and the Big Brown Bat (*Eptesicus fuscus*).

Insects

Insect Species at Risk and Species of Conservation Concern

NHIC data were consulted to identify insect SAR and SoCC in the LSA. One species has been documented within a 5 km radius of the LSA, the Skillet Clubtail (*Gomphurus ventricosus*).

Insect SAR and SoCC with confirmed occurrences—or the potential to occur—within a 5 km radius of the LSA were evaluated for their likelihood of presence within the LSA itself. This evaluation was based on a comparison between the available habitat observed during the field surveys and the preferred habitat typically associated with these species. Table 14-13 provides a list of these species, including their legal status in Québec, Ontario, and Canada, their preferred habitat, and their potential for occurrence within the LSA.

Table 14-13: Insect SAR and SoCC within a 5 km radius of the LSA

English Name	Latin Name	SARA Status	COSEWIC Status	Ontario Status	Québec Status	Preferred Habitat	Occurrence Reference	Likelihood of Occurrence in the LSA
Coleoptera								
Northern Barrens Tiger Beetle	<i>Cicindela patruela</i>	Endangered	Endangered	Endangered	Special concern	Along dry sandy trails and lightly traveled roads, as well as in other small openings of oak and pine savannas and in mixed forests (Government of Canada, 2025)	*	Low
Transverse Lady Beetle	<i>Coccinella transversoguttata</i>	Special Concern	Special Concern	Endangered	-	Agricultural areas, suburban gardens, parks, coniferous and deciduous forests, grasslands, meadows, riparian zones, and other natural environments (Government of Canada, 2025).	*	High
Two-spotted Lady Beetle	<i>Adalia bipunctata</i>	-	-	-	Vulnerable	Shrubs and trees (BugGuide, 2025)	*	High
Nine-spotted Lady Beetle	<i>Coccinella novemnotata</i>	Endangered	Endangered	Endangered	Threatened	Agricultural areas, suburban gardens, parks, coniferous and deciduous forests, grasslands, meadows, riparian zones, and isolated natural areas (Government of Canada, 2025).	*	High
Hemiptera								
Red-tailed Leafhopper	<i>Aflexia rubranura</i>	Special Concern	Special Concern	-	-	Open prairies and savannas where its host plant, Prairie Dropseed (<i>Sporobolus heterolepis</i>), grows. In Ontario, the species is restricted to alvar prairies and grasslands (Government of Canada, 2025).	*	Low

English Name	Latin Name	SARA Status	COSEWIC Status	Ontario Status	Québec Status	Preferred Habitat	Occurrence Reference	Likelihood of Occurrence in the LSA
Hymenoptera								
Macropis cuckoo bee	<i>Epeoloides pilosulus</i>	Endangered	Insufficient data	-	-	Ephemeral wetlands and drier but more shaded habitats. Inside or near patches of its food plants (nectar from dogbanes, milkweeds, and oil-producing plants of the genus <i>Lysimachia</i>), in sandy soil exposed to the sun and covered with low vegetation (Government of Canada, 2025).	*	Low
Rusty-patched bumble bee	<i>Bombus affinis</i>	Endangered	Endangered	Endangered	Threatened	Open habitats such as fallow lands, marshes, bogs, prairies, landscaped areas in urban environments, and forested habitats (Government of Québec, 2025b).	*	High
American Bumblebee	<i>Bombus pensylvanicus</i>	Special Concern	Special Concern	-	-	Open habitats, including farms, pastures, and prairies (Government of Canada, 2025).	*	Low
Suckley's Cuckoo Bumble Bee	<i>Bombus suckleyi</i>	-	Threatened	Endangered	-	Open meadows, prairies, agricultural and cultivated lands, urban areas, boreal forest, and mountain meadows (Government of Canada, 2025).	*	Low
Yellow-banded Bumble Bee	<i>Bombus terricola</i>	Special Concern	Special Concern	-	Special Concern	Mixed forests, agricultural lands, urban areas, mountain meadows, prairies, and boreal environments (Government of Canada, 2025).	*	High

English Name	Latin Name	SARA Status	COSEWIC Status	Ontario Status	Québec Status	Preferred Habitat	Occurrence Reference	Likelihood of Occurrence in the LSA
Gypsy Cuckoo Bumble Bee	<i>Bombus bohemicus</i>	Endangered	Endangered	Endangered	-	Open meadows and mixed agricultural lands, as well as urban areas, boreal forest, and mountain meadows (Government of Canada, 2025).	*	Moderate
Lepidoptera								
Bogbean buckmoth	<i>Hemileuca sp.</i>	Endangered	Endangered	Endangered	-	Non-treed, calcareous minerotrophic peatlands (fens) with a vegetation mat dominated by graminoids and small shrubs. Fens dominated by twig-rush (<i>Cladium mariscoides</i>) or woolly-fruited sedge (<i>Carex lasiocarpa</i>), and dotted with small shallow pools that support the species' primary host plant, bogbean (commonly called water clover; <i>Menyanthes trifoliata</i>) (Government of Canada, 2025).	*	Nil
Mottled duskywing	<i>Erynnis martialis</i>	Endangered	Endangered	Endangered	Susceptible	It depends on its host plants, New Jersey tea (<i>Ceanothus americanus</i> ; Great Lakes Plains) and narrowleaf ceanothus (<i>Ceanothus herbaceus</i> ; boreal). In Canada, these shrubs grow in dry, well-drained soils or alvars, within open oak or pine woodlands, along roadsides or waterways, on shaded slopes, and in tallgrass prairies	*	Low

English Name	Latin Name	SARA Status	COSEWIC Status	Ontario Status	Québec Status	Preferred Habitat	Occurrence Reference	Likelihood of Occurrence in the LSA
						(Government of Canada, 2025).		
Monarch	<i>Danaus plexippus</i>	Endangered	Endangered	-	-	Milkweeds (<i>Asclepias</i> spp.), which grow mainly in open habitats and are periodically disturbed, such as roadsides, fields, wetlands, prairies, and open forests (Government of Canada, 2025).	*	Confirmed, not observed on federal lands
West Virginia White	<i>Pieris virginiensis</i>	-	-	-	-	Open meadows and mixed agricultural lands, as well as urban areas, boreal forest, and mountain meadows (Government of Canada, 2025).	*	Moderate
Odonata								
Rapids Clubtail	<i>Phanogomphus quadricolor</i>	Endangered	Endangered	Threatened	-	Medium to large watercourses with clear water, featuring rapids and calmer pools where larvae can feed in soft sediments (Government of Canada, 2025).	*	Low
Riverine Clubtail	<i>Stylurus amnicola</i>	-	Special Concern	Threatened	-	Riparian habitats of varying size, ranging from the large St. Lawrence River to medium-sized watercourses, usually in locations where shading from the riparian forest canopy does not extend across the entire width of the channel. This species typically occurs in watercourses with primarily sandy substrates and clear to slightly turbid water	*	Moderate

English Name	Latin Name	SARA Status	COSEWIC Status	Ontario Status	Québec Status	Preferred Habitat	Occurrence Reference	Likelihood of Occurrence in the LSA
						(Government of Canada, 2025).		
Skillet Clubtail	<i>Gomphurus ventricosus</i>	Endangered	Special Concern	Threatened	Susceptible	Small to large rivers with silty, gravelly, or rocky bottoms, including pools and patches of soft sediments. Waters exhibit a wide range of turbidity, from clear to coloured and relatively turbid (Government of Canada, 2025).	NHIC (historical data)	Low

Observed Species

Active surveys were conducted to capture and identify insects during seven inventory outings carried out between June and October 2025 (Aki Ressources, 2025). A total of 94 insect occurrences, representing several different orders, were recorded. Survey efforts focused on insect orders that include SAR or SoCC.

In addition to the targeted groups, several incidental observations were made, including orthopterans (crickets, grasshoppers, and locusts), one fishing spider (*Dolomedes* sp.), one member of the family Tetragnathidae, and a praying mantis ootheca (*Mantis religiosa*), all within natural habitats of the LSA.

Only one SAR insect species, the monarch butterfly (*Danaus plexippus*), listed as endangered in Canada, was observed within the LSA during the 2025 surveys. The monarch was recorded in a herbaceous meadow during an active survey. Herbaceous meadows containing milkweed, one of the few plant species on which monarchs lay their eggs, represent the most important insect habitat within the LSA.

One beetle species, the Japanese Beetle (*Popilla japonica*) was also observed. This species is considered an invasive species in Québec, though not currently classified as invasive in Ontario.

14.2.2.4 Federal Lands

This section identifies important biophysical features on federal lands within the LSA.

Wetlands

Wetlands are vital ecosystems that support wildlife, improve water quality, store large amounts of carbon, and help protect communities from floods and climate impacts. Wetlands are thus recognized in Canada as environmentally important areas, and the Federal Policy on Wetland Conservation (Environment Canada, 1991) promotes a no net loss of wetlands on federal lands and waters.

Terrestrial surveys have shown that the LSA contains 62 distinct wetland environments, 18 of which are located on federal lands. These are shown on Figure 14-9.

Wetlands and Federal Lands

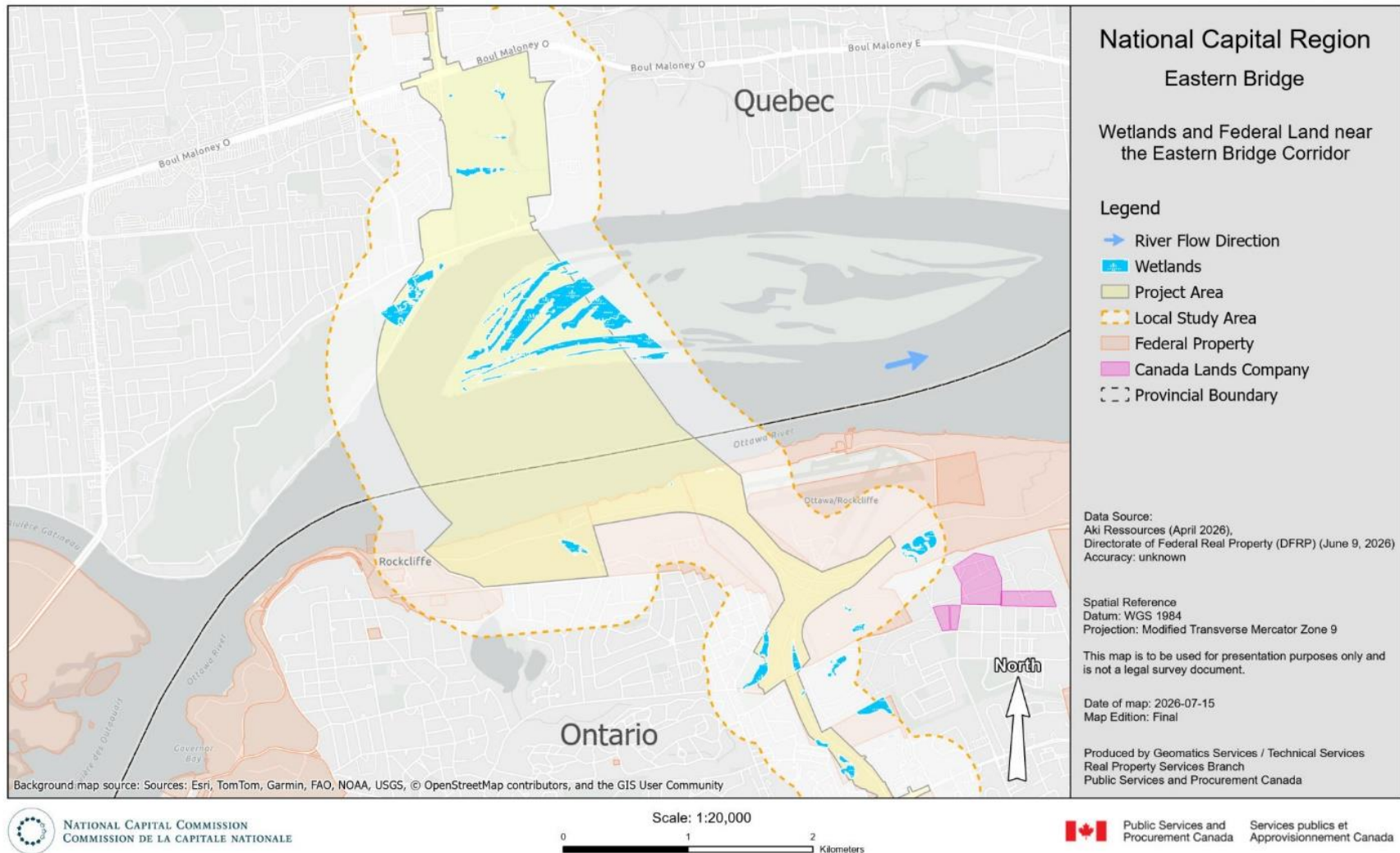


Figure 14-9: Wetland Environments on Federal Lands

Species at risk and Species of Conservation Concern

A total of 18 SAR and SoCC were observed on federal lands. Nine of the observed species are listed on Schedule 1 of SARA and are listed as either Endangered, Threatened or Special Concern. SAR and SoCC that were observed on federal lands are listed in Table 14-14.

Table 14-14: SAR and SoCC observed on federal lands

English Name	Latin Name	SARA Status	COSEWIC Status	Ontario Status	Quebec Status
Wild Leek	<i>Allium tricoccum</i>	-	-	-	Vulnerable
Canada Wild Ginger	<i>Asarum canadense</i>	-	-	-	Vulnerable
Canada Lily	<i>Lilium canadense</i>	-	-	-	Vulnerable
Ostrich Fern	<i>Matteuccia struthiopteris</i> <i>var. pensylvanica</i>	-	-	-	Vulnerable
Butternut	<i>Juglans cinerea</i>	Endangered	Endangered	Endangered	Susceptible
White Trillium	<i>Trillium grandiflorum</i>	-	-	-	Vulnerable
Large-flowered Bellwort	<i>Uvularia grandiflora</i>	-	-	-	Vulnerable
Common Nighthawk	<i>Chordeiles minor</i>	Special Concern	Special Concern		Susceptible
Bank Swallow	<i>Riparia riparia</i>	Threatened	Threatened	-	-
Barn Swallow	<i>Hirundo rustica</i>	Threatened	Special Concern	-	-
Eastern Wood-pewee	<i>Contopus virens</i>	Special Concern	Special Concern	-	-
Eastern Meadowlark	<i>Sturnella magna</i>	Threatened	Threatened	-	-
Western Chorus Frog	<i>Pseudacris triseriata</i>	Threatened	Threatened	-	Threatened
Silver-haired Bat	<i>Lasionycteris noctivagans</i>	-	Endangered	-	Susceptible
Hoary Bat	<i>Lasiurus cinereus</i>	-	Endangered	-	Susceptible
Eastern Red Bat	<i>Lasiurus borealis</i>	-	Endangered	-	Vulnerable
Little Brown Myotis	<i>Myotis lucifugus</i>	Endangered	Endangered	Endangered	Threatened
Tri-colored Bat	<i>Perimyotis subflavus</i>	Endangered	Endangered	Endangered	Threatened

Further, important habitat features are also present on federal lands such as trees with nesting cavities for Pileated Woodpeckers and potential maternity trees for bats. Locations of species observation and important habitat features on federal lands, in relation to potential LSA, are shown in Figure 14-10 and Figure 14-11.

Species at Risk and Species of Conservation Concern - Gatineau

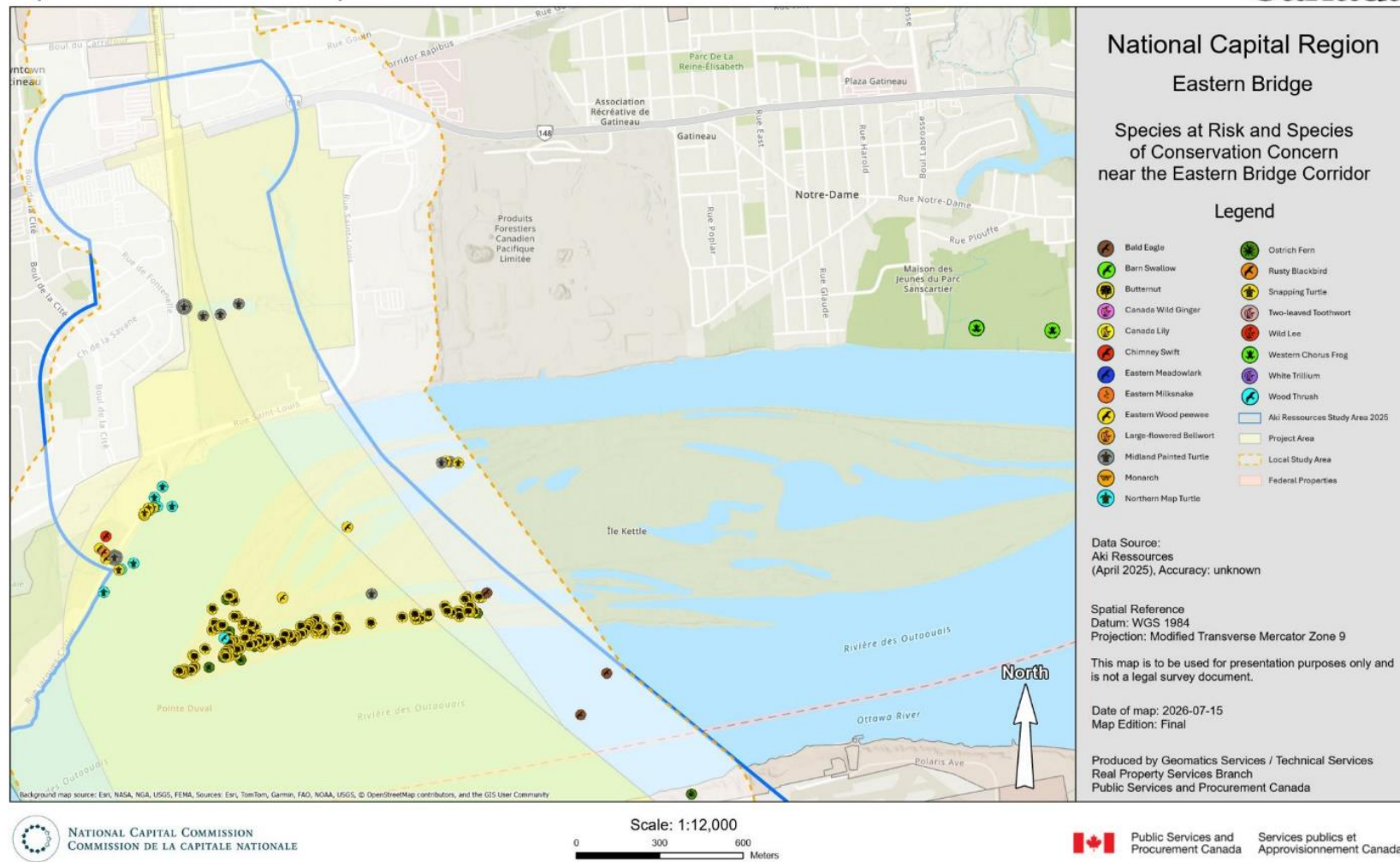


Figure 14-10: Species at risk and of Conservation Concern – Gatineau

Species at Risk and Species of Conservation Concern - Ottawa

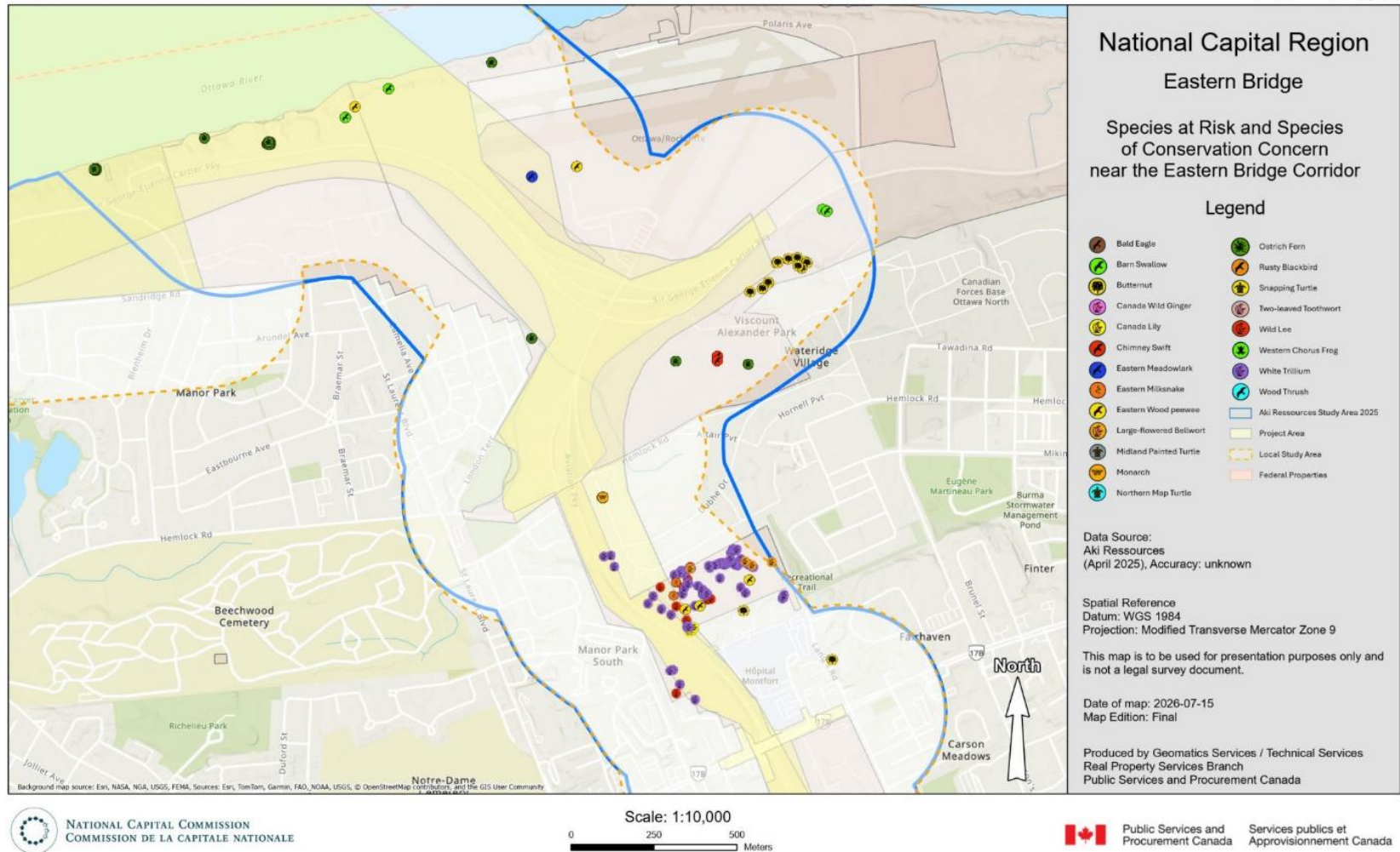


Figure 14-11: Species at risk and of Conservation Concern – Ontario

15 Socio-Economic Environment

15.1 Social Context

The region comprises eight municipalities: the City of Ottawa, City of Gatineau, and the Regional Municipality of Collines-de-l'Outaouais, including its six member municipalities: Pontiac, La Pêche, Chelsea, Cantley, Val des Monts, and L'Ange-Gardien.

The NCR is located on the traditional territory of the Anishinabe Algonquin Nation.

15.1.1 Description of Communities

As described in Section 13.3, the corridor crosses the District du Carrefour-de-L'Hôpital, District de Bellevue, District du Versant, District de la Pointe Gatineau, and District du Lac Beauchamp (see Figure 13-7). While in Ottawa, the corridor crosses the neighbourhoods of Rockcliffe Park, Manor Park, Wateridge Village, Overbrook, Carson Grove-Carson Meadows, Riverview, and Pineview (Figure 13-8).

Each side of Montée-Paiement has mixed land uses including residential neighbourhoods, commercial areas with a few community green spaces. The residences on the West side back onto the road, while those on the East side, between Rue Filiatreault and Boulevard Maloney, have direct front access driveway entrances from the road. Montée-Paiement becomes a two-lane road for a short distance South of Boulevard Maloney and provides access to the shopping complex on the West side of the road. South of the shopping complex is a residential area where homes back onto the corridor.

Heading South along Aviation Parkway, are the neighbourhoods of Manor Park on the West and Wateridge on the East side. Hemlock road provides access to both communities where traffic-calming and cut-through traffic prevention features are being considered in the roadway design.

Northeast of the intersection of Aviation Parkway with Montreal Road is the Monfort Hospital, a notable institution, and the Fairhaven neighbourhood. South of the Montreal Road intersection are the neighbourhoods of Overbrook (Forbes/Cummings/Cyrville) on the West and Carson Grove-Carson Meadows on the East side of Aviation Parkway.

Manor Park is an older neighbourhood known for its tree-lined streets, post-war homes, and a strong sense of community. The community features a mix of established homes with some later developments. The area offers easy access to downtown amenities, green spaces like Rockcliffe Park, and institutions like the RCMP Musical Ride Centre and the Canada Aviation and Space Museum.

Wateridge Village a large-scale, mixed-use community being developed on the site of the former CFB Rockcliffe in Ottawa. The plan includes a mix of housing types, commercial and retail spaces. The community is envisioned to be connected by pedestrian and cycling-friendly infrastructure, with transit-oriented design principles guiding its development.

15.1.2 Demographic Profiles

The data in this section is from the 2025 national census of Canada and applies to the entire Ottawa-Gatineau Census Metropolitan Area (CMA) as defined by Statistics Canada (2025). The CMA is slightly geographically larger than the official boundaries of the NCR, but demographic data for the CMA is assumed to be representative of the regional context covered in this IPD. It should be noted that the CMA boundary has been expanding with the urban development of the region as shown in Figure 15-1.

In 2025, Statistics Canada estimated that the Ottawa-Gatineau CMA had a population of 1,700,014, of which 1,325,788 (77.9%) resided in Ontario and 374,226 (22.1%) resided in Québec. The 2025 estimate is a population increase of almost 10% since 2021 when the population was 1,540,340.

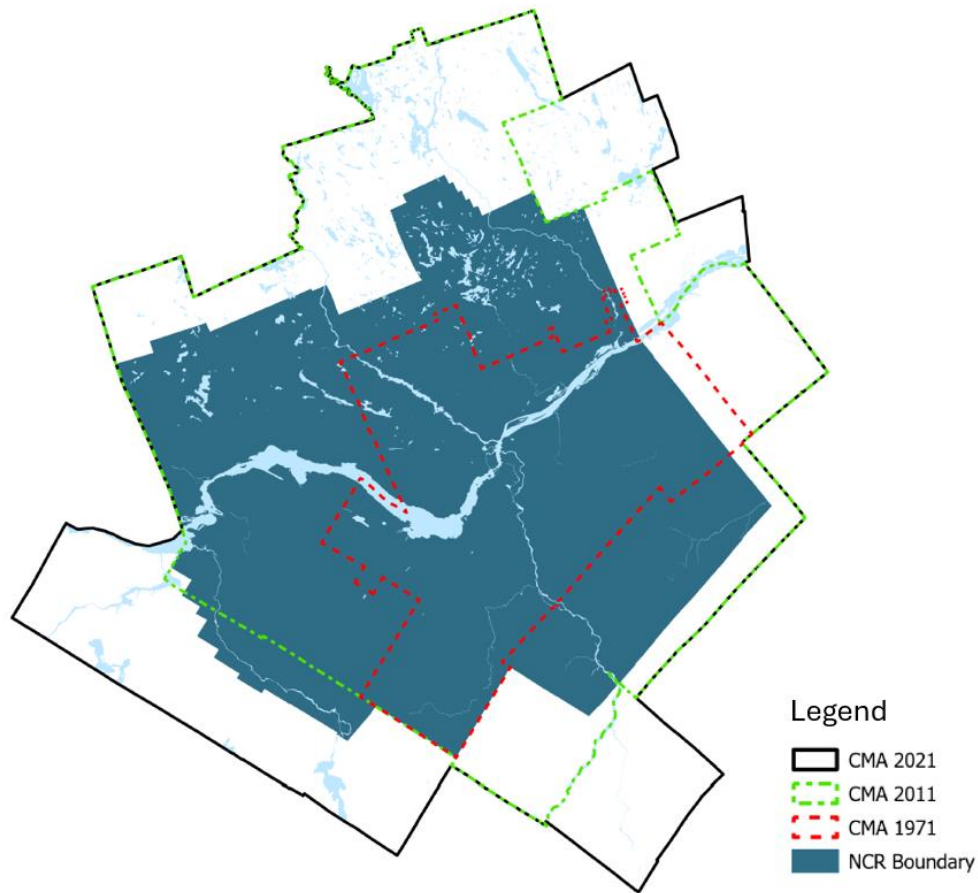


Figure 15-1: CMA and NCR Boundaries

The population has significantly increased since the 1970s when the last interprovincial bridge was constructed. Figure 15-2 shows the population growth within the CMA since 1971 based on the census. The region's urban population has more than doubled since 1971 and future projection estimates to 2050 show a continuation of this growth trend.

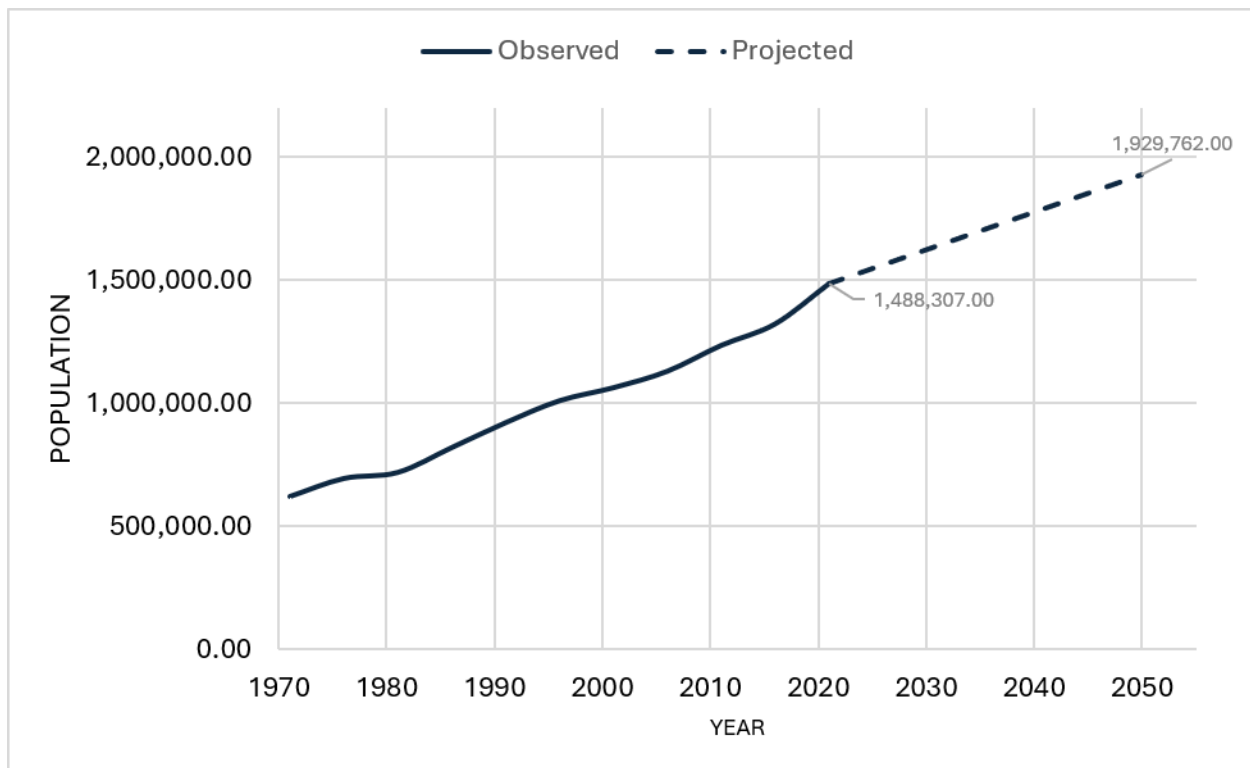


Figure 15-2: Observed and Projected Population for the NCR

The region is culturally and ethnically diverse, in part because it includes Ontario and Québec, which have different primary languages among other cultural differences. English is the most commonly used language at home for 68.4% of the CMA population, while 29.8% use French. This generally reflects the population distribution between Ontario and Québec: in Ottawa, the majority (81.4%) of people reported English as their first language, while in Gatineau, the majority (77.6%) of people reported French as their first language. Notably, 43.1% of the CMA population report themselves as bilingual in both official languages. Nearly one-fifth (18.2%) of the population are fluent in a language other than English or French. The most spoken non-official languages in the region are Arabic, Chinese, and Indo-Aryan languages.

More than a quarter (26.4%) of residents in the CMA identify as visible minorities and over one-fifth (21.4%) were born outside of Canada. More than 20,000 residents identified as having predominantly Indigenous ancestry (including Métis) and nearly 60,000 claim some Indigenous ancestry.

Nearly two-thirds (63.1%) of the CMA population are of working age (15 to 64). Nearly equal numbers are under 15 (16.9%) or 65 and older (17.0%). The region is highly educated: 63.9% of the working population has some level of post-secondary education and more than one-third (36.4%) have a bachelor's degree or higher. Average individual income in 2021 was \$61,900, which was above the national average of \$54,450 in the same year. Using the National Occupation Classification (NOC) 2021, the most common occupations in the region are (see Section 15.7.1):

- sales and service,
- business, finance, and administration,
- education, law and social, community, and government services, and
- natural and applied sciences.

The roadway modifications along Montée-Paiement and Aviation Parkway required to support the Eastern Bridge Project could be experienced differently by individuals who reside in proximity to the corridor. The Gender Based Analysis Plus (GBA+) framework is an approach used to guide significant projects by looking at intersecting identity factors such as sex, gender, race, age, ability and socio-demographic status to identify outcomes to support inclusivity and equity. The GBA+ analysis contributes to the design of the Project to avoid potentially unwanted effects and develop appropriate mitigation strategies. The analysis also contributes to the public engagement process with diverse community groups to consider the breadth and diversity of potential impacts including those that are positive, negative, intended and unintended on diverse groups as well as vulnerable populations.

WSP completed a Gender-based Analysis Plus (GBA+) analysis in 2025 which included an assessment of the vulnerability of neighbourhoods and municipal districts in the LSA based on intersecting indicators. Note that the “neighbourhoods” used in the GBA+ are census tracts within the Ottawa-Gatineau CMA and are not necessarily congruent with the neighbourhoods defined by the cities of Ottawa and Gatineau. In Ottawa, neighborhood boundaries are defined by the Ottawa Neighbourhood Study (Ottawa Neighbourhood Study, 2024). In Gatineau, municipal districts are referenced in lieu of defined neighbourhood boundaries.

The Ottawa Neighbourhood Study developed a socio-economic status index to assess social and economic vulnerability. This index is the result of a principal component analysis of six variables, including (Ottawa Neighbourhood Study, 2024):

- Unemployment rate
- Rate of one-parent families
- Rate of persons aged 25-64 with no high school diploma
- Median market income
- Rate of persons living in low-income
- Households in core housing need

The most socio-economically vulnerable neighbourhoods and municipal districts were determined to be Overbrook in Ottawa, and Lac-Beauchamp and Pointe-Gatineau in Gatineau. These neighbourhoods had higher rates of intersecting vulnerability indicators compared to other neighbourhoods in the LSA (Table 15-1 and Figure 15-3).

Table 15-1: Vulnerability analysis of socio-economic indicators for neighbourhoods in the LSA

Vulnerability factors			
	Overbrook	Lac-Beauchamp	Pointe-Gatineau
Unemployment	✓	✓	✓
1-parent families	✓	✓	✓
Persons with no certificate, diploma, or degree	✓	✓	✓
Median adjusted income after tax - Low-income measures after tax, for the population as a whole and for persons 65+	✓	✓	✓
Rate of persons living in low-income	✓	✓	✓
Unsuitable housing	✓		

Canada



15.1.3 Green Spaces and Recreation

Green spaces—such as parks, community gardens, and natural areas—play a vital role in supporting both individual well-being and the health of communities. They provide accessible places for physical activity, relaxation, and social interaction, which can reduce stress, improve mental health, and encourage healthier lifestyles. In addition, green spaces help strengthen community bonds by serving as shared environments where people of different backgrounds can gather, interact, and build relationships. Environmentally, they contribute to cleaner air, lower urban temperatures, and improved biodiversity, making cities more livable and resilient. Overall, green spaces are essential not only for enhancing quality of life but also for fostering stronger, more connected, and sustainable communities.

Figure 15-4 shows green spaces in vicinity of the Project. Green spaces will be considered in the design, planning and conception of the Project.

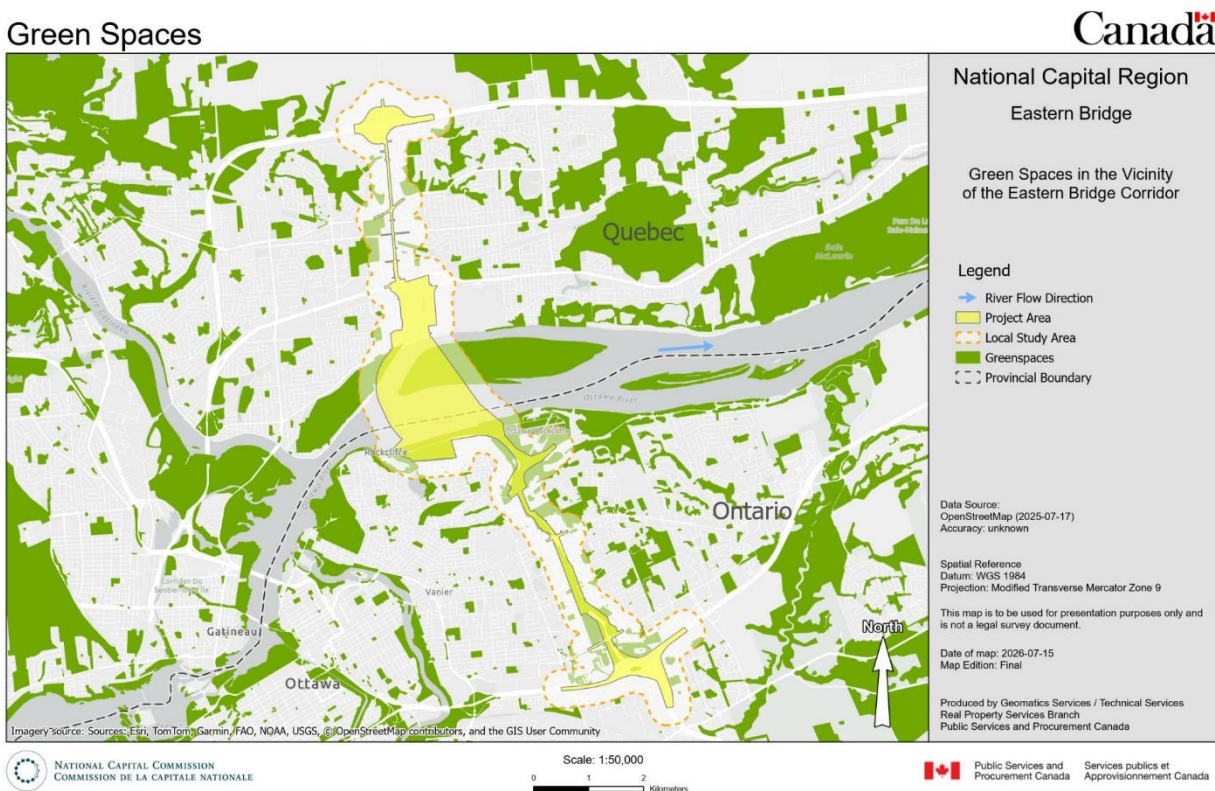


Figure 15-4: Green Spaces in the Eastern Bridge Project Corridor

Several pathways provide access to green spaces for recreational activities, offering residents and visitors a well-connected network to experience the region's natural and urban environments. The Capital Pathway is a cornerstone of this network, comprising over 200 kilometres of off-road, multi-use pathways across the NCR. It forms an integrated system of discovery routes that enable active transportation and leisure travel while linking major destinations, parks, and cultural sites. The pathway network traverses a wide range of landscapes, from dense urban cores and suburban neighbourhoods to agricultural lands and forested areas, providing diverse scenic experiences throughout the seasons.

Key segments such as the Ottawa River Pathway and the Aviation Pathway run parallel to the SGEK Parkway, creating convenient and continuous east-west connections between downtown Ottawa and communities further east. These pathways are designed to accommodate a variety of users, including pedestrians, cyclists, and rollerbladers, supporting both recreational use and active commuting. They also provide direct access to notable destinations such as the NCC River House, enhancing opportunities for waterfront recreation and social gathering.

On the Québec side, the Gatineau section of the Route verte network further strengthens regional connectivity. Extending along Montée-Paiement west of the Tecumseth Golf Course and continuing to Jacques-Cartier Street, this network offers hundreds of kilometres of interconnected multi-use pathways that support long-distance cycling and local recreational use. Complementing this system is the Sentier de la rivière Gatineau, a scenic pathway that follows the shoreline of the Gatineau River and links seamlessly with the Route verte, thereby expanding access to natural corridors and waterfront landscapes.

Together, these pathways form a comprehensive and accessible recreational network that encourages physical activity, active transportation, and outdoor exploration. They are heavily used year-round by residents and visitors for walking, cycling, jogging, and other activities, while also providing opportunities to experience the ecological and cultural character of the riverfront and surrounding green spaces.

15.1.4 Community Facilities

The Project supports broader aspects of community well-being and quality of life. The NCR is generally regarded as a region with a high quality of life and has been rated as one of the most livable cities in Canada and worldwide (Mercer LLC 2024). The region provides residents and visitors with year-round access to parks, trails, events, and spaces that promote healthy lifestyles. The Project contains multi-use trails and parks along both shores of the Ottawa River, within the right-of-way South of Montée-Paiement in Gatineau, and in the Aviation Parkway corridor in Ottawa. Other public recreational opportunities exist in the area, including the Canada Aviation and Space Museum and the RCMP Stables. Private recreational facilities include the Club de Golf Tecumseh in Gatineau, and the Rockcliffe Yacht Club, Flying Club and the Beechwood Cemetery National Historic Site of Canada in Ottawa. Improving connectivity within the existing network of multi-use trails and between public spaces will be a core design principle for the new interprovincial crossing.

In addition to recreational and cultural resources, access to essential health services is a key consideration within the LSA. Hôpital Montfort is located on the eastern side of Aviation Parkway in Ottawa and is the only primary care facility in the LSA. In 2022 it had 2,300 staff and 309 beds (Hôpital Montfort 2024). Maintaining access to the hospital during construction and improving access during Project operation will be important considerations during the design and pre-construction phases.

Arts, culture and recreational facilities activities broadly include social, arts, cultural, or leisure pursuits undertaken for enjoyment. These resources are vital assets that significantly contribute to overall community wellbeing. The Ottawa River is used extensively for many water-based recreational activities, including swimming, fishing, sailing, boating, sailboarding, kiteboarding, canoeing, and kayaking. More information is available in Section 15.5.

Education and skills training include the transfer of knowledge through both formal and informal methods. These processes impact the well-being of individuals, families, and communities by shaping collective skills and knowledge base. For individuals and households, education offers the academic or vocational qualifications necessary for personal growth and potential employment opportunities. There are several schools located in proximity to the Project, notably in Gatineau, École de la Montée and École secondaire du Versant, while in Ottawa, College La Cité.

Healthcare facilities and services have a direct impact on the well-being of individuals and communities. For individuals, families, and households, these facilities and services are essential in maintaining physical health, fostering a sense of safety, and ensuring well-being both daily and during crises. There are several health care providers and commercial outlets located along the Project's corridor.

Seniors' residential facilities encompass a range of housing options designed to meet the needs of older adults. These facilities can vary from independent living communities to assisted living and nursing homes, each offering different levels of care and support. They are often characterized by the presence of specific amenities and services tailored to seniors' needs, such as medical care, social activities, and assistance with daily living.

Figure 15-5 and Figure 15-6 shows the arts, culture, recreational, daycare, educational near the LSA. These are important considerations when evaluating potential social and cultural effects of the Project and will be considered in Section 18.5.

Community Facilities in Gatineau

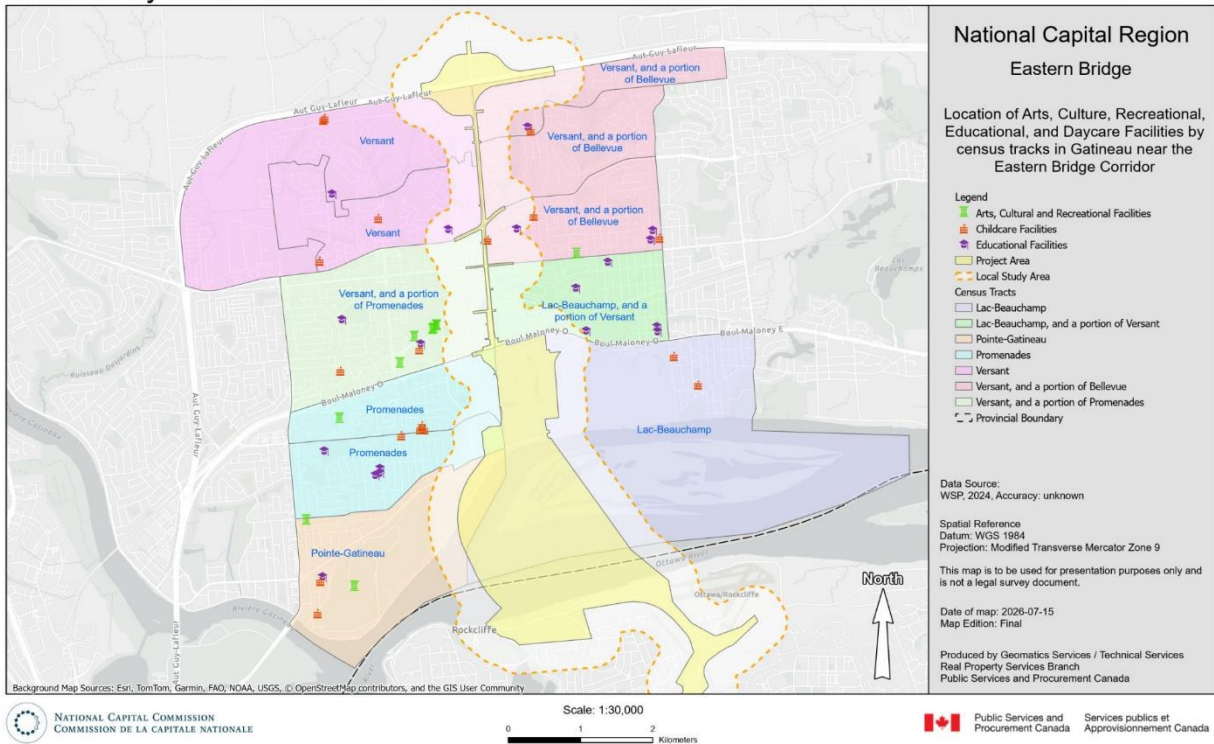


Figure 15-5: Location of Arts, Culture, Recreational, Educational, and Daycare Facilities in Gatineau.

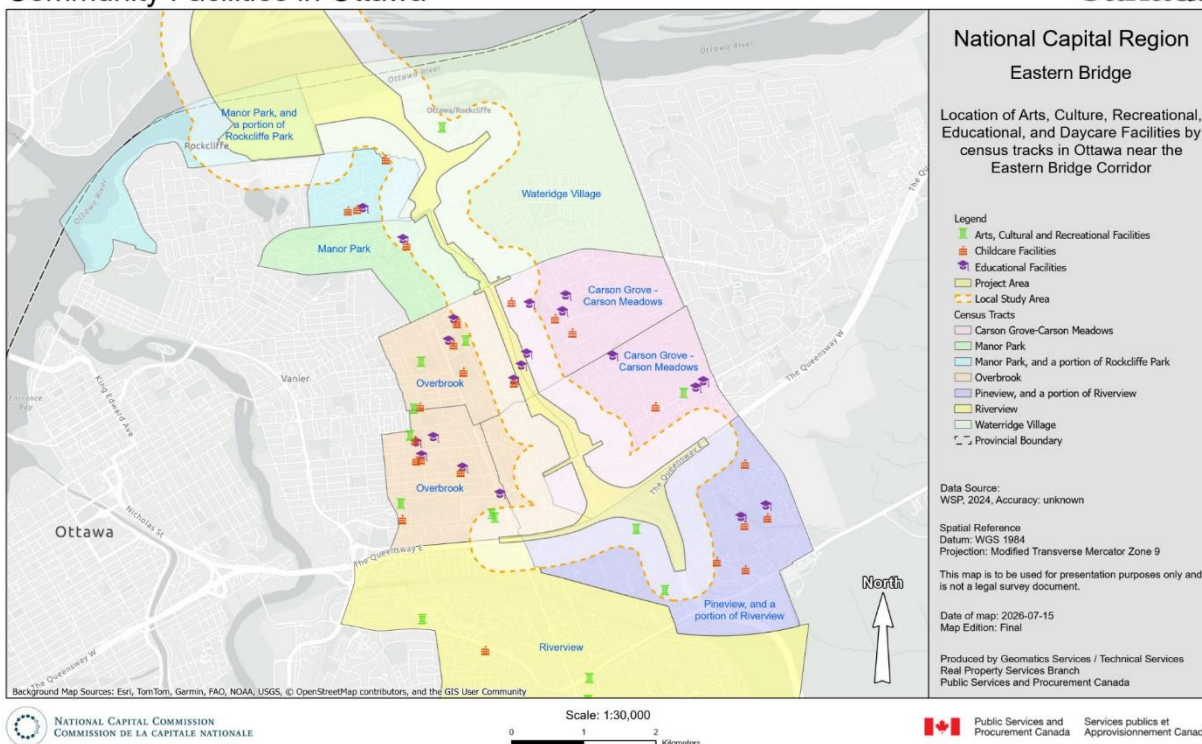


Figure 15-6: Location of Arts, Culture, Recreational, Educational, and Daycare Facilities in Ottawa.

15.2 Human Health Context

Noise, vibrations, and air quality are factors that can affect human health; these are discussed separately in Sections 14.1.1 and 14.1.2, respectively. Potential impacts of noise, vibrations, and reduced air quality on human health are assessed in Sections 19.3.1 and 19.3.2. In addition to these environmental stressors, access to safe and reliable drinking water is a key consideration in the assessment of potential human health effects.

Drinking water infrastructure in the cities of Ottawa and Gatineau was evaluated to determine potential interactions with the Project. Both cities draw drinking water from the Ottawa River (Gatineau also draws water from the Lièvre River, to serve the Buckingham sector). Ottawa's water intakes are located at the Lemieux Island and Britannia Water Purification Plants (City of Ottawa, n.d.), approximately 13.5 km and 6.7 km upstream of the Project, respectively. As the Project is located well downstream of these facilities, it is not expected to result in adverse effects on the drinking water quality of Ottawa residents. The City of Gatineau operates three drinking water intakes on the Ottawa River (Ville de Gatineau, 2026b). Two intakes, supplying the Aylmer and Hull sectors, are located upstream of the Project at distances of approximately 19.6 km and 8.5 km, respectively. Since the Project is located downstream of these facilities, no adverse effects on drinking water quality for these sectors are anticipated. However, Gatineau's third drinking water intake is located on the North shore of Kettle Island and is within alternative corridors under assessment for the bridge location (see Section 12.2.1). Among the three proposed bridge alignments, the West Alignment lies within the Intermediate Intake Protection Area approximately 750 m upstream of the intake, the East Alignment crosses the Immediate Protection Area approximately 350 m upstream from the intake, and the Straight Alignment passes directly over the intake. This facility supplies drinking water to approximately 117,000 residents (2018 data), primarily within the Gatineau sector (ABV7, 2021). Its location within the Project indicates the potential for adverse effects in the event of an accident or malfunction during the

construction or operational phases of the Project, as well as from runoff containing contaminants associated with seasonal maintenance activities.

15.3 Cultural Heritage

The Project and bridge will be an important addition to the waterfront and river panorama of both Gatineau and Ottawa and will be visible from trails and public spaces in both cities. This cultural landscape context will be an important consideration in the design of the Project.

The NCR has a rich and deep history. The Ottawa River - Kichi Zībī (Great River) in Algonquin - is at the heart of the traditional territory of the Algonquin Nation and has served as a major transportation route for trade, gatherings and celebrations for thousands of years. The river remains a culturally significant feature within the broader Indigenous cultural landscape (see Sections 15.4 and 20.1).

As noted in Section 14.1.4, the Ottawa River is designated as a Canadian Heritage River under Canada's National River Conservation Program and represents an important ecological, historical, and recreational feature of the NCR. The designation, granted in 2016, recognizes the river's outstanding cultural heritage, economic, natural and spiritual values. In addition to its significance as the cultural heartland of the Algonquin People, the river supported early European exploration and the fur trade, facilitated industrial logging and hydroelectric development, and played an important role in the development of Canada and the choice of Ottawa as the national capital (Canadian Heritage Rivers System, 2025). Today, uses are focused primarily on recreation, tourism, and environmental protection.

Most federal lands within the LSA are part of the National Interest Land Mass (NILM), which supports the symbolism, functions, physical structure, and natural and cultural landscape qualities of the NCR (NCC, 2021b). NILM lands include the Quebec and Ontario shorelines, Kettle Island, Montfort Woods, the Sir George-Étienne Cartier (SGEC) Park Cultural Landscape and the Aviation Parkway (RCI, 2026).

Kettle Island is a NILM of ecological and heritage significance (RCI, 2026). It is the third-largest island in the Ottawa River and the largest natural terrestrial habitat in the LSA. As discussed in Section 14.2.2, most of the island is owned by the Nature Conservancy of Canada and is designated as ecologically sensitive. It is also designated as a nature reserve under Quebec's *Natural Heritage Conservation Act*.

The Sir George-Étienne Cartier (SGEC) Park Cultural Landscape is identified by the NCC as a cultural landscape of capital value (CBCollective, 2022). Shaped by over a century of capital planning, it comprises a Capital parkway corridor within a large, naturalized setting that includes cultivated and open parkland, treed areas, recreational pathways, an airport, a museum, and a police campus. This broader cultural landscape includes three distinct components: the Rockcliffe Park Cultural Landscape, the RCMP National Division (N-Division) Cultural Landscape and the Ottawa/Rockcliffe Airport Cultural Landscape.

The Rockcliffe Park Cultural Landscape includes historic picturesque parklands at the western end of the SGEC Park Cultural Landscape. It is associated with historic Indigenous transportation routes and reflects a strong relationship to ideas about picturesque landscape traditions and capital-making. The RCMP National Division (N-Division) Cultural Landscape consists of a collection of institutional buildings set within a grassed and treed landscape located to the southwest of the Aviation – SGEC Parkways. The physical features in this area support key RCMP traditions, including the Musical Ride, and the Capital's federal identity. The Ottawa/Rockcliffe Airport Cultural Landscape, located at the northern end of the Aviation Parkway, includes runways, airport buildings, the Canadian Aviation and Space Museum (CASM), and a surrounding landscape composed of treed grassy fields. It reflects historic federal military use and both past and ongoing aviation activities.

The Aviation Parkway itself is also identified by the NCC as a cultural landscape. Constructed over three decades, its character changes as a reflection of evolving NCC planning and design standards. The first of three phases of

construction began in 1958 between Montreal and Ogilvie roads, concurrent with the development of several federal buildings along Montreal Road, including the Canadian Mortgage and Housing Corporation (CMHC) headquarters, the Forest Products Laboratory and the National Research Council. The Aviation Parkway was intended both as part of the Capital parkway network and as a means of reducing traffic pressures to and from the newly constructed Queensway. The initial section was connected to the Queensway in 1978, and the final northern extension from Montreal Road to the Rockcliffe Parkway was completed in 1988, providing access to the CASM.

In addition to these NILM and cultural landscapes, several cultural heritage sites are located within the Local Study Area (LSA). Beechwood Cemetery, established in 1873, is approximately 400 m west of the Aviation Parkway, just outside the LSA. It is a National Historic Site of Canada and includes the National Military Cemetery of the Canadian Forces. The NCC River House/Ottawa New Edinburgh Club Boathouse, located along the SGENC Parkway at the western end of the LSA, was constructed between 1914 and 1925 and is both a Recognized Federal Heritage Building and designated under Part IV of the *Ontario Heritage Act*. The western end of the LSA also includes part of the Village of Rockcliffe Park, a Heritage Conservation District designated under the *Ontario Heritage Act* and a National Historic Site. Although not formally designated, the CMHC head office (built 1950-52), located on Montreal Road near the Aviation Parkway, is identified as a notable building and a landmark that influenced the design of the Aviation Parkway.

Several built heritage resources identified by the City of Gatineau in their Traditional Built Heritage Inventory (Inventaire du patrimoine traditionnel) (Ville de Gatineau, 2026a) are located within the LSA, including four dwellings along Rue Saint-Louis and an abandoned house at the Montée-Paiement off-ramp. Of these, 571 Rue Saint-Louis and 827 Montée-Paiement fall within the proposed corridor alignment and are likely to be directly impacted by the Project. Heritage sites within the LSA include an abandoned barn on chemin des Terres, an occupied house on Rue Vallière, and several additional dwellings along Rue Saint-Louis.

The City of Ottawa has identified four heritage parcels within the LSA. These include three properties designated under the *Ontario Heritage Act* - 9 Crescent Road (Casa Loma, built in 1911), 559 Lang's Road (Crabtree House, built in 1947), and 275 St. Laurent (built in 1912) – as well as one property, a house at 701 Montreal Road, that's listed on the City's Heritage Register (City of Ottawa, 2026).

15.4 Archaeological Potential

The Ottawa River has played a central role in the history of Indigenous peoples in the region. Indigenous people, including the ancestors of the Anishinabe and Haudenosaunee who currently live in the region, have lived, traveled, hunted, farmed, and traded along the river for thousands of years. The LSA is in the traditional territory of the Anishinabe Algonquin Nation, and archaeological evidence of human occupation in Ottawa and Gatineau dates back at least 8,500 years. Although the first permanent European settlers did not arrive in Ottawa-Gatineau until 1800, European activity in the area began as early as the 1600s when explorer Samuel de Champlain traveled up the Ottawa River and eventually arrived at Georgian Bay.

With the area's long Indigenous history and relatively early date of European contact compared to much of North America, the LSA contains known archaeological sites and areas of both pre-contact and historical archaeological potential. Archaeological studies for other projects in the area began as early as 1993 when Ethnoscop Inc. prepared an archaeological assessment for shoreline stabilization works along the Ottawa River in Gatineau. Archaeological inventory of Kettle Island began in 2008, which included test pit survey at three locations on the island's western tip. Archaeological studies for a new interprovincial bridge began in 2008 when Arkeos completed an initial evaluation of archaeological potential along 10 alternative corridors on Québec lands. ASI (2008) also completed a complementary Stage 1 Archaeological Assessment at the same time for the 10 corridor alignments on Ontario lands. These evaluations were updated for Phase 2B of the original environmental assessment (Arkeos 2012). In 2013, ASI completed an additional Stage 1 archaeological assessment of the three alternative corridors shown in Figure 1-4.

In the Ottawa area, the NCC's mapping shows areas of medium pre-contact archaeological potential within the LSA to the South and East of the interchange of Aviation Parkway and Hemlock Road, and at the western edge of the LSA in the area generally encompassed by Hillsdale Road (Figure 15-7). The remainder of the LSA in Ontario is mapped as having low pre-contact archaeological potential by the NCC. The Stage 1 conducted by ASI in 2013 merged pre-contact and historical archaeological potential and identified much of the Ottawa side containing archaeological potential. Three registered Euro-Canadian archaeological sites—Upper Lang, Lower Lang, and the McLaughlin Site—are located less than 100 m East of the LSA North of Hemlock Road (ASI 2013). A known Euro-Canadian historic feature is located next to the eastbound ramp from Aviation Parkway to Promenade SGEC (ASI 2013).

Pre-Contact Archaeological Potential

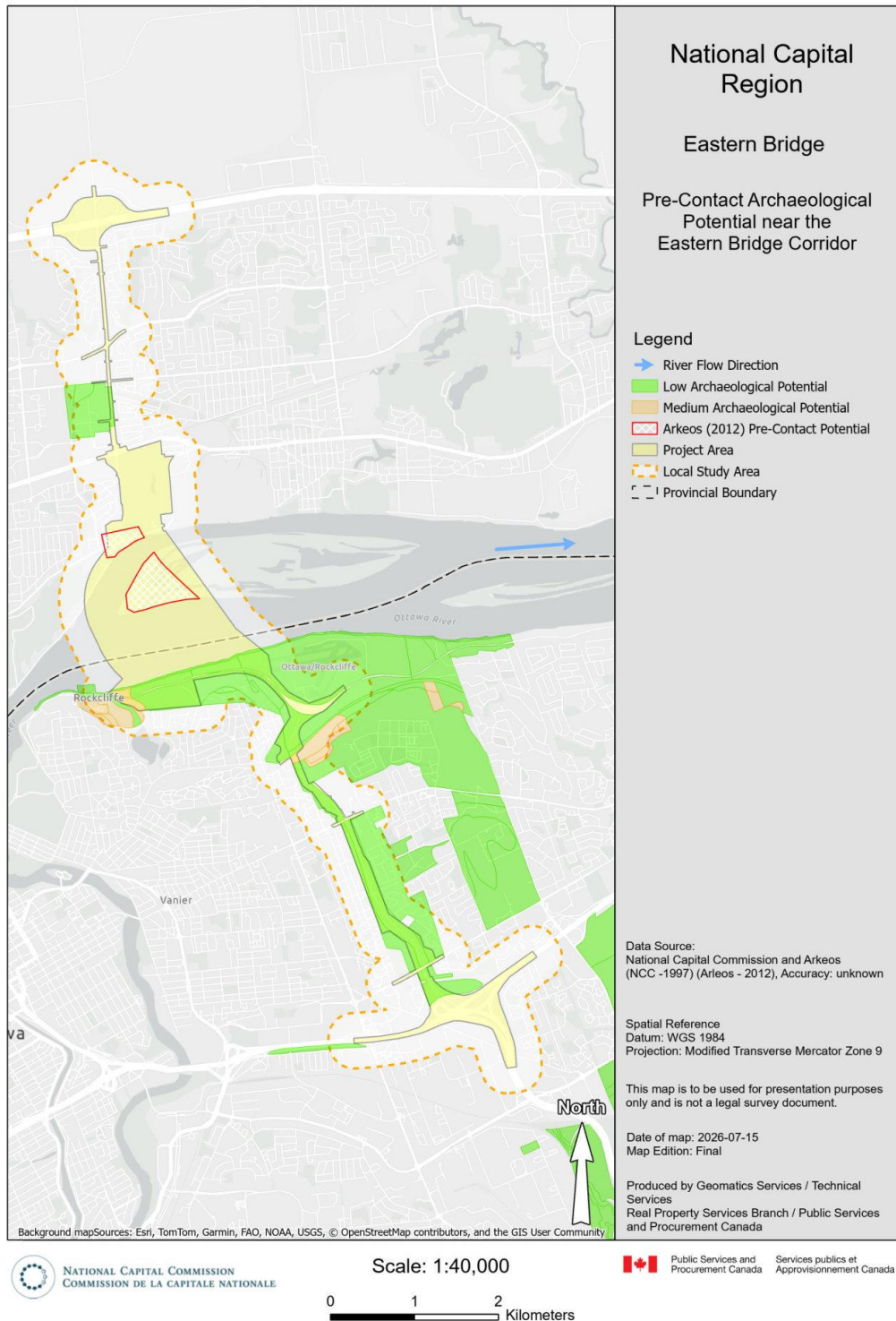


Figure 15-7: Pre-Contact Archaeological Potential near the Proposed Crossing

In Québec, the areas of greatest archaeological potential are the shorelines and the western end of Kettle Island as well as the shoreline of the Ottawa River in Gatineau (Ethnoscop Inc. 1993; Miller 2008; Arkeos 2012). These areas have both pre-contact and historical archaeological potential. At the western tip of Kettle Island less than 100 m West of the LSA is Pointe Duval, is a registered Euro-Canadian archaeological site (Miller 2008; Arkeos 2012). Additional research has identified secondary sources of historical accounts of human remains and artifacts found on the western part of the island in the 1800s (Ottawa Citizen 1879; Ottawa Daily Press 1880; Ottawa Citizen 1883; Ottawa Journal 1889). The current location of the artifacts and human remains mentioned in the articles is unknown. Further archaeological studies have been recommended to determine if the LSA extends into the site and to evaluate potential impacts (ASI 2013).

At least two shipwrecks—the *Maggie Bell* and *Quinte Queen*—are known to be in the Ottawa River to the West of Kettle Island but only approximate locations have been mapped (Maika pers. comm. 2025). Further marine archaeological assessment has been recommended to refine the locations of the wrecks and evaluate potential impacts (ASI 2013).

A protocol between the NCC, KZA and AOPFN, signed on August 22, 2012, and updated on March 13, 2017, provides a framework for the engagement of KZA and AOPFN in all stages of archaeological investigations undertaken on NCC land. It provides for opportunities for KZA and AOPFN to be involved in the decision-making process regarding the co-management of archaeological resources discovered through investigations or construction and development work.

When the preferred alternative is refined, any lands not previously subject to background research will undergo an archaeological overview assessment. An archaeological inventory will be undertaken within the PA in areas of archaeological potential (see Figure 15-7) once the preferred alternative is refined.

15.5 Waterway Navigation

The Ottawa River from Lake Timiskaming to its confluence with the St. Lawrence River is a designated Canadian Heritage River, which reflects its immense ecological, historical, and cultural significance. The Ottawa River is considered a navigable waterway under the federal *Canadian Navigable Waters Act*, as shown in Figure 15-8. Boaters can travel the river unimpeded from Chaudière Falls in Ottawa to the island of Montreal, a distance of over 150 km, having region-wide access through the waterways and canal systems. For sailboats however, the disadvantage is that the river (particularly the navigable channel) is much narrower, the river current is correspondingly stronger, and there are few areas appropriate for sailing, especially in larger boats.

There are marinas, boat ramps, and other access points on both the Ontario and Québec shorelines along this reach of the river

The NCC River House, Ottawa New Edinburgh Club and Rockcliffe Yacht Club are located within the LSA. In addition, the clubs have sailing schools located in the immediate vicinity of this section of the river, which is extensively used for regattas and leisure sailing.

There is a public marina on Rue Jacques-Cartier in Gatineau (DFO 2022) and many residential properties along the Gatineau shoreline have private docks. Several commercial boat operators currently offer tours of the Ottawa River which traverse the LSA. A submarine pipeline crosses the Ottawa River about 400 m West of Kettle Island (DFO 2022).

Recreational fishing on the Ottawa River is a year-round activity in the LSA. South shore access is provided at the Rockcliffe Yacht Club and a public boat launch at the North end of Blair Road. North shore access is available at Marina Kitchissippi de Gatineau and Marina LeBlanc.

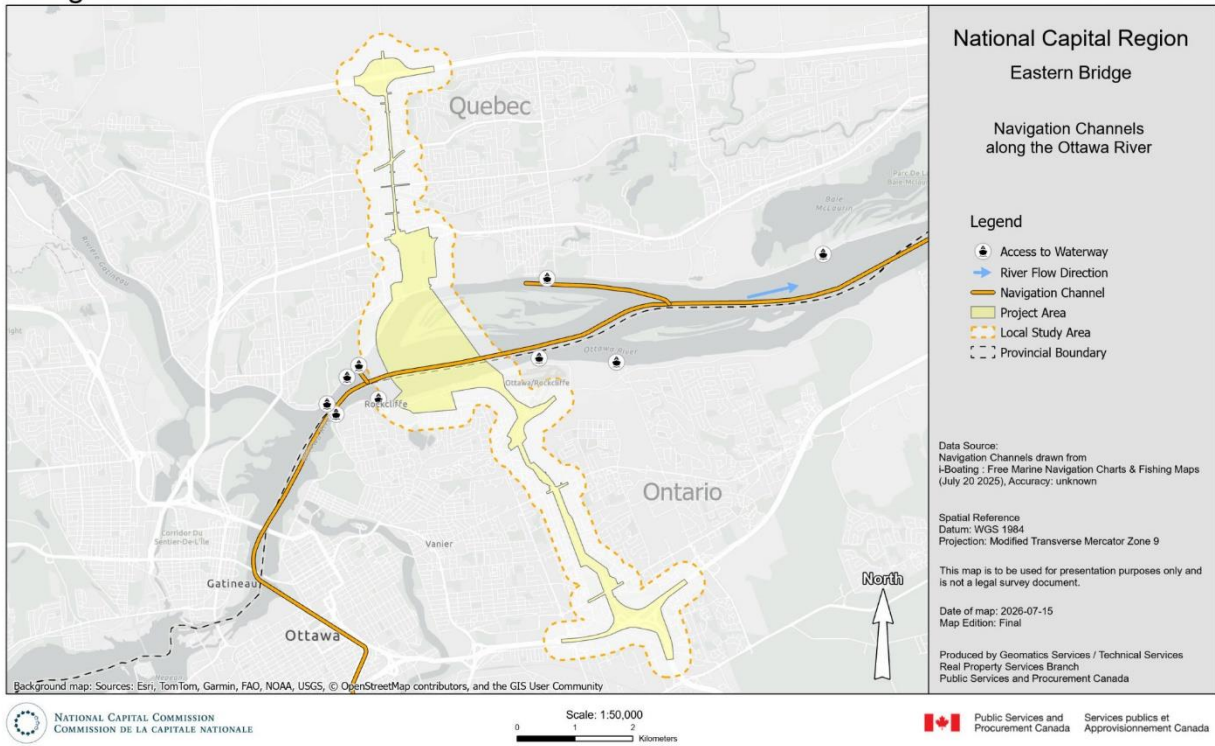


Figure 15-8: Navigation Channel in Proximity to the Proposed Crossing

15.6 Transportation Context

Although the NCR includes cities and municipalities from both the provinces of Ontario and Quebec; it functions as one metropolitan region and this is especially true in terms of transportation. The Ottawa River, the boundary between both provinces, is crossed by six bridges within the NCR, mainly in the core area. All interprovincial bridges within the NCR, except for the Chief William Commanda Bridge, are under federal jurisdiction. The NCC also owns and operates the parkways, which provide scenic links to downtown and to important landmarks. The highway system is mostly under provincial jurisdiction (Ministry of transportation of Ontario (MTO) and Ministère des transports et de la mobilité durable (MTMD)). Transit services are provided by the Société de transport de l'Ottawa in Gatineau and OC Transpo in Ottawa while rural transit services are provided by Transcollines and private providers. In terms of rapid transit, Ottawa is served by the O-Train, a light rail transit system, and Gatineau is served by the Rapibus, a bus rapid transit system. The transit system is designed to provide significant capacity to and from the core area of the NCR, serving a significant proportion of the employment opportunities. Within the NCR, the distribution of population and major employment centres creates strong directional imbalances across the bridges during peak periods. Peak travel direction is towards Ottawa during weekday morning and towards Gatineau during the afternoon period. Figure 15-9 provides a visual representation of the transportation context in the NCR.

To allow for the movement of goods within the NCR, a subset of the road network is designated as a truck route by municipal and provincial authorities. The highways are generally preferred for trucking except for first and last miles, where the municipal road network is used. While the movement of goods using commercial vehicles is permitted on two of the five interprovincial bridges, there are currently no interprovincial highways directly connecting the Ottawa and Gatineau highway system. Most interprovincial goods cross the Macdonald Cartier bridge (70%) and travel through the dense downtown streets of Ottawa including King Edward Avenue, designated as a capital entrance. Most of the remaining interprovincial trucks use the Chaudière Crossing, a two-lane bridge passing through an area of the downtown core undergoing important densification efforts.

The increase in population, economic activity and travel pressure will continue to exert pressure on the existing transportation network. Consequently, as highlighted by current federal plans, there is a need to maintain regional integration and strike a balance between mobility and livability while prioritizing the transition towards sustainable travel.

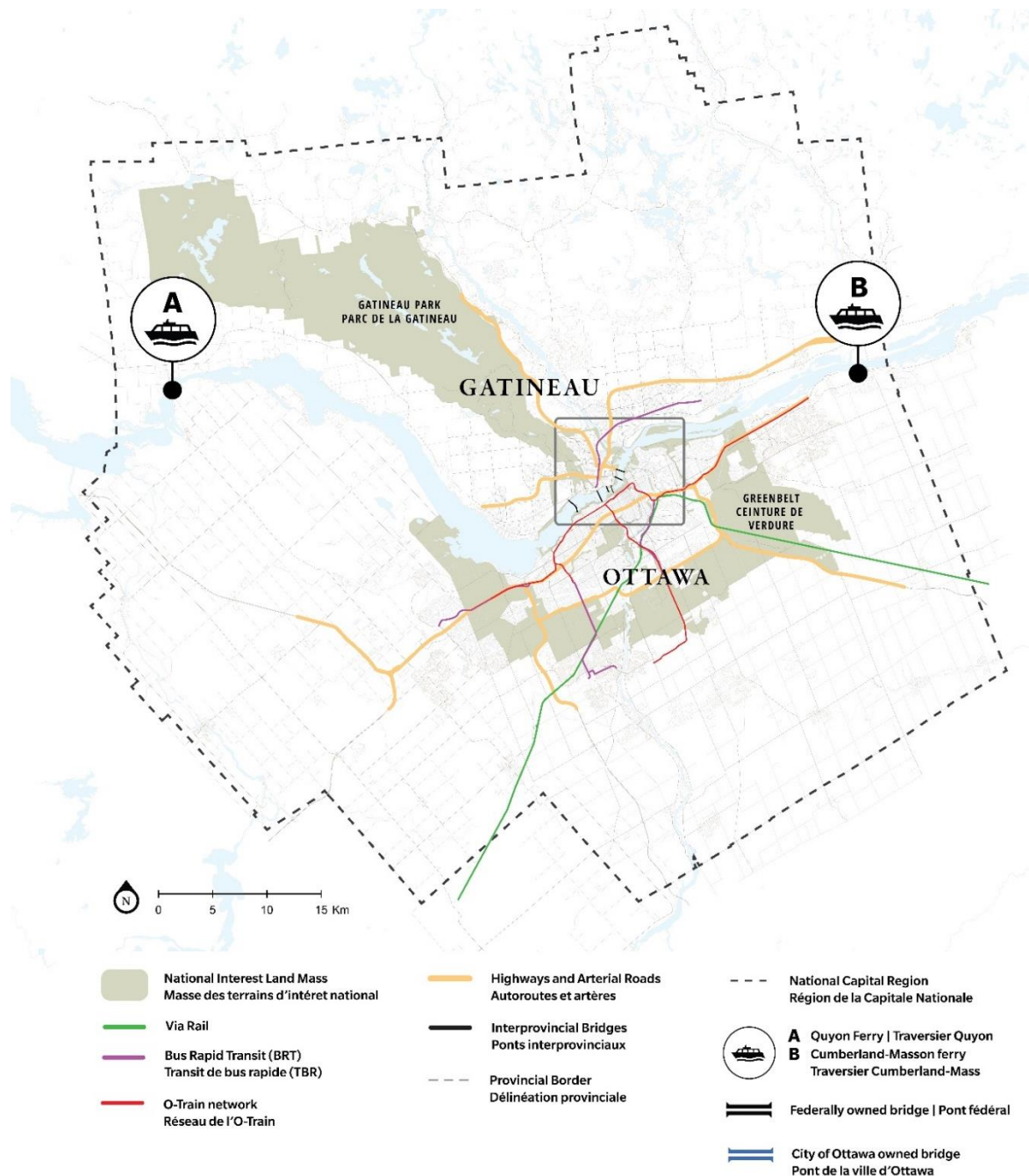


Figure 15-9: NCR Transportation Context (NCC)

15.7 Economic Context

The Ottawa-Gatineau CMA generated a total Gross Domestic Product (GDP) of over \$98 billion in 2021 (Statistics Canada 2025a), more than 80% of which was generated by the Ontario part of the CMA. Statistics Canada does not publish CMA-level data on GDP contributions by industrial sector, but the dominant industrial sectors by number of employees can provide some indication: using the North American Industry Classification System (NAICS), the

largest industrial sectors in Ottawa-Gatineau in 2024 were public administration; healthcare and social assistance; wholesale and retail trade; and professional, scientific, and technical services (Statistics Canada 2025b).

In terms of GDP, the economy of Ottawa-Gatineau has been stable relative to most other Canadian CMAs, largely because some of the dominant industrial sectors (e.g., public administration, healthcare and social assistance, and professional, scientific, and technical services) have been stable. The CMA fared better than most of Canada during the COVID-19 pandemic in 2020; although the CMA's GDP growth weakened during this period, it recovered significantly in 2021 (see Figure 15-10).

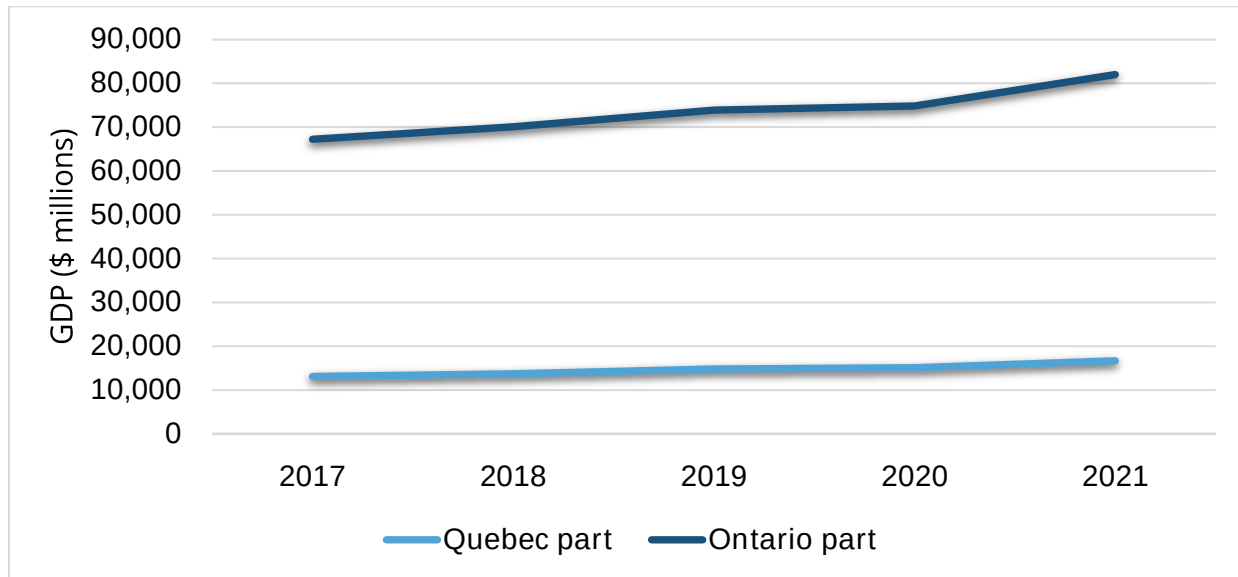


Figure 15-10: GDP (\$ millions) generated in the Ontario and Québec portions of the Ottawa-Gatineau CMA (Statistics Canada 2025a)

15.7.1 Employment

The NCR has a workforce of over 1.2 million workers whose demographics reflect the linguistic, ethnic, and cultural diversity of the region (see Table 15-2). Unemployment in the CMA has generally reflected national rates over time. The relatively high unemployment rate in 2021 was the result of the COVID-19 pandemic and reflects nationwide rates in the same year. Rates in 2024 were estimated to be lower: 7.1% in both Ottawa and Gatineau (Statistics Canada 2025c). Table 15-3 provides a breakdown of the labour force in the CMA by gender using Statistics Canada's (2022) National Occupational Classification (Statistics Canada 2025b).

Table 15-2: Ottawa-Gatineau CMA labour force breakdown in 2021 (Statistics Canada 2024)

Labour Force Status	Ottawa-Gatineau CMA Statistics		
	CMA	Ontario part	Québec part
In labour force	801,005	611,710	189,295
Employed	723,250	550,470	172,780
Unemployed	77,755	61,240	16,520
Not in labour force	412,345	318,175	94,170
TOTAL	1,213,355	929,885	283,465
Participation Rate	66.0	65.8	66.8
Employment Rate	59.6	59.2	61.0
Unemployment Rate	9.7	10.0	8.7

Table 15-3: Ottawa-Gatineau CMA labour force breakdown in 2021 by gender and occupation (Statistics Canada 2025b)

National Occupational Classification	Ottawa-Gatineau CMA Statistics		
	Men	Women	Total
0 Legislative and senior management occupations	7,965	4,270	12,235
1 Business, finance and administration occupations	54,680	107,210	161,890
2 Natural and applied sciences and related occupations	76,965	26,035	103,005
3 Health occupations	13,025	44,300	57,325
4 Occupations in education, law and social, community and government services	51,305	85,695	136,995
5 Occupations in art, culture, recreation and sport	11,940	15,795	27,735
6 Sales and service occupations	84,155	84,495	168,650
7 Trades, transport and equipment operators and related occupations	86,115	8,495	94,610
8 Natural resources, agriculture and related production occupations	7,320	1,950	9,270
9 Occupations in manufacturing and utilities	7,895	2,660	10,550
TOTAL	401,365	380,900	782,265

Part D: Federal, Provincial, Territorial, Indigenous and Municipal Involvement and Effects

16 Federal Financial Support

In 2018, the Government of Canada directed Public Services and Procurement Canada (PSPC) to update existing studies, refine cost estimates, and identify a preferred corridor for a new Eastern Bridge in the National Capital Region. To support this work, PSPC and the National Capital Commission (NCC) established an integrated project team to advance project planning. However, the onset of the COVID-19 pandemic led PSPC and the NCC to defer further analysis until updated household origin–destination and trucking data became available. The receipt of updated household survey data in 2022 enabled the project team to conduct a more comprehensive analysis of travel patterns and mobility behaviours and to develop an updated travel demand model. This work ultimately informed the recommendation submitted to the Government of Canada regarding the preferred corridor for the project.

In 2024, the Government of Canada approved the Montée Paiement–Aviation Parkway corridor as the preferred option for the Eastern Bridge project. The project also received funding to advance stakeholder engagement, agreements with Indigenous communities, undertake technical, exploratory, and environmental studies, and further develop design options and procurement strategies. In addition, the Government of Canada reaffirmed its commitment to the project through the 2024 Fall Economic Statement, confirming funding for the next phase of planning, impact assessment, design development, site preparation, and procurement activities.

The Eastern Bridge project is funded by the Government of Canada. While funding has been secured for the current planning and project development phases, funding for the final design and construction phases has not yet been approved. Proceeding with these phases will be contingent upon future funding decisions by the Prime Minister and the Minister of Finance. The funding currently allocated to support project advancement is projected to be exhausted in fiscal year 2027–28.

17 Regulatory Jurisdiction

This section presents a list of jurisdictions that have powers, duties or functions in relation to an assessment of the Project's environmental effects. The Project is expected to require permits, approvals, and/or licenses under federal, provincial, and municipal environmental laws and regulations outlined in the following subsections.

17.1 Federal

The Project is being evaluated according to federal impact assessment requirements under the IAA. PSPC and the NCC have prepared this Initial Project Description to initiate the planning phase of the federal impact assessment process. As a joint undertaking of PSPC and the NCC in the NCR, it is a Level 3 project under the *National Capital Act* and subject to the FLUDTA process.

Parks Canada may review the Project through the Federal Heritage Review Office to determine if there may be effects on the heritage character of the area. Parks Canada may also review and provide advice on archaeological studies for the Project. Certain design aspects of the new bridge may be required to conform with the *Accessible Canada Act*.

Table 17-1 provides an overview of potential federal environmental approvals required to build and operate the Project.

Table 17-1: Federal permits and approvals relevant to the Eastern Bridge Project

Permit or Approval	Legislation and Regulations	Administering Agency	Project Components or Activities	Project Stage
Impact Assessment Decision	IAA Physical Activities Regulations (SOR/2019-285)	Impact Assessment Agency of Canada (IAAC)	The Project is a new interprovincial bridge and therefore a designated activity under Section 48(a) of the Physical Activities Regulations. The Act requires that an Initial Project Description of designated activities be submitted to the IAAC who will determine if the Project requires an Impact Assessment. Following their review, IAAC may require that a Detailed Project Description be submitted. After posting the description and a notice on the Canadian Impact Assessment Registry (CIAR), IAAC will make a decision on the need for an Impact Assessment based on factors outlined in Section 16(2) of the IAA. If an Impact Assessment is required, the assessment will continue through the process outlined in the Act.	Planning
Approval	<i>National Capital Act</i>	NCC	Project will be constructed partially on federal lands in the NCR and the Proponent is a federal organization. The NCC is responsible for the Federal Land Use, Design and Transaction Approval (FLUDTA) process. As an interprovincial crossing, the Project is a Level 3 project under the FLUDTA process, and certain Project milestones may require approval from NCC's Board of Directors. A Level 3 project requires substantial Indigenous and public engagement led by the Proponent. In summary, due to its complexity, this Project will require approvals at various stages of design development. As a minimum, federal approval will be required at the concept design stage (approximately 15% design development), reference design stage (approximately 33% design development), preliminary design stage (approximately 66% design development), detailed design stage (approximately 99% design development). In the federal approvals framework, the construction period refers to the undertaking of works as approved in the federal approval letter.	Planning, Design
Fisheries Act Authorization	<i>Fisheries Act</i>	DFO	Project activities will take place in or near fish-bearing waters, including the Ottawa River. Sections 34 and 35 of the Act prohibit activities that result in the death of fish or harmful alteration, disruption, or destruction of fish habitat without prior authorization from the DFO. Alterations to features that contain fish and fish habitat, and collection/release of fish if required for in-water construction, will require authorization from DFO under the <i>Fisheries Act</i>. Section 36.3 of the Act, under the administration of ECCC, prohibits the deposit of a deleterious substance in fish-bearing waters.	Planning, Design
Canadian Navigable Waters Act	CNWA Major Works Order (SOR/2019-320)	Transport Canada	The Project is a new fixed-span bridge with piers below the ordinary high-water mark and therefore considered a major work under the Major Works Order. Further, the Project will be constructed over the Ottawa River which is a scheduled waterway under the CNWA. Major works and works over scheduled waterways require approval under the Act. An approval will	Planning, Design, Construction, Operation

Permit or Approval	Legislation and Regulations	Administering Agency	Project Components or Activities	Project Stage
(CNWA) Approval	Navigable Waters Bridges Regulations (C.R.C., c. 1231)		require that navigability be maintained during and after construction. The Minister of Transport, under the Navigable Waters Bridges Regulations, may prescribe requirements for lighting or markings of the bridge.	
Species at Risk Act Permit	SARA Permits Authorizing an Activity Affecting Listed Wildlife Species Regulations (SOR/2013-140)	DFO ECCC	Schedule 1 of SARA lists SAR that receive regulatory protection. Project activities that affect migratory bird SAR or their residences, other terrestrial SAR or their residences on federal land, or protected critical habitat for any terrestrial SAR will require a permit from ECCC. Project activities that affect aquatic SAR, their residences, or protected critical habitat of aquatic SAR will require a permit from DFO.	Design, Construction
Notification of Abandoned Nest	<i>Migratory Birds Convention Act, 1994</i> (MBCA) Migratory Birds Regulations, 2022 (SOR/2022-105)	ECCC	Construction of the Project must conform with the Regulations, which prohibit harm or destruction of listed migratory birds and their nests. This generally requires that vegetation clearing be conducted outside the most active bird nesting period (typically April 15 to August 15) and that any active nests of migratory birds discovered during construction be protected from harm. The Regulations have more specific requirements that may apply to the Project involving advance notice to the Minister of Environment to remove the inactive nests of for certain species set out in Schedule 1 of the Regulations (e.g., herons, egrets, Pileated Woodpecker).	Design
Damage or Danger Permit	MBCA Migratory Birds Regulations, 2022 (SOR/2022-105)	ECCC	Construction of the Project may require a Damage or Danger Permit if it will result in unavoidable damage, disturbance, removal, or destruction of a nest that contains a live bird or viable egg of a migratory bird species, or the unoccupied nest of a species listed in Schedule 1 of the Regulations.	Design, Construction
Aeronautical Assessment	<i>Aeronautics Act</i> Canadian Aviation Regulations (SOR/96-433)	Transport Canada	The <i>Canadian Aviation Regulations</i> define any building, structure, or object that is higher than 90 m above ground level and within 6 km of the centre of an aerodrome as an obstacle to air navigation. The Project is located within 6 km of the Ottawa/Rockcliffe Airport, which is an aerodrome as defined by the Act and may need to be appropriately marked and lit in accordance with the <i>Canadian Aviation Regulations</i> . Transport Canada will require an aeronautical assessment if the bridge structure or any equipment used to construct the bridge (e.g., cranes) reach a height that exceeds 90 m above ground level.	Planning, Design, Construction
Air Navigation Safety Review	<i>Civil Air Navigation Services Commercialization Act</i>	NAV Canada	As the Project is located in proximity to the Ottawa/Rockcliffe Airport, NAV Canada will need to review to assess potential impacts on air navigation safety.	Planning, Design, Construction

17.2 Provincial

This section is an overview of the permits, approvals, and/or licenses that may be required from provincial government agencies.

As a transportation project being undertaken by PSPC and NCC, which are federal authorities, the Project is not expected to require an environmental assessment under Ontario's *Environmental Assessment Act*. PSPC and NCC will notify Ontario's Ministry of Environment, Conservation, and Parks (MECP) about the Project to confirm requirements under the Act.

The Project has the potential to require an environmental assessment under Québec's *Environment Quality Act*. PSPC and NCC will work with the Direction générale de l'évaluation environnementale et stratégique of the MELCCFP to determine if the Project meets the following requirements:

- Within a waterbody, affect a cumulative distance equal to or greater than 500 m or are carried out over a cumulative area equal to or greater than 5,000 m² within the 2-year flood level of a river, or
- widening of a road designed for 4 lanes or more or whose right of way has a width equal to or greater than 35 m over a minimum length of 2 km situated within an urbanization perimeter.

During construction, the contractor will be required to adhere to provincial labour, health, and safety regulations. Approvals may be required from transportation agencies for works on their infrastructure, such as MTO and MTMD owned interchanges. This requirement will be further discussed with each agency as the Project progresses. Table 17-2 provides an overview of other Ontario legislation that may apply to the Project. Table 17-3 provides an overview of other Québec legislation that may apply to the Project.

Table 17-2: Ontario permits and approvals relevant to the Eastern Bridge Project

Permit or Approval	Legislation and Regulations	Administering Agency	Project Components or Activities	Project Stage
<i>Species Conservation Act</i> , 2025 Registration, Permit or Exemption	<i>Species Conservation Act</i> , 2025 Ontario Regulations (O.Reg.s.) O.Reg. 60/26, O.Reg. 75/26, O.Reg. 74/26, O.Reg. 61/26	MECP	If the Project may adversely affect species or habitats protected under Ontario's <i>Species Conservation Act</i> , 2025, the proponent may be required to comply with applicable regulatory requirements, which could include registering the activity with the MECP, obtaining a permit for higher-risk activities, or meeting conditions under an applicable exemption.	Design, Construction
Permit to Take Water (PTTW)	<i>Ontario Water Resources Act</i> O.Reg. 387/04	MECP	Certain construction activities may require the use or displacement of surface water or groundwater, which would require a PTTW under O.Reg. 387/04. However, diverting water for the purpose of establishing a dewatered area for construction of a bridge or pier does not require a PTTW. A PTTW would be required only if groundwater takings exceed 400,000 L/day and will be identified in the detailed design phase when dewatering or use of water for construction are determined.	Design, Construction
Class Environmental Assessment for Provincial Transportation Facilities and Municipal Expressways – Group B Project	<i>Environmental Assessment Act</i>	MTO	Modifications to an existing interchange that introduce or eliminate moves to or from any direction of a provincial transportation facility could be considered a Group B Project under the MTO Class EA process. Modifications are proposed to the existing interchange of Highway 417, Regional Route 174, and Aviation Parkway.	Design, Construction
Environmental Compliance Approval	<i>Environmental Protection Act</i> O.Reg. 255/11, O.Reg. 419/05, O.Reg. 406/19	MECP	Construction of Project components (i.e., stormwater, sewage, or water treatment infrastructure), including temporary infrastructure during construction, in Ontario outside of federal lands, may require Environmental Compliance Approval from MECP. The requirement for provincial Environmental Compliance Approval will be determined during the detailed design phase. Excess soils generated during construction activities in Ontario must be managed in accordance with Ontario Regulation 406/19 On-Site and Excess Soil Management.	Design, Construction

Permit or Approval	Legislation and Regulations	Administering Agency	Project Components or Activities	Project Stage
Heritage permit Excavation permit	<i>Ontario Heritage Act</i> O.Reg. 8/06, O.Reg. 9/06, O.Reg. 10/06	Ontario Ministry of Citizenship and Multiculturalism (MCM)	The Act prohibits the following: 1) Alteration, demolition, or removal of a designated heritage property without municipal approval 2) Excavation or alteration of a property that is of archaeological or heritage significance without a Project Information Form (PIF) submitted to the MCM by a licenced archaeologist An approval authority may issue an order for archaeological assessment if the Project requires excavation or earth disturbance outside of federal lands, if those lands may contain an artifact or archaeological site. O.Reg. 8/06 outlines the requirements for archaeological licences under the Act. O.Reg. 9/06 and 10/06 outline the criteria for determining cultural heritage value or interest. Requirements for archaeological or cultural heritage assessment will be determined in the planning and detailed design phase.	Planning, Design, Construction
Work Permit	<i>Public Lands Act</i> O.Reg. 239/13	Ontario Ministry of Natural Resources (MNR)	A work permit from MNR is required for construction activities on provincial Crown lands. Construction of piers, abutments, and other structures on the riverbed within the Province of Ontario may require a work permit under this Act.	Design, Construction
Occupation Permit	<i>Public Lands Act</i> <i>O. Reg. 161/17</i>	MNR	An authorization to occupy public lands is required for the bridge, a prescribed structure under this legislation (section 21.1) for piers and other permanent infrastructure located on the bed of the river.	
Section 28 Permit	<i>Conservation Authorities Act</i> O.Reg. 41/24	MNR	Review or permission from the Rideau Valley Conservation Authority may be required if Project activities extend outside of federal lands into areas regulated under O.Reg. 41/24 (typically floodplains, wetlands, and setbacks around those features). If a federal agency is planning a construction project within a Conservation Authority's jurisdiction that could impact a floodplain, they would typically consult with the Conservation Authority and potentially obtain necessary permits under the Act, but the Act is not directly applied to the federal government itself as it would be to a private landowner.	Design, Construction

Table 17-3: Québec permits and approvals relevant to the Eastern Bridge Project

Permit or Approval	Legislation and Regulations	Administering Agency	Project Components or Activities	Project Stage
Certificate of Authorization	<i>Environment Quality Act</i> Q-2, r. 23.1 Q-2, r. 17.1	MELCCFP	Construction of the Project may trigger the requirement for an environmental impact assessment under Section 31.1 of the Act. Schedule 1 of the Regulation respecting the environmental impact assessment and review of certain projects describes the types of projects that require an environmental impact assessment in Québec, including work in wetlands or waterbodies that affect a cumulative distance equal to or greater than 1,000 m or are carried out over a cumulative area equal to or greater than 15,000 m² within the 2-year flood level of a river. For road infrastructures, the widening of a road designed for 4 lanes or more or whose right of way has a width equal to or greater than 35 m over a minimum length of 2 km situated within an urbanization perimeter indicated in the land use planning and development plan applicable to the territory. The Project includes both road and bridge infrastructure where bridge piers and abutment will be in the portion of the Ottawa River under the jurisdiction of Québec. The federal <i>Impact Assessment Act</i> includes provisions for cooperation with provincial regulators on environmental assessments. The IAAC will prepare a cooperation plan which will outline timelines, roles, and responsibilities for a cooperative assessment. Subject to approval of the provincial Minister, there may be opportunities to harmonize certain aspects of the federal and provincial processes. If releases of contaminants, including sediment, during construction affect lands that are not federally owned, authorization from MELCCFP may be required.	Planning, Design, Construction
Authorization for work in wetlands and aquatic environments	<i>Environment Quality Act</i> Q-2, r. 0.2 Q-2, r. 9.1	MELCCFP	Construction activities in wetlands and waterbodies require authorization from MELCCFP under Section 22 of the Act. Regulation respecting activities in wetlands, bodies of water and sensitive areas outlines the standards that apply to work carried out in wetlands and waterbodies in Québec. Requirements for compensation are described in the Regulation respecting compensation for adverse effects on wetlands and bodies of water.	Design, Construction

Permit or Approval	Legislation and Regulations	Administering Agency	Project Components or Activities	Project Stage
Permit for work in a watercourse	<i>Watercourses Act</i> R-13, ss. 2 and 2.1	MELCCFP	An authorization to construct piers, abutments, and other structures in watercourses, including the Ottawa River, may be required from MELCCFP because a portion of the bed of the Ottawa River is in the jurisdiction of the Province of Québec.	Design, Construction
Authorization for archaeological assessment	<i>Cultural Heritage Act</i> P-9.002, r. 2.1	Québec Ministère de la Culture et des Communications (MCC)	Archaeological studies on lands within Québec provincial jurisdiction require authorization from the MCC.	Design, Construction
Projects classified according to levels of risk, which require different types of permitting requirements, including: - High risk: environmental impact assessment and review procedure (section 31.1); -Medium risk: ministerial authorization (section 22).	<i>Environment Quality Act</i>	MELCCFP	The type of permit or authorization, if required, will depend upon the extent of construction activities related to the Project, such as work on the interchanges, road widening or footprint within the aquatic environment.	Design, Construction
Permit for activities involving threatened or vulnerable species	<i>Act Respecting Threatened or Vulnerable Species</i> E-12.01, r.2, 3, and 5	MELCCFP	An authorization would be required from MELCCFP if species or habitats listed under the Act and its regulations may be harmed or destroyed on lands in Québec provincial jurisdiction.	Design, Construction
Permit for activities affecting wildlife or their habitat	<i>Act Respecting the Conservation and Development of Wildlife</i> C-61.1, r. 18	MELCCFP	Permits or authorizations may be required from MELCCFP if wildlife or habitats may be harmed by Project activities carried out on lands under Québec provincial jurisdiction. This may include the use of electrofishing for environmental studies undertaken for the impact assessment.	Design, Construction

Permit or Approval	Legislation and Regulations	Administering Agency	Project Components or Activities	Project Stage
Tree removal permit	<i>Tree Protection Act C- P-37</i>	MELCCFP	Removal of trees in Québec, in whole or in part, requires permission from MELCCFP.	Design, Construction
Permis d'occupation du domaine hydrique de l'État	<i>Act respecting the lands in the domain of the State C T-8.1</i>	MELCCFP	Certificate that authorises occupation of lands that form part of the domain of the State, including the beds of watercourses and lakes. The Minister may gratuitously transfer land or grant a servitude to a local municipality where it is required for the development of roads or public transport.	Design, Construction

17.3 Municipal

The Project is located in both the City of Ottawa, Ontario, and the City of Gatineau, Québec. As a federal undertaking on mostly federally owned land, some municipal by-laws and policies are not expected to apply to the Project. However, some Project elements that occur outside federal lands (e.g., stormwater infrastructure, construction staging) or on municipal lands (such as intersections) may be subject to municipal by-laws and policies. Therefore, approvals could be required from all transportation agencies for works on their infrastructure including City of Ottawa and Ville de Gatineau. This will be discussed with provincial and municipal agencies as the Project is better defined.

Ontario municipal by-laws and policies, which receive authority from the provincial *Municipal Act* or *Planning Act*, are not expected to apply to the Project since it is a federal undertaking. The Project is not expected to require planning permission under the City of Gatineau's Urban Plan or Zoning By-law. Likewise, it is not expected to require amendments or minor variances under the City of Ottawa's Official Plan or Zoning By-Law.

Removal of trees outside of federally owned land may be subject to the City of Gatineau's Woodland Protection By-law (225-2004) or the City of Ottawa's Tree Protection By-law. Permission from the forestry departments of one or both municipalities may be required, and there may be compensation requirements subject to the size and number of trees removed.

18 Potential Effects on the Environment within Federal Jurisdiction

In accordance with the *Information and Management of Time Limits Regulations* under the IAA, this section provides a list of potential non-negligible adverse changes that, as a result of the carrying out of the Project, may be caused to the following components of the environment that are within the legislative authority of Parliament:

- Fish and fish habitat (as defined in the *Fisheries Act*)
- SAR present on federal lands, including aquatic SAR (as defined in the *Species at Risk Act*)
- Migratory birds (as defined in the *Migratory Birds Convention Act, 1994*).

Effects discussed in this section are generally considered to fall under federal jurisdiction. However, in Section 18.3 (Effect on Species at Risk), not all species included are federally protected. Only species listed under SARA that occur on federal lands, as well as all aquatic species at risk listed under SARA are considered to be under federal jurisdiction.

Despite this, effects on all SAR and SoCC, because they are the same whether they are under federal jurisdiction or not, are presented as a whole in Section 18.3. Table 14-14 shows which SAR and SoCC are located on federal lands, and only nine species are under federal jurisdiction: Butternut, Common Nightawk, Bank Swallow, Barn Swallow, Eastern Meadowlark, Western Chorus Frog, Little Brown Myotis and Tri-colored Bat. This is in addition to Hickorynut, which is an aquatic species at risk and therefore under federal jurisdiction.

Adverse changes to the marine environment that are caused by pollution and that would occur outside Canada are not anticipated for this Project.

Potential effects of the Project on other components of the environment are discussed in Section 18.5.

Finally, the project planning continues and decisions regarding the alignment of the bridge, as well as modifications to some intersections, road configurations, construction staging, and temporary project components, have not yet been finalized. As such, the effects presented in this section, as well as sections 19, 20 and 21, reflect potential non-negligible adverse effects associated with the range of feasible project alternatives currently under consideration.

18.1 General Approach to Managing Potential Effects

The IPT's approach to managing potential negative effects follows a structured hierarchy to ensure impacts are addressed responsibly and effectively. The first and preferred approach is avoidance, where potential adverse effects are eliminated through thoughtful project design and site selection. If avoidance is not feasible, the next step is minimization, which involves modifying project activities or implementing best practices to reduce the intensity, duration, or extent of the impacts. When effects cannot be fully avoided or minimized, mitigation measures are applied to lessen their significance, often through engineered solutions or operational controls. Only when these primary strategies—avoidance, minimization, and mitigation—are insufficient, offsetting is considered. Offsetting involves compensating for residual negative effects by enhancing or restoring environmental values elsewhere,

ensuring a net benefit or no net loss. This hierarchical approach reflects a commitment to prioritizing proactive and preventative measures before resorting to compensatory actions.

Field studies occurred during the 2025/2026 season, and more are planned to occur in 2026/2027 field season to provide the data necessary to achieve this impact management approach.

18.2 Effects on Fish and Fish Habitat

For the purposes of this assessment, “fish” refers to organisms defined in s. 2(1) of the *Fisheries Act*, which includes fish, shellfish, crustaceans, and marine animals.

The conceptual design of the new bridge is being developed but it is expected that one or more piers and/or abutments will be constructed on the bed and shore(s) of the Ottawa River. Four other watercourses and several ponds that may support fish or fish habitat are in the Project corridor and could be temporarily or permanently affected by construction activities. The Project will have an in-water footprint and will require marine construction techniques, possibly including barges, marine cranes, and/or dredging equipment.

18.2.1 Construction

Construction of the Project could result in the following potential impacts on fish species and adverse changes to fish habitat:

- Destruction of fish habitat (e.g., loss underneath bridge piers, road embankments)
- Physical alteration of fish habitat through changes to the stream bed, bank, vegetation community, and/or flow
- Changes in fish habitat due to water quality changes such as changes in temperature regime, flow regime, increased sediments, or increased contaminants due to accidental releases. Death of fish caused by increased turbidity, physical contact with construction materials and equipment, stranding during temporary isolation measures, and/or accidental exposure to released contaminants

During construction, in-water work to construct the new bridge may include dredging, pile-driving, cofferdam installation, and/or dewatering, and these activities have the potential to cause harmful alteration, disruption or destruction of fish habitat and/or the death of fish in the Ottawa River. Construction of approach roads may require alteration of fish-bearing watercourses. Fish could be harmed directly by construction machinery or materials which enter the water or indirectly by fuels, oils, sediment or other pollutants spilled during construction.

Some or all in-water work areas will need to be isolated and dewatered to allow for construction. Fish, in areas to be dewatered, could be directly harmed by getting trapped in dewatering pumps or by being left stranded in a low-oxygen environment. Fish will need to be relocated from in-water work areas once piles/cofferdams are in place but before dewatering begins, and they could potentially be harmed in the capture and relocation process.

Fish spawning areas could be altered by construction (e.g., removal of aquatic vegetation or substrates required for spawning). Eggs or spawning fish in those areas could be harmed or destroyed by equipment and materials which enter the water.

Smaller drainage features in the LSA (e.g., ditches, tributaries, and headwater drainage features) could contain fish, but it is currently unknown whether modifications to these features will be required as part of the Project. If work such as culvert replacements, bank stabilization, or channel realignment results in modifications to these features, effects of construction on fish and fish habitat will be similar to those described above and will require avoidance, minimization or mitigation, and possibly offsetting.

It is expected that potential effects related to construction can be managed through regulatory processes related to the *Fisheries Act*. Details on potential avoidance and mitigation measures are presented in Section 18.2.4.

18.2.2 Operation

Operation of the Project could result in the following adverse changes to fish and fish habitat:

- Physical alteration of fish habitat through changes to shading and/or flow (e.g., scour) due to piers and/or abutments in the water
- Disruption of fish habitat (e.g., increase in suspended sediments or salt concentration)
- Death of fish caused by accidental releases of contaminants

There will be an overall net loss of aquatic habitat due to the construction of piers and/or abutments in the Ottawa River. Habitat will also be modified by scour of the riverbed caused by the presence of piers. The exact area and types of habitats affected will be determined in the detailed design phase of the Project. Avoidance of potential spawning habitat will be considered during the design phase, and the design will also help minimize the extent of habitat loss.

Fish are unlikely to be directly affected by typical operation of the new interprovincial bridge and related infrastructure. Fish habitat could be altered by shading of the river under the bridge and could be affected by maintenance of in-water structures such as piers and abutments. Indirect effects could arise from spills of salts, fuels, oils, or other pollutants from the bridge or runoff from the approach roads. De-icing salts applied in the winter could spill from the bridge into the Ottawa River and alter water chemistry, which could injure fish or affect reproduction (Hintz and Relyea 2017).

Some effects from Operations, such as scour, may be managed through provincial or federal regulatory processes. For indirect effects related to spills, these effects will need to be managed up front during the design phase of the project. Details on potential avoidance and mitigation measures are presented in Section 18.2.4.

18.2.3 Planning and Additional Studies

Field surveys were initiated in 2025 to identify the presence of fish (including SAR/SoCC) and fish habitat (including aquatic, semi-aquatic and riparian habitats) within the LSA. Survey methodologies were developed using recognized survey protocols. The IPT will seek advice from internal and external experts, including federal authorities (e.g., ECCC, DFO), and will engage with Indigenous communities to contribute Indigenous Knowledge. This additional information will support the design of the Project to ensure that potential effects are first avoided and minimized, before mitigation measures are required. Offsetting will only be considered as a last resort to reduce negative effects from the Project.

18.2.4 Avoidance and Mitigation Measures

18.2.4.1 Design Phase

Impacts to fish and fish habitat will be avoided through design to the maximum extent possible, including assessment of scour at the pier locations to determine the extent of potential impacts to water quality and fish habitat downstream and development of a stormwater management system to capture and treat surface water runoff from the bridge deck.

18.2.4.2 Construction Phase

Government agencies in both Ontario and Québec prescribe in-water work timing windows which ensure that construction occurs outside the spawning periods of key fish species. There are slight differences in the prescribed timing windows in Ontario and Québec, therefore construction phasing will consider the regulations in both provinces. Potential harm to fish during relocation from in-water isolated construction areas can be minimized by employing

experienced fisheries biologists and following best practices and standard protocols for fish relocation. The following mitigation measures will further reduce potential environmental effects of the Project on fish and fish habitat:

- Implement DFO's measures to protect fish and fish habitat (e.g., plan in-water work to respect timing windows, maintain riparian vegetation, maintain fish passage, safely capture and relocate fish that may become trapped in isolated or enclosed areas, design and implement proper sediment and erosion control, prevent entry of deleterious substances to the water)
- Control sedimentation, runoff and erosion through the following:
 - Stabilize all erodible areas (including excavated materials) and regularly inspect and maintain the stability of these areas until they are permanently stable;
 - Install settling basins and/or filtration systems for water flowing onto the site and water being pumped or diverted from the Project site such that water run-off meets the CCME's suspended solids thresholds before discharge into the receiving environment;
 - Proceed with dewatering gradually to prevent sediment resuspension and bank destabilization;
 - Maintain an undisturbed vegetated buffer zone of 15m between areas of on-land activity and the high-water mark of any waterbody;
 - Install structures to reduce scouring and sedimentation in aquatic areas intended to receive concentrated drainage.
- Implement relevant DFO standards and codes of practice to protect fish and fish habitat and mitigate intensity, spatial scale and duration of impacts (e.g., Interim standard: in-water site isolation, Interim code of practice: end-of-pipe fish protection screens for small water intakes in freshwater, Interim code of practice: bridge repair and maintenance, Code of practice: culvert maintenance, Interim code of practice: repair and maintenance of in-water structures)
- When using concrete, cement, mortars and other Portland cement or lime-containing construction materials in fish-bearing waters:
 - Prevent sediments, debris, concrete, and concrete fines and any water contacting uncured or partly cured concrete or Portland cement or lime-containing construction materials, including water that may be used for exposed aggregate wash-off, wet curing, equipment and truck washing, from entering the receiving environment directly or indirectly;
 - Use pre-cast concrete, instead of cast-in-place, unless not feasible;
 - Have a CO₂ tank with regulator, hose and gas diffuser, or other equivalent technology easily accessible during these project activities so that they can be deployed quickly to mitigate any spills that may occur and neutralize pH.
- Use only non-treated wood materials (e.g. pre-cast concrete, steel or plastic) for construction in fish bearing waters, where feasible. If the use of non-treated materials is not feasible, only use wood treated with water-based preservatives.
- Use only rock materials characterized as non-acid-generating and non-metal-leaching for project works
- Limit oxidation reactions in materials characterized as acid-generating and metal-leaching or potentially acid-generating and metal-leaching
- Avoid the introduction or propagation of aquatic invasive species by cleaning vehicles and equipment before entering the LSA and prior to leaving any known site with invasives species within the LSA
- If the use of explosives is required, avoid fish injury and mortality by ensuring the following thresholds are not exceeded (Guidelines for the Use of Explosives in or near Canadian Fisheries Waters), unless otherwise authorized by Fisheries and Oceans Canada:

- An overpressure of 100 kilopascals (kPa) in fish habitat;
 - Peak particle velocity of 13 mm•s⁻¹ in a spawning bed during the period of egg incubation.
- If pile driving is required in fish-bearing waters:
 - Give preference to the use of vibratory pile driving over impact pile driving unless not technically feasible as identified by a qualified individual;
 - Use sound attenuation method(s) and/or technology(ies) when conducting impact pile driving underwater;
 - Use soft start procedures for impact pile driving, where technically feasible, to gradually increase the sound levels emitted by pile driving equipment before use at full operational power;
 - Implement underwater noise monitoring during in-water pile driving activities during construction to maintain underwater peak sound pressure levels below levels that will cause injury;
 - Immediately halt pile driving if monitoring indicates that noise levels exceed the threshold or if fish mortality is observed, and do not resume without implementing sound attenuation measure(s) to reduce noise levels below the threshold.
- Offset unavoidable effects to fish and fish habitat through the *Fisheries Act* authorization process
 - Offsetting plans for project activities that may result in the harmful alteration, disruption, or destruction of fish habitat, or the death of fish, should be developed taking into account Fisheries and Oceans Canada's *Policy for Applying Measures to Offset Harmful Impacts to Fish and Fish Habitat* and in consultation with Indigenous groups;
 - For any offsetting measures proposed in the plan that may cause direct or incidental adverse effects, develop and implement, following consultation with Indigenous groups and relevant authorities, measures to mitigate those effects
- Provide environmental awareness and orientation for personnel and contractors on site
- Specify construction activities for which fish monitoring will be necessary and procedures for monitoring construction activities by a qualified person

18.2.4.3 Operation Phase

- Install and maintain dark sky-compliant lighting which minimizes light pollution and reduces the potential for disruption of fish habitat.
- Minimize the use of de-icing salts where feasible and consider using brines or alternative de-icing solutions.

18.3 Effects on Species at Risk

This section discusses effects on SAR as defined in Section 14. Effects on SoCC are discussed under flora and fauna (Sections 19.1.5.3 and 19.1.5.4, respectively).

Both terrestrial and aquatic SAR could be affected by construction and operation of the Project (Table 18-1). Aquatic SAR may experience potential effects similar to those described in Section 19.1. Effects on terrestrial SAR will depend on the species and their habitat. Construction activities could affect SAR and their habitats both directly (e.g., destruction, harm, or displacement) or indirectly (e.g., disruption of life stages, pollutant spills, introductions of invasive species). Potential effects of Project operation include road mortality of SAR animals and indirect effects of noise, lighting, de-icing salts, and fuel spills on SAR habitat.

Residual effects of the Project on SAR will depend on the species. They are expected to be long-term in duration but localized in scope, since the Project will likely require removal of aquatic habitats in the Ottawa River and some terrestrial habitats. Options for relocating or reintroducing SAR plants, if required, will be explored at the detailed

design stage. Habitat for SAR wildlife has been confirmed at several locations in the LSA and could be affected by construction.

After field surveys are completed, the list of aquatic and terrestrial SAR/ and their habitat—confirmed or possibly occurring in the LSA —will be refined, species-specific mitigation measures and permit requirements will be identified, and a management approach will be developed.

Carrying out of the Project is not anticipated to cause non-negligible adverse changes to marine plants, as defined in subsection 2(1) of the *Species at Risk Act*.

Table 18-1: Potential effects of the Project on Federal SAR and Federal SAR habitat

Species	Potential Effects
Fish: Bridle Shiner Channel Darter Cutlip Minnow Northern Brook Lamprey (Great Lakes- Upper St. Lawrence pop.) River Redhorse Silver Lamprey (Great Lakes-Upper St. Lawrence pop.)	Construction: Direct harm from construction machinery or materials that enter the water or during relocation from dewatering areas. Indirect harm from water quality changes due to pollutant spills, increased sedimentation, and scouring. Alteration/loss of spawning, rearing, and feeding habitat. Operation: Direct harm during maintenance activities. Indirect harm from water quality changes (e.g., spills of de-icing salts or other pollutants).
Freshwater Molluscs Hickorynut	Construction: Direct harm from construction machinery or materials that enter the water or during relocation from dewatering areas. Indirect harm from water quality changes due to pollutant spills, sedimentation, and scouring. Life cycle disruptions due to harm or displacement of host fish species. Operation: Direct harm during maintenance activities. Indirect harm from water quality changes (e.g., spills of de-icing salts or other pollutants) and disruptions to their host fish species.
Plants: American Ginseng Blunt-lobed Woodsia Butternut Eastern Prairie Fringed Orchid Spotted Wintergreen	Construction: Injury or destruction during vegetation removals and harm due to erosion and compaction. Indirect harm from pollutant spills. Indirect harm due to changes in microclimate (e.g., increased sun or shade). Indirect harm from invasive species introduced by construction equipment. Operation: Indirect harm from spills of de-icing salts or other pollutants.

Species	Potential Effects
Forest Birds: Bicknell's Thrush Canada Warbler Cerulean Warbler Eastern Whip-poor-will Eastern Wood-pewee Evening Grosbeak Golden-winged Warbler Kirtland's Warbler Louisiana Waterthrush Olive-sided Flycatcher Red-headed Woodpecker Wood Thrush	Construction: Direct harm to birds or nests during vegetation clearing, excavation, or other activities. Life cycle disruptions due to noise, vibration, light, or other disturbances. Loss of breeding, foraging, and/or migration habitat. Operation: Birds could be killed by vehicle strikes. Indirect harm from noise, vibration, lighting, or other disturbances.
Birds that nest on human structures: Barn Swallow Chimney Swift Common Nighthawk	Construction: Nests in/on human-made structures could be destroyed during potential demolition. Life cycle disruptions due to noise, vibration, light, or other disturbances. Operation: The new bridge could provide suitable nesting habitat for Barn Swallows and potentially other birds that nest on human-made structures; however, the nests could be damaged or destroyed by regular maintenance activities. Birds could be killed by vehicle strikes or indirectly harmed by noise, vibration, lighting, or other disturbances.
Burrow-nesting Birds: Bank Swallow	Construction: Although there is presently no nesting habitat in the corridor, stockpiles of fill or other granular materials could potentially be used as nesting sites by Bank Swallows and excavation of those piles could harm birds or nests. Life cycle disruptions due to noise, vibration, light, or other disturbances. Operation: Birds could be killed by vehicle strikes or indirectly harmed by noise, vibration, lighting, or other disturbances.
Reptiles: Blanding's Turtle Midland Painted Turtle Northern Map Turtle Snapping Turtle Eastern Milksnake	Construction: Direct harm during vegetation clearing, excavation, or other activities; may include injury to turtles moving through vegetation removal areas or turtles overwintering in ponds during excavation. Direct harm to turtles which accidentally enter staging and laydown areas. Accidental destruction of nests if turtles lay eggs in aggregate stockpiles. Destruction of nesting or overwintering habitat. Indirect harm due to noise, vibration, light, or other disturbances. Operation: Vehicle strikes causing injury or death of turtles crossing new and existing roads.
Amphibians: Western Chorus Frog (Great Lakes-St. Lawrence pop.)	Construction: Widening Montée-Paiement may require the removal of a portion of a wetland with breeding Western Chorus Frogs which would require a permit under SARA. Frogs could be directly injured or killed during construction in the wetland. Frogs could also be injured or killed if they enter work areas during construction. Construction noise could disturb frogs during the breeding season (typically late March to early May). Operation: Increased noise and light could affect reproduction. Habitat is located only on one side of Montée-Paiement in Gatineau, so the probability of vehicle strikes is low.

Species	Potential Effects
Mammals: Little Brown Myotis Northern Myotis Tri-colored Bat	Construction: Bats roosting in trees could be killed or injured during vegetation removals and bats roosting in buildings could be harmed during potential demolition. Removal of large trees, especially snags with cavities or peeling bark, could reduce the number of suitable maternity roosts in the area. Indirect harm due to noise, vibration, light, or other disturbances. Operation: Traffic noise at ultrasonic frequencies (i.e., within the vocalization range of bats) could disturb bats or interfere with their echolocation. Lighting and vibration could also affect bats' ability to forage, rest, or reproduce.
Monarch	Construction: Loss of host plants (milkweed). Loss of foraging habitat. Direct harm to adults, larvae, or eggs during vegetation removals. Operation: Removal of open habitats containing milkweed could reduce the amount of foraging and breeding habitat available to Monarchs. Vehicle strikes could kill adults.
Skillet Clubtail	Construction: Direct harm to eggs or larvae from construction machinery or materials that enter the water. Indirect harm to eggs or larvae from water quality changes due to pollutant spills. Operation: Removal of forest habitats and aquatic habitats could reduce the amount of habitat available for adult foraging and larval development. Indirect harm to eggs or larvae from water quality changes due to spills of de-icing salts and pollutants. Vehicle strikes could kill adults.

18.3.1 Planning and Additional Studies

Field surveys are being conducted to identify the presence of SAR aquatic and terrestrial habitats within the LSA. This will provide baseline information to identify potential constraints in the initial design stages. Survey methodologies were developed using recognized survey protocols. These studies have confirmed the presence of certain SAR within the LSA. Butternut has been observed, while Western-Chorus Frog was heard on a property directly adjacent to the LSA. As well, Bank Swallow, Barn Swallow, Midland Painted Turtle, and Rusty Blackbird were incidentally observed in the LSA. Bobolink, Common Nighthawk, Northern Map Turtle, Northern Watersnake, Snapping Turtle, Little Brown Myotis, Northern Myotis, Tri-colored Bat, and Monarch have all been observed within the LSA during past studies. The IPT will seek advice from internal and external experts, including federal and provincial authorities (ECCC, DFO, MNRF, MELCCFP, etc.), and will engage with Indigenous communities to contribute Indigenous Knowledge that will help to shape proposed mitigation, if required. This additional information will support the design the Project to ensure that potential effects are first avoided and minimized, before mitigation measures are required. Offsetting will only be considered as a last resort to reduce negative effects from the Project.

18.3.2 Avoidance and Mitigation Measures

18.3.2.1 Design Phase

The primary mitigation approach will be to configure the Project footprint, including construction staging and stockpiling areas, so that known aquatic and terrestrial SAR and their habitats are avoided and protected where feasible. The preferred method will always be to avoid potential effects to SAR and their habitat. However, if removal of SAR habitats is unavoidable, permitting requirements—potentially including offsetting—will be followed in consultation with DFO and ECCC. Options for relocating or reintroducing SAR plants removed by construction will be explored, if required and/or feasible.

Species-specific mitigation measures will be developed based on the results of ongoing field surveys. A preliminary list of additional mitigation measures to reduce the potential effects on SAR and their habitat includes the following:

18.3.2.2 Construction Phase

- Install appropriate wildlife exclusion measures to prevent SAR wildlife from entering construction areas. Regularly inspect and maintain wildlife exclusion measures. Implement BMPs for reptile and amphibian exclusion fencing recommended by Ontario's MECP (MECP 2025).
- Regularly inspect construction areas, including staging and stockpiling areas, for SAR wildlife; if animals are found, stop work in the vicinity until a qualified biologist provides direction on how to proceed.
- Provide environmental awareness and orientation for personnel and contractors on site, including training on how to recognize SAR animals and what to do if they are encountered during construction.
- Specify construction activities for which SAR monitoring will be necessary and procedures for monitoring construction activities by a qualified person.

18.3.2.3 Operation Phase

- Install and maintain dark sky-compliant lighting which minimizes light pollution and reduces the potential for disruption to SAR.
- Minimize the use of de-icing salts where feasible and consider using brines or alternative de-icing solutions.

18.4 Effects on Migratory Birds

Effects of construction on migratory birds are predicted to be short-term in duration and negligible in scope since they will cease when construction is complete. Migratory birds are defined here as bird species listed in Subsection 2(1) of the *Migratory Birds Convention Act, 1994*. More detail about the Act and species to which it applies can be found in Section 18.

18.4.1 Construction

Construction could directly affect migratory birds, including harm or destruction of adult birds, fledglings, eggs, or nests. Potential impacts are most likely to occur during the typical bird nesting season (April 8 to August 28 in the LSA) but are possible at all times of year. It is expected that direct effects to migratory birds can be effectively managed with regulations and permits available under the *Migratory Bird Convention Act, 1994*.

The construction activity most likely to affect migratory birds is vegetation clearing. Demolition of buildings, if required, could also destroy migratory bird nests. There is also potential for certain migratory birds to build nests in construction areas or on equipment where they might be accidentally harmed. Indirect effects of construction could include disturbance or displacement of migratory birds due to noise, vibrations, and lighting. However, this type of disturbance is not typically regulated under the *Migratory Birds Convention Act, 1994* unless it can be demonstrated that it caused abandonment of an active nest.

18.4.2 Operation

The new bridge could provide nesting habitat for birds which nest on human structures, such as American Robin (*Turdus migratorius*), Eastern Phoebe (*Sayornis phoebe*), and Cliff Swallow (*Petrochelidon pyrrhonota*). Birds nesting on the bridge may be harmed by maintenance activities. Vehicle strikes could injure or kill adult or juvenile birds. Migration, foraging, reproduction, or other behaviours could be interrupted by increased noise, vibrations, and light.

Bridge designs could present unique risks to birds (e.g., a cable-stayed bridge could result in bird collisions, especially at night).

18.4.3 Planning and Additional Studies

Field surveys were initiated in spring 2025 to identify birds (including SAR and species protected under the MBCA) and bird habitat within the LSA. Survey methodologies were developed using recognized survey protocols. The IPT will seek advice from internal and external experts, including federal and provincial authorities (ECCC, DFO, MNRF, MELCCFP, etc.), and will engage with Indigenous communities to contribute Indigenous Knowledge. This additional information will support the design of the Project to ensure that potential effects are first avoided and minimized, before mitigation measures are required. Offsetting will only be considered as a last resort to reduce negative effects from the Project.

18.4.4 Avoidance and Mitigation Measures

18.4.4.1 Design Phase

The primary mitigation approach will be to configure the Project footprint, including construction staging and stockpiling areas, so that effects to migratory birds and their habitats are avoided where feasible. Avoidance of effects through design can help reduce effects on migratory birds and their habitat, notably by following NCC Bird-Safe Design Principles (NCC, 2021) and the Convention on Migratory Species' *International Light Pollution Guidelines for Migratory Species*. (CMS, 2026)

18.4.4.2 Construction Phase

The potential for harm to migratory birds can be reduced by conducting vegetation removal and building demolition outside of the typical bird nesting period (i.e., after August 28 and before April 8). The following mitigation measures will further reduce potential environmental effects of the Project on migratory birds:

- Determine, under the direction of a qualified individual, the presence, or likely presence of migratory bird nest(s) protected under the *Migratory Birds Convention Act, 1994* and its regulations that may be adversely affected by vegetation clearing, site preparation and other land-disturbing activities prior to initiating the activity. Non-intrusive methods used to determine the presence or likely presence of migratory bird nests should be appropriately selected based on the habitat type.
- Throughout the construction phase, conduct regular (typically every 24 to 48 hours), non-intrusive inspections of work, staging, and stockpiling areas for bird nests during the general nesting period for migratory birds in the region.
- If nests are found, establish and delineate, under the direction of a qualified individual, setback distances around the nest(s), within which potentially disturbing activities shall not occur while those nest(s) are protected under the *Migratory Birds Convention Act, 1994* and its regulations (for example, until the nest is no longer active). When establishing setback distances, take into account Environment and Climate Change Canada's *Guidelines to avoid harm to migratory birds - Establishing buffer zones and setback distances*.
- Provide environmental awareness and orientation for personnel and contractors on site, including training on what to do if a bird nest is found during construction.
- Specify construction activities for which migratory bird nest monitoring will be necessary and procedures for monitoring construction activities by a qualified individual.

18.4.4.3 Operation

- Design of the bridge will take into consideration the NCC Bird-Safe Design Principles (2021) and the Convention on Migratory Species' *International Light Pollution Guidelines for Migratory Species*.
- Control project lighting, while meeting regulatory, operational, health and safety requirements, to mitigate attraction and disorientation of migratory birds:

- o Optimize lighting design to reduce the total amount of lighting needed.
- o Use directional lighting that targets only the areas where illumination is essential.
- o Install and maintain shielded, dark sky-compliant lighting fixtures which minimize glare and light leakage into directions where light is not essential.
- o Use automatic sensors or strobe lighting in areas where continuous lighting is not essential.

18.5 Federal lands

Potential effects the biological environment on federal lands will be similar to potential effects described in Section 19.1.5.2 of this document. The main difference is the footprint of potential direct and indirect impacts on federal lands that can be expected versus non-federal lands. This will depend on the chosen alignment over Kettle Island. Figure 13-5 shows overlap of the study area with federal lands.

Vegetation removal could directly and indirectly affect terrestrial habitats on federal lands, with the extent of effects depending on final alignments and the overall Project footprint. Vegetation clearing for the new bridge, associated infrastructure, and construction access areas could result in localized but long-term habitat loss for terrestrial flora and fauna. This could result to the destruction of plants, potentially SAR or SoCC species. Specific affected areas and species to be confirmed during detailed design and the Impact Statement.

For Species at Risk, Species of Conservation Concern and Migratory Birds, effects on federal lands are expected to be the same as those presented in Table 18-1 (for SAR and SoCC) and Section 18.4 (Migratory Birds). To avoid and mitigate potential impacts on federal lands to SAR and SoCC species, the Project will prioritize avoiding impacts by carefully designing the footprint, including construction staging and stockpiling areas, to protect known habitats where feasible. If impacts to SAR habitats cannot be avoided, required permits and potential offsetting measures will be implemented in coordination with regulatory authorities.

Specifically, avoidance and mitigation measures presented in Section 18.3.2.2 will also be applied to any effects to SAR/SoCC on federal lands while avoidance and mitigation measures presented in Section 18.4.4 also apply to migratory birds present on federal lands.

Part E: Potential Effects of the Project

19 Potential Effects on the Environment

19.1 Potential Effects on Physical Environment

This section examines the potential effects of the Project on valued components of the physical and biological environment that were not addressed in Section 18. Effects described typically fall outside of federal jurisdiction unless they are located on federal lands.

This Project is to be carried out on federal and non-federal lands and is a federal undertaking, as defined by the *Canadian Environmental Protection Act, 1999*. A broader range of non-negligible adverse effects that may be caused by the carrying out of the Project may need to be considered under the IAA beyond the effects in typical areas of federal jurisdiction (i.e., fish and fish habitat, aquatic species, migratory birds, impacts on Indigenous communities). Section 19 discusses adverse effects beyond those in typical areas of federal jurisdiction.

Precisions will be made throughout this section whether potential effects occur completely, partially or outside of federal lands. When applicable, a brief mention of the location of the federal land affected will also be presented.

19.1.1 Potential Effects on Air Quality

Although the atmospheric environment includes both air quality and GHG emissions, GHGs and climate vulnerability are discussed in Section 22. Effects to air quality from the Project are expected to be short-term and localized during the construction phase, while effects from operations are expected to be long-term. Effects from operations are not expected to be higher than air quality standard thresholds.

19.1.1.1 Construction

Effects of construction on air quality are expected to be short-term and small in scope since they will be localized in the construction areas and will cease once construction is complete. Effects are anticipated to be localized near roadway expansion and construction staging areas. Some of the potential effects will occur near federal lands, notably near SGEC roadway, aviation parkway and the 417 interchange.

Vehicles and equipment used to construct the Project will periodically emit carbon monoxide, ozone, fine particulate matter, and other atmospheric pollutants which could be harmful to the environment or human health. An inventory of potential atmospheric pollutants of concern could be produced during detailed design to better understand potential impacts, if required.

19.1.1.2 Operation

Effects of Project operation on air quality are expected to be long-term due to the long operational life of the new bridge.

The Project will create a new source of airborne contaminants in the Project corridor where roads do not currently exist (i.e., traffic on the interprovincial bridge) and is predicted to cause an increase in airborne contaminant

emissions along certain segments of existing roads that connect to the bridge. WSP (2019a, 2024c) modeled changes in ambient air quality in the corridor and predicted that airborne contaminants could increase as a result of the Project, with the greatest magnitude of air quality impacts occurring at the interchanges with Highway 417 in Ottawa and Autoroute 50 in Gatineau. Predicted increases in daily emissions of airborne contaminants compared to baseline conditions along the corridor ranged from 6% for sulphur dioxide (SO₂) to 137% for large particulate matter (PM₁₀). However, predicted airborne contaminant concentrations were below the thresholds specified in the Canadian Ambient Air Quality Standards (CAAQS), Ontario's Ambient Air Quality Criteria (OAAQC), and Québec Air Quality Standards (QAQS). For detailed methods used to model air quality changes, refer to the air quality report and memorandum (WSP 2019a, 2024a).

Predicted airborne contaminant emissions were modeled assuming that vehicle types and emissions regulations would be unchanged during the operation phase of the Project (WSP 2019a, 2024). Advancements in regulatory requirements and engine technology (e.g., vehicle electrification) may reduce airborne contaminant emissions in the long term.

No new sources of airborne contaminants are expected to be introduced near federal lands as a result of the existing roadway network, with the exception of the bridge approach structure located near the Ottawa shoreline. For existing roadways situated on federal lands, the anticipated effects on air quality are expected to be similar to those described above.

19.1.1.3 Planning and Additional Studies

During the impact statement phase of the Project, air quality will be modeled using advanced road design parameters to assess potential emissions and dispersion patterns. This modeling will be complemented within a human health and risk assessment, if required, ensuring that any predicted changes in air quality are evaluated in terms of their potential effects on public health. Road designs could be modified to avoid potential negative effect where necessary.

19.1.1.4 Avoidance and Mitigation Measures

Construction Phase

During construction, contractors will be required to adhere to air quality standards, including the CAAQS, National Ambient Air Quality Objectives, Ontario's Ambient Air Quality Criteria, and/or Québec's Atmospheric Quality Standards. Pollutant emissions thresholds will aim to meet the most stringent air quality standards. Pollutant emissions can be reduced by electrifying construction equipment and fleet vehicles.

The following mitigation measures will further reduce potential environmental effects of the Project on air quality:

- Establish and enforce a policy to prohibit unnecessary idling to control fugitive particulate emissions, except when required for health, safety, or operational reasons
- Ensure regular inspection, servicing, and maintenance of engines and exhaust systems on all mobile equipment and vehicles
- Prioritize the use of off-road equipment equipped with engines that meet the most stringent emission standards available, including the latest applicable tier of the *Off-Road Compression-Ignition Engine Emission Regulations*
- Apply water to exposed soils to reduce fugitive dust emissions
- Cover or stabilize stockpiles of fill or other granular materials to reduce fugitive dust emissions
- Stabilize exposed soils as soon as possible once construction is complete by applying a native seed mix as specified in site restoration plans and/or by installing temporary erosion control measures (e.g., fibre mats).

Operation Phase

Integrating active transportation and public transit infrastructure into the Project is a goal of detailed design and includes the construction of bike lanes and/or transit priority infrastructure. Providing additional opportunities for residents to use active transportation and public transit offers options that may shift the dependence on personal vehicles and contribute to a reduction in overall emissions during the operational phase of the Project.

19.1.2 Potential Effects on the Acoustic Environment

Potential noise effects may occur on federal lands where new Project infrastructure is proposed, such as the bridge approach on the south shore and associated structures, or where modifications to existing infrastructure on federal lands are required, including existing roadways. Future acoustic studies will assess these effects in greater detail and will clearly distinguish between effects occurring on federal lands and those occurring on non-federal lands.

19.1.2.1 Construction

Residual effects of construction on the acoustic environment are expected to be relatively short term and small in scope because they will be localized in construction areas and will cease once construction is complete. Effects of construction noise and vibration will be confirmed through additional studies, but noise is predicted to be similar to other road construction projects which occur annually in the NCR. However, localized and temporary effects of noise during construction could have negative effects to natural features.

Noise could be produced from engines, hammering, excavation, and many other construction activities. The effects of construction noise will depend on the type of noise and location of the source relative to populated areas and natural features. Noise in proximity to natural features (e.g., Kettle Island and the Ottawa River) could disturb wildlife and potentially affect critical life stages of wildlife (e.g., breeding, overwintering).

19.1.2.2 Operation

WSP (2020c) modeled changes in noise and vibrations and determined that the Project will introduce traffic noise to new areas (i.e., where roads do not currently exist) and increase noise along existing roads. The introduction of traffic noise to terrestrial and aquatic habitats where roads do not currently exist could disrupt or alter wildlife behaviour as animals might avoid these areas. Potential effects of noise on wildlife will be assessed during the impact assessment phase. The FLUDTA process is expected to support the development of design solutions that minimize potential effects on the acoustic environment.

19.1.2.3 Planning and Additional Studies

WSP (2020c) recommended additional studies and plans for noise and vibration as part of the impact assessment process. During the impact statement phase of the Project, the following studies/plans may be developed:

- Construction Noise and Vibration Effect Assessment
- Noise and Vibration Monitoring Plan (NVMP)
- Detailed mitigation measures to minimize noise vibration effects during construction and operation of the Project
- Monitoring protocol, including actions to be taken if guidance thresholds are exceeded.

19.1.2.4 Avoidance and Mitigation Measures

Design Phase

Through the design of the Project, infrastructure options within the corridor will consider effects to the acoustic environment. Preference will be given to options that can avoid or provide adequate mitigation for effects to the acoustic environments.

Construction Phase

- Restrict construction to daytime hours (e.g., 7:00 AM to 9:00 PM)
- Schedule blasting activities, if required, between 9:00 a.m. and 5:00 p.m., and avoid blasting on statutory holidays
- Where appropriate, respect municipal noise by-laws with specifications for construction timing
- Minimize equipment and vehicle idling
- Maintain equipment and fleet vehicles in good working order
- Use electric equipment and fleet vehicles where feasible
- Establish a process for receiving and addressing complaints within 48 hours of the complaint being received and implement corrective actions to reduce exposure in a timely manner

Operation Phase

There are currently noise barriers along some existing roads in the corridor and additional noise barriers may be incorporated into the Project to reduce the effects of traffic noise on nearby residents. WSP (2020c) estimated that 5,000 m of noise barriers would be required throughout the corridor to mitigate predicted noise increases. Locations of noise barriers will be determined during detailed design.

19.1.3 Potential Effects on Geophysical Environment

The geophysical environment encompasses the physical characteristics and natural processes of the earth's surface and subsurface. This includes geology, soil conditions, groundwater, landforms, and the dynamic processes – such as erosion, sediment transport, seismic activity, and slope stability – that shape and influence the landscape.

Most potential effects on the geophysical environment are expected to occur during the construction of the projects. A significant portion of the project is located on federal lands and therefore potential effects to the geophysical environment is expected on federal lands. Additional studies will be required to further define these potential effects, and distinction will be made to effects on federal vs non-federal lands.

19.1.3.1 Construction

Specific construction detail for the Project is not yet available. However, it is anticipated construction activity will include bedrock excavation where shallow bedrock depth is anticipated (i.e., from Montreal Road to the southern limit of the Project), overburden excavation for foundation installation throughout the Project limit and up to 10 m of overburden excavation in Champlain Sea clay at the Ottawa River South shore, for the underpass option at the Boulevard Maloney intersection and at the escarpment North of Boulevard la Vérendrye. Pile foundations will also be used mainly for structures North of the Montford Hospital. Construction activities associated with the Project have the potential to affect the geophysical environment through direct ground disturbance and alteration of existing landforms.

The deep overburden excavation on the Ottawa South shore and near Boulevard Maloney is anticipated to be within low permeability Champlain Sea clay (hydraulic conductivity of the intact silty clay is typically in the order of 10^{-9} m/s). This will limit the volumes of groundwater that will need to be managed within the roadway drainage system (below pavement, sub-base) and will limit the radius of influence of the dewatering to several metres, and away from nearby structures. Furthermore, as these marine clays are typically overconsolidated—with a preconsolidation pressure (σ'_p) generally exceeding existing in-situ effective stresses by at least 100 kPa—significant settlements induced by dewatering are not anticipated. Therefore, deep excavation into low permeability Champlain Sea clay near Ottawa South shore or Boulevard Maloney may have limited impact to surrounding area.

While drinking water in the LSA is provided by a municipal system, one Ottawa subdivision, Fairhaven, has wells and septic systems to service their residential needs. The subdivision may contain up to 30 houses without municipal servicing, and 12 complete well records were found in the provincial water well database. These wells were drilled through overburden (0 m to 6.7 m thick, 2.2 m on average, mainly sand) and uniformly completed in bedrock (limestone/shale) at depths ranging from 12 m to 122 m, with an average of 51 m. Static levels ranged from 1.9 m to 44 m, 10.3 on average, and water was found at depths ranging from 11 m to 119 m, 47 m on average. The closest potentially un-serviced house to the Project is approximately 250 m East of the Aviation Parkway at Montreal Road. The depth of the wells and their separation distance from the Project provides protection from hydrogeological impacts, however detailed assessment of such, along with development of mitigation measures, if necessary, will be required at later stages of design

Key potential effects include:

- Soil disturbance and compaction from excavation, grading, equipment movement, and temporary work areas. These activities may alter soil structure, reduce permeability, and increase susceptibility to erosion.
- Alteration of landforms where cuts, fills, embankments, and retaining structures are required to establish bridge approaches and roadway alignments.
- Excavations between Hemlock Road (Ottawa) and Autoroute 50 (Gatineau) will result in large volumes of non-reusable soils, portions of which will have a fluid-like behaviour. Special handling and disposal requirements should be anticipated. Significant cuts within clays are being considered at the South approach of the main bridge, at Boulevard Maloney and at the escarpment North of Boulevard la Vérendrye.
- Increased erosion and sediment mobilization on exposed soils, particularly near the Ottawa River shoreline and along steep or unstable slopes.
- Potential for slope instability where construction occurs adjacent to sensitive slopes, escarpments, or areas with known geotechnical constraints. The escarpment immediately North of Boulevard la Vérendrye was formed by the ancient Ottawa-River and is underlain by highly sensitive clay, prone to landslides.
- Disturbance of surficial geology and bedrock during foundation installation, pile driving, or rock excavation.
- Generation of vibration from heavy equipment and pile driving, which may affect nearby unstable soils or sensitive geological features.
- Permanent excavations to accommodate the new lanes West of Aviation Parkway, from Hemlock Road to Montreal Road, will result in new exposed rock faces up to 3 to 5 m high; potentially higher if the Aviation Parkway is lowered to pass beneath Montreal Road. The exposed rock face will likely consist of Lindsay Formation limestone and Bobcaygeon Formation limestone. Blasting activities will most likely be required to excavate these rock types.
- Interaction with shallow groundwater during excavation, particularly in areas where the water table is within the upper few metres. Dewatering may be required to maintain dry working conditions, which can temporarily lower groundwater levels and lead to ground settlement, softening of fine-grained soils, or changes in pore-water pressures.
- Permanent modifications to the groundwater region are expected in permanent cut areas, including: the section between Hemlock Road and Montreal Road; at Montreal Road and Ogilvie Road, where the Aviation Parkway may underpass these crossings; and, where the Hwy 417 N-W Ramp may underpass Cyrville Road.
- Permanent cuts within Billings Formation bedrock are expected at various locations at the Hwy 417 interchange, and potentially at the Ogilvie Road and Montreal Road sites, depending on which profile options are selected. Exposed Billings Formation bedrock is known for its pyrite content and its potential to swell and degrade due to biochemical weathering processes which produces iron ochre, a gelatinous substance formed by iron-oxidizing bacteria. This outcome poses a risk, as it can clog and damage engineered drainage systems.

- The presence of a low-lying area northwest of the Ogilvie Road and Aviation Parkway intersection which may contain organic materials which could be impacted by permanent local groundwater lowering.
- Increased risk of instability in groundwater discharge zones, such as slope toes or areas with emergent seepage, where excavation or loading may disrupt natural groundwater flow paths and reduce soil strength.

These effects are anticipated to be localized but require careful management due to the varied geological conditions on both sides of the Ottawa river.

19.1.3.2 Operation

Negligible residual effects on geophysical environments are anticipated as a result of Project operations. Overall, operational effects are expected to be stable and predictable, provided that geotechnical design criteria are met.

19.1.3.3 Planning and Additional Studies

Further geotechnical and geomorphological investigations may be required during detailed design to refine understanding of site-specific conditions. These may include:

- Detailed geotechnical drilling and sampling to characterize soil stratigraphy, bedrock depth, and engineering properties.
- Slope stability assessments for areas with known or potential instability.
- Erosion and sediment transport studies to evaluate risks near the riverbanks and along new or modified corridors.
- Assessment of seismic considerations, including liquefaction potential and structural response to regional seismicity.
- Geomorphological mapping to identify sensitive landforms, unstable slopes, or areas prone to natural hazards.
- Groundwater monitoring and hydrogeological characterization to determine groundwater levels, seasonal fluctuations, hydraulic conductivity, and potential impacts of dewatering on soil behaviour and settlement.
- A comprehensive hydrogeological investigation to assess and mitigate hydrogeological impacts on domestic wells in the Fairhaven subdivision near Montreal Road and Aviation Parkway.

These studies will support the development of appropriate design parameters and mitigation measures.

19.1.3.4 Avoidance and Mitigation Measures

Design Phase

The design of the Project must account for potential effects on the geophysical environment, particularly by designing to avoid Acid Rock Drainage and Metal Leaching. When combined with water and oxygen, rocks containing sulfide minerals and/or elevated metals concentrations can generate acid rock drainage or leach metals at near neutral pH. Metal-leaching (ML) and acid rock draining (ARD) can cause environmental damage if the ML/ARD weathering products enter surface waterbodies. To meet the CCME water quality thresholds for the protection of aquatic life, geochemical testing will be completed prior to construction to characterize and confirm the ML and ARD potential of materials that will be disturbed for the bridge foundations.

Moreover, infrastructure options within the corridor must consider other effects on the geophysical environment. Preference will be given to options that can avoid or provide adequate mitigation measures for effects on the geophysical environment.

These may include:

- Incorporate geotechnical investigation results into foundation design, slope stabilization, and retaining structures.
- Where permanent cuts extend into Billings Formation shales, sulfur resistant concrete should be used, and drainage systems should be included with cleanout ports to allow for periodic cleaning of the drainage system, to remove accumulations of iron ochre.
- Design should incorporate sensitive clay stability criteria, including staged construction, lightweight fill options, or ground improvement (e.g., wick drains, preload, deep mixing) where required.
- Bridge foundations in liquefiable zones may require deep foundations to competent bedrock, ground densification, or other liquefaction mitigation measures.
- Avoid or reduce construction in areas with known geotechnical constraints, such as unstable slopes or highly erodible soils.
- Optimize alignment and grading to reduce the extent of cuts, fills, and shoreline modification.
- Design erosion and sediment control systems that account for site-specific soil properties and geomorphic conditions.
- Integrate seismic design criteria consistent with regional seismic hazard assessments.
- Use retaining walls, embankments, or ground improvement techniques where necessary to maintain long-term stability.
- Incorporate groundwater conditions into design, including the need for cutoff walls, drainage layers, relief wells, or waterproofing to manage seepage pressures and maintain stability.
- Describe the methods used to characterize and confirm through geochemical testing acid rock drainage and metal-leaching potential of rock materials that follow the methodologies provided in the Mine Environment Neutral Drainage program's Prediction Manual for Drainage Chemistry from Sulphidic Geologic Materials (Price, 2009), including static and kinetic methods and the frequency and timing of characterization;
- Characterize the acid rock drainage and metal-leaching potential of materials with potential geochemical risk for acid generation and metal leaching ^{Footnote1} prior to construction;
- Confirm through geochemical testing, as appropriate to validate initial characterization and predictions;
- Use only rock materials characterized as not acid-generating, non-potentially acid-generating and non-metal-leaching for project works;
- Limit oxidation reactions in materials characterized as acid generating and metal leaching or potentially acid-generating and metal-leaching, which may include the use of covers.

Construction Phase

- Implement erosion and sediment control measures, such as silt fencing, sediment basins, stabilized entrances, and rapid revegetation of exposed soils.
- Stage construction activities to limit the area of exposed soil at any given time.
- Use appropriate excavation and backfilling practices to maintain soil integrity and prevent over-steepening of slopes.
- Limit excavation steepness, control equipment loading near slope crests, and use low-ground-pressure equipment in areas underlain by Champlain Sea clays.
- Implement vibration monitoring during rock excavation or pile driving to protect nearby structures and prevent fracturing of shallow shale bedrock.
- Stabilize temporary slopes using geotextiles, matting, or temporary retaining systems where required.
- Manage stockpiles to prevent erosion and sediment migration.

- Implement groundwater control measures, such as temporary dewatering systems, sump pumps, or well-point systems, ensuring that drawdown does not induce settlement or instability in adjacent areas.
- Monitor groundwater levels during excavation in areas with shallow water tables to detect unexpected changes that could affect soil strength or stability.

Operational Phase

- Maintain and inspect embankments, retaining structures, and slopes to identify and address erosion or settlement.
- Monitor areas prone to erosion, particularly near drainage outlets or shoreline interfaces.
- Periodic inspection of piers, abutments, and approach fills should be conducted following significant seismic events to identify settlement, lateral spreading, or scour.
- Periodic inspection of drainage systems in areas of Billings Formation shale to limit the potential accumulations of iron ochre.
- Implement long-term vegetation management to maintain root structure and slope stability.
- Repair or reinforce areas showing signs of instability, settlement, or erosion over time.

19.1.4 Potential Effects on Hydrological Environment

19.1.4.1 Construction

The Ottawa River is the boundary between the provinces of Québec and Ontario and forms *inter-jurisdictional waters* as defined by the *Canada Water Act*. Construction activities associated with the bridge, shoreline works, and roadway improvements have the potential to cause non-negligible adverse changes to the interprovincial waters by affecting the hydrological environment through changes to water quantity, water quality, and hydrodynamic conditions.

Key potential effects include:

Water Quantity (Runoff, Flooding, Drainage)

- Increased surface runoff from vegetation clearing, soil exposure, and temporary work areas, potentially altering local drainage patterns.
- Temporary obstruction of overland flow paths due to construction staging areas, stockpiles, or equipment.
- Localized changes in flood behaviour near the shoreline where temporary cofferdams, causeways, or in-water structures may influence water levels or flow distribution.
- Reduced infiltration in compacted areas, contributing to higher peak runoff during storm events.

Water Quality

- Sediment release from exposed soils, shoreline disturbance, and in-water works, potentially increasing turbidity in the Ottawa River.
- The water intake on Kettle Island may be vulnerable to changes in raw water quality resulting from bridge construction. The placement of bridge piers, in-water works, and associated construction activities increase turbidity, sedimentation, and the redirection of suspended materials toward the intake.
- Risk of accidental spills of fuels, lubricants, or concrete wash water, which could degrade water quality if not properly contained.

- Mobilization of contaminants in disturbed soils or sediments, particularly in areas with historical industrial activity.
- Increased nutrient or particulate loading from erosion of temporary access routes or embankments.

Hydrodynamics

- Temporary alteration of flow patterns around cofferdams, barges, or temporary piers, potentially affecting sediment transport or local scour.
- Localized changes in water velocity that may influence shoreline stability or aquatic habitat.
- Potential for increased scour around temporary structures, requiring monitoring and mitigation.

19.1.4.2 Operation

Once operational, the bridge and associated roadway network may influence hydrological conditions through long-term changes to drainage, runoff, and in-river flow patterns.

Water Quantity

- Increased impervious surface area from bridge decks, roadways, and intersections, resulting in higher runoff volumes and peak flows.
- Altered drainage patterns where new or modified stormwater systems redirect flows to different outlets.
- Potential changes to local flood behaviour if permanent piers or embankments influence flow conveyance during high-water events

Water Quality

- Runoff from bridge and roadway surfaces may carry suspended solids, hydrocarbons, metals, and de-icing materials into receiving waters.
- Long-term accumulation of pollutants in stormwater management facilities or at discharge points.
- Potential for accidental spills from vehicles, with rapid conveyance to the river if not properly managed.

Hydrodynamics

- Permanent bridge piers may cause localized changes in flow velocity, turbulence, and sediment transport.
- The placement of bridge piers could alter local hydrodynamics, potentially increasing turbidity, sedimentation, and the redirection of suspended materials toward the intake.
- Potential for long-term scour around piers or abutments, requiring periodic inspection.
- Minor constraints on natural river processes, such as sediment deposition or ice movement, depending on pier configuration and river conditions.

Overall, operational effects are expected to be manageable with appropriate stormwater design and structural considerations.

19.1.4.3 Planning and Additional Studies

Additional hydrological and hydraulic studies may be required during detailed design to refine predictions and support mitigation strategies. These may include:

- Hydraulic modelling of the Ottawa River to assess flow distribution, water levels, and potential flood impacts under various scenarios.

- Hydrodynamic modelling of the Ottawa River in the vicinity of Kettle Island to evaluate how bridge pier placement and in-water works could alter flow patterns, sediment transport, and turbidity near the water intake under construction and operation scenarios.
- Stormwater management assessments to determine appropriate drainage infrastructure, treatment requirements, and discharge locations.
- Water quality modelling to evaluate potential contaminant loading from roadway runoff.
- Scour and sediment transport analyses to inform pier design and long-term maintenance needs.
- Ice dynamics studies, given the Ottawa River's seasonal ice cover and potential interactions with bridge structures.
- Shoreline stability assessments to evaluate erosion risks associated with altered flow or drainage patterns.

These studies will support the development of appropriate design parameters and mitigation measures.

19.1.4.4 Avoidance and Mitigation Measures

Design Phase

- Design should incorporate measures that minimize hydrological impacts on the Ottawa River, including limiting in-water footprint, reducing turbidity, and maintaining natural flow patterns.
- Incorporate hydraulic modelling results into pier placement, bridge geometry, and shoreline design.
- Bridge alignment and pier placement should explicitly incorporate the Kettle Island water intake as a priority constraint to reduce potential impacts on raw water quality. Pier locations, in-water structures, and construction access zones should be sited outside areas where flow alterations could redirect sediments or contaminants toward the intake.
- Design stormwater management systems to control peak flows, promote infiltration where feasible, and treat runoff before discharge. Stormwater systems should be designed to avoid overloading existing urban drainage networks, including piped systems on Montée-Paiement and open ditches near the 417/174 interchange.
- Avoid sensitive hydrological features where possible, such as wetlands, groundwater recharge areas, or erosion-prone shorelines.
- Select pier configurations that reduce flow obstruction and reduce potential for scour.
- Integrate spill containment features into bridge deck drainage systems.
- Design erosion and sediment control measures tailored to site-specific hydrological conditions.

Construction Phase

- Implement erosion and sediment control measures, including silt curtains, sediment basins, turbidity barriers, and stabilized access points.
- Construction activities near open ditches should include measures to prevent sediment deposition, blockage, or erosion, ensuring continued drainage function.
- Use cofferdams, turbidity curtains, or isolation techniques to limit sediment release during in-water works.
- Manage stormwater on construction sites through temporary drainage controls, diversion channels, and staged grading.
- Store fuels and hazardous materials away from watercourses, with secondary containment.
- Monitor turbidity and water quality during in-water construction activities.

- Stabilize disturbed areas quickly through seeding, mulching, or temporary armoring.

Operational Phase

- Maintain stormwater management systems to support long-term performance, including sediment removal and inspection of outfalls.
- Monitor bridge piers and abutments for scour, erosion, or changes in flow patterns.
- Implement spill response protocols for incidents occurring on the bridge.
- Inspect drainage infrastructure regularly to prevent blockages or uncontrolled discharges.
- Maintain vegetation along embankments and drainage channels to support infiltration and reduce erosion.

19.1.5 Potential Effects on Biological Environment

19.1.5.1 Aquatic Habitat

This section describes potential effects of the Project on aquatic habitats excluding effects on fish and fish habitat which are regulated under the *Fisheries Act* (see Section 18.2). Aquatic features in the LSA provide habitat for aquatic vegetation, foraging and overwintering habitat for turtles and amphibians, and foraging and migration stopover habitat for waterbirds.

It is expected that one or more piers and/or abutments will be constructed on the bed and shore(s) of the Ottawa River, and four other watercourses and several ponds in the corridor could be affected by construction activities. The Project will have an in-water footprint and will require marine construction techniques possibly including barges, marine cranes, and/or dredging equipment.

The potential effects described in this section are generally not expected to fall under federal jurisdiction unless they occur on federal lands. Some effects on non-fish-bearing aquatic environments may occur on federal lands; however, the extent and location of these effects will be confirmed once the preferred alignment has been selected.

Construction

Construction of the Project could result in the following potential impact on aquatic habitat:

- Destruction of aquatic habitat (e.g., loss underneath bridge piers, road embankments)
- Physical alteration of aquatic habitat through changes to the stream bed, bank, vegetation community, and/or flow
- Changes in aquatic habitat due to water quality changes such as changes in temperature regime, flow regime, increased sediments, or increased contaminants due to accidental releases

During construction, in-water work to construct the new bridge may include dredging, pile-driving, cofferdam installation, and/or dewatering, and these activities have the potential to cause harmful alteration of aquatic habitat in the Ottawa River. Construction of approach roads may require alteration of watercourses. Aquatic vegetation or animals living in waterbodies could be harmed directly by construction machinery or materials which enter the water or indirectly by fuels, oils, sediment or other pollutants spilled during construction.

Operation

Operation of the Project could result in the following adverse changes to aquatic habitat:

- Physical alteration of aquatic habitat through changes to shading and due to piers and/or abutments in the water
- Disruption of aquatic habitat (e.g., increase in suspended sediments or salt concentration)
- Death of animals in waterbodies caused by accidental releases of contaminants

There is expected to be an overall net loss of aquatic habitat due to the construction of piers and/or abutments in the Ottawa River. The exact area and types of habitats affected will be determined in the detailed design phase.

Aquatic habitat could be altered by shading of the river under the bridge and could be affected by maintenance of in-water structures such as piers and abutments. Indirect effects could arise from spills of salts, fuels, oils, or other pollutants from the bridge or runoff from the approach roads. De-icing salts applied in the winter could spill from the bridge into the Ottawa River and alter water chemistry, which could injure aquatic organisms or affect their reproduction (Hintz and Relyea 2017).

Planning and Additional Studies

Field surveys were initiated in spring 2025 to identify aquatic, semi-aquatic and riparian habitats within the LSA. Survey methodologies were developed using recognized survey protocols. The IPT will seek advice from internal and external experts, including federal and provincial authorities (e.g., ECCC, DFO, MNRF, MELCCFP), and will engage with Indigenous communities to contribute Indigenous Knowledge. This additional information will support the design of the Project to ensure that potential effects are first avoided and minimized, before mitigation measures are required. Offsetting will only be considered as a last resort to reduce negative effects from the Project.

Avoidance and Mitigation Measures

Design Phase

Minimizing impacts to aquatic habitat will be addressed through design, including considering the number and overall size of piers in the river and assessing potential scour area at the pier locations to determine the extent of potential impacts to water quality and aquatic habitat downstream.

Construction Phase

- Implement DFO's and provincial measures, standards, and codes of practice to protect fish and fish habitat, as these will also protect other aquatic habitat features
- Provide environmental awareness and orientation for personnel and contractors on site
- Specify construction activities for which aquatic habitat monitoring will be necessary and procedures for monitoring construction activities by a qualified person

Operation Phase

- Install and maintain dark sky-compliant lighting which minimizes light pollution and reduces the potential for aquatic habitat disruption.
- Minimize the use of de-icing salts where feasible and consider using brines or alternative de-icing solutions.

19.1.5.2 Terrestrial Habitat

Effects of the Project on terrestrial habitats are expected to be long-term in duration since removal of vegetation will be required but localized in scope since removal will be restricted to the direct footprint of the Project. Terrestrial vegetation could be removed on both the Ontario and Québec shorelines of the Ottawa River and other locations in the corridor to accommodate the new bridge approaches, abutments and other related infrastructure. Vegetation may

also be removed on Kettle Island if the alignment and design require the construction of a terrestrial pier. Terrestrial vegetation may also need to be removed to accommodate the construction staging, stockpiling and laydown areas, depending on their location.

Vegetation removals could result in a loss of habitat for terrestrial flora and fauna. The sections below briefly describe possible effects on those terrestrial habitat features; potential effects on flora and fauna directly are discussed in Sections 19.1.5.3 and 19.1.5.4 respectively.

It is expected that potential impacts to the terrestrial environment that is not of federal jurisdiction can be managed through a combination of provincial regulatory processes and the voluntary adherence to various construction and operations management plan by the IPT. These will be further developed as design of the project progresses.

Potential effects on terrestrial habitats located on federal lands would fall under federal jurisdiction. The Project may affect terrestrial habitats on federal lands; however, the nature, extent, and location of these effects will be determined once the preferred alignment has been selected.

Construction

Vegetation removal may result in the direct loss of terrestrial habitats within the LSA.

Construction activities could have indirect effects on terrestrial habitats. Invasive species could be introduced via construction equipment, materials, and worker, and already-established invasive plants (e.g., Glossy Buckthorn, European Reed) could be spread to new locations. If equipment or material removed from the site after construction is not properly cleaned, it could spread invasive plant species to locations far away from the LSA, which could result in induced effects of the Project on regional ecosystems. Accidental spills of fuels, oils, or sediment could affect water or soil chemistry which could affect remaining vegetation adjacent to construction areas.

Operation

Direct effects on terrestrial habitats are not expected to result from typical operation of the new interprovincial bridge or related infrastructure. Indirect effects could include changes in soil and water chemistry due to pollutant spills, especially as a result of de-icing salts which spray into natural habitats adjacent to the Project. Shading from the interprovincial crossing may also result in indirect changes to vegetation communities and habitat in previously unshaded areas.

Planning and Additional Studies

Field surveys were initiated in spring 2025 to identify ecological communities and habitat features within the LSA. Survey methodologies were developed using recognized survey protocols. The IPT will seek advice from internal and external experts, including federal and provincial authorities (ECCC, DFO, MNR, MELCCFP, etc.), and will engage with Indigenous communities to contribute Indigenous Knowledge. This additional information will support the design of the Project to ensure that potential effects are first avoided and minimized, before mitigation measures are required. Offsetting will only be considered as a last resort to reduce negative effects from the Project.

Avoidance and Mitigation Measures

Design Phase

The primary mitigation approach will be to configure the Project footprint, including construction staging and stockpiling areas, so that known terrestrial habitats are avoided and protected where feasible.

Construction Phase

The limits of vegetation clearing and construction staging and stockpiling areas will be clearly delineated and wildlife habitat adjacent to construction areas will be illustrated as environmental protection areas in construction drawings. Other preliminary mitigation measures to prevent impacts to terrestrial habitats include the following:

- Prohibit entry into environmental protection areas by equipment or workers in contract tender documents
- Install erosion and sediment control measures around all work areas to prevent sediment runoff into environmental protection areas
- Install orange safety fencing around environmental protection areas to prevent accidental entry by workers or equipment
- Do not store equipment and materials within critical root zones of trees in the PA; retain a qualified professional to delineate critical root zones
- Retain wildlife trees (i.e., large trees with cavities, peeling bark, or other potential habitat features) wherever possible; delineate protection zones around wildlife trees, including dead trees.
- Implement a clean equipment protocol to minimize the potential for invasive plants to be introduced or dispersed beyond the PA by construction equipment
- If invasive plants are removed, follow BMPs for those species developed by the Ontario Invasive Plant Council (OIPC 2025), if available.

19.1.5.3 Flora

Effects of the Project on flora are expected to be long-term in duration but localized in scope. Vegetation may be removed within the PA, which may result in the destruction of plants, potentially including SoCC and provincially listed SAR (see Table 19-1). While some cleared areas will be renaturalized after construction, vegetation will be altered in the footprint of the bridge and related infrastructure.

It is expected that potential impacts to flora that is not of federal jurisdiction can be managed through a combination of provincial regulatory processes and the voluntary adherence to various construction and operations management plan by the IPT. Reasonable efforts will be done to reach out to provincial authorities regarding any SAR or SoCC that may be listed under their respective jurisdictions.

Potential effects on flora occurring on federal lands would be subject to federal jurisdiction. While the Project may affect vegetation on federal lands, the specific nature and extent of these effects will be identified once the preferred alignment has been selected. Potential effects on species at risk (SAR) on federal lands are discussed in Section 18.3.

Table 19-1: Potential effects of the Project on flora SoCC and provincially listed SAR.

Species		Potential Effects
Provincially listed SAR:		
Arrow-leaved Violet	Ostrich Fern	Construction: Plants could be destroyed if they fall within the construction footprint. May be affected by erosion and sedimentation or spills of deleterious substances.
Black Ash	Peach-leaved Willow	
Canada Lily	Philadelphia Panic Grass	Operation: May be affected by spills of de-icing salts or other deleterious substances.
Cattail Sedge	Pinedrops	
Cavernous Crystalwort	Poison Sumac	
Downy Rattlesnake-plantain	Prairie Sundrops	
Ebony Spleenwort	Pringle's Aster	
Fragrant Sumac	Purple Cliffbrake	
Green Dragon	Purple Crystalwort	
Halberd-leaved Tearthumb	Rock Elm	
Hoary Vervain	Rusty Flatsedge	
Horn-leaved Riverweed	Smooth Arrowwood	
Interior Butterfly Milkweed	Striped Coralroot	
Lizard Crystalwort	Swamp White Oak	
Long-spurred Violet	Switchgrass	
Maidenhair Fern	Torrey's Rush	
Many-headed Sedge	Vasey's Pondweed	
Mountain Liverwort	Virginia Chain Fern	
Narrow-leaved Glade Fern	Wild Leek	
New Jersey Tea	Wright's Spikerush	

Construction

Vegetation could be removed to accommodate the footprint of the new bridge and related infrastructure as well as construction access, staging, and laydown areas. The exact areas and species which will be affected by vegetation removals will be determined at the detailed design stage and in the impact statement.

Operation

Use of road salt or brine for de-icing operations on the new bridge could affect plants on Kettle Island which has never been exposed to salts. Salt spray would be greatest immediately adjacent to the bridge and decline rapidly between 20 and 30 m away. No other effects on plants are expected from operation of the new bridge or related infrastructure.

Planning and Additional Studies

Field surveys were initiated in spring 2025 to identify flora, including SAR and SoCC, within the LSA. Survey methodologies were developed using recognized survey protocols. The IPT will seek advice from internal and external experts, including federal and provincial authorities (ECCC, DFO, MNR, MELCCFP, etc.), and will engage with Indigenous communities to contribute Indigenous Knowledge. This additional information will support the design of the Project to ensure that potential effects are first avoided and minimized, before mitigation measures are required. Offsetting will only be considered as a last resort to reduce negative effects from the Project.

Avoidance and Mitigation Measures

Design Phase

The primary mitigation approach will be to configure the Project footprint in a way that minimizes the need to remove natural vegetation. The limits of vegetation clearing and construction staging and stockpiling areas will be clearly delineated.

Construction Phase

Natural vegetation outside construction areas will be illustrated as environmental protection areas in construction drawings and tender documents, and entry into these areas by contractors will be prohibited. A preliminary list of additional mitigation measures to reduce the potential effects of construction on flora includes the following:

- Prohibit entry into environmental protection areas by equipment or workers in contract tender documents
- Install erosion and sediment control measures around all work areas to prevent sediment runoff into environmental protection areas
- Install orange safety fencing around environmental protection areas to prevent accidental entry by workers or equipment
- Do not store equipment and materials within critical root zones of trees in the PA; retain a qualified professional to delineate critical root zones
- Implement a clean equipment protocol to minimize the potential for invasive plants to be introduced or dispersed beyond the PA by construction equipment
- If invasive plants are removed, follow BMPs for those species developed by OIPC (2025), if available.

A compensation plan for trees and/or other vegetation will be developed prior to construction and included in the tender documents. Opportunities to collect seeds to reintroduce certain plant species may be explored.

19.1.5.4 Fauna

Effects of the Project on wildlife are expected to be long-term in duration but localized in scope. Note that this section only discusses potential effects on wildlife not under federal jurisdiction (i.e., birds that are not listed on Section 2(1) of the *Migratory Birds Convention Act, 1994*; and other animals including SoCC and provincially listed SAR).

It is expected that potential impacts to fauna that is not of federal jurisdiction can be managed through a combination of provincial regulatory processes and the voluntary adherence to various construction and operations management plan by the IPT. Reasonable efforts will be done to reach out to provincial authorities regarding any SAR or SoCC that may be listed under their respective jurisdictions.

Potential effects on fauna occurring on federal lands would be subject to federal jurisdiction. While the Project may affect fauna on federal lands, the specific nature and extent of these effects will be identified once the preferred alignment has been selected. Potential effects on species at risk (SAR) on federal lands are discussed in Section 18.3.

Construction

Construction could directly affect fauna, including harm or destruction of adults, juveniles, eggs, or dens/nests.

The construction activities most likely to affect fauna are vegetation clearing and excavation because they could directly harm animals or remove habitats used for breeding, overwintering, foraging, or other life phases. Animals

sheltering in buildings could be harmed by demolition, if required. Urban wildlife could be found throughout the LSA and could be accidentally harmed if they enter work areas. Indirect effects of construction could include disturbance or displacement of birds, bats, and other wildlife due to noise and vibrations.

Operation

Wildlife could be injured or killed by vehicle strikes during operation of the new bridge and related infrastructure. Traffic noise and vibrations, and increased light could potentially disturb or displace animals. Birds not protected under the *Migratory Birds Convention Act* (e.g., raptors, most corvids) or SARA could nest on the bridge and could be harmed by maintenance activities but are unlikely to be harmed by typical operation.

Planning and Additional Studies

Field surveys were initiated in spring 2025 to identify the presence of wildlife (including provincial SAR/SoCC) and wildlife habitat (including breeding, overwintering, congregation, and foraging habitats) within the LSA. Survey methodologies were developed using recognized survey protocols. The IPT will seek advice from internal and external experts, including federal and provincial authorities (ECCC, DFO, MNR, MELCCFP, etc.), and will engage with Indigenous communities to contribute Indigenous Knowledge. This additional information will support the design of the Project to ensure that potential effects are first avoided and minimized, before mitigation measures are required. Offsetting will only be considered as a last resort to reduce negative effects from the Project.

Avoidance and Mitigation Measures

Design Phase

Design of the bridge will take into consideration the NCC Bird-Safe Design Principles (2021) and will incorporate dark sky-compliant lighting which minimizes light pollution and reduces the potential for wildlife disruption. Further, specific avoidance and mitigation measures for wildlife such as birds, reptiles, amphibians, and mammals will be developed at the detailed design stage. The prioritized approach will be to configure the Project footprint so that wildlife habitat is avoided and protected where feasible.

Construction Phase

The limits of vegetation clearing and construction staging and stockpiling areas will be clearly delineated and wildlife habitat adjacent to construction areas will be illustrated as environmental protection areas in construction drawings. A preliminary list of additional mitigation measures to reduce the potential effects of construction on fauna includes the following:

- Prohibit entry into environmental protection areas by equipment and workers in contract tender documents
- Where appropriate, conduct vegetation clearing within established timing windows to avoid critical life phases of wildlife
- Install erosion and sediment control fencing and/or other exclusion measures to prevent wildlife from entering construction areas; consider implementing BMPs for reptile and amphibian exclusion fencing recommended by Ontario's MECP (2025)
- Regularly inspect wildlife exclusion measures and immediately close any potential entry points
- Regularly inspect construction areas, including staging and stockpiling areas, for wildlife; if animals are found, stop work in the vicinity until a qualified biologist provides direction on how to proceed.

Operation Phase

Opportunities to mitigate wildlife road mortality by excluding animals from roads and providing safe crossings should be considered. This could include installation of permanent wildlife exclusion fencing along roads adjacent to natural areas, upsizing of existing bridges and culverts to improve wildlife access, and installation of dedicated wildlife culverts.

19.2 Potential Effects on the Social Environment

Social effects are generally anticipated to be positive and of benefit to all residents of the NCR by supporting regional growth and enhancing interprovincial mobility. The planning and design will focus on minimizing negative effects on communities along the corridor through a thoughtful and context-sensitive approach. A key benefit anticipated for downtown residents is the reduction in trucks using the KERWN corridor to connect from one highway to the other. Effects are expected to be mitigated through the careful design of new infrastructure that considers the specific needs of each segment.

Potential effects on the social environment will be considered throughout project planning and development. The FLUDTA process will provide opportunities to inform and enhance project design, while the IPT will work to identify and integrate avoidance and mitigation measures wherever feasible. These measures will be incorporated through project design and supported by construction and operational management plans to help minimize potential effects on the social environment.

19.2.1 Construction

Effects to adjacent communities from the construction of the Project related to traffic, detours and road closures are expected to be localized and temporary in nature during construction for each segment.

19.2.1.1 Traffic in Residential Areas

Potential effects include:

- Increased traffic, including heavy truck traffic from construction equipment, near neighbourhoods and at intersections where new developments are planned.
- Detours and road closures may affect active mobility options or have potential conflicts with vehicular traffic.

19.2.1.2 Pathway Use and User Experience

Most effects on pathway users are expected to be temporary and localized to areas immediately adjacent to construction activities. Potential construction-related impacts on the multi-use pathways could include the following:

Construction activities may temporarily reduce the quality and enjoyment of recreational experiences along the pathway network.

- Users may be exposed to increased noise, vibration, dust, and visual disturbance from construction equipment and activities.
- Reduced network continuity, requiring users to navigate alternative routes that may be less direct or less comfortable resulting in longer travel times and reduced convenience for pedestrians, cyclists, runners, and other users.
- Potential congestion at detour locations where pedestrian and cycling traffic are redirected onto narrower facilities or shared roadways.

- Temporary decreases in scenic quality due to the presence of construction equipment, stockpiled materials, fencing, and altered viewsheds.

Construction activities may introduce temporary safety concerns for pathway users, including:

- Increased interactions between pathway users and construction vehicles at crossing points or access roads.
- Changes to established travel patterns, creating confusion among users unfamiliar with temporary detours.
- Potential hazards associated with construction materials, excavations, uneven surfaces, or temporary barriers if not appropriately managed.

19.2.1.3 Access to Facilities, Green Spaces and Waterfront Areas

Pathways within the study area provide access to parks, riverfronts, natural areas, and other recreational amenities. Construction may:

- Reduced accessibility to recreational destinations such as parks, waterfront areas, and other attractions connected by the pathway network.
- Temporarily restrict access to portions of adjacent green spaces and waterfront areas.
- Reduce opportunities for walking, cycling, jogging, birdwatching, nature appreciation, and other outdoor activities in areas closest to construction activities.
- Affect visitor access to cultural, recreational, and tourism destinations that rely on pathway connectivity.

Potential effects on the social environment on federal lands will be similar to potential effects described in Section above. A notable difference of the footprint of potential direct and indirect impacts on federal lands will depend on the chosen alignment for the bridge crossing. Figure 13 5 shows overlap of the study area with federal lands.

19.2.2 Operations

19.2.2.1 Traffic in residential areas

- Access to areas adjacent to the corridor may be impacted by increased traffic congestion particularly at intersections with major arteries, which would make travel to and from residential areas more difficult.
- Potential effects on adjacent communities along the corridor include traffic in residential areas due to vehicular cut-through and community connections to facilities.

19.2.2.2 Pathway Use and User Experience

Upon completion of construction, users may benefit from:

- Improved transportation infrastructure and connectivity.
- Enhanced or upgraded pathway crossings and connections, where applicable.
- Improved safety and accessibility features associated with new infrastructure.
- Long-term maintenance or restoration of disturbed pathway segments and adjacent landscapes.

19.2.2.3 Access to Facilities, Green Spaces and Waterfront Areas

Operation of the new roadway and bridge may have several potential impacts on communities along the corridor, particularly for vulnerable neighbourhoods such as Overbrook, Manor Park, Lac-Beauchamp, and Pointe-Gatineau.

- Access, including pedestrian access, to community facilities may be impacted by changes to roadways and intersections, particularly for residents with reduced mobility. Community safety is a concern due to the presence of trucks along the corridor and at intersections.

19.2.2.4 Ottawa/Rockcliffe Airport Operations

Given the proximity of the Project to the Ottawa/Rockcliffe Airport, potential effects could impact the Airport and require physical changes to the runways. Alternately, the bridge and road design may result in changes to the take-off and landing operations which could have effects on adjacent communities.

To meet Transport Canada regulations, the runway may need to be extended to the East to allow sufficient safety clearance between the end of the runways on the West side and the new bridge. A land transfer agreement signed in 2005 between the NCC and Canada Aviation and Space Museum is in place to support this need if it arises.

Take-off procedures could also be adjusted depending on the height of the new bridge where flight paths would be directed towards the South over the communities instead of turning North over the river. This altered flight path could result in increased noise impacts to the communities, particularly Manor Park.

19.2.3 Avoidance and Mitigation Measures

19.2.3.1 Design Phase

- Design of road intersections is a mitigation strategy to address potential added traffic in neighbourhoods. The Project will seek to minimize vehicular cut-through impacts to local residents where possible.
- Mitigation measures such as safe pedestrian infrastructure, accessible transit connections, and community engagement strategies that prioritize the voices of marginalized populations will form part of the design development process. Most of these principles are included within the Project's planning and design principles (Section 7.3).
- During the design phase, priority will be given to using existing public rights-of-way and transportation corridors to minimize potential impacts on neighbouring private properties.
- Integration of active transportation modes including safe and accessible cycling and pedestrian routes to mitigate potential changes in access to community facilities.
- Multiple connection possibilities to regional networks are under consideration, with likely segregation of active transportation modes.
- Mitigation measures aimed at addressing disproportionate impacts on vulnerable communities will be assessed.
- Appropriate avoidance and mitigation measures to alleviate potential impacts to the Ottawa/Rockcliffe Airport and the Canada Aviation and Space Museum or its operations will be explored during the initial design phase.
- During the design of the bridge and its connection to the SGEC Parkway, appropriate avoidance and mitigation measures will be considered to minimize disruptions to the Ottawa/Rockcliffe Airport operations, particularly with respect to the takeoff flight path.

19.2.3.2 Construction Phase

Overall, construction activities could temporarily affect traffic patterns within communities, active mobility pathway accessibility, user experience, safety, and recreational enjoyment; however, these effects would generally be localized, short-term, and manageable through appropriate construction planning and mitigation measures.

Appropriate mitigation measures may include maintaining pathway access where feasible, implementing signed detours, scheduling disruptive activities to minimize conflicts with peak traffic and recreational periods, and restoring

disturbed areas following construction, residual impacts on communities, active mobility pathways and access to green spaces are anticipated to be minor and short-term.

- Efforts will be made to refine construction sequencing to avoid occupying or disturbing neighbouring properties.
- Additional mitigation measures will include minimizing the physical footprint of construction zones to reduce encroachment and utilizing public or vacant lands for staging areas wherever feasible.
- Affected property owners will receive timely updates regarding construction schedules, anticipated impacts, and planned mitigation strategies.
- The Project will modify access to various areas, businesses and services in the vicinity. Sometimes, a new access may be created and at other times access may be newly restricted.
- At this time, specific effects to communities related to access are difficult to define, as the Project is still in the conceptual design stage. As the Project advances and roadways and intersection structures are defined, potential effects of opening or restricting access will be evaluated for communities along the corridor.
- The anticipated effects to pathways would be mitigated through traffic management measures, clear signage, physical separation between construction activities and pathway users, and implementation of temporary pathway detours where required.

19.2.3.3 Operational Phase

Mechanisms to control access through some intersections (ex: southbound from the bridge to SGEC) are being explored to minimize commuter impacts and cut-through traffic and could include signage or other physical barriers such as gates.

19.3 Potential Effects on Human Health

19.3.1 Air Quality Effects

Hospitals, seniors' residences, and daycares represent locations where vulnerable populations are concentrated. Pollutant emissions are expected to be below thresholds of concern to human health during construction and operations (WSP 2019a, 2024c).

It is expected that potential effects to human health will be evaluated by the IPT with a Human Health Risk Assessment and feasible avoidance and mitigation measures will subsequently be applied to project design, construction and operations.

19.3.1.1 Construction

Effects to human health from the Project related to air quality are expected to be localized and temporary in nature during construction.

- Emissions from construction equipment and vehicles may release pollutants such as particulate matter (PM_{2.5} and PM₁₀), nitrogen dioxide (NO₂), carbon monoxide (CO), and volatile organic compounds (VOCs).
- Dust generation from exposed soils and stockpiles may affect respiratory health, particularly for vulnerable populations (e.g., children, seniors, individuals with asthma).
- Localized air quality degradation near construction zones could lead to temporary discomfort or health risks.

19.3.1.2 Operations

During operations, effects are expected to be low in magnitude; however changes in air quality can affect certain segments of the population differently than others; vulnerable groups (e.g., those with compromised health, children, and older adults) are more sensitive to reduced air quality.

- Increased traffic volumes, especially heavy truck traffic, may elevate emissions in adjacent residential areas.
- However, the Project aims to divert trucks from downtown Ottawa, which could improve air quality in core urban areas.
- Integration of active transportation and public transit infrastructure may reduce reliance on personal vehicles, potentially lowering long-term emissions.

19.3.1.3 Avoidance and Mitigation Measures

Design Phase

- A Human Health Risk Assessment (HHRA) will be conducted in the Impact Statement phase once design of the Project is advanced to assess potential effects from airborne contaminants and dust and develop mitigation strategies, if required.

Construction Phase

- Apply the most stringent air quality standards
- Electrification of construction equipment and fleet vehicles.
- Minimize idling of machinery and vehicles.
- Regular maintenance of equipment to ensure optimal performance.

- Water exposed soils and unpaved surfaces.
- Cover or stabilize stockpiles of granular materials.
- Rapid stabilization of disturbed areas using native seed mixes or erosion control mats.

Operational Phase

- Dedicated lanes for public transit and active transportation (e.g., cycling, walking).

19.3.2 Noise and Vibration Effects

Construction

Effects to human health from the Project related to noise are expected to be localized and temporary in nature during construction. Construction noise in proximity to residences could affect the sleep and mental well-being of residents.

- Noise from excavation, pile driving, and machinery may cause temporary disturbances.
- Effects are expected to be localized and short-term, but could still impact sleep, stress levels, and well-being of nearby residents.

Operations

During operations, effects are expected to occur in certain segments of the corridor, and those effects are expected to be mitigable with the installation of noise barriers.

Without mitigation, increased traffic noise is predicted to exceed Health Canada guidance thresholds at 30 noise sensitive areas (NSAs) in the Project corridor (WSP 2024g). Residential noise impacts are predicted to be greatest near Montée-Paiement and Aviation Parkway due to increased traffic volumes along the corridor. Without mitigation, noise levels in neighbourhoods adjacent to these roads are predicted to increase between 2.5% and 16.8% (WSP 2020c). It is however predicted that the implementation of noise barriers as mitigation will allow all NSAs to fall within Health Canada guidance thresholds.

- Increased traffic, especially heavy trucks, may lead to increases in noise exposure in adjacent communities.
- Low-income and vulnerable populations may be disproportionately affected.

Avoidance and Mitigation Measures

Design Phase

Throughout the design of the Project, infrastructure options within the corridor will consider effects to the acoustic environment, including potential effects on human health related to noise and vibrations. Preference will be given to options that can avoid or provide adequate mitigation for effects to the acoustic environments.

- An HHRA will be conducted in the Impact Statement phase once design of the Project is advanced to assess potential impacts and develop required noise reduction infrastructure.
- Design elements such as noise barriers and landscaping to reduce roadway noise.

Construction Phase

- Limit noisy activities to daytime hours.
- Provide advance notice to nearby residents about high-noise activities.
- Use of noise-reducing equipment and mufflers.
- Installation of temporary noise barriers near sensitive receptors.

Operational Phase

- Physical sound barriers along the corridor where required.
- Vegetated buffers and berms to absorb and deflect sound

19.3.3 Drinking Water Effects

Construction

- Increased sedimentation and turbidity from construction activities such as excavation, pile driving, shoreline disturbance and coffer dams could release sediments, and complicate the water treatment process
- Construction activities could also negatively affect water quality near the water intake, therefore having undesirable consequences on drinking water

Operations

- Alteration of hydrology and flow patterns caused by local scour near piers which can in turn affect water quality near the water intake
- Long-term runoff from the bridge surface which may include metals from vehicle wear, de-icing salts and hydrocarbons

Avoidance and Mitigation Measures

Design Phase

- The assessment of the bridge alignment alternatives should take into consideration the drinking water intake protection zone and the vulnerabilities associated with water quality (for example, the minimum safe distance between the bridge and the intake).
- Consider the presence of the drinking water intake when determining the location of stormwater drains, the capacity of retention basins and overflow scenarios.
- Investigate design options that include the management and treatment of stormwater.

Construction Phase

- Complete water quality assessments before, during and after construction. Continuous monitoring will be required before, during and after the works.
- Implement effective mitigation measures for and monitoring of turbidity, sedimentation, containment measures and drinking water quality thresholds.

- Develop a contingency plan for accidents or malfunctions, in collaboration with the City of Gatineau water treatment plant operators, that includes mechanisms for alerting the water treatment plant operators and/or for stopping construction work.

Operational Phase

- Establish protocols, in collaboration with the City of Gatineau water treatment plant operators, for managing emergencies that can have an impact on drinking water quality, such as accidental spills. Response times and a system for communicating with the City of Gatineau for decisions to close the intake in the event of an emergency will be required (site-specific emergency protocol; clear federal-municipal decision chain).
- Impacts of winter abrasives on water quality

19.4 Potential Effects on Archeological Resources

19.4.1 Construction

Effects to archeological resources may occur during the construction of the Project. These effects are difficult to predict without a full comprehension of the Project footprint (including temporary staging areas). Specifically, archeological resources can be impacted by construction activities such as excavations, drilling and the removal of vegetation. The extent of these potential effects depends on the exact location of these activities during staging, construction activities or the creation of laydown areas.

Construction activities near or in-water may also have negative effects on potential underwater archeological resources such as the installation of moorings, dredging, construction of bridge piers and abutment construction near the shoreline.

19.4.2 Operations

Once operational, it is not expected that the Project would have any effects on archeological resources.

19.4.3 Avoidance and Mitigation measures

In accordance with federal, provincial and municipal regulatory requirements, mitigation and follow-up measures to minimize the effects on archaeological resources may include the following:

- Develop a strategy that places priority on managing sites that are prone to erosion and may contain archaeological resources
- Conduct research to more accurately determine the extent of known archaeological sites
- Manage known archaeological sites in collaboration with the Algonquin people and in accordance with the Protocol for the Co-management of Archaeological Resources (2017) and the Parks Canada's Cultural Resource Management Policy (2013)
- Recognize and promote the educational value of archaeology and heritage
- Conduct an underwater archaeological survey of the riverbed within the PA
- A detailed archaeological study will be undertaken to identify all known archaeological resources and areas of pre-contact and historical archaeological potential to be avoided by Project work as well as to determine mitigation measures (e.g., rescue excavation and monitoring) for zones of archaeological sensitivity that cannot be avoided. The IPT will work with interested Indigenous communities to provide opportunities for meaningful engagement and establish processes for Indigenous communities to have representatives present and potentially participate during archaeological resource recovery programs.
- In the event that previously unidentified resources of historical, archaeological or paleontological significance are discovered within the PA, implement the NCC' Protocol for the Co-management of Archaeological Resources (2017), including the following mitigation measures to protect and manage the chance finds:
 - Immediately halt work at the location of a discovery;
 - Delineate an area around a discovery as a no-work zone;
 - Notify the IPT immediately. The IPT will then notify the appropriate Indigenous Communities and IAAC within 24 hours of a discovery and allow the Communities to monitor archaeological works, where feasible;

- o Develop mandatory training on chance finds, which includes the identification of sensitive locations within the PA and the implementation of the above measures; and deliver this training to all employees and contractors associated with the Project.

19.5 Potential Economic Effects

WSP (2019b) completed an Economic Development Potential Study which assessed the potential impacts of the Project on the local economy. Significant changes in the local economic setting and employment context occurred as a result of the COVID-19 pandemic beginning in 2020. This, in addition to ongoing residential and commercial development in the neighbourhoods surrounding the Project, prompted the preparation of an updated Economic Development Report in 2024 (WSP, 2024e).

The refresh methodology considers any changes to economic development potential that may have occurred since the 2019 Economic Development Potential Study. This could be driven by vacant lands that have been developed since 2019, or new parcels that have become available in that time.

The update report considers changes driven by policy shifts (e.g., changing land use designations and Official Plan policies) and other regulatory tools (e.g., updated zoning permissions, modified development charges, etc.).

The City of Gatineau adopted several amendments to its Urban Plan (plan d'urbanisme) since 2019. The amendments do not have a significant impact on the corridor analysis or surrounding lands. A proposed interprovincial crossing remains consistent with the City's policies and strategies.

The City of Ottawa's new Official Plan (OP) was formally adopted by Council on November 24, 2021. The City's new Official Plan recognizes the importance of a new interprovincial crossing with the "City-Wide Policies – Mobility" Section. The proposed interprovincial crossing remains consistent with the City's policies and objectives.

As part of the overall economic development study (WSP, 2024e), an economic impact analysis was carried out with assessments performed at the provincial level for both Québec and Ontario to account for the interprovincial nature of the Project. The assessment of economic impacts was completed using Statistics Canada provincial input-output multipliers that account for and reflect the diverse structure and linkages of the two provincial economies.

Through this process, direct, indirect, and induced impacts of the corridors were assessed. These impacts can broadly be defined as the following:

- Direct impacts measure the initial requirements for a unit of output by an industry. In the case of PSPC, that could represent new spending, hiring, and production by construction companies to accommodate the demand for resources to complete the proposed Project.
- Indirect impacts result from the quantity of inter-industry purchases necessary to support the increase in production from the relevant industries experiencing new demands for its goods and services. For example, all industries that produce goods and services consumed by the construction industry will also increase production and, if necessary, hire new workers to meet the additional demand.
- Induced impacts stem from the re-spending of wages and salaries earned by workers benefiting from the increase in direct and indirect expenditure activity within an area. For example, if an increase in construction demand leads to new employment and earnings in a set of industries, workers in these industries will spend some proportion of their increased earnings at local retail shops, restaurants, and other places of commerce, which would further stimulate economic activity.

To estimate economic development potential, a selection of vacant parcels was identified. The analysis used data on existing land use that was obtained in 2019 from the City of Ottawa and the Ville de Gatineau. The data was refreshed in 2024 by reviewing updated aerial imagery to confirm any changes in land use (WSP, 2024e). The potential for economic development in proximity to the Project in terms of the potential number of new jobs, based on opportunities to develop vacant lots area around the corridor are 1,360 jobs in Ottawa and 6,809 jobs in Gatineau. Large generators include the Gréber Business Zone and the Gatineau Business Park.

This impact analysis does not include contingency and escalation costs as these costs cannot be categorized.

19.5.1 Construction

Economic impacts of the construction phase for the Project:

- During the construction phase, capital expenditures translate to an estimated 33,514 person-years of employment, a labour income of \$2.8 billion, and a GDP contribution of \$4.4 billion. These figures are based on the aggregate of direct, indirect, and induced impacts.
- In terms of government revenue, the construction phase brings in an estimated \$260 million in taxes on production, and an additional \$162 million from taxes on products.

Several concerns were identified during the initial public engagement that apply to the construction as well as operation of the bridge and corridor. During construction, concerns were raised regarding the need to support the efficient movement of commercial goods and to maintain access to businesses.

Efficient Movement of Commercial Goods

- Changes to the roadway network could affect the efficient movement of commercial goods. Modifications such as lane reductions, altered traffic patterns, increased congestion, or restricted turning movements may result in longer travel times for freight vehicles, reduced reliability of delivery schedules, and increased transportation costs for businesses that depend on timely movement of goods and services.

Limiting Business Access

- Temporary road closures, detours, reduced parking availability, and changes to site access configurations could affect customer visits, employee access, deliveries, and overall business operations, potentially resulting in economic impacts during project implementation.

19.5.2 Operations

Feedback received during the initial public engagement highlighted concerns about potential effects on property values, increases in property taxes, and the potential displacement of residents and businesses.

Potential Impacts on Property Values

- Property owners raised concerns regarding the potential effect of the project on nearby property values. Factors such as changes in traffic volumes, increased noise, visual impacts, access modifications, and perceived changes to neighbourhood character could influence the attractiveness of adjacent properties and, consequently, their market value.

Property Taxes

- There were concerns about the possibility of increased property taxes associated with the project. There were questions whether project-related investments, property acquisitions, or potential increases in assessed property values could result in higher tax burdens for affected landowners.

Displacement Issues

- Concern that property acquisition requirements, right-of-way expansions, or construction-related impacts could result in the relocation of residents, businesses, or community services. Such displacement may create financial, social, and operational challenges for those affected.

19.5.3 Avoidance and Mitigation measures

The following mitigation measures could be considered to address the identified socio-economic concerns associated with the road modification project.

Efficient Movement of Commercial Goods

A stated objective for this project is to address regional growth by enhancing interprovincial connectivity in alignment with long-term transportation plans. To support effective movement of commercial goods, the project design will consider potential volumes to maintain adequate roadway capacity and accommodate freight operations throughout the corridor. Measures may include:

- Preserve or enhance truck routes and key freight connections.
- Optimize intersection designs, traffic signal timing, and turning movements to improve traffic flow.
- Maintain sufficient lane widths and turning radii to safely accommodate commercial vehicles.
- Implement construction staging plans that minimize disruptions to freight and delivery operations.
- Coordinate with local businesses, freight operators, and emergency services during design and construction to identify and address operational concerns.
- Monitor traffic conditions following project implementation and making adjustments, where feasible, to improve network performance.

Limiting Business Access

Maintaining business access during construction and operation is critical to reducing economic impacts. Potential mitigation measures include:

- Maintain access to businesses throughout construction wherever feasible.
- Implement phased construction approaches to limit the duration and extent of access restrictions.
- Provide clear signage and wayfinding to direct customers, employees, and delivery vehicles to businesses.
- Coordinate construction schedules with affected businesses to avoid peak operating periods when possible.
- Maintain loading areas, parking access, and delivery routes to the greatest extent practical.
- Establish ongoing communication of upcoming construction activities and respond to concerns.
- Monitor access conditions during construction and making adjustments as required to maintain reasonable business operations.

Potential Impacts on Property Values

Although property values are influenced by many factors beyond transportation projects, potential concerns can be addressed through measures that reduce nuisance effects and maintain neighbourhood attractiveness. These may include:

- Incorporate context-sensitive design features that complement the surrounding area.
- Implement landscaping, streetscape improvements, and aesthetic enhancements where appropriate.
- Minimize noise, vibration, and visual impacts through design refinements and mitigation measures.
- Maintain safe and convenient access to residential and commercial properties.
- Provide transparent communication regarding project benefits, timelines, and anticipated impacts.
- Monitor and respond to community concerns to ensure local issues are appropriately considered throughout project development.

Property Taxes

While property taxation decisions are outside the scope of a road project, concerns regarding potential tax implications can be addressed through public engagement and information sharing by:

- Clearly communicate the project funding sources.
- Provide information on how property assessments and taxation are administered by the appropriate authorities.
- Explain that transportation projects do not necessarily result in increased property taxes for adjacent landowners.
- Coordinate with municipal departments to ensure consistent messaging regarding assessment and taxation processes.
- Maintain transparency regarding any property acquisition requirements and compensation processes.

Displacement Issues

Reducing impacts on private property is a factor that will be used in the project design. Where property acquisition or relocation may be required, the design will consider options to avoid or minimize displacement impacts. Potential measures include:

- Refine the design to reduce property requirements wherever feasible.
- Consider alternative alignments or cross-sections that limit impacts on residences, businesses, and community facilities.
- Engage affected property owners and tenants early in the planning process.
- Provide fair compensation in accordance with applicable legislation and policies.
- Offer relocation assistance and support where displacement cannot be avoided.
- Develop acquisition strategies that provide sufficient time for affected residents and businesses to plan and relocate.
- Continue consultation with potentially affected stakeholders throughout design and implementation.

Collectively, these measures can help reduce potential socio-economic impacts while supporting the overall objectives of the Project.

19.6 Potential Effects to Federal Lands

Potential effects to the biological environment on federal lands will be like potential effects described in Section 19.1.5.2 of this document. The main difference is the footprint of potential direct and indirect impacts on federal lands that can be expected versus non-federal lands. This will depend on the chosen alignment over Kettle Island. Figure 13-5 shows overlap of the study area with federal lands.

Vegetation removal could directly and indirectly affect terrestrial habitats on federal lands, with the extent of effects depending on final alignments and the overall Project footprint. Vegetation clearing for the new bridge, associated infrastructure, and construction access areas could result in localized but long-term habitat loss for terrestrial flora and fauna. This could result to the destruction of plants, potentially SAR or SoCC species. Specific affected areas and species to be confirmed during detailed design and the Impact Statement.

For Species at Risk and Species of Conservation Concern, effects on federal lands are expected to be the same as those presented in Table 18-1 (for SAR and SoCC). To avoid and mitigate potential impacts on federal lands to SAR and SoCC species, the Project will prioritize avoiding impacts by carefully designing the footprint, including construction staging and stockpiling areas, to protect known habitats where feasible. If impacts to SAR habitats cannot be avoided, required permits and potential offsetting measures will be implemented in coordination with regulatory authorities. For species listed under Schedule 1 of SARA and that are on federal lands, these would be of federal jurisdiction while these same species of land other than federal lands do not fall under federal jurisdiction. Species at risk and Species of Conservation Concern listed in provincial regulations present on federal lands would not be of federal jurisdiction.

Specifically, avoidance and mitigation measures presented in Section 18.3.2.2 will also be applied to any effects to SAR/SoCC on federal lands while avoidance and mitigation measures presented in Section 18.4.4 also apply to migratory birds present on federal lands.

20 Potential Impacts on Physical and Cultural Heritage of Indigenous Peoples

The IPT continues to actively engage with Indigenous communities. Engagement for this Project was initiated in spring 2025 and collaboration agreements are being negotiated. One collaboration agreement was formally signed with AOPFN.

Engagement with Indigenous communities has occurred on various projects ranging from smaller scale bridge works (such as maintenance or repair) to large infrastructure projects, including the replacement of the Timiskaming Québec Dam-Bridge, the replacement of the Alexandra Bridge, and the Energy Services and Acquisitions Project (ESAP). In these discussions, valued components and potential impacts were recorded to inform a comprehensive approach to mitigating impacts of those projects. In addition, individual communities led studies to contribute valuable Indigenous knowledge to help understand impacts to their physical and cultural heritage.

The following section presents a preliminary summary of the perspectives and insights gathered from past engagement. Valued components (VC) and potential impacts were identified from past meetings notes and reports, including studies completed by Indigenous communities for other projects.

The information is presented to offer a starting point for discussions. Communities will be requested to validate that the information correctly captures and reflects their interests and that it applies to the context of the current Project. The IPT will also seek to understand if other VCs apply to the Eastern Bridge Project and will work with communities to develop mitigation strategies to address identified impacts.

Current and proposed engagement with Indigenous communities specific to the Eastern Bridge Project is presented in Section 4. Continuous and meaningful engagement with Indigenous communities will occur throughout all phases of the Eastern Bridge Project. At this stage of the Project, engagement with Indigenous communities is just starting.

20.1 What We Heard - Identification of Potential Impacts on the Environment

Specific concerns from both primary communities (AOPFN and KZA) are outlined in Section 20.1.1 while concerns from other communities are summarized in Section 20.1.2.

20.1.1 Primary Communities

20.1.1.1 Algonquins of Pikwakanagan First Nation

In past engagements, Algonquins of Pikwakanagan First Nation (AOPFN) has identified valued components for similar project work. A summary of these discussions, pertaining to potential impacts on cultural heritage and the natural environment, is provided below. In addition to these valued components, further concerns have been raised regarding cumulative effects in the Ottawa River, as well as mitigation of project impacts. Concerns have been noted in past projects regarding the impacts of dams and water regulation in the Ottawa River watershed, including potential effects on aquatic and terrestrial species in the riparian zone. Indigenous knowledge (where permitted to be shared) should be incorporated when considering the potential impacts of the Project.

Valued Component: Cultural Heritage

Concerns: The Kichi Sibi (Ottawa River) is of great importance to AOPFN. It has traditionally and continues to be used as a network enabling harvesting, fishing, trade and transportation. Archaeological artifacts have been found at several locations along the shorelines of the river, and these historical sites and resources are of great value to the community. Certain sites along the river, such as Kettle Island, also hold spiritual significance. AOPFN was displaced to its current location near Golden Lake, which has had lasting impacts on the community's health and social traditions.

Valued Component: Environment, land and water

Concerns: Concerns were raised in past projects regarding the impacts of new infrastructure on both the land and the river. AOPFN has previously requested involvement in the assessment and development of infrastructure improvements. Specific concerns include changes to the shoreline and requests to consider comprehensive buffer zones when assessing potential Project effects and identifying mitigation measures. Sediment transport, changes to water flow, impacts on water quality, and the presence of deleterious substances have also been identified as concerns, particularly in projects involving water diversions, water discharge, cofferdams, and groundwater connections.

Valued Component: Environment, terrestrial and aquatic species

Concerns: During engagement for past projects, AOPFN expressed concerns regarding potential impacts on terrestrial and aquatic species and their habitats. Concerns were raised about the American Eel, including habitat degradation, barriers to fish passage, and population decline. Additional concerns include the loss of culturally important plant species; impacts from past projects on migratory birds and the need for a long-term vision for their migration routes; and the effects of increased noise during the construction and operation of the interprovincial crossings. AOPFN has also emphasized the importance of developing protection and enhancement measures for wildlife in collaboration with Indigenous communities, as well as their interest in the design and development of habitat restoration plans, and participation in ecological restoration work.

AOPFN has received federal funding through a collaboration agreement to undertake Project-specific studies, including an Alternative Means Assessment (AMA), a Socio-Economic Impact Assessment (SEIA), a Cultural Impact Study (CIS), a Navigation Study, an Algonquin Knowledge and Land Use Study (AKLUS) and a Rights Impact

Assessment (RIA). These AOPFN-led studies are intended to identify community values and potential effects of the Project on health, culture, well-being and the exercise of rights. The results will inform the evaluation of alternatives, Project design, and the development of mitigation measures.

20.1.1.2 Kitigan Zibi Anishinabeg First Nation

Discussions with Kitigan Zibi Anishinabeg (KZA) for past infrastructure projects in the region have identified valued components in many areas of environmental protection. The community expressed that the engagement process should continue to be reviewed and clarified to ensure effective participation and engagement.

Valued Component: Environment, terrestrial and aquatic species

Concerns: KZA noted that Species at Risk mussels are known to be present near Kettle Island. Discussions with KZA have been held for past projects regarding monitoring of construction works and studies. Specific to mussels, KZA expressed interest in understanding potential impacts, and the potential for a monitoring station. Mussels are very sensitive and can be highly impacted by changes in water quality. Further, KZA expressed concerns about the well-being of American Eel. Interest was also expressed in ensuring that baseline study areas and subsequent study boundaries were appropriate to the aspect under study.

Valued Component: Water, drainage and surface water

Concerns: Concerns expressed in past project discussions about changing water levels in the Kichi Sibi.

20.1.2 Other Communities and Organizations

The environmental concerns raised from Indigenous communities in relation to similar federal Projects reflects a shared emphasis on the protection and preservation of aquatic ecosystems and culturally significant species. Key issues include potential disruptions to fish habitat, spawning grounds, and the movement of aquatic species due to in-water construction activities. There is also concern about water quality, sedimentation, erosion, and changes in water flow and temperature, which in turn could impact aquatic species and their habitats.

Broader ecological impacts such as air quality impacts, vegetation loss, and disturbances to wildlife—including migratory birds, bats and species at risk like Lake Sturgeon, American Eel, certain mussels and turtles were also noted. Communities have expressed interest in participating in ecological studies, contributing Indigenous knowledge, and ensuring that cumulative effects are considered. The Ottawa River is consistently recognized as a valued environmental and cultural component, underscoring the importance of meaningful engagement and robust mitigation strategies throughout Project planning and implementation.

20.2 Potential Effects and Mitigation Measures

Table 20-1 provides an overview of valued components, impacts, and early approaches to mitigating adverse effects of the Project. These VCs have been compiled from some early discussions specific to the Eastern Bridge, but also from past discussions for other projects with the potential for similar impacts on the environment.

Table 20-1: Initial assessment of impacts – Changes in the environment

Valued Component	Potential Impacts on Environment	Potential Impacts on Indigenous People	Mitigation
Ottawa River	Effects to the river, including the shorelines	Effects on access and cultural significance of the river	Avoid and minimize construction footprint during design, avoid

Valued Component	Potential Impacts on Environment	Potential Impacts on Indigenous People	Mitigation
			encroaching in any areas of high cultural significance
Water Quality	Sediment transport, accidental spills, contamination of water from construction or operation	Effects to aquatic wildlife, reduction of drinking water quality	Sediment curtains, silt fencing, spill prevention measures
Drainage and Surface Water	Water level and flow changes	Access to waterways, effects to aquatic wildlife	Timing of works, using proper equipment, using exclusion zones, proper design, management of surface water drainage on the bridge
Vegetation	Removal of vegetation, emissions and dust	Effects to wildlife, effects to country foods,	Avoiding tree critical root zones, re-instatement with native species identified in consultation with Indigenous groups, design for a maximum of avoidance of vegetation removal, vegetation compensation, invite Indigenous groups to participate in the reclamation activities
Wildlife and Wildlife Habitat, including Migratory Birds and Species at Risk	Loss/degradation of habitat, removal of vegetation, disturbance, fatalities	Additional pressures to SAR, effects to wildlife and their habitat, harvesting	Timing windows, design for avoidance, exclusion measures, follow ECCC/provincial regulatory guidance
Fish and Fish Habitat, including Species at Risk	Loss/degradation of habitat, loss of fish passage, disturbance, fatalities	Effects to fish and their habitat, additional pressures to SAR, effects on fishing	Timing windows, design for avoidance, exclusion measures, follow DFO/provincial regulatory guidance
Valued fish and mussel species (American Eel, Lake sturgeon)	Loss/degradation of habitat, loss of fish passage, disturbance, fatalities	Effects to fish and their habitat, additional pressures to SAR, effects on fishing	Timing windows, design for avoidance, exclusion measures, follow DFO/provincial regulatory guidance
Air Quality	Construction and dust emissions	Effects to country foods and human health	Human Health Risk Assessment, dust control measures
Soil contamination	Accidental spills, existing conditions	Effects to country foods and human health, effects to wildlife, leaching of contaminants into aquatic habitat	Spill prevention and response measures, contaminated soil management

21 Potential Impacts on Health or Socio-economic Conditions of Indigenous Peoples

21.1 Health Impacts

Potential negative effects on fish populations, vegetation and wildlife may result from the release of contaminants into the air or water. These can in turn have negative impacts on the health and socio-economic conditions of Indigenous communities. Potential impacts on health conditions have been discussed in relation to other NCR projects that are similar to the Project in terms of scope (bridge construction and maintenance).

Concerns raised in those discussions included the following:

- Recognizing the importance of the Kichi Sibi (Ottawa River) and tributaries for sustainable living practices of community members
- Concern for the health of fish populations, movement of species, and effects on community members reliant on the fishery for food requirements
- Concern regarding sediment quality assessments and the timing of studies, as studies conducted too late could increase the risk of health impacts of Algonquin community members “if contaminants are taken up by fish species and subsequently eaten by Algonquin community members”
- Avoidance of water use of the Kichi Sibi should it be impacted, uses such as drinking, swimming and bathing
- Loss of access and travel through the Kichi Sibi
- Wider concern regarding barriers to employment, decreased participation in cultural events, increases in non-Indigenous land and resource use, disruption of community life (non-Indigenous), demands on health care facilities (non-Indigenous)

These concerns, previously raised, will be integrated with concerns heard during engagement for the Eastern Bridge and be considered in the design stage of the Project. Further, potential negative effects to human health will be evaluated following a HHRA to be completed during the Impact Statement phase.

21.2 Cultural Impacts

During the engagement for the Alexandra Bridge Replacement Project, concerns for potential impacts to culturally sacred sites located in the vicinity of the Project were expressed. The concern for access to several areas will be discussed with Indigenous communities and groups during planning for construction related activities. It is expected that there will be similar concerns regarding historical and archaeological sites for the Eastern Bridge Project.

Based on studies conducted in previous phases of corridor selection, the IPT is aware of areas of pre-contract archaeological potential as shown on maps in Section 15. It is expected that following advancements in the design of the Project, potentially impacted areas would be investigated and evaluated to ensure no archaeological resources are damaged or lost.

21.3 Social and Economic Impacts

To provide economic participation support to Indigenous communities, PSPC have developed tools including the following:

- **Directive on the Management of Procurement**—Ensures increased participation in contracting by mandating a minimum target of 5% of the total value of contracts is awarded to Indigenous businesses annually
- **Capacity building**—Addressing long-term, lasting, meaningful and sustainable participation/inclusion to Indigenous communities, Peoples and businesses.
- **Careers**—Leveraging the human resource capabilities of PSPC and NCC to hire and train Indigenous people
- **Indigenous Participation Plans**—Detailed in section 21.3.1
- **Collaboration Agreements**—Support for community participation, meetings, outreach and correspondence related to the Project

21.3.1 Indigenous Participation Plans

PSPC has worked successfully in the past to leverage employment, training and skills development, sub-contracting, and the opportunity for the provision of capacity building for Indigenous Businesses and Peoples. The objective has been to:

- Assist in the development of Indigenous workers and businesses that will contribute to the economic development of Indigenous communities.
- Help stimulate Indigenous employment and business development.
- Provide opportunity for Indigenous businesses through sub-contracting and/or joint ventures with the general business community, when bidding on tenders.
- Through innovative approaches help stimulate economic development of Indigenous communities and contribute to capacity building for Indigenous Businesses and Peoples

Contracting for the Eastern Bridge Project will require bidders to submit Indigenous Participation Plans (IPP) for meaningful sub-contracting, employment, skills development and opportunities for capacity building, for Indigenous Businesses and Peoples throughout the duration of the Project.

In alignment with the Government of Canada commitment to reconciliation and meaningful engagement, the purpose of the IPP is to establish a clear framework to advance Indigenous participation, capacity building, and business planning throughout the duration of the Project.

The IPP outlines the approach and strategy for creating opportunities in the four Pillars:

1. Indigenous Human Resource Plan: Provides an opportunity to establish baseline tracking, engage with Indigenous professionals, and create the systems and processes that will enable expanded Indigenous human resources opportunities in future phases.
2. Indigenous Skills Development: Aims to establish partnerships, scoping needs, and embed capacity-building into project design.
3. Business Planning: Aim is to establish tracking systems, build supplier lists, and initiate relationships with Indigenous businesses.
4. Capacity Building and Other Measures: Creating long-term pathways for Indigenous participation in environmental, design, and construction-related opportunities.

The IPP also serves as a tool to monitor and report on Indigenous participation performance, focusing on accountability and continuous improvement, contributing to building Indigenous capacity and supporting the long-term business planning of Indigenous communities through collaboration, mentorship, and inclusive business practices.

The IPT will engage with Indigenous communities and groups specifically on the Eastern Bridge Project to better understand how they will want to be involved in economic activities related to the Project.

22 Greenhouse Gas Emissions

22.1 Introduction

This section discusses the initial estimate of GHG emissions associated with construction, operation, and decommissioning of the Project, as outlined in the SACC, which sets out the requirements for including climate change in Federal environmental assessments, and associated guidance provided in the SACC's Draft Technical Guide for GHGs (ECCC 2021b).

The Project will align with the following objectives of the GGS (Treasury Board, 2025): low-carbon New Construction, Implement Buy Clean: Low Carbon Construction, Reduce Water Consumption and Reduce Waste Amount.

In 2024, WSP prepared an initial estimate of GHG emissions associated with Project construction, specifically focussing on Corridor 5, 6 and 7. The results from that study, as they pertain to Corridor 5, which is the corridor selected for the Project, have been used in preparing this section. Construction emissions are predicted to be the greatest contribution of GHG throughout the life of the Project. As discussed in Section 7, the additional capacity created by the new bridge will allow opportunities to convert vehicular lanes on interprovincial bridges in the core area to create dedicated transit and carpooling lanes where the travel demand is the highest

The initial GHG estimate calculates the total carbon dioxide equivalent (CO₂e) emissions of carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O) resulting from direct emissions and acquired energy during construction activities, land use change, and loss of carbon sinks (e.g., loss of forest cover). Operational emissions have partially been estimated and will be refined in the Impact Statement, per Section 3.1.1 of the SACC (ECCC, 2021a).

An upstream emissions assessment has not been prepared for this Project as it is not expected to exceed the threshold of 500 kt CO₂ eq/year of upstream emissions, consistent with section 3.2.2 of the SACC (ECCC, 2021a).

22.2 Formula and Definitions

Total CO₂e representing the Net GHG Emissions is calculated using the following equation (ECCC, 2021b):

$$\text{Net GHG emissions} = \text{direct GHG emissions} + \text{acquired energy GHG emissions} - \text{CO}_2 \text{ captured and stored} - \text{avoided domestic GHG emissions} - \text{offset credits}$$

A definition for each emissions category is provided below, based on the SACC (ECCC, 2021a) Section 3.1.1:

- **Direct GHG emissions:** Emissions generated by activities that are within the defined scope of the Project, i.e.: from sources that are owned or controlled by the proponent. These sources may include mobile fuel combustion (e.g. construction vehicles), stationary combustion (e.g. boilers), land clearing activities; and emissions equivalent associated with vegetation removal (i.e., loss of carbon sinks), and flaring, venting and fugitive emissions. This analysis assumes that there are no industrial processes associated with the Project.
- **Acquired Energy GHG emissions:** Emissions associated with the off-site generation of electricity, heat, steam or cooling, that is purchased or acquired from a third-party at any stage of the Project.
- **CO₂ Captured and Stored:** Emissions generated by the Project and permanently stored in a storage project (e.g. deep saline aquifer injection), using capture, transportation, and storage methods that comply with federal or provincial laws. CO₂ capture and storage is not considered at this stage of the Project.

- **Avoided Domestic GHG emissions:** Net emissions that are reduced or eliminated in Canada because of the Project. The avoided GHG emissions only apply to the project's net GHG emissions (i.e., not to any upstream emissions calculations). Avoided domestic GHG emissions are not considered at this stage of the Project.
- **Offset Credits:** Emission reductions or removals generated from activities that are additional to what would have occurred in the absence of the offset project (i.e., generated from activities that go beyond legal requirements and a business-as-usual standard). Each offset credit generated by an offset project represents one tonne of carbon dioxide equivalent (CO₂e) reduced or removed from the atmosphere. Offset Credits are not considered at this stage of the Project.

22.3 Construction

22.3.1 Emission Sources

WSP (2024d) estimated the direct and acquired energy GHG emissions associated with Project construction. Construction activities are anticipated to:

- Release GHG into the atmosphere from fossil fuels used to power heavy equipment and vehicles.
- Have acquired energy GHG emissions from electricity used for heating, cooling, and to power equipment and/or vehicles.
- Result in a one-time loss and ongoing loss of CO₂e elimination due to land use change requiring removal of vegetation to construct the Project

22.3.2 Equipment & Vehicles

WSP (2024d) examined two scenarios to estimate vehicle and equipment emissions during the construction phase. The initial estimate includes emissions from vehicles and equipment used on site as well as vehicles used to transport materials and workers to and from the site, using the following methodology and assumptions.

Construction will also have acquired energy GHG emissions from electricity used for heating, cooling, and to power equipment and/or vehicles.

22.3.2.1 GHG Emissions Factors

WSP (2024d) used GHG emission factors for CO₂, CH₄, and N₂O associated with construction equipment from Table A6.1-5 in Canada's National Inventory Report (NIR) Part 2 (ECCC 2023b). Several assumptions were made about the types of equipment to be used, but emissions estimates were made for excavators, dozers, graders, triaxles, concrete pumps, pavers, piling equipment, and barges among others (WSP 2024d).

22.3.2.2 Scenario 1

Scenario 1 assumes that all heavy construction equipment will be diesel-fueled, and the pick-up truck fleet gasoline fueled, resulting in direct GHG emissions. Fleet vehicles were assumed to be gasoline fueled Ford F-150 pick-up trucks with fuel economy consistent with United States Department of Energy statistics for that model.

22.3.2.3 Scenario 2

Scenario 2 assumes that the pick-up truck fleet will be electric, producing acquired energy emissions from purchased electricity. Other major construction equipment remain diesel fueled. Fleet vehicles were assumed to be electric Ford F-150 Lightning pick-up trucks with electricity usage consistent with US Department of Energy statistics.

22.3.2.4 Results

WSP (2024d) estimated the following annual CO₂e emissions from fuel combustion and purchased electricity for construction equipment during construction for the two scenarios (Table 22-1: Construction Vehicle & Equipment Emissions (tonnes CO₂e/ 5 years)).

Table 22-1: Construction Vehicle & Equipment Emissions (tonnes CO₂e/ 5 years)

Emissions Source	Scenario 1	Scenario 2
Direct emissions (Construction fleet mobile fuel consumption) + Acquired Emissions (EV fleet, if applicable)	25,141	23,631

22.3.3 Land Use Change

Land-use changes, such as removing vegetation, include both the one-time release of carbon when the land is cleared and the ongoing loss of carbon elimination that plants would have absorbed each year. The direct GHG emissions resulting from vegetation removal for the Project were calculated as the sum of the CO₂e content of the biomass removed (i.e., one-time removal emissions) plus the amount of CO₂e absorbed annually by that biomass (i.e., land use change emissions).

22.3.3.1 Land Use Types

For the assessment, WSP (2024d) calculated emissions based on the area of different vegetation communities expected to be removed to construct the Project (Table 22-2). This assessment used a river crossing alignment similar to the East alignment (see Figure 12-1) across Kettle Island. Land use type categories utilised in the assessment include:

- Forested lands: deciduous and coniferous forest, mixed woodlot, and mixed forest areas.
- Wetlands: river and riparian zones, swamps, and marshes.
- Cropland and pastureland: green land and agricultural lands.

The method to estimate emissions depends on the size of the land being disturbed, and the proportion of carbon dense lands present. Carbon dense lands are described as mature forests, wetlands, and forested wetlands.

The SACC Draft Technical Guide (ECCC 2021b) defines mature forests as forests that have reached at least 50% of the age at which they attain their maximum carrying capacity. Since the Project is located at the border between Boreal Shield East and Mixedwood Plains ecozones, parameters for the Boreal Shield East ecozone were chosen as a more conservative option due to the higher capacity for carbon storage in this vegetation type. The wetlands in the area include a combination of river and riparian zone, swamp, and marsh. These are not characterized by the presence of peat and are assumed to be largely forested. They have been calculated with forestry parameters for the purpose of this assessment. Nearly half (49.8%) of the vegetation to be removed is expected to consist of deciduous forests on Kettle Island.

Table 22-2: Estimated removal by land use type (WSP 2024d)

Land Use Type	Removal Area (ha)	Percentage
Cropland/Pastureland	8.18	39.5
Forest	10.30	49.8
Wetland	0.00	0.0
Sub-Total Natural Areas	18.48	89.3
Other (residential and industrial)	2.22	10.7
TOTAL	20.70	100.00

22.3.3.2 Annual Carbon Sink Loss

WSP (2024d) calculated total CO₂e emissions from carbon sink loss using a formula that integrates the area of carbon dense lands to be cleared, average annual above-ground biomass growth, ratio of below-ground to above-ground biomass, and carbon fraction of dry matter. The assessment considers only the years of construction to determine the impacts from carbon sink loss. It is expected that this loss will continue annually for the Project's operational lifetime in addition to during the construction phase.

22.3.3.3 One-Time Loss of Carbon

The one-time loss of carbon storage is due to the removal and disposal of biomass. Living biomass refers to all living vegetation, including stems, stumps, branches, bark, seeds, foliage, and roots. Dead organic matter includes all non-living woody debris, litter, and roots. Soil organic matter includes any organic carbon in mineral soils up to the default value of 30cm depth, including fine roots that are not otherwise distinguishable as living biomass or dead organic matter (IPCC, 2006).

WSP (2024d) calculated GHG emissions from one-time removal of vegetation to construct the Project following the specifications IPCC Guidelines (IPPC, 2006). The calculation is similar to that used for carbon sink losses but considers the total carbon absorption over the lifespan of the vegetation to be removed in addition to the carbon stored in dead biomass and soil biomass.

22.3.3.4 Results

Using the methods biomass and soil biomass described above, WSP (2024d) estimated that the total CO₂e emissions from one-time removal of living vegetation for the Project, using the same removal areas shown in Table 22-2, will be 3,884 tonnes, assumed to occur in year 1 of Project construction.

Beyond this, WSP (2024d) estimated that the total CO₂e emissions from carbon sink loss is 35 tonnes/year, or 175 tonnes over a 5-year construction period. This is summarized in Table 22-3 below.

Table 22-3: Carbon Sink Loss (tonnes CO₂e)

Emissions Source	One-Time	5-year
Direct emissions: Land use change	3,884	175

22.3.4 Construction Summary

WSP (2024d) assumed a five-year construction program to estimate the total CO₂e emissions overall during construction for the Project (Table 22-4).

Table 22-4: Estimated Construction Emissions (tonnes CO₂e/5 years)

Emissions Source	Estimated CO ₂ e Emissions	
	Scenario 1	Scenario 2
Direct Emissions		
Construction fleet mobile fuel consumption (gasoline + diesel)	25,141	23,631
Land Use Change (Annual Carbon Sink Loss)	175	175
Land Use Change (One-Time Loss of Carbon)	3,884	3,884
Acquired Energy Emissions		
Acquired emissions: Construction fleet vehicle purchased electricity	0	Included above
TOTAL	29,200	27,690

22.4 Operations

22.4.1 Emission Sources

While the intention of the Project is to relieve pressure on existing bridges and to assist in redistributing traffic flow across the Ottawa River during operations, the Project is nonetheless anticipated to:

- Release direct emissions from mobile fuel consumption by new or redistributed vehicle traffic (i.e. corridor users), inspection, maintenance, and repair vehicles and related activities.
- Experience the ongoing loss of CO₂e elimination (i.e. carbon sink loss) due to removal of vegetation to construct the Project
- Generate acquired emissions due to purchased electricity

Other direct emissions, such as process emissions, flaring and incineration, emissions from on-site energy generation, and fugitive emissions are not anticipated for the Project.

22.4.2 Direct Emissions

22.4.2.1 Mobile Fuel

22.4.2.2 Corridor Users

At this stage of the Project, the initial estimate includes emissions from mobile consumption of fossil fuels by automobiles, medium trucks, and heavy trucks traveling the corridor, using the following data sources, assumptions, and calculation methodology:

- Vehicle type and quantities are based on the 2050 forecasted Average Annual Daily Traffic (AADT) shown in Table 22-5 below, for both directions of travel combined, which is based on the TRANS Regional Travel Demand Model for the “2+0” roadway configuration (two general-purpose travel lanes in each travel direction).
- It is assumed that the proportion between medium and heavy trucks is 60%/40%.
- It is assumed the annual traffic volume remains the same for the entire operational life.
- The total roadway length within the corridor (33.5 km) is divided into smaller components shown in Table 22-5 below, and Segment 3 length is conservatively based on the longest bridge alignment currently under consideration during the options analysis, i.e. "Alignment West." This approach is conservative as it considers vehicle traffic on the main roadway and bridge as well as all exit/entrance ramps.
- For the purposes of emission factor selection, heavy trucks are assumed to be Heavy-duty Diesel Vehicles (HDDV), uncontrolled; medium trucks are assumed to be Light-duty Diesel Trucks (LDDT), uncontrolled; and other passenger vehicles are assumed to be Light-duty Gasoline Vehicles (LDGV), Tier 2.
- No consideration of increased prevalence of Electric Vehicle (EV) use over time has been included.
- Vehicle type GHG emission factors for CO₂, CH₄, and N₂O were obtained from Table A6.1-15 in Canada's 2026 National Inventory Report (NIR) Annex 6.
- The 100-year Global Warming Potential (GWP) values used to convert N₂O and CH₄ to CO₂e were obtained from the Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report (273 for N₂O and 27 for CH₄).
- Fuel economy conversions used to convert driving distance to volume of fuel were obtained from:
 - LDGV: International Energy Agency (IEA) Fuel Economy in Canada 2005-2019, using average fuel consumption for diesel, petrol, hybrid, electric, and plug-in vehicles (IEA, 2021);
 - HDDV: Natural Resources Canada's Fuel Efficiency Benchmarking in Canada's Trucking Industry – Results of a Industry Survey, March 2000 (NRCan, 2000);
 - LDDT: Natural Resources Canada's Improving Energy Performance in Canada - Report to Parliament Under the Energy Efficiency Act For the Fiscal Year 2006-2007 (NRCan, 2008)

Table 22-5: Preliminary Annual Average Daily Traffic

Corridor Component	Total AADT	Medium & Heavy Truck AADT	Other Passenger Vehicles	Length (km)
Aviation Parkway, South of Ogilvie Road	47,700	2,300	45,400	9.3
Aviation Parkway, North of Ogilvie Road	50,300	2,000	48,300	1.0
Aviation Parkway, North of Montreal Road	47,100	1,700	45,400	3.6
Eastern Bridge Crossing	45,200	1,700	43,500	4.0
Montée Paiement, North of Boulevard Maloney	29,700	800	28,900	5.2
Montée Paiement, North of Boulevard la Vérendrye	31,100	700	30,400	1.4
Montée Paiement, South of Davidson Ouest	33,400	1,100	32,300	1.7
Montée Paiement, South of des Terres	25,400	500	24,900	7.3

Total carbon dioxide equivalent (CO₂e) emissions representing the mobile combustion emissions from corridor users, was calculated for each component, the three vehicle types (i.e., HDDV, LDDT, and LDGV), and three greenhouse gasses (i.e., N₂O and CH₄ to CO₂) using the equation below. The component-by-component results were then added to produce a corridor-wide annual value for CO₂e emissions, which was multiplied by 125 years to obtain the value for entire operational life.

CO₂e = component length (km) x Vehicle AADT x 365 days/yr x Fuel economy (L / 100 km) x Vehicle type emissions factor (g/L fuel) x GWP conversion factor

It should be noted that the majority (95%) of these vehicles are already anticipated to be on the road in 2050 using roadways and bridges across the Ottawa River that may be diverted to this new corridor. These projections also include vehicles that are currently using (or that are projected to use) the existing roadways within the Project area to be upgraded through this Project. While a slight increase in traffic may occur over time, the majority of vehicles (and therefore the majority of GHG emissions expected during operations) are from vehicles anticipated to be operational with or without this Project.

22.4.2.3 Maintenance, Repairs, Material Transport

Due to the early stage of the design process, mobile fuel consumption associated with inspection, maintenance, and rehabilitation activities and material transport have not yet been calculated. Operations and Maintenance (O&M) requirements and routines have yet to be defined, and the bridge design has not progressed to a level of detail that would allow for meaningful assumptions. Based on our assessment to date for this type of project, the GHG emissions over the Project's lifecycle from the fuel consumption associated with these activities appears to be minor compared to the GHG emissions from the corridor's users.

At a future stage, data sets and assumptions that would factor into the mobile fuel emissions calculation for these O&M activities include but may not be limited to:

- Bridge and roadway geometry
- Repair/rehabilitation activity type (roadway cleaning, snow removal, asphalt paving, concrete repair)
- Time to commence after initial construction and interval thereafter
- Equipment types, fuel source, fuel economy, duration of use
- Material types and quantities
- Material sources (e.g. concrete and asphalt plant or recycled material stockpiles) to job site.

Other sources of direct emissions, such as stationary combustion of fuel for heating maintenance facilities, do not currently apply as it is anticipated that the operator of the bridge and roadway will rely on existing maintenance facilities.

22.4.2.4 Land Use Change; Annual Carbon Sink Loss

The annual 35 tonnes direct CO₂e emissions from carbon sink loss calculated for the construction phase is anticipated to continue annually for the Project's 125-year operational lifetime.

22.4.3 Acquired Energy Emissions

22.4.3.1 Purchased Electricity

Acquired emissions (e.g. from purchased electricity for electric maintenance vehicles, electric vehicles driven by corridor users, and bridge lighting) have not yet been estimated at this stage of the Project.

Electricity-consuming systems have not been defined to a level of detail that would allow for meaningful assumptions and calculation outputs. Based on our assessment to date for this type of project, the GHG emissions from this source appears to be far less than the GHG emissions from corridor's users over the project lifecycle.

At a future stage, data sets and assumptions that would factor into the calculation of purchased electricity required for energy-consuming systems and equipment may include the following:

- Number and type of light fixtures (e.g. roadway, pathway, bridge architectural and/or safety lighting), and associated operational schedules
- Number and type of electric maintenance vehicles and equipment used for O&M activities
- Miscellaneous potential electrical end uses (e.g. Intelligent Transportation Systems (ITS), digital signage, structural health monitoring, video surveillance, de-icing systems, EV charging stations).

22.4.3.2 Results

Table 22-6 provides the operation emissions over the 125-years of the Project operational lifetime.

Table 22-6: Estimated Operation Emissions (tonnes CO₂e)

Emissions Source	Estimated CO ₂ e Emissions (tonnes)
Direct Emissions	
Mobile Combustion: O&M on-site activities	TBD
Mobile Combustion: Corridor Users	12,580,061
Land Use Change (Annual Carbon Sink Loss)	4,375
Acquired Energy Emissions	
Purchased Electricity	TBD
TOTAL	12,584,436+TBD

It should be acknowledged that the majority of these predicted emissions during operations are from vehicles that will be operating with or without the Project and therefore this estimate represents an over-estimation of the GHG emissions that would be attributable to the Project. However, for the purposes of this preliminary estimate, we have conservatively included the emissions above.

22.5 Decommissioning

No decommissioning is anticipated. However, if so, GHG emission estimates are assumed to be no greater than the direct mobile fuel emissions associated with construction equipment in Scenario 1, which amount to 25,141 tonnes CO₂e.

22.6 Net GHG Emissions

The initial estimate of net GHG emissions associated with the Project lifecycle is summarized in the Table 22-7 below.

Table 22-7: Life Cycle Emissions Associated with the Project

Emissions Source	CO ₂ e Emissions (tonnes)	
	Scenario 1	Scenario 2
Direct GHG Emissions		
Construction	29,200	27,690
Operations	12,584,436+TBD*	12,584,436+TBD*
Decommissioning	25,141	25,141
Acquired Energy GHG Emissions		
Construction	0	Included above
Operations	TBD*	TBD*
Decommissioning	0	0
TOTAL	12,638,777 + TBD*	12,637,267 + TBD*

* Refer to the discussion in Section 22.4 regarding Operational emissions estimates.

22.7 Mitigation

The following mitigation measures, to be further detailed in the Impact Assessment, could be implemented, if feasible, to reduce GHG emissions from construction, operation, and decommissioning of the Project:

- Minimize the footprint of new construction in terrestrial and aquatic habitats to reduce GHGs from land clearing
- Plan detour routes during construction to minimize traffic delays and vehicle idling
- Keep vehicles and equipment in good working order to reduce fuel consumption
- Use electric vehicles during the construction and operation activities
- Use materials with low life-cycle carbon impact to the extent possible
- Integrate active transportation and public transit into the Project design
- Divert >90% of construction waste from landfills
- Reduce energy consumption during construction, operation and decommissioning phases
- Use energy efficient lighting and consider using solar powered lighting where feasible
- Procure concrete to have an embodied carbon reduction by at least 10% compared to a baseline defined per Standard on Embodied Carbon in Construction.
- Procure structural steel to lower embodied carbon compared to baselines defined per the National Tiered GHG Limits
- Reduce material quantities into the design to reduce their embodied carbon, especially for asphalt for example
- Use of for low-carbon construction methods
- Recycling materials, re-use of materials, and use material with recycled content to the extent possible
- Reduce water consumption during construction, operation and decommissioning phases

22.8 Upstream GHG Emissions

Estimates of upstream GHG emissions associated with production of materials and fuels used for their transportation on site have not been completed at this time. Per the SACC, this information is typically required for projects expected to exceed 500 kt CO₂e/year, a threshold this Project is not expected to approach.

22.9 Uncertainty Assessment

The uncertainty associated with the Project's net and upstream GHG emissions estimates are described in this section.

22.9.1 Uncertainty Related to Data

22.9.1.1 Construction

WSP (2024d) explains the GHG emissions during construction phase have been quantified in a manner that reduces uncertainty to the extent practical by using the best available corridor input data, published emissions factors, and estimation methodologies.

The net GHG emissions estimates provided in WSP (2024d) is based on information available at the time of the assessment. WSP (2024d) section 2.1.3 details data collection procedures and assumptions regarding:

- Working hours
- Equipment horsepower
- Load factor
- Emission factors
- Construction beginning in 2034
- Land clearing data for forested lands and for Wetlands
- Land-use change (assumed to occur in the first year of construction)
- All carbon in removed biomass assumed oxidized as CO₂.

22.9.1.2 Operations

The GHG emissions calculation data and assumptions for the operational phase are based on information available at the time of the assessment. Uncertainties include the following:

- The 2050 forecasted AADT is calculated by a numeric model, which assumes travel directionality based on time of day will remain a reality by 2050 and beyond.
- Average vehicle fuel economy values specific to Canada are not all available from a single source reflecting data from the past 5 years. In addition, a single fuel conversion factor per vehicle type does not consider improvements to fuel economy in Canada's overall vehicle population over time.

22.9.2 Uncertainty Related to Methods and Models

The GHG estimate during the construction phase performed in WSP (2024d) uses default parameters as per the Tier 1 method as per the Draft Technical Guide for the SACC (ECCC 2021b), which are subject to uncertainty. In cases where multiple values were presented, the average was taken. These results should be considered as high-level screening values with this uncertainty in mind.

Limitations to methodology for calculating mobile fuel emissions of corridor users during the operational phase are:

- The calculation considers only three types of vehicles which is a simplification of the reality. Future calculations could more vehicle types, changes to vehicle technology and fuel economy, and potential increase in the use of EVs.
- While it is assumed the annual traffic volume will remain the same for the entire 125-year operational life for the purposes of predicting potential GHG emissions, the more likely scenario is that AADT will increase with time

23 Waste and Emissions

Construction and operation of the Project are expected to generate various emissions, discharges, and wastes. Waste management will align with the objectives of the GGS:

- Diverting at least 90% by weight of all construction and demolition waste from landfills. By 2030, departments will strive to achieve a diversion rate of 100%
- Diverting at least 75% by weight of non-hazardous operational waste from landfills by 2030
- Diverting at least 75% by weight of plastic waste from landfills by 2030
- Tracking and disclosing waste diversion
- Minimizing environmentally harmful and hazardous chemicals and materials used and disposed of in real property operations

Table 23-1 summarizes the types of waste expected to be produced and the handling, storage, and disposal measures that will be implemented. Management requirements for hazardous and non-hazardous wastes are described in the following sections. GHG emissions are discussed separately in Section 22.

Table 23-1: Wastes expected to be produced by the Project and appropriate handling, storage, and disposal measures

Waste Type	Measures
Waste materials generated during construction	• Sorting, transportation, documentation, and disposal in accordance with federal and provincial legislation • Implementation of a waste management plan • Goal of >90% diversion rate in accordance with PSPC best practices • Disposal will be conducted by licensed companies at licensed facilities • Designated Substances Assessment may be required; will be determined at the detailed design stage
Liquid discharges	• Implementation of management plans for petrochemical storage and handling and spill prevention and response • Safe handling and storage requirements for contractors using hazardous substances • Hazardous waste will be managed in compliance with relevant federal and provincial legislation
Air emissions during construction	• Implementation of best practices (e.g., minimizing equipment idling, using electric equipment where practical) • Implementation of a dust management plan and application of surface treatments for dust control
Air emissions during operation	• Incorporate active transportation infrastructure into the Project and explore opportunities for public transit improvements to encourage travelers to use alternative modes of transportation and offset emissions

Waste Type	Measures
Surface water drainage during operation	Stormwater management features will be planned during the detailed design stage
Accidental spills during construction	- Implementation of a spill prevention and response management plan - Maintain spill kits at easily accessible locations at the site - Establish procedures for safe containment, cleanup and reporting; identify personnel/parties responsible
Sediment	- Implement an erosion and sediment control plan - Install, maintain, and regularly inspect erosion and sediment control measures during construction

23.1 Non-hazardous Solid Waste

The Project will be required to implement Construction, Renovation and Demolition (CRD) waste management practices in accordance with PSPC's Departmental Sustainable Development Strategy: 2023 to 2027 (PSPC, 2024) and the GGS). The goal of CRD practices is to achieve a waste diversion rate of over 90% and decrease the Project's waste intensity (tonnes/m²) by 5%. The CRD practices do not apply to hazardous wastes.

A CRD non-hazardous solid waste management program will generally consist of the items detailed below.

23.1.1 Prior to Construction

- Perform a waste audit to determine the types and volumes of construction materials that will be produced as surplus to the Project. Explore preliminary options and diversion potentials for waste reduction, reuse, and recycling.
- Develop a Waste Reduction Work Plan, including
 - Identification of overall waste diversion goals and material-specific targets
 - Descriptions of Project-specific procedures to maximize recovery of materials identified in the waste audit
 - Details of the Material Source Separation Program to be implemented during construction, including on-site sorting and labelling practices, tracking and reporting procedures, and destinations for the materials recovered.

23.1.2 During Construction and Post-construction

- Establish Waste Reduction Work Plan training and orientation procedures for personnel on site.
- When construction is complete, prepare a Waste Diversion Report to document conformity with the Waste Audit and Waste Reduction Work Plan; the report should document the quantities and destinations of materials diverted and the overall diversion rate.

23.2 Hazardous Waste

Hazardous waste is defined by provincial regulations including O.Reg. 347 under Ontario's *Environmental Protection Act* and the Land Protection and Rehabilitation Regulation Q-2 under Québec's *Environment Quality Act*. Any

hazardous waste generated or discovered during construction will be required to be managed in compliance with applicable legislation. Transportation of hazardous waste deemed to be a dangerous good in accordance with the federal *Transportation of Dangerous Goods Act, 1992* must comply with the Act and regulations.

All hazardous waste will be identified, labeled, and properly stored respecting the National Fire Code, occupational health and safety regulations, and/or other best practices as described in applicable legislation. Construction vehicles and equipment will be maintained in good working order to prevent leaks of fuels, oils, or other hazardous substances.

24 Environmental Protection

Environmental management and protection plans will be developed in anticipation of the construction phase detailing the measures and procedures for construction and operation of the Project to comply with applicable legislation (see Section 18) and environmental commitments of the IA. The plans will detail best practices, mitigation measures, and permitting requirements for construction and operation of the Project, and will outline the responsibilities of the proponent, contractors, and others for implementing those measures. Management plans will be prepared during the pre-construction phase of the Project and will be included in contract tender documents and operational manuals. Table 24-1 provides preliminary descriptions of the types of management plans expected to be prepared for the Project.

Table 24-1: Preliminary summary of management plans to be prepared for construction and operation of the Project

Management Plan	Phase(s)	Contents
Accident and Malfunction Prevention and Response	Construction	Detailed response plans for accidents or malfunctions during construction.
Air Quality and Greenhouse Gases	Construction	Detail of mitigation measures for air quality and greenhouse gases.
Blasting (if applicable)	Construction	Detail of mitigation measures and requirements to reduce noise and vibrations from blasting.
Heritage Conservation and Mitigation Plan	Construction	Outline of procedures for identifying, reporting, and protecting archaeological, cultural and heritage resources.
Erosion and Sediment Control	Construction	Detail of erosion and sediment control measures to be implemented and maintained throughout construction. Will include drawings and specifications for silt fencing, flow checks, and temporary and permanent surface treatments to prevent erosion or sediment inputs into water.
Fish and Fish Habitat Protection and Offsetting Plan	Construction	Detail of regulatory requirements and mitigation measures to protect fish and fish habitat: Respecting in-water work timing windows Obtaining authorization for work/alterations in fish habitat under the <i>Fisheries Act</i> Summaries of regulatory obligations under federal or provincial legislation Copies and summaries of permits under federal and/or provincial legislation Implementation of DFO standards and codes of practice to protect fish and fish habitat Provisions to retain a qualified fisheries biologist to conduct fish relocations

Management Plan	Phase(s)	Contents
		Provisions to provide environmental awareness training to personnel working in water
Navigation Management	Construction Operation	Detail of measures to ensure the Ottawa River remains navigable to watercraft and to ensure conformity with the Canadian <i>Navigable Waters Act</i> .
Noise Management	Construction	Detail of mitigation measures to be implemented during construction to reduce excess noise: • Respecting local noise by-laws and restricting certain activities to daytime hours • Minimizing equipment and vehicle idling
Site Restoration	Construction	Detail of post-construction restoration plans for the site: • Landscape plans and drawings • Specifications for plant size and hydroseed composition • Post-construction monitoring plan.
Spill Prevention and Response	Construction Operation	• Detail of procedures for prevention and response to pollutant spills: • Identification of personnel/parties responsible for prevention, response, and reporting • Specifications for proper storage and handling of deleterious substances • Specifications of the contents and locations of spill kits • Procedures for safe containment and cleanup of spills • Procedures for reporting and contact information of relevant agencies.
Soil and Groundwater Management	Construction	• Detail of procedures for removal, storage, and disposal of soils: • Plans and drawings showing the limits of removals • Designation of stockpile areas • Specifications for proper transport • Specifications for stabilizing soil stockpiles to prevent erosion
Surface Water and Stormwater	Construction	• Detail of measures for protecting water quality and preventing run-off of deleterious substances into water: • Summary of legislated surface water quality standards • Copies and summaries of permits to take water • Specifications for surface water diversion and dewatering • Environmental monitoring requirements
Tree Protection and Compensation Plan	Construction	Outlines measures to protect trees and how the removal of trees will be compensated

Management Plan	Phase(s)	Contents
Traffic	Construction Operation	Outline of safe operating procedures for construction vehicles and equipment, including requirements to maintain equipment in good working order. Details of traffic management during construction, including detour routes, signage, and locations of traffic protection (e.g., barriers, pylons). Details of speed limits and signage. Maps of detour routes.
Vegetation	Construction	• Detail of plans and measures to protect and restore natural vegetation: • Plans and drawings showing limits of vegetation clearing • Specifications for installation of safety fencing around environmental protection areas • Prohibitions on entry into environmental protection areas by construction personnel, equipment, and materials • Locations of critical root zones of retained vegetation • Descriptions of SAR known to occur in the area • Summaries of regulatory obligations under federal or provincial SAR legislation • Copies and summaries of permits under the SARA and/or provincial legislation • Provisions for environmental awareness training for construction personnel. • Details of post-construction restoration plans
Invasive Species Management	Construction	• Clean equipment protocols to prevent the spread of invasive species • Invasive species management procedures
Waste Management	Construction	Outline of procedures for collection and disposal of waste material during construction. Including requirements under federal and provincial regulations. Will include procedures for safe handling and disposal of hazardous materials.
Wildlife Management	Construction Operation	• Detail of mitigation measures to prevent harm to wildlife, including SAR. • Plans and drawings showing locations of wildlife habitat and environmental protection areas • Specifications of timing windows to avoid bird nesting, reptile nesting, and other important life phases of wildlife • Monitoring protocols for wildlife in construction areas • Provisions to retain a qualified biologist to conduct regular site inspections and respond to wildlife encounters during construction • Procedures for wildlife encounters • Descriptions of SAR known to occur in the area

Management Plan	Phase(s)	Contents
		• Summaries of regulatory obligations under federal or provincial SAR legislation • Copies and summaries of permits under the SARA and/or provincial legislation • Provisions for environmental awareness training for construction personnel.

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