1.0 INTRODUCTION AND BACKGROUND

On January 20, 2009, the City of Kingston (City) retained a team led by J. L. Richards & Associates Limited to initiate an Environmental Assessment (EA) to evaluate the need for and the feasibility of implementing additional transportation capacity across the Cataraqui River. The Cataraqui River forms part of the Rideau Canal, a designated United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site, National Historic Site, Canadian Heritage River and Federally regulated navigable waterway. The undertaking of this EA study represents an opportunity to improve the following existing conditions:

1. The relief of existing and future traffic congestion through improved road network connectivity and traffic flows.

2. The enhancement of the City's historic association with, and the heritage values of, the Rideau Canal through the use of state-of-the-art and sustainable design practices.

3. The ability to accommodate current and planned growth and development programs through improved east-west road network connectivity.

4. The enhancement of public transit services and alternative modes of transportation (walking and cycling) by creating new east-west routes.

5. The enhancement of municipal services to the eastern portion of the City.

1.1 EA Study Background

Two major east-west transportation crossings of the Cataraqui River currently exist within the City's urban limits. One crossing is the LaSalle Causeway-Highway 2 corridor, which crosses the Cataraqui River at the southerly confluence of the Cataraqui River and Lake Ontario. The LaSalle Causeway is comprised of a two-lane cross section and a series of structures (fixed truss, rigid frame structure and Bascule Lift Bridge). It is under the jurisdiction of Public Works & Government Services Canada. Existing network conditions pertinent to the LaSalle Causeway-Highway 2 corridor include: i) the signalized intersections at the Highway 2-Kingston Road 15 intersection to the east and the Barrack Street-Ontario Street intersection to the west; ii) the egress movement from the discharge of vehicles from the Wolfe Island Ferry at the Barrack Street-Ontario Street intersection; and iii) the Bascule Lift Bridge portion of the LaSalle Causeway that is raised to accommodate recreational boat traffic. Based on the City's Level of Service (LOS) policy, the LaSalle Causeway has an average estimated capacity of 900 vehicles per hour, per lane (or LOS D)[1].

The second crossing is the Highway 401 corridor, which crosses the Cataraqui River approximately 6 kilometres (km) north of the LaSalle Causeway. Highway 401 is owned by the Province of Ontario through the Ministry of Transportation Ontario (MTO). It is a four-lane Freeway that extends through the City and is the primary inter-city freeway, with local interchanges at Joyceville Road, Kingston Road 15, Montreal Street, Division Street, Sir John A. Macdonald Boulevard, Sydenham Road, and Highway 38. The Highway 401 crossing capacity is estimated to be approximately 1,500 to 2,000 vehicles per hour, per lane (for a total two-way capacity of about 6,000 vehicles per hour given its current four-lane configuration). The MTO is currently widening Highway 401 from four to six lanes west of Sydenham Road to west of Montreal Street as part of a broader provincial strategy to ultimately twin Highway 401 from the City of Windsor to the Quebec border in response to traffic volume growth and traffic collision incidents.

Studies predating this EA study have indicated an eventual need for an additional crossing of the Cataraqui River in order to: a) relieve traffic congestion on the LaSalle Causeway during peak hour traffic demand and/or during a Highway 401 detour event; b) support planned urban growth on the east and west sides of the Cataraqui River; and c) provide opportunities to enhance emergency response capabilities and other municipal services. Highlights of these studies include:

1. The 'Transportation Study: Bridge Crossings of the Cataraqui River', completed by Totten Sims Hubicki Associates (TSH) in 1992 concluded that the LaSalle Causeway was either operating at or exceeding its capacity and that there was a need for a new four-lane bridge crossing at the John Counter Boulevard-Gore Road alignment to satisfy both the 1992 and future 2011 crossing demand. This study further concluded that:

   a) Expanding the capacity of the LaSalle Causeway would only result in increased traffic congestion in the downtown core unless major changes to the surrounding intersections and street networks were put in place;

   b) Potential short-term operational improvements at the intersections at Barrack Street-Ontario Street and the Highway 2-Fort Henry access (channelization, signal timing and phasing,

[1] Note 'Level Of Service' (LOS) is a measure of the mobility of traffic and the resulting level of congestion determined by vehicle delay. A volume-to-capacity ratio associated with LOS is measured based on traffic counts (or the 'volume') and the ability of the road to carry traffic (or the 'capacity'). Generally, LOS is measured between LOS A and LOS F where LOS A involves free flow traffic operations at average travel speeds and LOS F involves gridlock conditions. LOS B, C, D and E are incremental measures between LOS A and LOS F. The City generally applies LOS D for future design purposes at peak hour traffic volume levels, which is commonly used in similarly sized Canadian cities.

lane additions) could improve operations but would not significantly increase river crossing capacity on the LaSalle Causeway over the long-term due to the following:

i. improving the Barrack Street-Ontario Street intersection by widening the north approach to the intersection to provide additional storage could reduce vehicle queues and re-allocate green time at this intersection but there would continue to be periods that vehicle queues would block the access to Place D'Armes; and

ii. while reconstructing the Highway 2-Fort Henry access intersection and widening the Highway 2 eastbound lane from one to two lanes between the intersection and Kingston Road 15 would increase capacity on the west approach to the intersection, the constraints at the Barrack Street-Ontario Street intersection would continue to impact the capacity of the LaSalle Causeway; and

c) A tunnel option at the John Counter Boulevard-Gore Road alignment would not be viable, mainly because of the significant environmental impacts resulting from construction and because the horizontal and vertical alignment between the east shore of the Cataraqui River and the Kingston Road 15-Gore Road intersection cannot be implemented to respect acceptable geometric design criteria of a 6 percent slope or less to match the existing elevation at the intersection.

2. The 'Kingston Transportation Master Plan' (KTMP), completed by Dillon Consulting Ltd. in 2004, outlines the City's strategic direction for the development of its transportation networks, programs and priorities to 2026. The KTMP reviewed the need for and location of additional transportation capacity across the Cataraqui River. It determined that the existing LaSalle Causeway was operating at capacity and that the Highway 401 crossing had capacity to accommodate additional traffic. The 2004 KTMP reaffirmed the limitations cited in the 1992 TSH study associated with expanding the capacity of the LaSalle Causeway. It further concluded that:

a) Diverting traffic from the LaSalle Causeway to the Highway 401 crossing was an impractical alternative solution, based on the trip demand lines of vehicles that favour crossing the Cataraqui River via the LaSalle Causeway to the south and the 6 km travel distance between these two crossings;

b) Focusing on transportation demand management measures as tools to optimize the future transportation system as well as strategies to increase walking, cycling and public transit use could form part of the solution but would be insufficient on their own to significantly increase river crossing capacity on the LaSalle Causeway; and

c) A new 2-lane bridge crossing is needed to satisfy 2026 crossing demand and that the John Counter Boulevard-Gore Road crossing alignment represented the most optimum mid-City wide corridor location.

3. The 2004 KTMP was updated in accordance with the 'Ontario Municipal Act' in 2009 by AECOM as part of the City's 'Development Charges Background Study'. With a traffic volume in the order of 1,000 to 1,100 vehicles per hour in each direction during the PM peak hour, the 2009 KTMP Update has determined that the existing LaSalle Causeway was continuing to operate at or exceeding its capacity. In addition, forecasted 2019 PM peak hour demand for the LaSalle Causeway is projected to increase to 1,319 vehicles per hour for eastbound travel and 1,192 vehicles per hour for westbound travel. This is in response to projected 9 percent population growth and 11 percent employment growth in the City by 2019. As a result, the 2009 KTMP Update has reaffirmed the need for a new 2-lane bridge at the John Counter Boulevard-Gore Road crossing alignment, but has concluded that it would be required to satisfy the anticipated 2019 PM peak hour traffic demand, which is seven years earlier than what was recommended in the 2004 KTMP. The 2009 KTMP Update also reaffirms the other conclusions in the previous transportation studies noted above.

4. Consistent with the 2004 KTMP, the travel demand forecasting component of the 'Wellington Street Extension Class C Environmental Assessment' prepared by Morrison Hershfield in 2006 concluded that there would be a future automotive travel deficiency in the north-south roadway capacity from the existing section of Wellington Street at Bay Street to John Counter Boulevard. This deficiency was based on projected growth in the north-south travel demand of between 30 percent and 40 percent from 2001 to 2026. It was further projected that a new north-south corridor in this area, commonly referred to as the 'Wellington Street Extension', would accommodate upwards of 800 vehicles per hour in each direction. While road capacity was the main consideration in this EA study, other related issues that needed to be addressed in the area were:

a) High traffic volumes on local residential streets such as Rideau Street which would likely worsen in light of future urban growth and intensification efforts in the downtown;

b) Spill-over effects of traffic congestion on Division Street, a key public transit corridor, which would negatively impact public transit service in the area;

c) The lack of cycling facilities to support the increased use of cycling as a travel mode; and

d) The lack of an attractive tourist route into the downtown.

After considering a range of both travel mode and roadway capacity alternatives, this EA study concluded that strategies focusing on increasing walking, cycling and public transit use could

address part, but not the entire future capacity deficiency issue in the area. It further reaffirmed the recommendations in the 2004 KTMP that a new roadway link should be provided between John Counter Boulevard and Montreal Street-Railway Street and between Montreal Street and Bay Street, mostly as two-lane urban arterials, except in the immediate area of Montreal Street where a four-lane cross-section should be provided to improve intersection operations. This project, in conjunction with the John Counter Boulevard-Gore Road bridge crossing alignment, could also then further improve network connectivity and traffic flows. The preferred alignment for the Wellington Street Extension is generally shown on Drawing 1.1.

5. In 2006, the City initiated the 'Master Fire Plan' which was completed in 2010. The planning process consisted of ten steps designed to identify fire service gaps or risks and develop strategies to address the gaps and properly manage the risks. Station No. 3, which is located on Gore Road near Kingston Road 15 on the east side of the Cataraqui River, is a volunteer station and has the support from the career staff located in the downtown core stations for all reported structure fires. The 'Master Fire Plan' concluded that traffic congestion on the LaSalle Causeway and the operation of the Bascule Lift Bridge portion of the LaSalle Causeway for boat traffic is negatively impacting existing emergency response agencies due to the limited access to resources located in the core area when career staff from the downtown core stations are required to be assigned to support the volunteer staff in the east side of the City in a timely manner. Three recommendations relevant to this EA study are cited as a means to enhance emergency response capabilities, namely:

   a) That a bridge be built at the John Counter Boulevard-Gore Road alignment at a time and cost to be determined by City Council;

   b) That lights and/or a radio link be installed on the LaSalle Causeway to provide more open travel routes for emergency vehicles until the bridge at the John Counter Boulevard-Gore Road alignment is in place; and

   c) That a new fire substation be built at Elliott Avenue and Division Street in 2013-2014 in strategic response to the transportation network improvements resulting from the potential installation of both the bridge at the John Counter Boulevard-Gore Road alignment and the Wellington Street Extension[2].

6. The 'Master Plan for Water Supply for the City of Kingston Urban Area' was completed by Simcoe Engineering Group Ltd. for Utilities Kingston in 2007. It outlines future requirements in the City's drinking water treatment facilities and water distribution works to satisfy current and projected drinking water demands, including the provision of adequate fire hydrant flows and pressures, to 2026. Based on this study, which assessed a range of alternatives, the recommended option was to install an east-west watermain across the Cataraqui River in order to improve water supply to a proposed new water storage tower in the St. Lawrence Business Park (in east Kingston). This infrastructure is needed to improve the redundancy in the municipal water system on the east side of the Cataraqui River. In recognition of the 2004 KTMP, it envisions this infrastructure being incorporated into future bridge crossing design considerations at the John Counter Boulevard-Gore Road alignment.

1.2 EA Study Area

The EA study area is illustrated on Drawing 1.1. It extends along the shoreline and lands adjoining the Cataraqui River from the LaSalle Causeway-Highway 2 corridor in the south, to Highway 401 in the north. Other main roadways within the study area include John Counter Boulevard and Montreal Street west of the Cataraqui River, as well as Kingston Road 15 and Gore Road east of the Cataraqui River.

1.3 EA Study Process

1.3.1 Provincial and Federal EA Frameworks

The implementation of additional transportation capacity across the Cataraqui River must satisfy both the Provincial and Federal EA frameworks. It should be noted that the Federal and Provincial Governments executed the 'Canada-Ontario Agreement on Environmental Assessment Cooperation' on November 1, 2004. Its purpose is to facilitate inter-jurisdictional cooperation and coordination of Federal and Provincial EA requirements. This agreement acknowledges that their respective authorizing statutes and regulations are to be met, while avoiding unnecessary duplication, delays and uncertainty that could arise from separate EA's for the same project. As a result, the evaluation, consultation, and decision-making process can be summarized through a single set of documents.

Additional information on the Provincial and Federal EA frameworks is outlined below.

.1 Provincial Environmental Assessment Act Process

The Ontario Class Environmental Assessment (Class EA) planning process developed by the Municipal Engineers Association (October 2000, as amended in 2007) is a decision-making process approved under the 'Ontario Environmental Assessment Act' (OEA Act) for various projects undertaken by municipalities related to road, water, wastewater and transit facilities. Since projects can vary in terms of scope, complexity, and environmental impact, the Class EA process identifies three levels of planning activities through separate schedules, namely:

[2] Note Elliott Avenue is an east-west collector road that intersects with John Counter Boulevard (and the future Wellington Street Extension) just west of Montreal Street (outside the EA study area).

RECOMMENDED WELLINGTON ST. EXTENSION ALTERNATIVE AS PER 2006 ENVIRONMENTAL STUDY REPORT

LIMIT OF RIDEAU CANAL RESERVE LANDS (APPROXIMATE LOCATION)

PROJECT:
CATARAQUI RIVER THIRD CROSSING EA - STAGE 2 ENVIRONMENTAL STUDY REPORT

DRAWING:
EA STUDY AREA

J.L.Richards
ENGINEERS·ARCHITECTS·PLANNERS
J.L. Richards & Associates Limited
203-863 Princess Street
Kingston, ON Canada
K7L 5N4
Tel: 613 544 1424
Fax: 613 544 5679

DESIGN:	DRAWING NO.: 1-1
DRAWN:	
CHECKED:	JLR NO: 23446-02
PLOTTED: 25-Jan-12	

File Location: C:\Documents and Settings\djudson\Desktop\23443-02 - Third Crossing ESR\Figures\Figure 1-1 EA Study Area.dwg

1. ***Schedule A/A+***. This generally includes normal or emergency operational and maintenance activities. The environmental effects of these activities are usually minimal and, therefore, these projects are pre-approved and can proceed directly to implementation. As part of the 2007 amendments to the Class EA planning process, Schedule A+ projects were introduced, which are pre-approved and can proceed to implementation (similar to Schedule A projects), but require prior public notification.

2. ***Schedule B***. This generally includes improvements and minor expansions to existing facilities. There is the potential for some adverse environmental impacts with Schedule B projects. Therefore, the proponent is required to proceed through a screening process including consultation with those who may be affected.

3. ***Schedule C***. This generally includes the construction of new facilities and major expansions to existing facilities. Schedule C projects must be planned through the full Class EA planning process.

The potential implementation of additional transportation capacity across the Cataraqui River falls under Schedule C of the Class EA planning process, given its potential scope, complexity, effects and cost.

The main elements of the Class EA planning process comprise five phases, as shown in detail on Drawing 1.2 and applied to this EA study in summary form in Table 1.1 below (note the references to the 'Why', 'Where', 'How' and 'When' in Table 1.1 is provided to illustrate the principle focus of decision-making activities during each phase).

Table 1.1
Schedule C Class EA Planning and EA Study Processes

	PHASE 1 ('WHY')	PHASE 2 ('WHERE')	PHASE 3 ('HOW')	PHASE 4 ('REPORT')	PHASE 5 ('WHEN')
Main Activity	Problem Statement or Opportunity	Alternative Solutions Preferred Solution	Alternative Designs Preferred Design	Environmental Study Report	Implementation
Consultation Requirements	Optional	Mandatory	Mandatory	Mandatory	Optional
EA Study Terms of Reference	Stage 1		Stage 2		Beyond the EA Study Scope
Timelines	March 2009 – May 2010		May 2010 – June 2012		

As highlighted on Table 1.1, the Class EA planning process involves:

1. Consultation with the general public and agencies potentially affected by the proposed project.

2. Identification of a Problem Statement or Opportunity (the 'Why' as per Phase 1).

3. Consideration of a reasonable range of alternative solutions (the 'Where' as per Phase 2) and alternative design concepts (the 'How' as per Phase 3).

4. A systematic evaluation of alternatives to determine their advantages and disadvantages and their net environmental effects, with mitigation measures where necessary.

5. Documentation of the planning process in an Environmental Study Report to allow 'traceability' of the decision-making process and consultation activities (the 'Report' as per Phase 4).

Note Project Implementation, which involves detailed design and project construction activities (the 'When' as per Phase 5), is beyond the scope of this EA study.

As also reflected in Table 1.1, pursuant to City requirements, this EA study was completed in two stages. This allowed the City to reconsider both its resource commitments and the recommended results at the end of Stage 1. Stage 1 focused on Phase 1 (identifying the problem or opportunity) and Phase 2 (considering the alternative solutions highlighted earlier) of the Class EA planning process and recommended a bridge crossing at the John Counter Boulevard-Gore Road alignment as the preferred solution. At this project site location, the Cataraqui River forms part of the Rideau Canal, which is owned by the Federal government and managed and regulated by Parks Canada.

At the May 25, 2010 City of Kingston Council meeting, Council approved the 'City of Kingston Third Crossing of the Cataraqui River Environmental Assessment Stage 1 Summary Report' (Stage 1 Summary Report) and authorized that the project proceed to completion, or Stage 2. Stage 2 is addressing Phase 3 (assessing alternative bridge design solutions and identifying/assessing the preferred bridge design solution at the John Counter Boulevard-Gore Road alignment) and Phase 4 [finalizing approval of this Screening Report / Environmental Study Report (Report)] of the Class EA planning process.

.2 Canadian Environmental Assessment Act Process

The Federal EA process is normally coordinated by the Canadian Environmental Assessment Agency (CEAA), the agency responsible for administering the Federal EA process under the 'Canadian Environmental Assessment Act' (CEA Act). There are four possible types of EA's under the Federal framework, namely: a) screenings; b) comprehensive studies; c) mediations; and d) review panels. The majority of projects are assessed through screenings.

WHY WHERE HOW REPORT WHEN

Feb '09 - May. '09 | May '09 - Apr. '10 | May '10 - May '11 | June '11 - Apr. '12

PHASE 1 — PROBLEM OR OPPORTUNITY

1. IDENTIFY PROBLEM OR OPPORTUNITY
2. DISCRETIONARY PUBLIC CONSULTATION TO REVIEW PROBLEM OR OPPORTUNITY

DETERMINE APPLICABILITY OF MASTER PLANAPPROACH (See Section A.2.7)

PHASE 2 — ALTERNATIVE SOLUTIONS

1. IDENTIFY ALTERNATIVE SOLUTIONS TO PROBLEM OR OPPORTUNITY
2. INVENTORY NATURAL, SOCIAL, ECONOMIC ENVIRONMENT
3. INDENTIFY IMPACT OF ALTERNATIVE SOLUTIONS ON THE ENVIRONMENT AND MITIGATING MEASURES
4. EVALUATE ALTERNATIVE SOLUTIONS: IDENTIFY RECOMMENDED SOLUTIONS
5. CONSULT REVIEW AGENCIES AND PUBLIC re: PROBLEM OR OPPORTUNITY AND ALTERNATIVE SOLUTIONS
6. SELECT PREFERED SOLUTION

SELECT SCHEDULE (APPENDIX 1)

REVIEW AND CONFIRM CHOICE OF SCHEDULE

ALTERNATIVE DESIGN CONCEPTS FOR PREFERRED SOLUTIONS

SCHEDULE A/A*

APPROVED - MAY PROCEED

IF NO ORDER*, MAY PROCEED

ORDER* GRANTED PROCEED WITH INDIVIDUAL E.A. OR ABANDON PROJECT

OPPORTUNITY FOR ORDER* REQUEST TO MINISTER WITHIN 30 DAYS OF NOTIFICATION

NOTICE OF COMPLETION TO REVIEW AGENCIES & PUBLIC

SCHEDULE B

SCHEDULE C

INDIVIDUAL E.A.

1. IDENTIFY ALTERNATIVE DESIGN CONCEPTS FOR PREFERRED SOLUTION
2. DETAIL INVENTORY OF NATURAL, SOCIAL AND ECONOMIC ENVIRONMENT
3. IDENTIFY IMPACT OF ALTERNATIVE DESIGNS ON ENVIRONMENT, AND MITIGATING MEASURES
4. EVALUATE ALTERNATIVE DESIGNS: IDENTIFY RECOMMENDED DESIGN
5. CONSULT REVIEW AGENCIES & PREVIOUSLY INTERESTED & DIRECTLY AFFECTED PUBLIC
6. SELECT PREFERRED DESIGN

REVIEW ENVIRONMENTAL SIGNIFICANCE & CHOICE OF SCHEDULE

7. PRELIMINARY FINALIZATION OF PREFERRED DESIGN

DISCRETIONARY PUBLIC CONSULTATION TO REVIEW PREFERRED DESIGN

PHASE 3

CITY COUNCIL CONFIRMED THE NEED TO COMPLETE THE EA STUDY IN MAY, 2010.

PHASE 4 — ENVIRONMENTAL STUDY REPORT

1. COMPLETE ENVIRONMENTAL STUDY REPORT (ESR)
2. ENVIRONMENTAL STUDY REPORT (ESR) PLACED ON PUBLIC RECORD

NOTICE OF COMPLETION TO REVIEW AGENCIES AND PUBLIC

COPY OF NOTICE OF COMPLETION TO MOE-EA BRANCH

3. OPPORTUNITY TO REQUEST MINISTER WITHIN 30 DAYS OF NOTIFICATION TO REQUEST AN ORDER *

OPTIONAL FORMAL MEDIATION (See Section A.2.8.2)

ORDER * GRANTED, PROCEED AS PER MINISTER'S DIRECTION OR ABANDON PROJECT

MATTER REFERRED TO MEDIATION

ORDER * DENIED WITH OR WITHOUT MINISTER'S CONDITIONS

PHASE 5 — IMPLEMENTATION

1. COMPLETE CONTRACT DRAWINGS AND TENDER DOCUMENTS
2. PROCEED TO CONSTRUCTION AND OPERATION
3. MONITOR FOR ENVIRONMENTAL PROVISIONS AND COMMITMENTS

SUBJECT TO CITY COUNCIL APPROVAL; BEYOND THE CURRENT EA SCOPE.

INDICATES POSSIBLE EVENTS
INDICATES MANDATORY EVENTS
INDICATES PROBABLY EVENTS
MANDATORY PUBLIC CONTACT POINTS (See Section A.3 Consultation)
DECISION POINTS ON CHOICE OF SCHEDULE
OPTIONAL
* PART II ORDER (See Section A.2.8)

WE ARE HERE

MUNICIPAL ENGINEERS ASSOCIATION

PROJECT: CATARAQUI RIVER THIRD CROSSING EA - STAGE 2 ENVIRONMENTAL STUDY REPORT	DRAWING: ONTARIO MUNICIPAL CLASS EA PROCESS	J.L.Richards ENGINEERS·ARCHITECTS·PLANNERS J.L. Richards & Associates Limited 203-863 Princess Street Kingston, ON Canada K7L 5N4 Tel: 613 544 1424 Fax: 613 544 5679	DESIGN: DRAWN: CHECKED: PLOTTED: 22-Feb-12	DRAWING NO.: 1-2 JLR NO: 23446-02

File Location: P:\23000\23446-02 - Cataraqui River EA - Stage 2\23443-02 - Third Crossing ESR\Figures\Figure 1-2 EA Process Chart.dwg

Discussions about this EA study were initiated with the CEAA in March, 2009. It was determined that the Federal EA process under the CEA Act would be triggered should City Council authorize that this EA study proceed to completion, or Stage 2. This was due to the following:

1. The riverbed throughout the EA study area is owned by the Federal Government.

2. A number of licenses, permits or approvals listed in the Federal 'Law List Regulations' would be required from various Federal authorities before project implementation could proceed.

3. Completing a Federal EA would be a pre-requisite for the City in seeking Federal financial assistance for implementing the project.

The CEAA advised that it would formally initiate the Federal EA process once a Project Description was submitted as part of commencing Stage 2 of this EA study. Since City Council authorized that Stage 2 of this EA study proceed at its May 25, 2010 meeting, an initial Project Description was submitted to the CEAA on July 29, 2010 for posting on the CEAA website registry. It was also circulated to Federal authorities to confirm the Federal EA triggers highlighted above and the composition of the Federal review team (FRT) to engage in the Federal EA process. The respective roles within the FRT are noted below:

1. 'Responsible Authorities' (RA's) which are Federal authorities required to ensure that a Federal EA of a project is conducted.

2. Expert 'Federal Authorities' (FA's) which are Federal authorities having specialist or expert information that may assist RA's with the Federal EA of the project.

3. 'Federal EA Coordinator' (FEAC) which is the Federal authority responsible for coordinating the review activities of RA's and FA's.

4. 'Other', which are Federal authorities that confirm no interest or role in the project at this time.

1.3.2 EA Study Committees

As shown in Table 1.2, decision making and consultation activities during this EA study have been facilitated through the following four committees:

1. A Senior Management Committee to oversee the overall project direction.

2. A Technical Advisory Committee to provide technical guidance and act as a sounding board for technical decision making on EA study alternative solutions and designs as well as the preferred solution and design.

3. A First Nations Consultation Sub-Committee to facilitate consultations with First Nations communities having an interest within the EA study area.

4. A Public Liaison Committee to provide guidance and input for public consultation activities.

These committees are part of a comprehensive consultation plan that has been implemented to facilitate input from the public and various agencies during this EA study. Additional consultation has been facilitated through:

1. A 'Notice of Study Commencement', which was published in 'The Kingston Whig Standard' newspaper and posted on the City's website at www.cityofkingston.ca on March 3, 2009.

2. Maintaining a comprehensive agency, stakeholder group, and contact list.

3. Preparing regular project status updates such as newsletters and information handouts distributed by mail and/or E-mail.

4. Maintaining an up-to-date project website at www.cityofkingston.ca/thirdcrossing.

5. Specific consultations:

   a) During Stage 1 of this EA study with:

      i. Parks Canada on November 23, 2009 and February 8, 2010 to discuss the potential impacts of an additional crossing of the Cataraqui River on the Rideau Canal south of the Kingston Mills Lock Station; and

      ii. Canadian Forces Base (CFB) Kingston on November 23, 2009 to provide an overview of the project and discuss CFB Kingston's long-term strategic plans; and

   b) During Stage 2 of this EA study with:

      i. Parks Canada on September 16, 2010 which involved a boat tour of the EA study area and discussions on First Nations history in the area as well as preliminary bridge design and viewscape considerations; and

      ii. the Kingston Rowing Club on August 16, 2010 as well as March 28, April 5 and April 9, 2012 to discuss rowing needs in the Cataraqui River.

Table 1.2
Role and Responsibilities of Various Committees

Committee	Committee Structure	Committee Roles and Responsibilities	Meetings to Date	
			EA Stage 1	EA Stage 2
Senior Management Committee	• Senior City Staff • Senior Project Team Members	• Project Oversight and Administration • Manage Project Budget and Schedule • Issue/Risk Management and Mitigation	• Various	• Various
Technical Advisory Committee	• Various City Departments • Senior Project Team Members • Canadian Environmental Assessment Agency • CFB Kingston • Cataraqui Region Conservation Authority (CRCA) • Department of Fisheries and Oceans • Parks Canada • Ministry of Transportation Ontario	• Technical Guidance on EA Study Alternatives • Vetting Technical Decision-Making • Assistance in Identifying Approval Requirements	• March 9, 2009 • September 16, 2009 • November 4, 2009 • January 27, 2010 • February 10, 2010 • February 23, 2010	• October 18, 2010 • January 20, 2011 • May 26, 2011 • July 28, 2011
First Nations Consultations Sub-Committee	• Senior City Staff • Senior Project Team Members • Special Advisors	• Led by the City • Represents City and Project Team • Maintain a Link With First Nations	• Various	• Various
Public Liaison Committee	• Senior City Staff • Senior Project Team Members • Community representatives from both sides of the Cataraqui River	• Provide Input on Public Consultation Activities • Review Consultation Reports • Attend Public Information Centres	• June 4, 2009 • August 24, 2009 • October 14, 2009 • January 27, 2010 • February 25, 2010	• October 18, 2010 • January 19, 2011 • March 2, 2011 • May 25, 2011 • February 16, 2012

6. Facilitating five Public Information Centres to date at the following key project milestones:

   a) During Stage 1 of this EA study:

      i. on April 23, 2009 to introduce the project;

      ii. on November 28, 2009 to discuss project issues in small working groups; and

      iii. on March 3, 2010 to present the preferred solution; and

   b) During Stage 2 of this EA study:

      i. on March 31, 2011 to present and receive feedback on the three preliminary bridge concepts; and

      ii. on March 1, 2012 to provide details on the projected traffic volumes, flows and origin-destination patterns on the recommended bridge design solution and how these traffic patterns will affect the downtown and adjacent neighbourhoods as well as an EA process recap to provide a basis for the Stage 2 analyses and recommendations.

7. Preparing a 'Mission Statement, Vision and Guiding Principles' for use and reference throughout this EA study, which is summarized below in Table 1.3.

Table 1.3
Mission Statement, Vision and Guiding Principles

A. Mission Statement	1. To complete an EA that evaluates the need and feasibility for a new crossing of the Rideau Canal and Cataraqui River in the City within a framework that: a) builds trust, support, and consensus among international, national, provincial, First Nations, local interests and homeowner associations; b) protects and enhances the cultural and natural heritage integrity of the Rideau Canal as a designated UNESCO World Heritage Site, National Historic Site, Canadian Heritage River and Federally regulated navigable waterway; c) evaluates the functionality and compatibility of alternative solutions on the basis of social, cultural, economic, and environmental sustainability; and d) respects Kingston's unique heritage and cultural character, including the customs and traditions integral to the distinctive cultures of First Nations communities and other cultures that make up our community.
B. Vision	1. Through innovative planning, design, and consultation, the EA process for evaluating the need and feasibility for a new crossing of the Cataraqui River will display community leadership that reinforces the City's proud historic association with the Rideau Canal and its goal of becoming Canada's most sustainable City.
C. Guiding Principles	
C1. Scenic, Cultural and Natural Heritage Integrity	1. We respect the role of the Rideau Canal and Cataraqui River as: a) a cultural heritage and natural symbol of Canada's identity; b) a valuable tourism and recreational resource; and c) a valuable testimony of First Nations and early European settlements and cultures. 2. We recognize the traditional role of the Rideau Canal and Cataraqui River as a fully functional navigable historic waterway in both promoting public education and nurturing the appreciation of its scenic, cultural heritage, and natural heritage value.

Table 1.3
Mission Statement, Vision and Guiding Principles

C1.	Scenic, Cultural and Natural Heritage Integrity	3. We value the ongoing efforts of private landowners, stakeholder groups, government agencies, and public and private sector partnerships in protecting and enhancing the scenic, cultural heritage, and natural heritage character of the Rideau Canal and Cataraqui River. 4. We recognize that the sustainable design and development of the shoreline and lands adjoining the Rideau Canal and the Cataraqui River is achieved through respect of its scenic, cultural heritage, and natural heritage landscape.
C2.	Healthy Community	1. We recognize that efficient transportation linkages guide the future development of the City of Kingston and contribute to the quality of community life. 2. We appreciate that the development of effective alternative solutions needs to incorporate, promote and respect: a) private and public transportation use; b) sustainable transportation options such as cycling and walking; c) the principles of universal accessibility; and d) remaining cultural heritage artifacts from First Nations and early European settlements. 3. We recognize that the evaluation of effective alternative solutions needs to be based on: a) a full set of social, cultural, economic, and environmental factors; b) mitigation measures that are state-of-the-art and sustainable; and c) the preservation of cultural and heritage resources.

Table 1.3
Mission Statement, Vision and Guiding Principles

C3.	Public and Agency Engagement	1. We acknowledge that international, national, provincial, and local interests and concerns shall be considered and addressed in an equitable manner. 2. We recognize that goals are realized when local knowledge and experience promotes understanding of project issues and solutions in an atmosphere of mutual respect and trust. 3. We are committed to a process in which support and consensus is established and nurtured through open and innovative public and agency consultation activities. 4. We welcome differences of opinion and competing interests as opportunities to ensure all project issues will be considered and addressed.
C4.	Effective Implementation	1. We recognize that evaluating and developing alternatives at the same time will allow stakeholder and project team partners to better understand the issues from the outset and develop proactive solutions. 2. We appreciate that through effective graphic design of alternatives, the concepts will be better understood by stakeholders and help to generate feedback. 3. We recognize that our sense of accomplishment is achieved by providing clear and comprehensive documents that show how project decisions have been made.
C5.	Project Teamwork	1. We are committed to providing professional services with a strong community-based presence that reflects professional pride, personal commitment, and mutual respect. 2. We acknowledge that project milestones are met by establishing realistic task objectives, strategic personnel assignments, proactive risk management, and effective schedule control.

1.3.3 Government, Agency and First Nations Involvement

As highlighted above, the consultation plan that has been engaged since the EA study commenced in March, 2009 has been critical in facilitating ongoing input from various government departments and agencies and First Nations communities. This input reflects their respective stakeholder roles in this EA study, given its potential scope, complexity, effects and capital cost implications. This is discussed further below.

.1 Provincial, Municipal and Agency Involvement

The respective roles and involvement of Provincial and Municipal authorities and agencies in this EA study are highlighted in Table 1.4 below.

Table 1.4
Project Involvement: Provincial and Municipal Authorities and Agencies

Authority / Agency	Involvement
Ministry of Environment	1. The project is proceeding as a Schedule C undertaking in accordance with Ontario Municipal Class EA requirements; 2. Review the potential impacts and mitigation measures of the project on the aquatic and natural environment; and 3. Collaborate with the proponent on related Provincial approval requirements regarding recommended project activities; and 4. Participated in the EA study TAC as an observer during the early part of Stage 1 of this EA study.
Ministry of Natural Resources Cataraqui Region Conservation Authority	1. Review the potential impacts and mitigation measures of the project on the aquatic and terrestrial environments; 2. Collaborate with the proponent on related Provincial approval requirements regarding recommended project activities; and 3. Participated in the EA study TAC.
Ministry of Culture	1. Review the potential impacts and mitigation measures of the project on heritage and archaeological resources.
Ministry of Transportation	1. Review the potential impacts and mitigation measures of the project on Highway 401; and 2. Participated in the EA study TAC.
Hydro One	1. Review the potential impacts and mitigation measures of the project on existing power supply networks.
Utilities Kingston	1. Review needs and opportunities for municipal infrastructure service improvements that could be incorporated into the project.
City of Kingston	1. Collaborate with the project team; and 2. Upon completion of this EA study, engage long-term planning and budget programming and the pursuit of financial assistance from senior levels of government to implement the project.

.2 Federal Involvement

The respective roles and involvement of Federal authorities in this EA study (both prior and subsequent to the submission of the initial Project Description to the CEAA at the start of Stage 2 of this EA study) are highlighted in Table 1.5 below.

Table 1.5
Project Involvement: Federal Authorities

Agency	Involvement
CEAA	1. FEAC of Federal authorities during Stage 1 of this EA study, being responsible for reviewing the EA and coordinating the review activities of the RA's and expert FA's; 2. Contributed expert information and participated in the EA study TAC during Stage 1 of this EA study; and

Table 1.5
Project Involvement: Federal Authorities

Agency	Involvement
CEAA	3. Transferred its FEAC role to Parks Canada and withdrew its participation in the project during Stage 2 of this EA study, as the project site location is within the Rideau Canal.
Parks Canada	1. An RA during Stage 1 of this EA study, given that: a) it is responsible on behalf of i) the Federal government for managing and protecting the Rideau Canal as a National Historic Site and Canadian Heritage River; and ii) the UNESCO World Heritage Committee for ensuring that the canal's Outstanding Universal Value is maintained; and b) the project would require authorization under the 'Historic Canals Regulations' and could further be subject to the 'Federal Real Property and Federal Immovable's Act'; 2. As an RA: a) contributes expert information; b) reviews the potential impacts and mitigation measures of the project on the heritage values of the Rideau Canal and approve recommended project activities; c) collaborates with the proponent to ensure Federal Duty to Consult protocol with First Nations communities is effected; d) collaborates with the proponent on other related Federal approval requirements regarding recommended project activities; e) participated in the EA study TAC; and 3. Assumed the FEAC role from the CEAA during Stage 2 of this EA study, as the project site location is within the Rideau Canal, and as such: a) is responsible for reviewing the EA and coordinating the review activities of the RA's and expert FA's; and b) continues to collaborate with the proponent on EA study activities.

Table 1.5
Project Involvement: Federal Authorities

Agency	Involvement
Department of Fisheries and Oceans	1. An RA, given that it administers the 'Fisheries Act' and that the project would be subject to it and require related approvals; 2. Contributes expert information; 3. Reviews the potential impacts and mitigation measures of the project on the aquatic environment and the role of the Rideau Canal as a Federally regulated waterway; 4. Collaborates with the proponent on related Federal approval requirements regarding recommended project activities; and 5. Participated in the EA study TAC.
Transport Canada	1. An RA, given that it administers the 'Department of Transport Act' and 'Navigable Waters Protection Act' and that the project would be subject to both and require related approvals; 2. Contributes expert information; 3. Reviews the potential impacts and mitigation measures of the project on the LaSalle Causeway and the Rideau Canal as a Federally regulated navigable waterway; and 4. Collaborates with the proponent on related Federal approval requirements on recommended project activities.
Environment Canada	1. An expert FA, in that it has specialist or expert information that may assist RA's with the Federal EA of the project; and 2. Participated in the EA study TAC.
National Defence	1. Reviews the potential impacts and mitigation measures of the project on CFB Kingston and contribute expert information; and 2. Participated in the EA study TAC.

Table 1.5
Project Involvement: Federal Authorities

Agency	Involvement
Health Canada	1. Contributes expert information, if requested; and 2. Participated in the EA study TAC.
Natural Resources Canada	1. Contributes expert information, if requested.
Infrastructure Canada	1. The proponent will seek Federal financial assistance prior to project construction activities, for which a Federal EA would likely be required.

.3 First Nations Involvement

The Canadian constitutional framework takes into account that the First Nations of Canada were here first as sovereign peoples who were never conquered. Further, the 'Crown', which is made up of the Federal and Provincial levels of government, has an obligation, based on its own inherent honour, to consult on matters affecting Aboriginal interests raised by First Nations. In 2010, the Supreme Court of Canada in the *Rio Tinto* ruling confirmed that the purpose of consultation with First Nations was not only based on the honour of the Crown but also, because of that honour, related to the onerous demands of the trial process. Accordingly, it has been established that consultations must be undertaken with the awareness not only of the constitutional fiduciary duty of the Crown to protect Aboriginal interests but also that the process stand as a surrogate for a full court process. As such, the 'Duty to Consult' is a means to ensure First Nations' interests and rights are identified and respected. It also helps the Crown to make better more durable decisions and strengthen its relationships with the First Nations of Canada.

Procedural aspects of First Nations consultation processes are often delegated to the project proponent. The project proponent is typically best-suited to speak to technical and environmental aspects of the project and where appropriate, is best-placed to address concerns raised by First Nations communities. As the project proponent for this EA study, the City has been delegated the procedural aspects of First Nations consultation from the RA's.

First Nations history in the region of Kingston is complex, in that the establishment of a European presence occurs far earlier here as compared to most other cities in Ontario. As such, the City has sought to be recognized as a municipality which takes the Duty to Consult with First Nations communities as a serious obligation. This is due in no small part to the City's interest in understanding the rich and complex historic and continuing experience of First Nations as part of its overall cultural awareness. Consistent with this commitment, the City, through its First Nations Consultation Sub-Committee, undertook consultations either though meetings or regular mailings with the following First Nations communities having an interest within the EA study area:

1. Ardoch Algonquin First Nation.
2. Mississaugas of Alderville First Nation.
3. Mohawk Nation Council of Chiefs.
4. Tyendinaga Mohawk Territory.
5. Shabot Obaadjiwan First Nation.
6. Huron-Wendat Nation.
7. Algonquins of Ontario.
8. Algonquins of Pikwàkanagàn.
9. Mohawk Council of Akwesansne.

1.3.4 Time Frame and Approvals Process

As previously noted, this EA study was initiated on March 3, 2009 with the 'Notice of Study Commencement'. This Report can be used to satisfy both the Provincial and Federal EA frameworks.

Upon City Council's review and approval of this Report under the Class EA planning process, a formal 'Notice of Completion' will be issued by the City. The public and review agencies will have thirty days to request a 'Part II Order' from the Ontario Minister of Environment. This is an appeal provision whereby a person or party with outstanding concerns may request the Ontario Minister of Environment to make an order requiring the City to comply with Part II of the OEA Act before proceeding any further with the Schedule C Class EA phase of the project. If no request for a Part II Order is received, the Schedule C Class EA phase of the project will be complete. As shown on Table 1.1, this is anticipated to occur by June 2012. The City will then seek Federal approval of the EA pursuant to the CEA Act. Following Federal EA approval, the City will be in a position to initiate project implementation (long-term planning and budget programming, detail design, final approvals and construction) within the next ten years without having to revisit the findings and recommendations identified through the Schedule C Class EA. Should a ten year time lapse occur between completion of the Schedule C Class EA and commencement of the implementation phase, the City would be required to review the planning and design process as well as the environmental setting at that time to ensure the project and proposed mitigation measures are still appropriate. Such a review would be documented through an Addendum to this Report. Only the changes to the original project, if any, would be open for public review.

1.4 Proponent and Project Team

1.4.1 Proponent

The project proponent is the City. City contact information is as follows:

City of Kingston
216 Ontario Street
Kingston, Ontario K7L 2Z3
Mr. Mark Van Buren, P.Eng.
Director, Engineering Department
Phone: (613) 546-4291, Extension 3218
Fax: (613) 542-7880
E-mail: mvanburen@cityofkingston.ca

1.4.2 Project Team

A team led by J. L. Richards & Associates Limited was retained by the City to undertake this EA study, including the coordination and production of this Report. Project team contact information is as follows:

J.L. Richards & Associates Limited
Suite 203 – 863 Princess Street
Kingston, Ontario K7L 5N4
Mr. Dan Lalande, P.Eng.
Director, Kingston Office Manager
Phone: (613) 544-1424
Fax: (613) 544-5679
E-mail: dlalande@jlrichards.ca

Additional information on the main project team members and their roles in this EA study is provided in Table 1.6 below.

Table 1.6
EA Study Project Team

Project Team Partner	Project Team Personnel	Project Team Role
J.L. Richards & Associates Ltd.	Dale Craig, P.Eng. Dan Lalande, P.Eng. Wes Paetkau, MCIP, RPP Manuel Stevens, M.A.	Principal-In-Charge Project Manager and EA Lead Assistant Project Manager Senior Advisor
Associated Engineering	John Fussell, P.Eng. Bala Balakrishnan, P.Eng. Bryan Petzold, P.Eng.	Bridge Engineer Bridge Engineer Transportation Engineer
Bridgescape LLC	Fred Gottemoeller, PE, AIA	Bridge Architect
Williamson Consulting Inc.	Howard Williamson, B.A. (Hons.)	Public Consultation Specialist
Scarlett Janusas Archaeological and Heritage Consulting	Scarlett Janusas, M.A.	Marine Archaeologist
Adams Heritage	Nick Adams, M.A.	Land Archaeologist
Bowfin Environmental Consulting	Michelle Lavictoire, B.Sc.	Marine Ecologist
Ecological Services	Mary Alice Snetsinger, M.Sc.	Land Ecologist
HCCL Inc.	Stu Seabrook, P.Eng., M.Sc.	Hydrotechnical Engineer
Golder Associates Ltd.	Gerry Webb, P.Eng. Berend Veldermain, P.Geo. Bruce Goddard, PE, P.Eng.	Geotechnical Engineer Geoscientist Geotechnical Engineer
Smith Heritage Consulting	Laurie Smith, M.A, LLB, CAHP	Cultural Heritage Specialist
Corush Sunderland Wright	John Wright, CSLA, MCIP, RPP	Landscape Architect
RWDI Air Inc.	Ben Coulson, P.Eng.	Noise Specialist
Leslie Higginson Surveying Ltd.	Leslie Higginson, O.L.S., O.L.I.P.	Land Surveyor
Monteith & Sunderland Ltd.	Glenn Dawson, P.Eng.	Hydrographic Surveyor

1.5 Report Sections

This Report documents the decision making and consultation process during Stage 1 and Stage 2 of this EA study. It presents and evaluates alternative solutions to the problem statement and determines a preferred solution. It then builds on the preferred solution by assessing alternative designs, which in turn leads to the selection of a preferred design. The potential effects on (and from) the environment from (and on) activities associated with implementing the preferred design (construction, operation, decommissioning) are then discussed. Mitigation measures and monitoring, where necessary, are also identified.

This Report is organized in the following main sections:

1. Introduction and Background.
2. The EA Problem Statement.
3. The Alternative Solutions and The Preferred Solution.
4. The Alternative Designs and The Preferred Design.
5. The Project Description.
6. Project Monitoring.
7. Public and First Nations Consultations.
8. Conclusion.
9. List of Reference and Supporting Documents.

2.0 THE EA PROBLEM STATEMENT

2.1 Problem Description

Two major east-west transportation crossings of the Cataraqui River currently exist within the City's urban limits. One crossing is the LaSalle Causeway-Highway 2 corridor, which crosses the Cataraqui River at the southerly confluence of the Cataraqui River and Lake Ontario. The LaSalle Causeway is comprised of a two-lane cross section and a series of structures (fixed truss, rigid frame structure and Bascule Lift Bridge). It is under the jurisdiction of Public Works & Government Services Canada. The LaSalle Causeway has an average estimated capacity of 900 vehicles per hour, per lane (for a total two-way capacity of 1,800 vehicles per hour given its 2-lane configuration), based on the City's target LOS D.

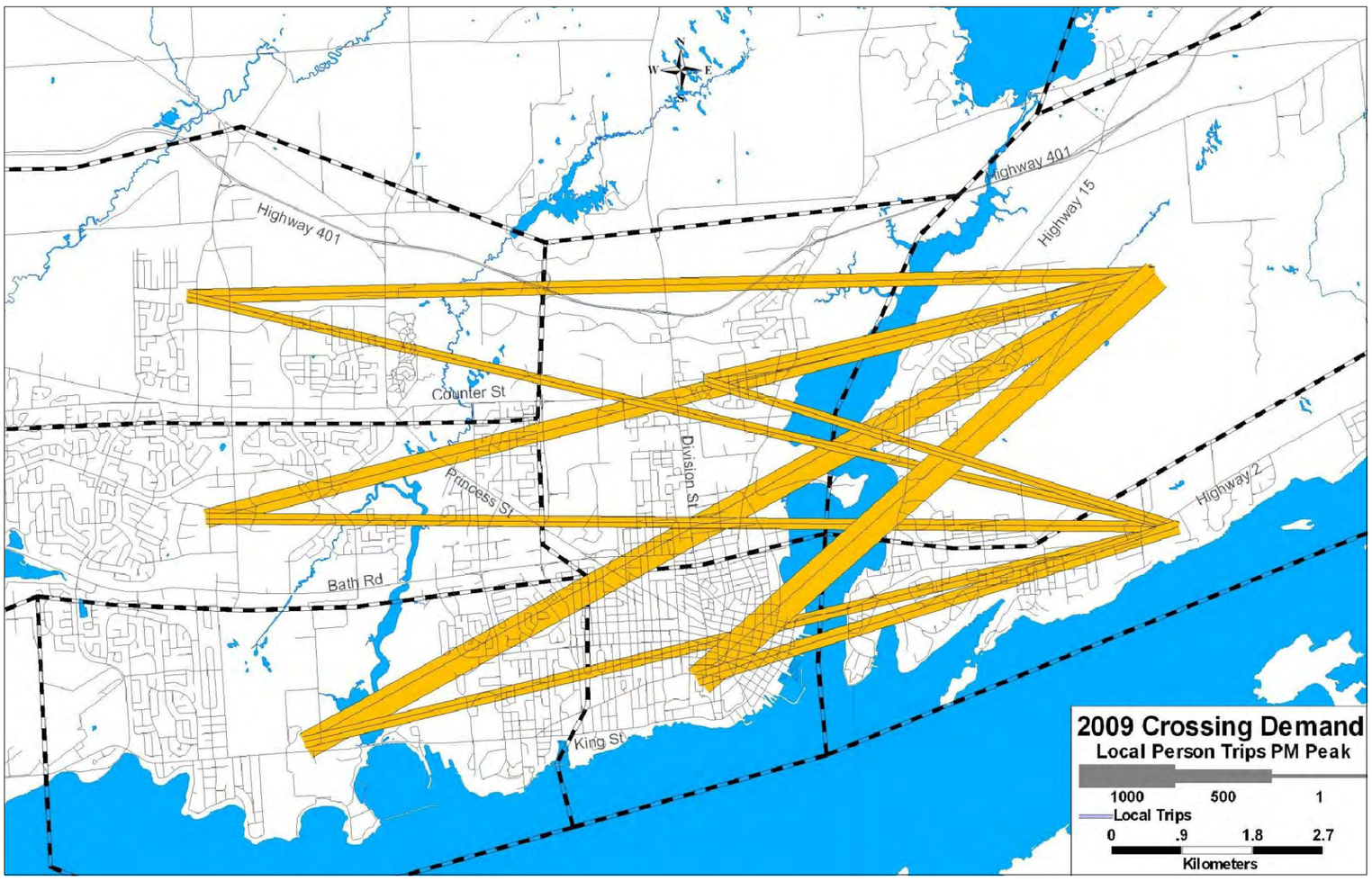
The second crossing is the Highway 401 corridor, which crosses the Cataraqui River approximately 6 km north of the LaSalle Causeway. Highway 401 is owned by the Province of Ontario through the Ministry of Transportation Ontario (MTO). It is a four-lane Freeway that extends through the City and is the primary inter-city freeway, with local interchanges at Joyceville Road, Kingston Road 15, Montreal Street, Division Street, Sir John A. Macdonald Boulevard, Sydenham Road, and Highway 38. The Highway 401 crossing capacity is estimated to be approximately 1,500 to 2,000 vehicles per hour, per lane (for a total two-way capacity of about 6,000 vehicles per hour given its current four-lane configuration).

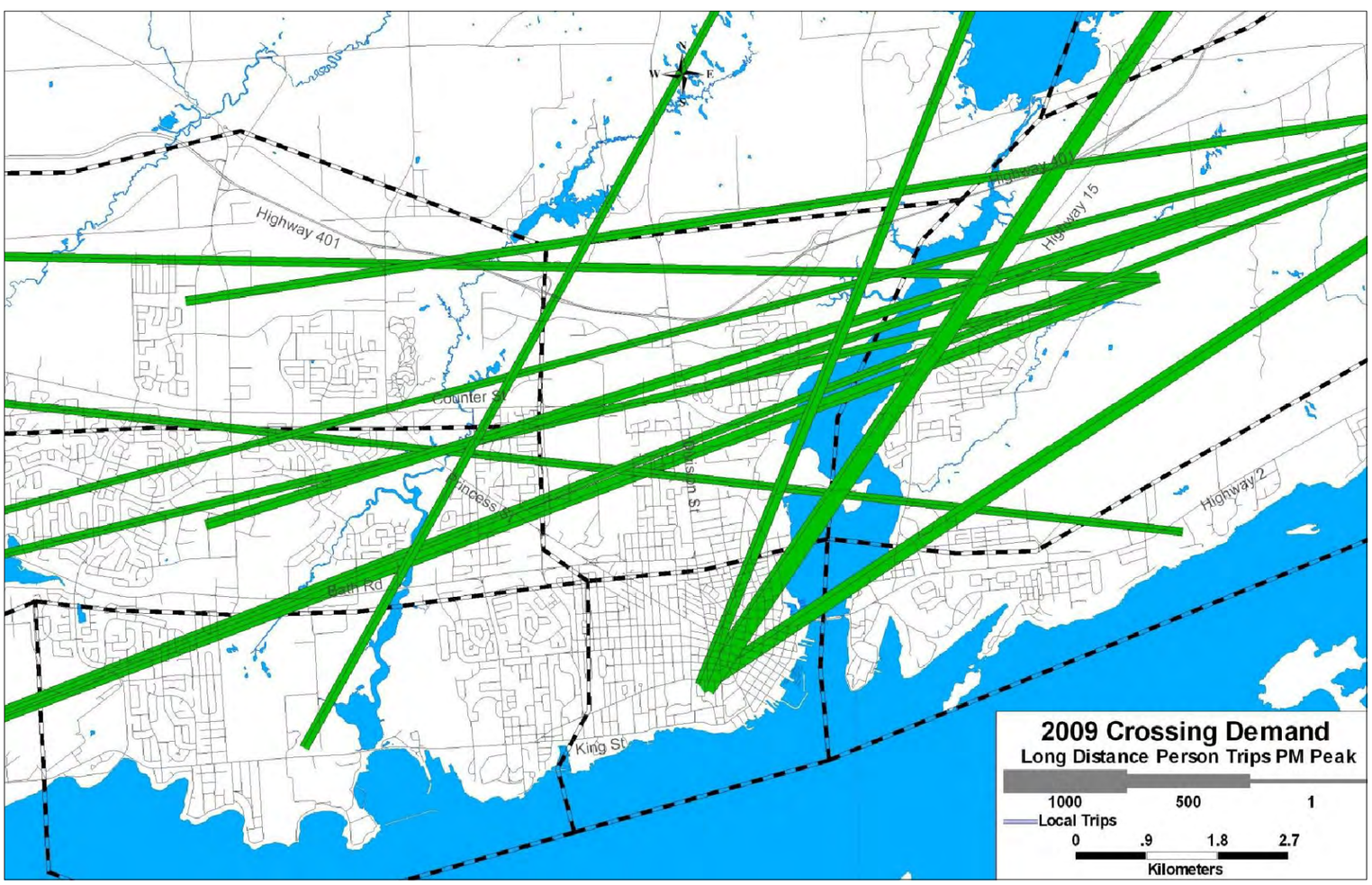
Other key roadway network links within the EA study area include:

1. Highway 2, which is a major east-west arterial that connects the east part of the City to the downtown via the LaSalle Causeway and connects with Kingston Road 15 on the east side of the Cataraqui River by a signalized T-intersection.
2. Kingston Road 15, which is a major north-south arterial on the east side of the Cataraqui River that connects with Highway 2 in the south via a signalized T-intersection (as noted above) and Highway 401 in the north by a modified diamond grade separated interchange.
3. John Counter Boulevard, which is a major east-west arterial that serves development in west Kingston up to the east of Montreal Street where it becomes a local street.
4. Montreal Street, which is a major north-south arterial on the west side of the Cataraqui River that connects with the downtown core in the south and Highway 401 in the north via a grade separated interchange.

Both the 2004 KTMP and 2009 KTMP Update confirmed a 0.90 volume/capacity ratio as the appropriate trigger for recommending roadway solutions for the 'Cataraqui River screenline' (which includes the LaSalle Causeway and Highway 401 crossing), which is based on an urban arterial road classification from the Transportation Association of Canada. This means the trigger for recommending improvements for the LaSalle Causeway is 810 vehicles per hour, per lane (based on an average estimated capacity of 900 vehicles per hour, per lane) and 5,400 vehicles per hour for the Highway 401 crossing (based on its total two-way capacity of about 6,000 vehicles per hour given its current four-lane configuration).

Drawing 2.1 shows the 2009 PM peak hour crossing demand patterns for local travel across the Cataraqui River. Drawing 2.1 also shows the 2009 PM peak hour crossing demand patterns for longer distance trips both to and from the City, excluding trips using Highway 401. Note the trip demand lines of specific traffic zones have been aggregated to broader zones in order to simplify the demand patterns. As Drawing 2.1 illustrates, there is strong demand for trips crossing the Cataraqui River via the LaSalle Causeway in both the southern and northern portions of the City's urban limits.





PROJECT:

CATARAQUI RIVER THIRD CROSSING EA - STAGE 2 ENVIRONMENTAL STUDY REPORT

DRAWING:

2009 PM CROSSING DEMAND: LOCAL AND LONG DISTANCE TRIPS (SOURCE: AECOM)

J.L.Richards
ENGINEERS·ARCHITECTS·PLANNERS

J.L. Richards
& Associates Limited
203-863 Princess Street
Kingston, ON Canada
K7L 5N4
Tel: 613 544 1424
Fax: 613 544 5679

DESIGN:

DRAWN:

CHECKED:

PLOTTED: 25-Jan-12

DRAWING NO.: **2-1**

JLR NO: 23446-02

File Location: C:\Documents and Settings\tdjudson\Desktop\23443-02 - Third Crossing ESR\Figures\Figure 2-1 Crossing Demand.dwg

Existing traffic volumes on the LaSalle Causeway during the PM peak hour from Stage 1 and Stage 2 of this EA study are shown in Table 2.1 below. Existing volumes are in the order of 1,000 vehicles per hour for eastbound travel and 1,100 vehicles per hour for westbound travel during the PM peak hour. As shown on Drawing 2.2 which is based on the 2011 'Traffic Operations Study For The LaSalle Causeway Corridor' prepared by HDR/iTrans pursuant to Stage 1 of this EA study, trip destinations for eastbound and westbound travel via the LaSalle Causeway during the PM peak hour are more specifically defined as follows:

1. Eastbound trip destinations are split between Kingston Road 15 (51 percent) and Highway 2 (46 percent) and originate from the following main areas on the west side of the Cataraqui River:

    a) 38 percent originate from the downtown area and Queen's University;

    b) 15 percent originate from north of the downtown area;

    c) 13 percent originate from Princess Street;

    d) 15 percent originate from Johnson Street; and

    e) 7 percent originate from King Street west of Queen's University.

2. Westbound trips originating from Kingston Road 15 (35 percent) and CFB Kingston-Highway 2 (59 percent) are destined to the following main areas on the west side of the Cataraqui River:

    a) 36 percent are destined to the downtown area and Queen's University;

    b) 10 percent are destined to north of the downtown area;

    c) 10 percent are destined to the Bath Road-Concession Street corridor;

    d) 14 percent are destined to Princess Street;

    e) 15 percent are destined to Johnson Street; and

    f) 7 percent are destined to King Street west of Queen's University.

Based on existing traffic volumes, the LaSalle Causeway is currently operating below the City's target LOS D. Existing conditions affecting LOS on the LaSalle Causeway-Highway 2 corridor are as follows:

1. **The discharge of vehicles from the Wolfe Island Ferry at the Barrack Street-Ontario Street intersection.** Each hourly arrival of the ferry can offload up to 55 vehicles and 330 passengers, which impacts the Barrack Street-Ontario Street intersection where all unloading vehicles exit through the east leg of the intersection. Travel time surveys done as part of the 2011 HDR/iTrans report indicate that this surge causes a 2-3 minute delay on the LaSalle Causeway-Highway 2 corridor during the PM peak hour. The MTO is undertaking an EA study to determine future transportation needs between Wolfe Island and the City. The current preliminary recommendation is to add a second ferry service to meet projected ferry demands over the next 20 years. If implemented, this service would not be available until 2014. But it would further affect queues on Ontario Street and increase the delay on the LaSalle Causeway to 7-8 minutes during the PM peak hour.

2. **The operation of the signalized intersections at each end of the LaSalle Causeway, namely, the Highway 2-Kingston Road 15 intersection to the east and the Barrack Street-Ontario Street intersection to the west.** The 2011 HDR/iTrans report indicates that signal timings and offsets on Ontario Street, Highway 2 and Kingston Road 15 are not fully optimized to serve current demand during the PM peak hour. This is particularly apparent for eastbound travel on the LaSalle Causeway exiting the downtown and for northbound travel on Kingston Road 15:

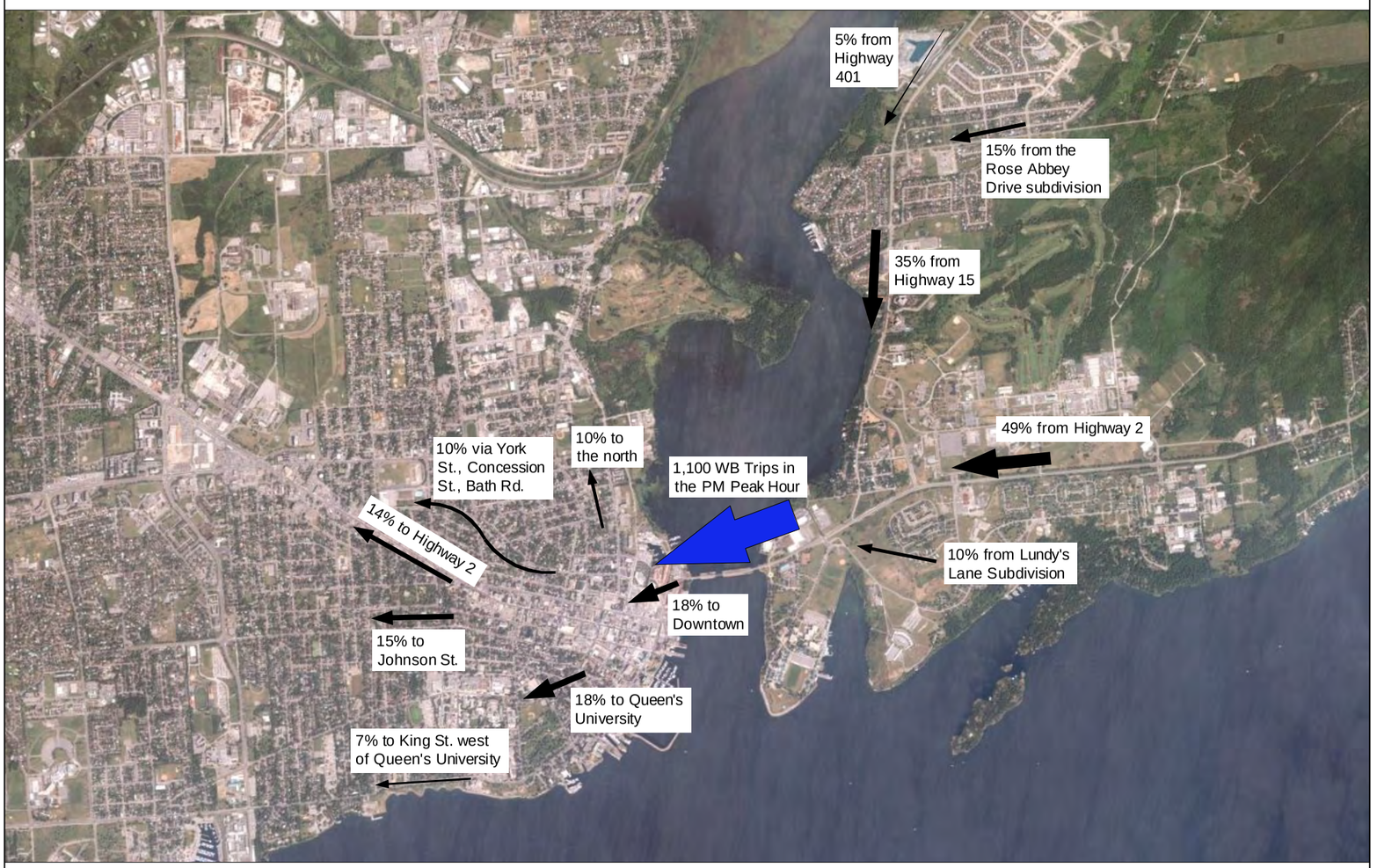
    a) For eastbound travel, there are high eastbound left turn delays at the Highway 2-Kingston Road 15 intersection. This subsequently creates long queues extending back to Ontario Street that block the eastbound through lane on Highway 2, causing an 8-12 minute delay on the LaSalle Causeway during the PM peak hour (versus 3-4 minutes during non-peak hours); and

    b) For northbound travel on Kingston Road 15, travel times during the PM peak hour were almost two times longer than during the non-peak hours and coincide with when northbound commuters from CFB Kingston exit onto Kingston Road 15 at Craftsman Boulevard.

    For westbound travel into the downtown during the PM peak hour, demand is equally high, with queues extending to Niagara Park Drive east of Kingston Road 15. This is caused by a combination of delays at the Barrack Street-Ontario Street intersection, the Highway 2-Duty Drive intersection and the Highway 2-Kingston Road 15 intersection as a result of the left-turn advance phases and competing traffic from the cross streets which take away from 'green time' that could otherwise be allocated to the westbound through movements. The need to accommodate pedestrian crossings at the signalized intersections also limits the available green time to serve traffic.

3. **The Bascule Lift Bridge portion of the LaSalle Causeway that is raised to accommodate recreational boat traffic.** The Bascule Lift Bridge is raised about 15-30 times per day during the summer months, but is closed during the 8:00-8:30 AM, 12:30-1:00 PM and 4:30-5:00 PM periods. The 2011 HDR/iTrans report states that since the Bascule Lift Bridge does not operate during the

A: EASTBOUND TRIPS



B: WESTBOUND TRIPS

PROJECT:

CATARAQUI RIVER THIRD CROSSING EA - STAGE 2 ENVIRONMENTAL STUDY REPORT

DRAWING:

2009 PM PEAK TRAVEL DEMAND AND PATTERNS ON THE LASALLE CAUSEWAY (SOURCE HDR / iTRANS)

J.L.Richards
ENGINEERS·ARCHITECTS·PLANNERS
J.L. Richards & Associates Limited
203-863 Princess Street
Kingston, ON Canada
K7L 5N4
Tel: 613 544 1424
Fax: 613 544 5679

DESIGN:	DRAWING NO.: 2-2
DRAWN:	
CHECKED:	JLR NO: 23446-02
PLOTTED: 31-Jan-12	

File Location: C:\Documents and Settings\djudson\Desktop\23443-02 - Third Crossing ESR\Figures\Figure 2-2 & 2-4 Causeway Travel Demand 2009 & 2020.dwg

AM and PM peak hours, it is not a major contributing factor to existing traffic congestion. However, it still is noteworthy that:

a) The Bascule Lift Bridge is closed for only a portion of the PM peak hour period but can be opened at 4:13 PM, which is considered in the 2011 HDR/iTrans report as the 'worst case travel time' on the LaSalle Causeway;

b) The 1992 TSH report estimated that the traffic delay caused by the bridge opening could reduce the capacity of the LaSalle Causeway by an additional 100 vehicles per hour; and

c) The 'Master Fire Plan' concluded that traffic congestion on the LaSalle Causeway and the operation of the Bascule Lift Bridge portion of the LaSalle Causeway for boat traffic is negatively impacting existing emergency response agencies due to the limited access to resources located in the core area when career staff from the downtown core stations are required to be assigned to support the volunteer staff in the east side of the City in a timely manner.

As noted in Table 2.1 below, projected traffic volumes on the LaSalle Causeway, also undertaken during Stage 1 and Stage 2 of this EA study, are expected to increase in the future. Based on the 2011 HDR/iTrans report, the forecasted 2019 PM peak hour demand is estimated to be 1,260 vehicles per hour for both eastbound and westbound travel. This increase in travel demand is in response to urban growth projections in the City and surrounding area [or the Census Metropolitan Area (CMA)], as noted below:

1. Projected population growth could reach 9 percent from 2009 to 2019 (for a total population of 167,200 people) and 19 percent from 2009 to 2029 (for a total population of 183,200 people). 77 percent of this growth is expected to occur within the City boundaries, based on 2006 Census characteristics of the Kingston CMA.

2. Projected employment growth could reach 11 percent from 2009 to 2019 (for a total of 87,300 jobs) and 22 percent from 2009 to 2029 (for a total of 96,300 jobs). 88 percent of this growth is expected to occur within the City boundaries, based on demographic research work done in 2006 by TeraTrends. This projected employment growth includes long-term plans at CFB Kingston. Further in this regard, CFB Kingston employs a workforce of roughly 8,000 individuals (military and civilians) with residency being approximately 50 percent on each side of the Cataraqui River. CFB Kingston's long-term strategic plan is expected to create approximately 100 employment opportunities per year during the next several years. As a result, trips to and from CFB Kingston is anticipated to increase by 10 percent to 12.5 percent in 10 years, with approximately half of those trips originating from the west side of the Cataraqui River, based on current residency.

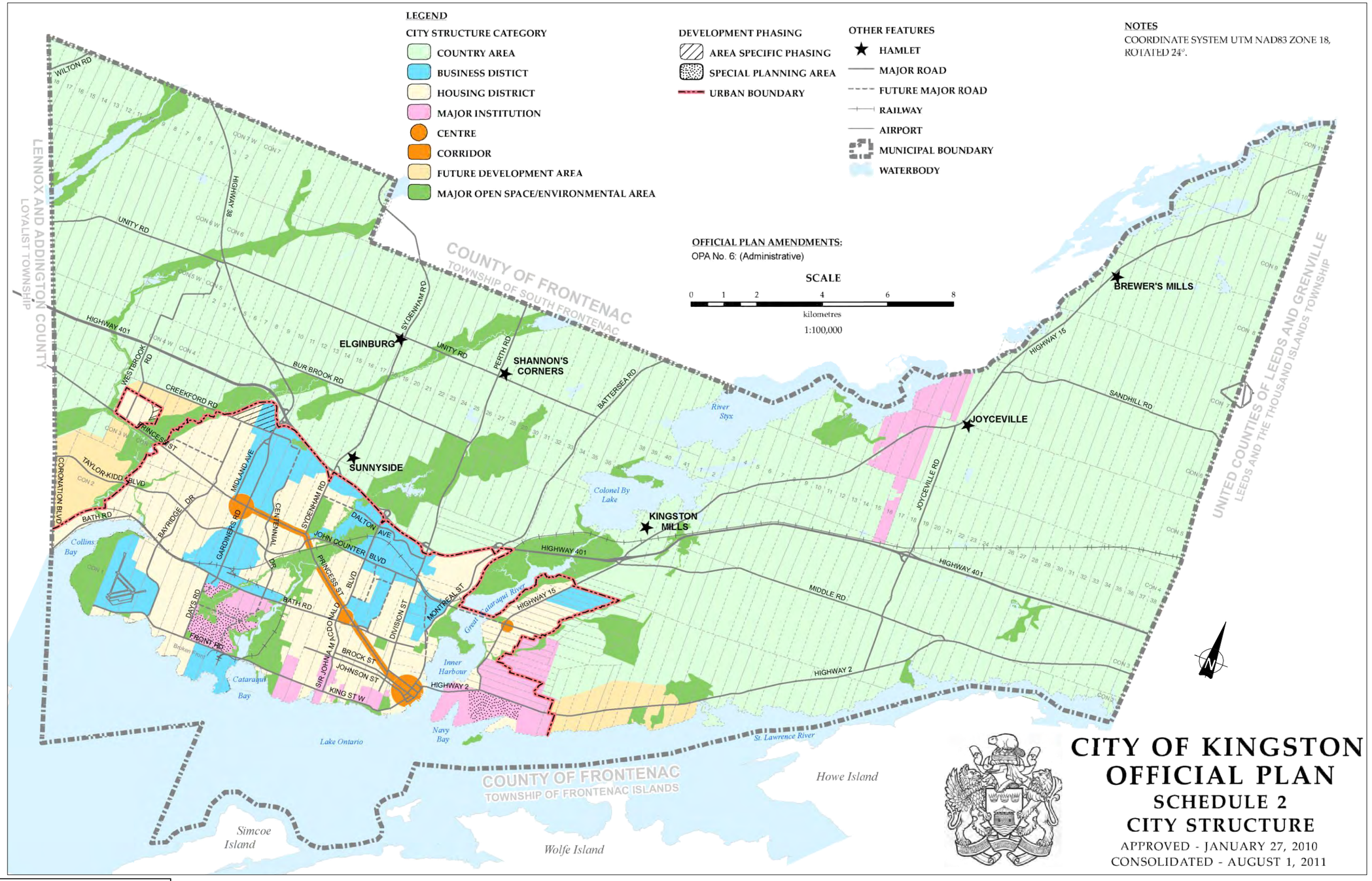
The City's Official Plan identifies various growth and development areas as shown on Drawing 2.3. It organizes the City into broad structural parts and highlights areas that are to accommodate the City's future urban population and employment growth via infill, intensification and new development. As Drawing 2.3 illustrates, growth and development areas within the City are shown on both sides of the Cataraqui River. Notable areas include east of Division Street in the downtown area and Rideau Heights, Cataraqui North and Cataraqui West along Princess Street as well as Westbrook, the Novelis-Alcan area and Creekford Road south in west Kingston as well as the St. Lawrence and Rideau communities in east Kingston. Future employment growth areas include the Highway 401 corridor and the potential surplus lands at the Collins Bay Penitentiary in west Kingston as well as the St. Lawrence Business Park and CFB Kingston (including the potential surplus lands at CFB Kingston) in east Kingston.

Table 2.1
Existing and Forecasted PM Peak Volumes on Highway 401 and the LaSalle Causeway

	Existing		**2019 5% Transit and 14% 'Active' Modes**		**2029 5% Transit and 14% 'Active' Modes**		**2029 9% Transit and 14% 'Active' Modes**	
	EB[7]	WB[8]	EB	WB	EB	WB	EB	WB
Stage 1 EA								
Highway 401	1,260	1,252	2,392	2,479	2,513	2,756	2,466	2,744
LaSalle Causeway	1,017	1,187	1,319	1,192	1,353	1,346	1,331	1,351
Stage 2 EA								
Highway 401	1,260	1,252	2,392	2,479	2,513	2,756	2,466	2,744
LaSalle Causeway	1,017	1,100	1,260	1,260	1,353	1,346	1,331	1,351

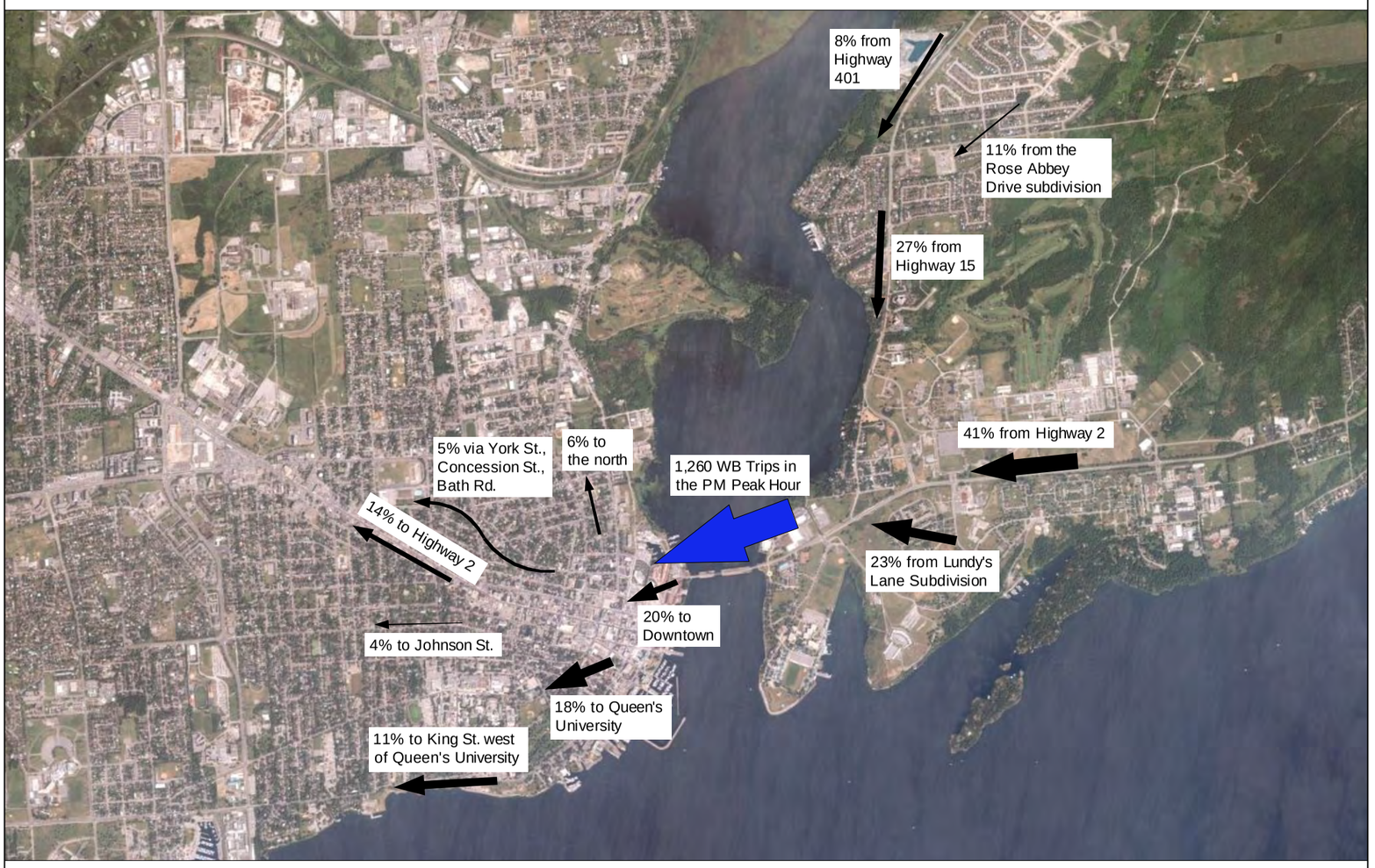
As shown on Drawing 2.4 and summarized below, based on the 2011 HDR/iTrans report, forecasted trip destinations for eastbound and westbound travel via the LaSalle Causeway during the PM peak hour are expected to change:

[7] Note 'EB' means 'eastbound' travel.
[8] Note 'WB' means 'westbound' travel.



PROJECT: CATARAQUI RIVER THIRD CROSSING EA - STAGE 2 ENVIRONMENTAL STUDY REPORT	DRAWING: OFFICIAL PLAN CITY STRUCTURE MAP	J.L.Richards ENGINEERS·ARCHITECTS·PLANNERS J.L. Richards & Associates Limited 203-863 Princess Street Kingston, ON Canada K7L 5N4 Tel: 613 544 1424 Fax: 613 544 5679	DESIGN: DRAWN: CHECKED: PLOTTED: 1-Feb-12 DRAWING NO.: 2-3 JLR NO: 23446-02

A: EASTBOUND TRIPS



B: WESTBOUND TRIPS

PROJECT:

CATARAQUI RIVER THIRD CROSSING EA - STAGE 2 ENVIRONMENTAL STUDY REPORT

DRAWING:

2019 TRAVEL FORECASTS AND PATTERNS ON THE LASALLE CAUSEWAY (SOURCE HDR / iTRANS)

J.L.Richards
ENGINEERS·ARCHITECTS·PLANNERS
J.L. Richards & Associates Limited
203-863 Princess Street
Kingston, ON Canada
K7L 5N4
Tel: 613 544 1424
Fax: 613 544 5679

DESIGN:	DRAWING NO.: 2-4
DRAWN:	
CHECKED:	JLR NO: 23446-02
PLOTTED: 23-Feb-12	

File Location: P:\23000\23446-02 - Cataraqui River EA - Stage 2\23443-02 - Third Crossing ESR\Figures\Figure 2-2 & 2-4 Causeway Travel Demand 2009 & 2020.dwg

1. Eastbound trip destinations are still generally split between Kingston Road 15 (49 percent) and Highway 2 (44 percent) and originate from the following main areas on the west side of the Cataraqui River:

   a) 45 percent originate from the downtown area and Queen's University (a 7 percent increase from 2009);

   b) 2 percent originate from north of the downtown area (a 13 percent decrease from 2009);

   c) 17 percent originate from Princess Street (a 4 percent increase from 2009);

   d) 4 percent originate from Johnson Street (a 11 percent decrease from 2009); and

   e) 21 percent originate from King Street west of Queen's University (a 14 percent increase from 2009).

2. Westbound trips originating from Kingston Road 15 decrease from 35 percent to 27 percent, whereas trips from CFB Kingston-Highway 2 increase from 59 percent to 64 percent. Main destinations on the west side of the Cataraqui River are as follows

   a) 38 percent are destined to the downtown area and Queen's University (a 2 percent increase from 2009);

   b) 6 percent are destined to north of the downtown area (a 4 percent decrease from 2009);

   c) 5 percent are destined to the Bath Road-Concession Street corridor (a 5 percent decrease from 2009);

   d) 14 percent are destined to Princess Street (unchanged from 2009);

   e) 4 percent are destined to Johnson Street (a 11 percent decrease from 2009); and

   f) 11 percent are destined to King Street west of Queen's University (a 4 percent increase from 2009).

As a result of this increased travel demand, the current problems and deficiencies on the LaSalle Causeway-Highway 2 corridor are expected to worsen in the future, if left unaddressed. By 2019, travel time delays during the PM peak hour are expected increase by an average of 79 percent for eastbound traffic and 76 percent for westbound traffic. Northbound travel time delays on Kingston Road 15 are also expected to increase by 27 percent on average.

In regards to the Highway 401 crossing, existing traffic volumes during the PM peak hour is 1,260 vehicles per hour per lane for eastbound travel and 1,252 vehicles per hour per lane for westbound travel. The forecasted 2019 PM peak hour demand for the Highway 401 crossing is estimated to be 2,392 vehicles per hour for eastbound travel and 2,479 vehicles per hour for westbound travel. Based on its current capacity of 1,500 to 2,000 vehicles per hour, per lane (for a total two-way capacity of about 6,000 vehicles per hour given its current four-lane configuration), the Highway 401 crossing has ample capacity to accommodate additional traffic. The MTO is also currently widening Highway 401 from four to six lanes west of Sydenham Road to west of Montreal Street as part of a broader provincial strategy to ultimately twin Highway 401 from the City of Windsor to the Quebec border in response to traffic volume growth and traffic collision incidents.

Though Highway 401 has ample capacity to handle more traffic both now and in the future, two issues need to be considered. The first is that the primary function of Highway 401 is to accommodate regional (or long distance) traffic. Traffic operations related to local traffic needs are fundamentally different than regional traffic needs. These differences can result in compromised efficiency and safety for both local and regional traffic. The second issue relates to the strong demand for trips crossing the Cataraqui River via the LaSalle Causeway in both the southern and northern portions of the City's urban limits. The Highway 401 crossing is 6 km north of the LaSalle Causeway. Diverting traffic to the Highway 401 crossing would lead to further out of way travel and additional travel delays.

The current and future traffic volumes on Table 2.1 also account for modal splits for active transportation (cycling and walking) and public transit use. Both are important factors in managing growth and reducing the number of single-occupant vehicles. The 2004 KTMP included numerous recommendations in keeping with the City's objectives for increasing both active transportation and transit use. At that time, modal splits for active transportation and transit were at 12 percent and 3 percent, respectively. Despite the City's subsequent strategic efforts, today's modal shares are at 14 percent for active transportation and 5 percent for transit. This represents a 2 percent share increase for each mode since 2004. The 2009 KTMP Update concluded that significantly increasing these modal shares would be very difficult to achieve in the City within the next 15-20 years, given the size of the City and the significant investment in infrastructure and aggressive policy approach that would be required. As such, the existing modal shares for active transportation and transit have been carried forward to the 2019 horizon, which results in the projected capacity deficiencies on the LaSalle Causeway-Highway 2 corridor shown on Table 2.1.

It is recognized however, that the City's Transit Department has been reviewing the City's existing transit system. A number of transit service enhancements were recently approved by City Council including the introduction of two new express bus routes serving the east and west sides of the City. Express Route 1, covering the west side of the City, will form a loop from the downtown and connect the west end of the City along the King Street-Bayridge Drive-Princess Street corridors. Express Route 2, covering the east side of the City, will also form a loop both to and from the downtown across the LaSalle Causeway-Highway 2

corridor and extending north on Kingston Road 15. Based on preliminary assessments, these Express Routes are expected to increase transit ridership in the City and result in a 1 percent increase in the overall City-wide transit mode share, or from 5 percent today to 6 percent by 2019. This 1 percent modal share increase for transit is expected to generate 1,049 new transit trips during the PM peak hour, which represents a reduction of 384 vehicle trips City-wide. As such, this increase would have a marginal impact on the capacity deficiency on the LaSalle Causeway-Highway 2 corridor. As shown on Table 2.1 and based on the 2009 KTMP Update, even at a simulated 9 percent transit mode share by 2029, the projected decrease in traffic volume on the LaSalle Causeway would still only amount to 0.6 percent (a decrease from 2,699 vehicles per hour in 2019 to 2,682 vehicles per hour in 2029). Thus, despite the projected modal shares for transit and active transportation and despite the even higher simulated increase for the transit mode share in particular (which would be difficult to achieve in any event as noted above), the projected traffic volumes on the LaSalle Causeway would still result in the corridor operating below the City's target LOS D over the immediate-to-long-term.

2.2 EA Problem Statement

Based on the above and in accordance with Phase 1 of the Schedule C Class EA process, the EA Problem Statement is as follows:

> There are currently two crossings of the Cataraqui River within the City of Kingston urban limits, namely: the LaSalle Causeway-Highway 2 corridor located at the southerly confluence of the Cataraqui River and Lake Ontario; and the Highway 401 crossing located 6 km upstream of the LaSalle Causeway-Highway 2 corridor. There is a requirement to evaluate the need for and the feasibility of implementing additional transportation capacity across the Cataraqui River over the immediate (2009), mid-term (2029) and long-term (2050/2075) planning horizons in response to:
>
> 1. The effects of the LOS for the LaSalle Causeway-Highway 2 corridor, which is falling below the City's accepted policy level of LOS D as a result of existing traffic congestion on the LaSalle Causeway during peak hour traffic demand (and during a Highway 401 detour event), despite focused strategies to optimize the transportation system and increase walking, cycling, and public transit use. The LOS is expected to continue to decrease in the future due to population and employment growth and increased traffic congestion.
>
> 2. The current role of the Highway 401 crossing as an inter-city roadway facility and the related safety and system efficiency issues that can result from conflicts between local and regional traffic use as well as the strong demand for trips crossing the Cataraqui River via the LaSalle Causeway in both the southern and northern portions of the City's urban limits.
>
> 3. Projected 19 percent population growth and 22 percent employment growth in the City and surrounding area by 2029 and the need to determine whether the City's transportation networks will be able to accommodate long-term planned growth and development programs on the east and west sides of the Cataraqui River in an efficient and effective manner.

2.3 EA Study Purpose

Based on the EA Problem Statement, this EA study is to involve an assessment of the potential positive and negative social, cultural, economic and environmental impacts of the following alternative solutions:

1. Retain the status quo or 'do nothing', which means that no facilities would be constructed to provide additional transportation capacity across the Cataraqui River and the problem would remain and/or an opportunity would not be addressed.

2. Increase the capacity of the LaSalle Causeway.

3. Increase the capacity of Highway 401 from Kingston Road 15 to Montreal Street.

4. Implement a new crossing between the LaSalle Causeway and Highway 401 by either a tunnel or bridge.

3.0 THE ALTERNATIVE SOLUTIONS AND THE PREFERRED SOLUTION

3.1 EA Study Area Conditions

3.1.1 Provincial and Municipal Land Use Planning Considerations

.1 2005 Provincial Policy Statement

The 2005 Provincial Policy Statement (PPS) provides general policy guidance on matters of provincial interest related to land use planning and development and is considered in conjunction with local policies. All municipal land use and development decision-making must be consistent with the policies of the 2005 PPS. The intent of this EA study is to be consistent with the 2005 PPS, in that its purpose is to enable the City to:

1. Provide infrastructure to meet current and projected needs and do so in a coordinated, efficient and cost-effective manner (Sections 1.1.1, 1.6.1, 1.6.5 and 1.6.6 of the 2005 PPS).

2. Optimize the use of existing infrastructure, wherever feasible, before consideration is given to developing new infrastructure (Section 1.6.2 of the 2005 PPS).

3. Strategically locate infrastructure to support the effective and efficient delivery of emergency management services (Section 1.6.3 of the 2005 PPS).

4. Plan for major transportation and infrastructure facilities in a manner that:

   a) Accounts for natural and cultural heritage resources having provincial significance (Section 1.6.6 of the 2005 PPS); and

   b) Mitigates their adverse effects on adjacent sites and surrounding land uses to acceptable levels (Section 1.7.1 of the 2005 PPS).

5. Satisfy both the Provincial and Federal EA frameworks, in addition to other applicable legislation and regulations (Section 4.8 of the 2005 PPS).

.2 City of Kingston Official Plan

The City's Official Plan was adopted in 2010. Reviewed at least every 5 years, the Official Plan provides a 20-year development blueprint for the community and must be consistent with the 2005 PPS. The various growth and development areas identified in the Official Plan were already highlighted earlier in Section 2 of this Report. Other policy areas in the Official Plan that are pertinent to this EA study include:

1. The need for proposed developments to be implemented in a manner that either eliminates or minimizes to an acceptable level any adverse effects on adjacent sites and surrounding land use designations (Section 2.7.4 of the Official Plan).

2. Municipal infrastructure (which includes transportation corridors and facilities) may be permitted in all land use designations, provided they can be made compatible with surrounding land uses and that all works are carried out in accordance with the 'Ontario Environmental Protection Act' (OEPA) and other Ministry of Environment regulations (Section 3.1.1 of the Official Plan).

3. Should an application for development be located on land adjacent to or forming part of an 'Environmental Protection Area' designation, an Environmental Impact Assessment must be submitted for review to the City, the CRCA and other agencies having jurisdiction (Section 3.10.9 of the Official Plan).

4. The intent of the Official Plan is to maintain and protect the resources related to the Rideau Canal in cooperation with Parks Canada and other agencies having jurisdiction. Development is permitted only if potential adverse effects on the canal and its environs can be remedied, as demonstrated through a heritage impact statement (Sections 3.10.A.3, 3.10.A.6 and 7.3.A of the Official Plan).

5. Based on the 2004 KTMP, the recommended 2-lane bridge crossing at the John Counter Boulevard-Gore Road alignment is cited as a strategic 'future major road extension', subject to the outcome of an EA study (Sections 2.5.12 and 4.6.35 of the Official Plan).

6. Should an application for development be located on a site that may be contaminated by a prior or current use, the Environmental Site Assessment protocol shall take effect in accordance with Ministry of Environment regulations and guidelines (Sections 5.10, 5.11, 5.12 and 5.13 of the Official Plan).

7. The City may permit development on lands adjacent to a protected heritage property, provided a heritage impact statement demonstrates that the heritage attributes of the protected heritage property will be conserved (Section 7.2.5 of the Official Plan).

8. The City will permit development either on lands containing archaeological resources or in areas of archaeological potential if the archaeological resource has been conserved by removal or conserved on-site (Section 7.4.2 of the Official Plan).

9. There are a series of protected views that include views to and from protected heritage properties, or between related heritage properties (Section 8.6 of the Official Plan).

10. Proposed Official Plan amendments must show that the subject development meets the City's long-term plans for the area, is compatible with surrounding land uses and is consistent with Provincial policy and/or plans (Section 9.3 of the Official Plan).

11. The entire area within the City is designated as a Site Plan Control Area (Section 9.5.31 of the Official Plan).

.3 Existing Zoning By-Laws

The EA study area is regulated by the following three Zoning By-Laws that are still in effect since the amalgamation in 1998 of the former City and the former Townships of Pittsburgh and Kingston:

1. City of Kingston Zoning By-Law No. 8499, as amended.

2. Downtown and Harbour Zoning By-Law No. 96-259, as amended.

3. Township of Pittsburgh Zoning By-Law No. 32-74, as amended.

Together, these Zoning By-Laws contain numerous zones as well as site-specific zones and regulations that affect the lands within the EA study area. What is critical to note as part of this EA study however, is that under the General Provisions in these Zoning By-Laws, 'Public Uses'[9] are permitted in all zones. From a high level perspective (and notwithstanding some of the site-specific zones and regulations), a pertinent exception to this provision is found in the Former Township of Pittsburgh Zoning By-Law No. 32-74, wherein 'Public Uses' are not permitted in the 'Extractive Industrial Zone (MX)'. As further referenced below, this zone affects the Pittsburgh quarry site, which is located to the north of the Pittsburgh Branch of the Kingston Frontenac Public Library (Gore Road Library) on Kingston Road 15.

3.1.2 Existing Land Use Conditions

There are a wide range of environmental and land use features within the EA study area. These features, which are discussed throughout this Report, are highlighted below and are supplemented with Drawings 3.1 to 3.4, which highlight the City's Official Plan designations and overlay policies for the EA study area:

1. The 'Central Business District' designation for the City's downtown core area, which serves to support and enhance the multi-faceted centre of the City and the surrounding region. It includes and accommodates the wide range of retail services, business offices, entertainment, cultural and recreational facilities, tourism and hospitality facilities, as well as institutional, open space and residential uses in the downtown core area.

2. The Cataraqui River has a water depth averaging 1.2 m except at the buoyed channel and the southern portion of the Inner Harbour. Watercraft navigation is an important feature of the EA study area, typified most directly by the Inner Harbour and Outer Harbour, the HMCS Cataraqui Facility immediately north of the LaSalle Causeway, the Kingston Marina (located in the Inner Harbour), Rideau Marina (located south of the Point St. Mark residential neighbourhood) and Music Marina (located north of John Counter Boulevard) as well as the Rideau Canal's navigable channel and the rowing lanes that run adjacent on either side of it. Most of these features are captured in the 'Harbour Area' designation, which also accommodates various water-related activities ranging from marine retail, mooring facilities, yacht clubs and rowing clubs (Kingston Rowing Club, Queen's University Rowing Club), to dry docks, marine salvage and repair services, tourism and hospitality uses.

3. The 'District Commercial' designation just south of Emma Martin Park and the Kingston Rowing Club on the west side of the Cataraqui River, which recognizes the character of the Woolen Mill as a designated cultural heritage property, its waterfront site and unique mix of land uses ranging from artisan workshops to businesses, professional offices and a restaurant.

4. Areas designated 'Residential' that pertain, in particular, to:

   a) The St. Lawrence Ward Heritage Area immediately adjacent to the downtown area to the north, which is one of the oldest areas of the City;

   b) The Barriefield Village Conservation District on the east side of the Cataraqui River, which contains historic residences, buildings, laneways and landscapes that reflect a 19th Century village setting;

   c) The Village On The River apartments and the River Park subdivision along John Counter Boulevard; and

   d) The Greenwood, Point St. Mark and Grenadier Village residential neighbourhoods, also located on the east side of the Cataraqui River, which are part of the Rideau Community Secondary Plan area.

5. The 'Environmental Protection Area' designation, which includes:

   a) The Greater Cataraqui Marsh in recognition of its designation as a Provincially Significant Wetland and Provincially Significant Coastal Wetland;

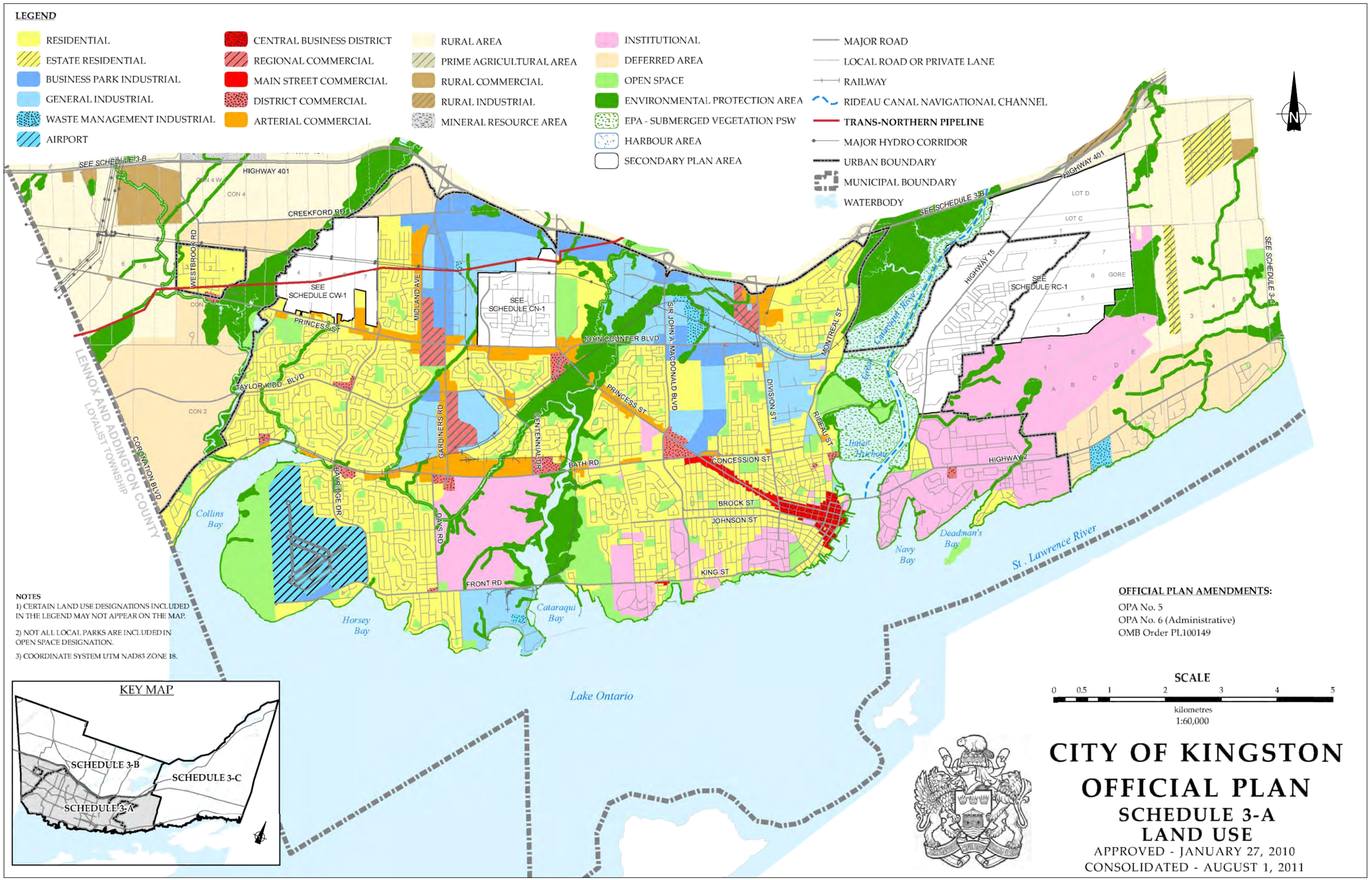
   b) 'Riparian Habitat' areas extending from the confluence of the Cataraqui River and Lake Ontario up to and including the tributaries and channels within the Greater Cataraqui Marsh;

   c) The provincially significant and contributory woodland areas along both sides of the Cataraqui River;

   d) An area extending 30 m from either shoreline of the Cataraqui River to encourage the protection of a 'ribbon of life' along the waterfront (note landscaping and passive trail/open space development may be permitted in affected designated areas, subject to review and approval by the City, CRCA and other agencies having jurisdiction); and

   e) Areas that either are or may be contaminated by a prior or current use, which are focused on the west side of the Cataraqui River at the former Davis Tannery site southwest of Belle Park and the federal dredged sediment disposal site along the north shore of Belle Island.

[9] 'Public Uses' are generally defined to include lands, buildings, structures and uses by any public authority for the provision of infrastructure and utilities, including transportation services.



PROJECT: CATARAQUI RIVER THIRD CROSSING EA - STAGE 2 ENVIRONMENTAL STUDY REPORT	DRAWING: OFFICIAL PLAN LAND USE SCHEDULE	J.L.Richards ENGINEERS·ARCHITECTS·PLANNERS J.L. Richards & Associates Limited 203-863 Princess Street Kingston, ON Canada K7L 5N4 Tel: 613 544 1424 Fax: 613 544 5679	DESIGN: DRAWN: CHECKED: PLOTTED: 1-Feb-12	DRAWING NO.: 3-1 JLR NO: 23446-02

NOTES

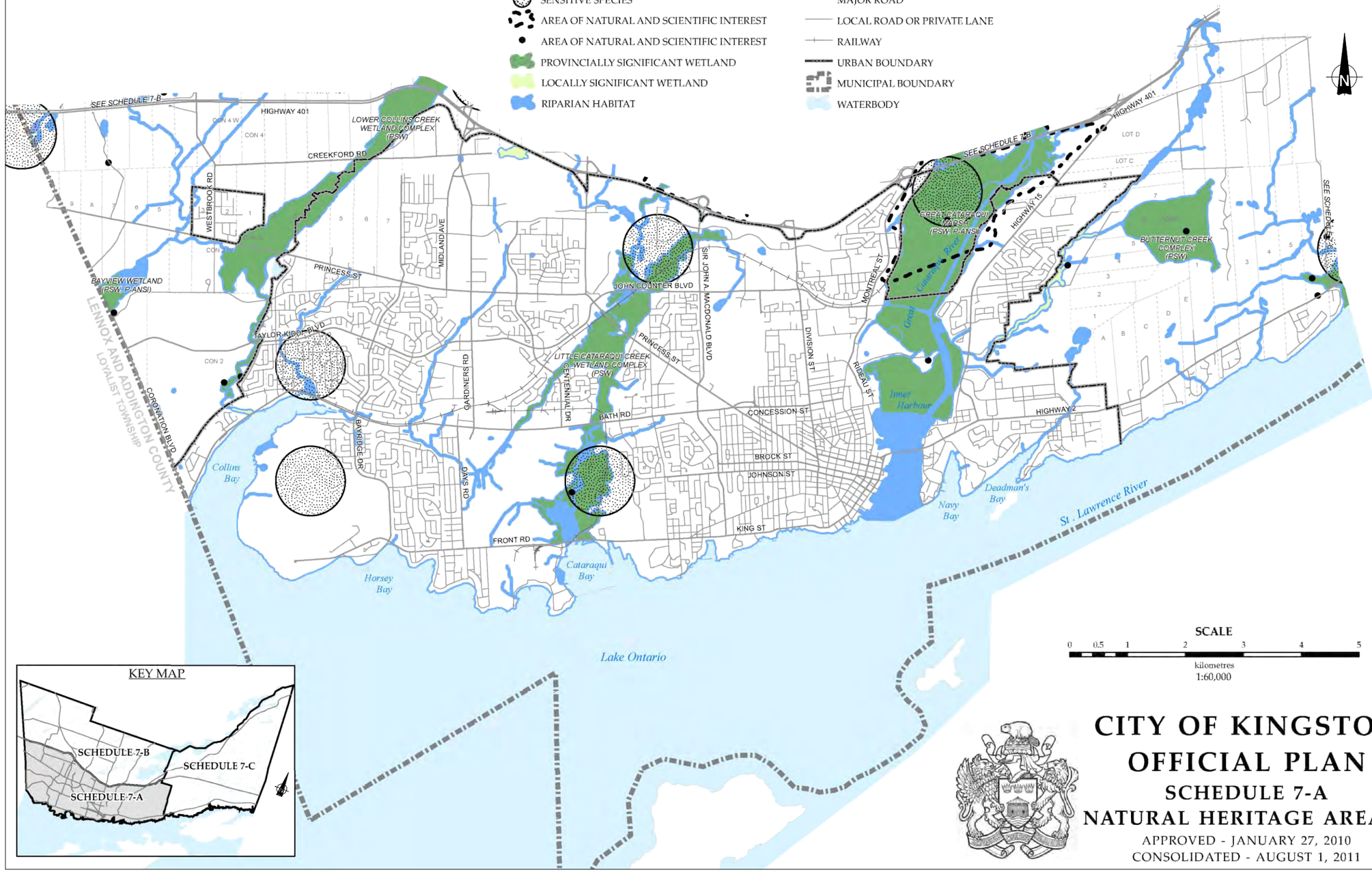
COORDINATE SYSTEM UTM NAD83 ZONE 18.

LEGEND

- SENSITIVE SPECIES
- AREA OF NATURAL AND SCIENTIFIC INTEREST
- AREA OF NATURAL AND SCIENTIFIC INTEREST
- PROVINCIALLY SIGNIFICANT WETLAND
- LOCALLY SIGNIFICANT WETLAND
- RIPARIAN HABITAT

OTHER

- MAJOR ROAD
- LOCAL ROAD OR PRIVATE LANE
- RAILWAY
- URBAN BOUNDARY
- MUNICIPAL BOUNDARY
- WATERBODY



KEY MAP

SCALE

0 0.5 1 2 3 4 5

kilometres

1:60,000

CITY OF KINGSTON OFFICIAL PLAN

SCHEDULE 7-A

NATURAL HERITAGE AREA 'A'

APPROVED - JANUARY 27, 2010

CONSOLIDATED - AUGUST 1, 2011

PROJECT: CATARAQUI RIVER THIRD CROSSING EA - STAGE 2 ENVIRONMENTAL STUDY REPORT	DRAWING: OFFICIAL PLAN NATURAL HERITAGE 'A' AREAS	J.L.Richards ENGINEERS·ARCHITECTS·PLANNERS J.L. Richards & Associates Limited 203-863 Princess Street Kingston, ON Canada K7L 5N4 Tel: 613 544 1424 Fax: 613 544 5679	DESIGN: DRAWN: CHECKED: PLOTTED: 1-Feb-12	DRAWING NO.: 3-2 JLR NO: 23446-02

File Location: C:\Documents and Settings\djudson\Desktop\23443-02 - Third Crossing ESR\Figures\Figure 3-2 & 3-3 Official Plan Natural Heritage Areas.dwg

NOTES

1) COORDINATE SYSTEM UTM NAD83 ZONE 18.

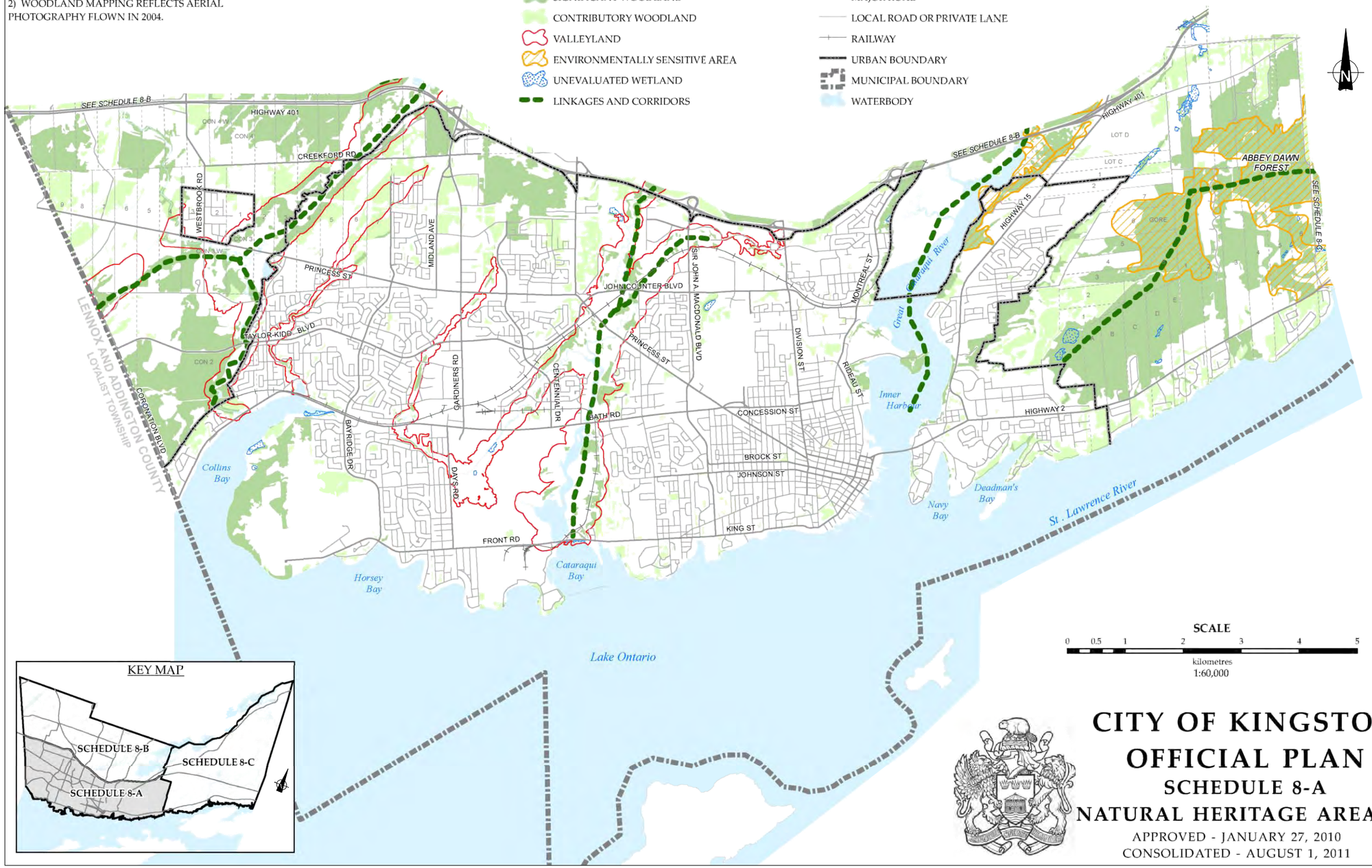
2) WOODLAND MAPPING REFLECTS AERIAL PHOTOGRAPHY FLOWN IN 2004.

LEGEND

- SIGNIFICANT WOODLAND
- CONTRIBUTORY WOODLAND
- VALLEYLAND
- ENVIRONMENTALLY SENSITIVE AREA
- UNEVALUATED WETLAND
- LINKAGES AND CORRIDORS

OTHER

- MAJOR ROAD
- LOCAL ROAD OR PRIVATE LANE
- RAILWAY
- URBAN BOUNDARY
- MUNICIPAL BOUNDARY
- WATERBODY



KEY MAP

SCALE

0 0.5 1 2 3 4 5

kilometres

1:60,000

CITY OF KINGSTON OFFICIAL PLAN

SCHEDULE 8-A

NATURAL HERITAGE AREA 'B'

APPROVED - JANUARY 27, 2010

CONSOLIDATED - AUGUST 1, 2011

PROJECT:
CATARAQUI RIVER THIRD CROSSING
EA - STAGE 2
ENVIRONMENTAL STUDY REPORT

DRAWING:
OFFICIAL PLAN
NATURAL HERITAGE 'B' AREAS

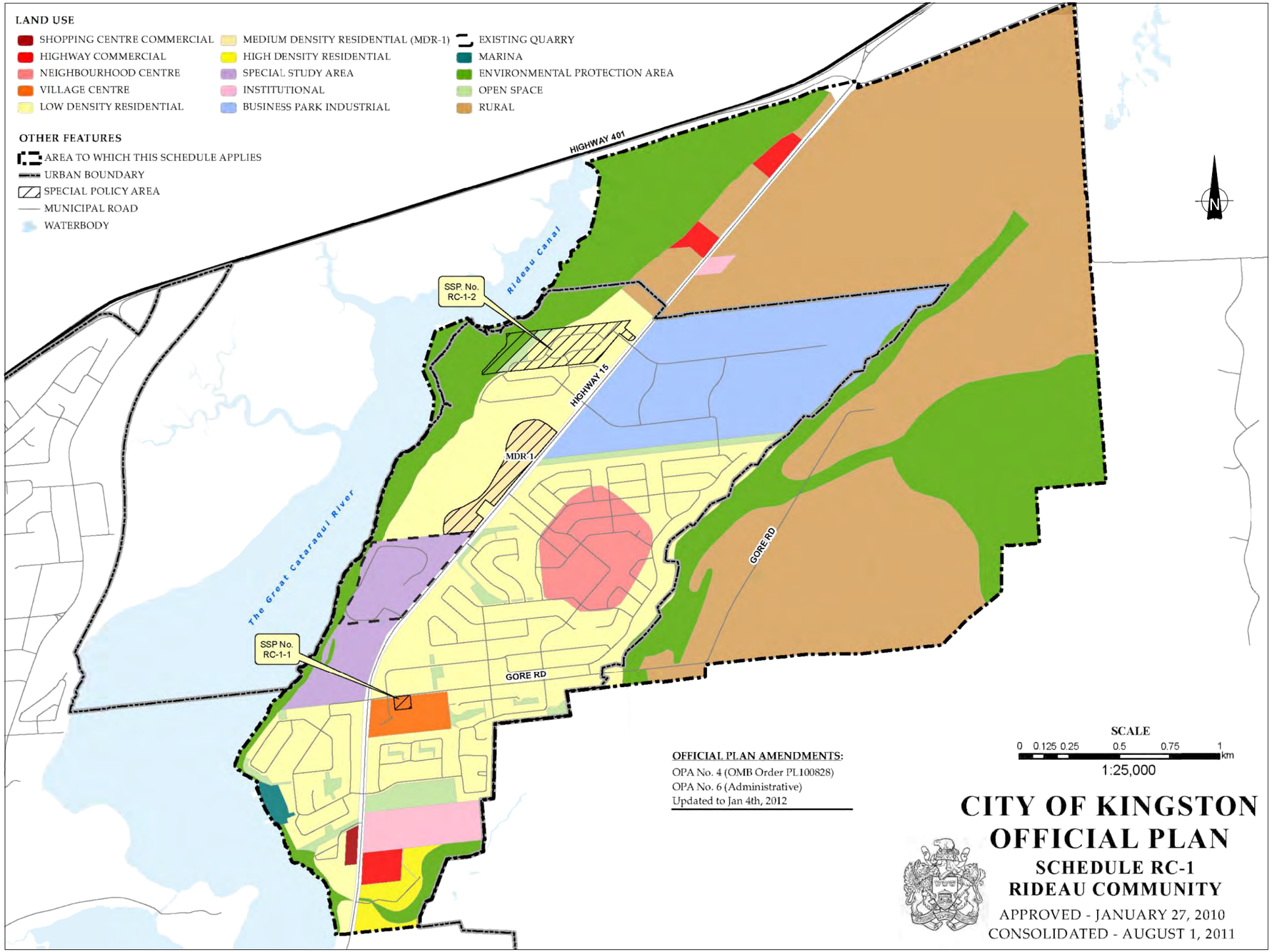
J.L.Richards
ENGINEERS·ARCHITECTS·PLANNERS
J.L. Richards & Associates Limited
203-863 Princess Street
Kingston, ON Canada
K7L 5N4
Tel: 613 544 1424
Fax: 613 544 5679

DESIGN:
DRAWN:
CHECKED:
PLOTTED: 1-Feb-12

DRAWING NO.: 3-3

JLR NO: 23446-02

File Location: C:\Documents and Settings\djudson\Desktop\23443-02 - Third Crossing ESR\Figures\Figure 3-2 & 3-3 Official Plan Natural Heritage Areas.dwg



PROJECT: CATARAQUI RIVER THIRD CROSSING EA - STAGE 2 ENVIRONMENTAL STUDY REPORT	DRAWING: OFFICIAL PLAN RIDEAU COMMUNITY SECONDARY PLAN	J.L.Richards ENGINEERS·ARCHITECTS·PLANNERS J.L. Richards & Associates Limited 203-863 Princess Street Kingston, ON Canada K7L 5N4 Tel: 613 544 1424 Fax: 613 544 5679	DESIGN: DRAWN: CHECKED: PLOTTED: 1-Feb-12	DRAWING NO.: 3-4 JLR NO: 23446-02

File Location: C:\Documents and Settings\djudson\Desktop\23443-02 - Third Crossing ESR\Figures\Figure 3-4 Official Plan Rideau Community.dwg

6. The ‘Open Space’ designation, which includes park and open space areas as well as lands adjacent to the ‘Environmental Protection Area’ designation, such as Douglas Fluhrer Park, Emma Martin Park, Belle Park and Belle Island on the west side of the Cataraqui River.

7. A ‘General Industrial’ node south of the Canadian National Railway (CNR) line, east of Division Street and west of Montreal Street that contains older, heavy industrial uses and which is part of a Community Improvement Plan intended to encourage site and area rehabilitation programs.

8. The ‘Business Park Industrial’ designation for the St. Lawrence Business Park, which is also part of the Rideau Community Secondary Plan area and is located north of the Greenwood neighbourhood on the east side of the Cataraqui River. The St. Lawrence Business Park is intended to provide prominent locations for corporate administrative, research and development and related business industrial uses in a prestige, business park setting.

9. A ‘Special Study Area’ designation in the Rideau Community Secondary Plan area, which is subject to further planning and development analyses and includes:

   a) The Gore Road Library located at the northwest corner of Gore Road and Kingston Road 15, which is a designated cultural heritage property; and

   b) The Pittsburgh quarry operation located north of the Gore Road Library.

10. The ‘Institutional’ designation, which serves to support and accommodate the City’s major institutions, some of which are further designated as cultural heritage properties. Within the EA study area, the major institutions include:

    a) The Rideaucrest Home Long-Term Care Facility located on Rideau Street on the west side of the Cataraqui River;

    b) Fort Frontenac at the eastern end of Ontario Street adjacent the LaSalle Causeway which refers to both the archaeological remains of the 17th century French fort (Fort Frontenac National Historic Site) and the present-day Department of National Defence barracks that occupy part of the same site;

    c) CFB Kingston on the east side of the Cataraqui River which includes land and buildings for military purposes, armories, training facilities, administrative offices, residential accommodation, recreation facilities such as the Garrison Golf and Curling Club and complementary commercial support services;

    d) The Royal Military College (RMC), which is also part of the CFB Kingston land base and offers a wide variety of educational programs in Arts, Science, and Engineering at both the undergraduate and graduate levels; and

    e) Fort Henry and the Kingston fortifications comprising Fort Frederick and the Murney, Shoal and Cathcart Martello Towers, which are part of the inscribed property of the UNESCO World Heritage Site for the Rideau Canal as well as National Historic Sites.

11. The navigable channel within the Cataraqui River, which starts at the LaSalle Causeway and extends northwards as part of the Rideau Canal. The Rideau Canal is a UNESCO World Heritage Site, National Historic Site, Canadian Heritage River and Federally regulated navigable waterway (and which is officially closed to watercraft from Thanksgiving to Victoria Day). Within the EA study area, the designated site of the canal (for all three designations) begins at Belle Island and follows the high-water marks on either shore, north to and beyond the limits of the EA study area. The canal is owned by the Federal government and managed and regulated by Parks Canada according to management plans and guidelines that conserve its heritage values.

12. Though not shown, there are major utility works within the Cataraqui River, including a buried sewage forcemain and watermain that extends from River Street on the west side of the Cataraqui River southward to James Street on the east side as well as three Hydro One marine electrical cables (3-phase 44 kV line) that cross the Cataraqui River in the John Counter Boulevard-Gore Road area.

3.1.3 Ecological Conditions

The EA study area is part of an important natural system passing through the City. As per the 2005 PPS and the City’s Official Plan referenced earlier, development shall not be permitted on lands *adjacent to*[10] identified natural heritage features unless it can be demonstrated by an Environmental Impact Assessment that there will be no residual negative impacts. As shown in Table 3.1 below, the extent of the ‘adjacent lands’ depends on the natural heritage feature.

[10] ‘Adjacent lands’ means those lands contiguous to a specific natural heritage feature where it is likely that development or site alteration would have a negative impact on the feature.

Table 3.1
2005 PPS: Natural Heritage Features and 'Adjacent Lands' Considerations

Natural Heritage Feature	Existing 'Adjacent Lands'
Significant habitat of endangered and threatened species	50 m
Provincially significant wetlands	120 m
Locally significant wetland	30 m
Significant woodlands, valleylands and significant wildlife habitat	50 m
Significant areas of natural and scientific interest (ANSI)	50 m
Fish habitat	30 m

As shown on Drawing 3.5, within the EA study area, the following natural heritage features are identified:

1. The Greater Cataraqui Marsh is a Provincially Significant Wetland that extends from the Woolen Mill / Barriefield area in the southern portion of the EA study area to just north of Highway 401. The Greater Cataraqui Marsh is the most significant ecological system on the landscape [based on the Ontario Wetland Evaluation System (OWES), its visible cattail portion north of John Counter Boulevard has higher ecological diversity (more plant and animal species) and greater potential for pollution/erosion/flood control than the southern portion]. The Rideau Canal's navigable channel and the dredged access route for the Music Marina at the end of John Counter Boulevard are excluded from the Provincially Significant Wetland designation.

2. The Greater Cataraqui Marsh is also a Provincially Significant Coastal Wetland which means its water levels are largely controlled by a Great Lake (Lake Ontario), it is a wetland that is within the floodplain of a Great Lake (Lake Ontario) and it is on a tributary to a Great Lake (Lake Ontario)[11].

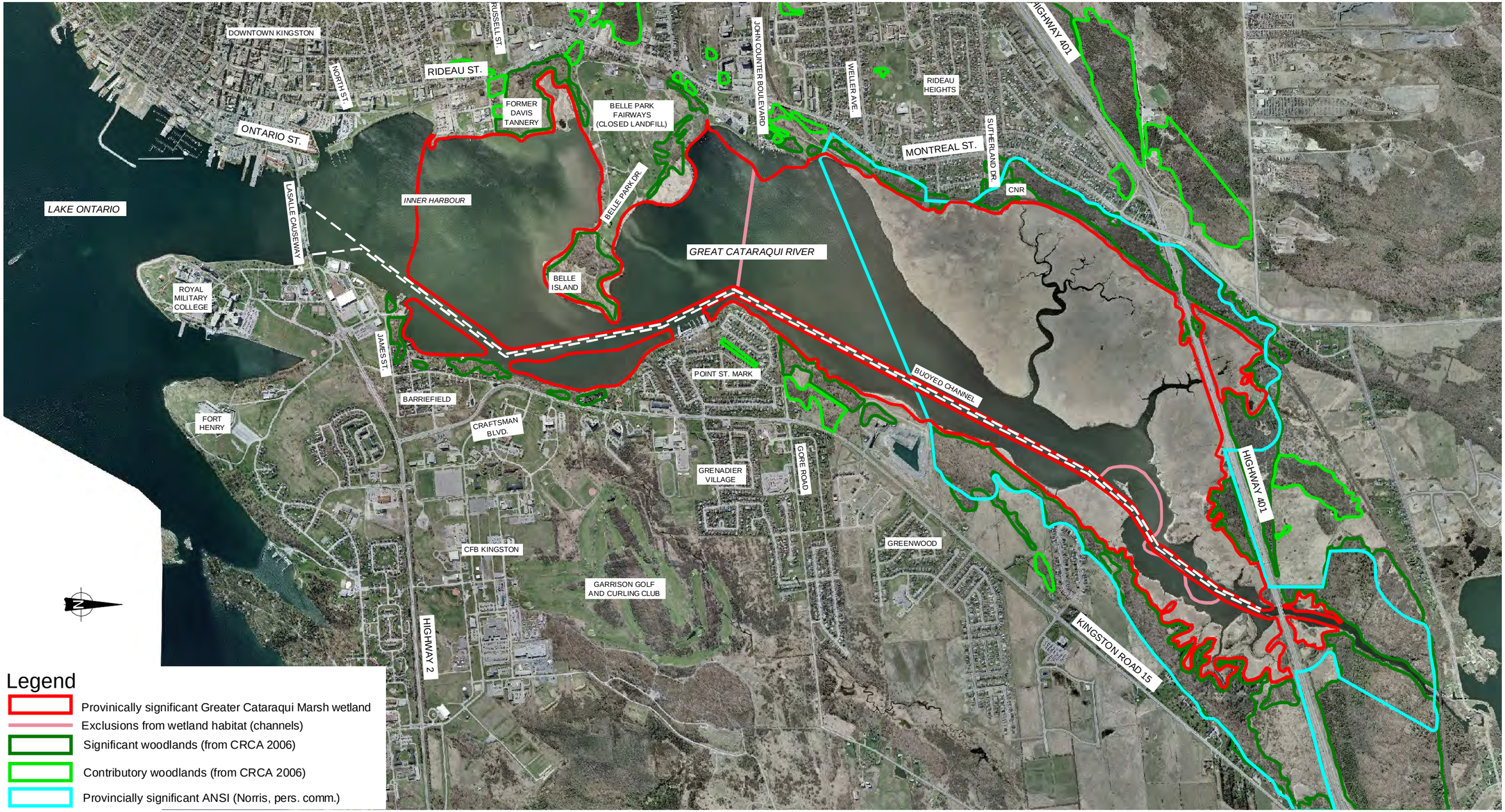
3. Based on the 2006 'Central Cataraqui Region Natural Heritage Study' from the CRCA, most of the identified provincially significant and contributory woodlands in the EA study area are in narrow, fragmented strips, except for areas on the former Davis Tannery site, Belle Park Fairways, along the visible cattail portion of the Greater Cataraqui Marsh north of John Counter Boulevard and Belle Island whereon its old oak grove is well-documented for its ecological significance.

4. ANSI's, which are areas having identified life science or earth science values, are focused on the visible cattail portion of the Greater Cataraqui Marsh and the buffering woodlands on both sides of the Cataraqui River north of John Counter Boulevard.

5. The Cataraqui River, its seven tributaries and the channels within the Greater Cataraqui Marsh provide significant habitat to a wide range of terrestrial and aquatic wildlife species, including feeding areas for migratory waterfowl, 206 bird species (at least 21 of which are dependent on the marsh for nesting habitat), at least 26 sport and forage fish species that use the river system for spawning, nursing and rearing and 16 amphibian and reptile species. Available data on mammal populations is more limited, but 25 species have been observed or reported.

6. As shown in Table 3.2 below, there are 30 listed terrestrial and aquatic wildlife and plant 'species at risk' (SAR) that are potentially present in the area, but their habitats are not precisely mapped.

[11] The Provincially Significant Coastal Wetland designation is a joint Federal and Provincial designation of the 'Ontario Great Lakes Coastal Wetland', which is part of the 'Great Lakes Wetland Conservation Action Plan' in support of the Great Lakes Water Quality Agreement between Canada and the United States.



File Location: P:\23000\23446-02 - Cataraqui River EA - Stage 2\23443-02 - Third Crossing ESR\Figures\Figure 3-5 Ecological Conditions.dwg

PROJECT: CATARAQUI RIVER THIRD CROSSING EA - STAGE 2 ENVIRONMENTAL STUDY REPORT	DRAWING: ECOLOGICAL CONDITIONS	J.L.Richards ENGINEERS·ARCHITECTS·PLANNERS J.L. Richards & Associates Limited 203-863 Princess Street Kingston, ON Canada K7L 5N4 Tel: 613 544 1424 Fax: 613 544 5679	DESIGN: DRAWN: CHECKED: PLOTTED: 22-Feb-12	DRAWING NO.: 3-5 JLR NO: 23446-02

Table 3.2
Species at Risk or Species of Conservation Concern

Category	Species Name	Common Name	S-rank[12]	COSEWIC	MNR
Birds	*Rallus elegans*	King Rail	S2B	END	END
	Colinus virginianus	Northern Bobwhite	S1S2	END	END
	Ammodramus henslowii	Henslow's Sparrow	S1B	END	END
	Ixobrychus exilis	Least Bittern	S3B	THR	THR
	Chilidonias niger	Black Tern	S3B	NAR	SC
	Hydroprogne caspia	Caspian Tern	S3B	NAR	NAR
	Circus cyaneus	Northern Harrier	S4B	NAR	NAR
Plants	*Juglans cinerea*	Butternut	S3?	END	END
	Eurybia divaricata	White Wood Aster	S2	THR	THR
	Crataegus brainerdii	Brainerd's Hawthorn	S2		
	Gentianella quinquefolia	Stiff Gentian	S2		
	Carex albicans var. albicans	White-tinged Sedge	S3		
	Juncus secundus	Secund Rush	S3		
	Najas guadalupensis	Southern Naiad	S3		
	Juncus vaseyi	Vasey's Rush	S3		
	Schoenoplectus smithii	Smith's Bulrush	S3		
	Alisma gramineum	Grass-leaved Water-Plantain	S4		
	Najas marina	Prickly Naiad	S1		
	Porteranthus trifoliatus	Bowman's-root	SX		
	Sparganium androcladum	Branching Burreed	SH		
	Grimmia olneyi	A Moss	S2		
Reptiles	*Sternotherus odoratus*	Stinkpot Turtle	S3	THR	THR
	Emydoidea blandingii	Blanding's Turtle	S3	THR	THR
	Graptemys geographica	Map Turtle	S3	SC	SC
	Lampropeltis triangulum	Milk Snake	S3	SC	SC
	Chelydra serpentina	Snapping Turtle	S3	SC	
	Thamnophis sauritis	Eastern Ribbon Snake	S3	SC	SC
Fish	*Anquilla rostrata*	American Eel	S1?	SC	END
	Moxostoma valenciennesi	Greater Redhorse	S3		
	Notropis anogenus	Pugnose Shiner	S2	END	END
Butterflies	*Callophrys gryneus*	Juniper Hairstreak	S2		

[12] S-ranks range from S1 (Critically Imperiled), S2 (Imperiled), S3 (Vulnerable), S4 (Apparently Secure), to S5 (Secure); the use of the '?' in the S-ranks is to suggest that its ranking needs to be confirmed; B indicates breeding status for bird species; END is an Endangered species; THR is a Threatened species; SC is a species of Special Concern; and NAR is a species that has been evaluated, but is considered Not at Risk.

7. Though not shown on Drawing 3.5, it is recognized that, as shown earlier on Drawing 3.1, there is also an 'Environmental Protection Area' as per the City's Official Plan which extends 30 m from either shoreline of the Cataraqui River in order to encourage the protection of a 'ribbon of life' along the waterfront.

3.1.4 Cultural Heritage Conditions

As shown on Drawing 3.6, there are 72 identified cultural heritage sites within the EA study area. One of the most significant identified cultural heritage properties is the Rideau Canal. The Rideau Canal is a 202 km long waterway, built by the Royal Engineers between 1826 and 1832 to provide a secure alternate supply route in the event of a military blockade by the Americans. The canal is a UNESCO World Heritage Site (designated in 2007), National Historic Site (designated in 1925), Canadian Heritage River (designated in 2000) and Federally regulated navigable waterway (which is officially closed to watercraft from Thanksgiving to Victoria Day). Within the EA study area, the designated site of the canal (for all three designations) begins at Belle Island and follows the high-water marks on either shore, north to and beyond the limits of the EA study area. The inscribed property of the UNESCO World Heritage Site includes the Rideau Canal National Historic Site as well as the Fort Henry and Kingston fortifications (Fort Frederick and the Murney, Shoal and Cathcart Martello Towers) National Historic Sites in the southern portion of the EA study area.

It is important to note that UNESCO World Heritage Site designations are based on 10 criteria and the canal's designation in 2007 was based on two of these criteria[13], namely:

1. That it remains the best preserved example of a slackwater canal in North America demonstrating the use of European slackwater technology in North America on a large scale. It is the only canal dating from the great North American canal-building era of the early 19th century that remains operational along its original line with most of its original structures intact.

2. That it is an extensive, well preserved and significant example of a canal which was used for a military purpose linked to a significant stage in human history, that of the fight to control the north of the American continent.

[13] There are eight other UNESCO World Heritage Site designation criteria that do not apply to the canal. These criteria relate to the interchange of human values within cultural areas, traditional human settlements, living traditions having outstanding universal significance, or areas representing natural, ecological, or biological phenomena.

File Location: P:\23000\23446-02 - Cataraqui River EA - Stage 2\23443-02 - Third Crossing ESR\Figures\Figure 3-6 Cultural Heritage Conditions.dwg

PROJECT:
CATARAQUI RIVER THIRD CROSSING EA - STAGE 2
ENVIRONMENTAL STUDY REPORT

DRAWING:
CULTURAL HERITAGE CONDITIONS

J.L.Richards
ENGINEERS·ARCHITECTS·PLANNERS
J.L. Richards & Associates Limited
203-863 Princess Street
Kingston, ON Canada
K7L 5N4
Tel: 613 544 1424
Fax: 613 544 5679

DESIGN:	DRAWING NO.: 3-6
DRAWN:	
CHECKED:	JLR NO: 23446-02
PLOTTED: 16-Apr-12	

The Statement of Outstanding Universal Value for the Rideau Canal UNESCO World Heritage Site further reflects these two criteria, wherein it states that:

> 'The Rideau Canal is a large strategic canal constructed for military purposes which played a crucial contributory role in allowing British forces to defend the colony of Canada against the United States of America, leading to the development of two distinct political and cultural entities in the north of the American continent, which can be seen as a significant stage in human history.'

Parks Canada is responsible on behalf of the Federal government for managing and protecting the Rideau Canal as a National Historic Site and Canadian Heritage River. Parks Canada is also responsible on behalf of the UNESCO World Heritage Committee for ensuring that the Outstanding Universal Value is maintained, enhanced and presented and that the integrity (wholeness and intactness) and authenticity (expression of value through attributes such as use, function, location and setting) are protected and preserved. This mandate is reflected in the management plans that have been put in place to conserve the heritage values of the canal. These include:

1. The 1994 'Cultural Resource Management Policy' (CRM) which effects Parks Canada's legislated mandate as per the 'Parks Canada Agency Act' to manage nationally significant heritage resources. The CRM Policy reinforces the importance of managing the natural and cultural values of such resources, which is germane to the Rideau Canal context, in that its historic value is derived from the interaction of nature and human activities. The CRM policy contains 18 guiding principles falling under the categories of 'Value', 'Public Benefit', 'Understanding', 'Respect' and 'Integrity'. The guiding principles pertinent to the canal within the EA study area context deal with: i) protecting its ecological and commemorative integrity; ii) Parks Canada's role as Canada's State Party Representative to the World Heritage Convention; iii) enhancing public education and experience of the canal; and iv) Parks Canada's collaborative role with other jurisdictions and stakeholders in employing a values-based approach to decision-making in the protection and presentation of the canal's inter-related 'physical heritage' (such as its locks, lock stations and dams) and 'associative heritage' (such as its historic, natural and cultural importance). The guiding principles then form the basis of seven activity policies. Applicable policies to the canal within the EA study area context relate to:

   a) The 'Canadian Heritage Rivers Policy', which effects Parks Canada's objective of designating river systems such as the canal as Canadian Heritage Rivers, which recognize their respective roles in shaping Canada's natural and human history;

   b) The 'National Historic Sites Policy', which effects Parks Canada's objective of protecting and enhancing the natural and cultural values of the canal as a National Historic Site; and

   c) The 'Historic Canals Policy', which effects Parks Canada's objective of ensuring continued through-navigation of the canal system and managing the natural and cultural values of the canal.

2. The 2000 'Commemorative Integrity Statement' (CIS) applies the principles and activity policies of the CRM Policy. In support of the Rideau Canal's designation as a National Historic Site, the CIS further articulates both the physical and associative heritage values of the canal. The CIS reflects the canal's unique historic and natural environment, including its rich and varied landscapes. The lower section of the canal south of Kingston Mills is a rare example of the waterway where the landscape was not altered during canal construction. The CIS identifies the following three strategies to ensure the protection and enhancement of the 'Designated Place' of this section of the canal (which consists of the designated site of the canal as noted above):

   a) Maintaining through-navigation of the canal system to help assure the preservation of the canal's unique historic environment and cultural resources;

   b) Safeguarding the heritage character of corridor shore-lands from inappropriate development or uses; and

   c) Safeguarding the landmarks, viewscapes and natural ecosystem features of the canal's islands, shore-lands and wetlands that are related to the construction of the canal and which are part of the canal's unique historical environment.

3. The 2005 'Rideau Canal World Heritage Site Management Plan' which prohibits activities that would alter the size, shape, depth or configuration of the slackwater sections of the canal; requires that new bridge and public utilities crossing proposals include detailed environmental assessments; and requires Parks Canada to work with municipalities to maintain a 30 m buffer zone for new shoreline construction along the canal. This 30 m buffer zone corresponds to the 30 m 'ribbon of life' which, as highlighted earlier regarding the City's Official Plan, extends from either shoreline of the Cataraqui River.

4. The 2005 'Rideau Canal National Historic Site Management Plan' identifies elements which must be safeguarded to ensure the commemorative integrity of the canal's heritage values, including: i) continued through-navigation of the canal system; ii) view sheds and visual linkages in the Kingston harbour landscape that portray the relationship between the fortifications, the harbour and the canal; iii) cultural resources of the military period; iv) the heritage character of corridor shore lands and identified corridor communities; v) the landmarks, viewscapes and natural ecosystem features (such as wetlands and critical habitats) of the canal that are related to the construction of the canal and which are part of the canal's unique historic environment; and vi) working with other

jurisdictions and stakeholders in protecting and enhancing the natural and cultural values of the canal. Critical cross-jurisdictional safeguard requirements regarding the canal's features include:

a) Protecting the status of the canal as a UNESCO World Heritage Site, National Historic Site and Canadian Heritage River;

b) Protecting species listed in the Ontario 'Endangered Species Act' (OESA) as well as Federal 'Species at Risk Act' (SARA), 'Fisheries Act' (FA) and 'Migratory Birds Convention Act' (MBCA);

c) Ensuring continued through-navigation and natural resource protection of the canal system as per the 'Department of Transport Act' and 'Navigable Waters Protection Act';

d) Ensuring there is no net loss of wetland structure or function and no net loss of fish habitat as per the 'Federal Wetlands Policy'; and

e) Ensuring municipal land use and development decision-making is consistent with the policies of the 2005 PPS.

5. The 2007 'Rideau Canal and Trent-Severn Waterway National Historic Sites of Canada Policies for In-Water and Shoreline Works and Related Activities' contains policies regarding the construction of in-water and shoreline works normally associated with the development and use of waterfront properties for residential purposes adjacent to the Rideau Canal and Trent-Severn Waterway National Historic Sites. The intent of the policies is to:

a) Contribute to ensuring the commemorative integrity of the National Historic Sites;

b) Ensure the protection of cultural resources;

c) Minimize the cumulative effects of in-water and shoreline works;

d) Contribute to the sustainability and public enjoyment of the National Historic Sites; and

e) Protect public safety by ensuring that in-water and shoreline works do not interfere with navigation or other uses of the National Historic Sites.

This document includes a policy that restricts dredging in wetlands or in areas containing rock rubble on lakes or riverbeds. Proponents for dredging are required to demonstrate through an EA study that it could be environmentally beneficial and that there will be no significant adverse environmental impacts or impacts to cultural resources.

6. The 2008 'Standards and Guidelines for the Conservation of Historic Places in Canada' set out the following 8 general standards in dealing with visual relationships that have been identified as a character-defining element of an historic place, which includes the canal:

a) Understand the visual relationships and how they contribute to the heritage value of the cultural landscape;

b) Understand designed landscapes and the planning principles behind the visual relationships in the cultural landscape;

c) Understand the evolution of visual relationships in terms of how they may have changed or been lost over time;

d) Document the visual relationships in the cultural landscape, including viewscapes and their foreground, middle ground and background;

e) Assess the overall condition of the visual relationships early in the planning process;

f) Protect and maintain the features that define the visual relationships;

g) Retain or rehabilitate features that define the visual relationships in the cultural landscape; and

h) Design a new feature when required by a new use that respects the historic visual relationships in the cultural landscape.

In addition, the EA study area east of the Cataraqui River includes the following major identified heritage sites:

1. The Barriefield Village Conservation District which encompasses the entire village, including its buildings, landscape features, topography, and archaeological sites and resources. Buildings are not individually designated, but are protected as elements of the district. Management of the district is governed by a Conservation Plan, which strives to: maintain the low density residential profile of the Village; avoid destruction of its built and landscape fabric; maintain the visibility and prominence of St. Mark's Church; and preserve its built heritage, landscape character, natural features and viewscapes from the Village towards the Cataraqui River and St. Lawrence River, Fort Henry and downtown Kingston.

2. As noted above, the Fort Henry site and RMC site comprise many overlapping designations, including a portion of the Rideau Canal's UNESCO World Heritage Site designation at Fort Henry, four national historic sites (Fort Henry, Point Frederick Buildings, Navy Bay and Kingston

Fortifications), 35 federal heritage buildings and numerous plaques erected by federal, provincial, municipal and private authorities. The heritage value of these sites includes important viewscapes, both between the various sites and to/from other significant landmarks, such as Kingston Harbour, City Hall and the Barriefield Village Conservation District.

3. The Gore Road Library which is located at the northwest corner of Gore Road and Kingston Road 15. It was acquired by the City of Kingston in 1997 and designated as a cultural heritage property in 2007. The cultural heritage value of the property lies in its physical and design values (the exterior and interior of the stone farmhouse, the traditional dry stone wall and evidence of an historic garden and agricultural activities, its scenic pathways with views of the Rideau Canal), its historical associations with several families and individuals who were prominent in the former Pittsburgh Township, and its contextual value as a community resource and landmark on Kingston Road 15. Although the designation covers the entire property, identified heritage resources are for the most part clustered on the upper plateau area, along Gore Road and Kingston Road 15.

4. There are three federal heritage buildings at CFB Kingston on the east side of Kingston Road 15 and two other farmhouse properties that are municipally designated on both sides of Kingston Road 15, north of Gore Road.

The EA study area west of the Cataraqui River includes the following major identified heritage sites:

1. The LaSalle Causeway which is a municipally listed property and its Bridge Office and Shop portion is also a federal heritage building.

2. Fort Frontenac which refers to both the archaeological remains of the 17th century French fort (Fort Frontenac National Historic Site), and the present-day Department of National Defence barracks (formerly Tête du Pont Barracks) that occupy part of the same site, at the eastern end of Ontario Street.

3. Within the area bound by Ontario Street, Queen Street, Montreal Street, and North Street there are 45 identified cultural heritage properties, including municipal listings and designations, plaques erected by various government authorities and private organizations, and a federal heritage building. Well-known heritage properties include the Kingston Armouries, Wellington Terrace, St. Paul's Anglican Church and burial ground, Cataraqui School, and the Wellington Street Brewery.

4. The area north of North Street has comparatively few identified heritage properties. The City has designated five properties, including the old stone Imperial Oil building, the Woolen Mill, the stone Depot School, the Grand Trunk Railway Station property and the stone Grand Trunk Railway Terrace and has listed six properties.

In addition, in certain cases, heritage protection also extends beyond the boundaries of the heritage property to include the consideration of visual impacts from proposed developments on the heritage property (both to and from the heritage property) or between related heritage properties. Within the EA study area these views are identified by Parks Canada in its World Heritage Site and/or National Historic Site management documents, the Barriefield Conservation District Plan, municipal designations and the City's Official Plan. As noted below, there are 9 of these views within the EA study area and some of these are referenced above. They include:

1. From the LaSalle Causeway up to Belle Island:

   a) Views between the Kingston Fortifications and between each fortification and Kingston Harbour;

   b) Views from the Barriefield Village Conservation District towards the Cataraqui River, St. Lawrence River, Fort Henry and downtown Kingston;

   c) Views of St. Mark's Church in Barriefield Village;

   d) Views from the Woolen Mill to City Hall and the Cataraqui River;

   e) Views from Barrack Street and Queen Street to the Inner Harbour;

   f) Views of the City Hall cupola from the LaSalle Causeway and RMC; and

   g) Views across the Inner Harbour.

2. From Belle Island to the Highway 401 crossing:

   a) Views of the Rideau Canal from the Gore Road Library; and

   b) All development overlooking the Rideau Canal.

To put the above discussion in further context, the southern portion of the EA study area from the LaSalle Causeway up to Belle Island contains 64 of the 72 identified heritage sites and seven of the nine protected views. Most of the southern portion of the EA study area is either part of a World Heritage Site and/or a National Historic Site, part of a Heritage Conservation District or subject to protected views to and from significant landmarks. But as also noted, the cultural heritage context in the northern portion of the EA study area from Belle Island to Highway 401 should not be overlooked, given the presence of the Rideau Canal and Gore Road Library on the cultural heritage landscape.

3.1.5 Archaeological Conditions

Table 3.3 highlights the cultural history of the Kingston area.

Table 3.3
Cultural Chronology of the Kingston Area

Period	Timeframe	Description
Paleo	Ca. 12000 to 10000 Before Present (B.P.)	The first inhabitants of Ontario lived in small family-based groups, depending on plants and large game animals (moose, deer, caribou, elk) for their food. These nomadic peoples used stone, skin, antler bone, wood, and plant fibers to produce the tools and goods necessary for their survival. A survey of Allen Point along the Rideau Canal system north of Kingston Mills resulted in the identification of a late Paleo point, the first recorded find from this period in Kingston.
Early Archaic	Ca. 5000 B.C.	Early Archaic peoples produced a greater variety of items than their predecessors. Of particular importance were the dugout canoes and stone tools made by grinding rather than by flaking. The water craft allowed the Early Archaic peoples to travel greater distances, facilitating the exchange of new ideas and goods.
Middle Archaic	Ca. 3000 B.C.	The early people who inhabited Eastern Ontario during the Middle Archaic Period participated in a trade network that spanned the Great Lakes region. For example, copper obtained from the shores of Lake Superior was traded in Eastern Ontario, where it was made into awls, needles, knives, fish hooks, spear points, and bracelets. The earliest recorded human burials in Eastern Ontario date to the Middle Archaic Period.
Late Archaic	Ca. 700 B.C.	Changes that characterized the Late Archaic Period include increased population size, distinction in social status, and new hunting techniques. Evidence of these changes is the inclusion of trade goods in the burial of selected individuals and tool kits consisting of a variety of projectile point types.
Early Woodland	Ca. 300 B.C.	Peoples living in Eastern Ontario began to use pottery during the Early Woodland Period. Early pots were crudely made, with thick walls and a distinct cord-marked exterior surface. The practice of including grave goods with burials continued, influenced by the Adena Culture, centred in the Ohio River Valley, and the Middlesex tradition, which was focused in New York State.
Middle Woodland	Ca. 900 A.D.	During the Middle Woodland Period regionally distinct pottery styles developed, and trade networks began to disintegrate. Ceramic vessels were of a higher quality than previously, and appeared in a greater range of shapes and with a greater variety of decorations. The disintegration of trade networks toward the end of this period coincided with the decline of major cultural influences centred in Ohio and Illinois. Agriculture was introduced to Eastern Ontario towards the end of the Middle Woodland Period. Middle Woodland sites are located throughout the region including the 1000 Islands, the Cataraqui River (Belle Island), the Gananoque River System and along the Napanee River system. Middle Woodland ceramics were recovered in the excavation of Fort Frontenac suggesting that this was once the location of settlement prior to the arrival of the Europeans.
Late Woodland	Ca. 1600 A.D.	Domesticated plants (corn, beans, and squash) increased in significance as supplements to the more traditional foods such as deer, fish, and wild plants during the Late Woodland Period. Agriculture allowed the Late Woodland Peoples to live in permanent villages. Increasing conflict between groups resulted in the construction of palisades around some of these villages. There is only one identified permanent settlement that can be attributed to this period in the region and it is located in the Cataraqui Creek area. This is a proto Huron or Middleport site. The Kingston Outer Station was a fishing camp utilized throughout the Late Woodland period.
Proto-Historic	Ca. 500 to 350 B.P.	Distinguished by the introduction of European influences prior to the actual settlement of the region. This was a turbulent period for Aboriginal populations in the area. The St. Lawrence Iroquois located just east of the region had been absorbed into other Iroquoian peoples, including the Mohawk, Onondaga and Wendat-Huron, by the time of Champlain's arrival in the area in 1612. The Huron, initially located along the north shore of Lake Ontario, moved to the Lake Simcoe-Georgian Bay area where they too were eventually dispersed in 1649. Fort Frontenac, established in 1673, was the first permanent European settlement in the region. Also established were a series of mission sites along the north shore of Lake Ontario including one in the Napanee area and La Presentation near the present day site of Ogdensberg New York. By the early 18th century, the Iroquois had been driven from the north shore of Lake Ontario by the Mississauga.

Table 3.3
Cultural Chronology of the Kingston Area

Table 3.3
Cultural Chronology of the Kingston Area

Period	Timeframe	Description
Historic	15th Century to Today	Kingston benefited considerably by the presence of the military and developed fairly quickly through the early-to-mid-19th century. The War of 1812 increased activity and development of military property in the region. The potential for shipwrecks and associated marine structures in the area is high.

There are 37 registered archaeological sites within and adjacent to the EA study area and an undetermined number of areas that are in process of being investigated. However, the number of registered archaeological sites is a poor indicator of pre-Contact settlement history. As reflected in Table 3.3 above, given the rich ecological resources of the Cataraqui River and the archaeological evidence found in nearby areas, the EA study area, in all likelihood, would have been used and periodically inhabited by peoples for the last 10,000 years or more. Archaeological evidence of this has yet to be verified and archaeological potential in some areas may have already been removed due to subsequent urban development. Still, since a large percentage of the EA study area remains essentially unaltered, indicators point to virtually the whole EA study area exhibiting high archaeological potential, except for:

1. The land-based features of Belle Park Fairways, the Pittsburgh quarry operation as well as the Rivers Edge and Point St. Mark residential neighbourhoods.

2. The marine-based features associated with the in-water development of the LaSalle Causeway, the HMCS Cataraqui Facility, the Rideau Marina, the federal dredged sediment disposal site along the north shore of Belle Island, the Rideau Canal's navigable channel as well as the existing marine utilities associated with the River Street Pumping Station and Hydro One marine electrical cables (3-phase 44 kV line) in the John Counter Boulevard-Gore Road area.

Areas within the EA study area containing known or potential archaeological resources include the following:

1. Significant archaeological resources are present on both sides of the LaSalle Causeway. Despite the extent of modern developments in that area, intact archaeological remains representing Pre-Contact First Nations, French and British Military Periods (especially at Fort Frontenac, RMC and Fort Henry), and remains relating to subsequent urban development are present.

2. The area between the LaSalle Causeway and Belle Island contains fourteen registered Euro-Canadian shipwrecks in its southern portion and intact Euro-Canadian archaeological remains relating to subsequent urban development.

3. Belle Island contains an extensive Middle Woodland Period archaeological settlement site and cemetery. Only two small portions of the island have been archaeologically tested and the archaeological potential of the untested areas is very high. Despite recent developments, portions of the shoreline opposite Belle Island also have a high archaeological potential for Pre-Contact First Nations, Historic First Nations, and Historic Euro-Canadian archaeological sites. The archaeological significance of Belle Island is further reinforced by the 2001 City Council resolution acknowledging Belle Island as a site of significant Aboriginal cultural heritage. This resolution engaged a strategy that was subsequently formalized through negotiation between the City and representatives of local First Nations communities and is embodied in an agreement that was endorsed by City Council in 2006. The framework of the agreement includes a process that would set Belle Island physically apart from the mainland and place Belle Island under the joint ownership of the City of Kingston and the Mohawk Nation Council of Chiefs.

4. The Kingston Outer Station site north of Belle Island, John Counter Boulevard and the Music Marina on the west side of the Cataraqui River contains intact archaeological remains of a Pre-Contact First Nations and Historic First Nations hunting and fishing camp.

5. While other areas north of Belle Island have had minimal development disturbance to date, there is high potential for Pre-Contact and Historic First Nations archaeological remains in this portion of the EA study area.

3.1.6 Geo-Environmental Conditions

Within the EA study area, there are approximately 750 +/- sites where on-site operations have had spills reported to have either 'high' or confirmed environmental impacts (285 +/- sites), 'medium' or possible environmental impacts (270 +/- sites), or 'low' or no anticipated environmental impacts (200 +/- sites).

Historically, the lands on the west side of the Cataraqui River from the LaSalle Causeway to just north of John Counter Boulevard were more heavily industrialized than in other portions of the EA study area. Consequently, there are numerous sites of potential environmental concern throughout the EA study area, including:

1. The Katings Pasture waste disposal site north of Cataraqui Street to Montreal Street and west of Rideau Street.

2. The Belle Park Landfill site.

3. The federal dredged sediment disposal site along the north shore of Belle Park.

4. The Frontenac Lead Smelter and Davis Tannery operations southwest of Belle Park.

5. The McLeod's Tannery operation at Emma Martin Park.

6. The rail yards and shipbuilding operations at Anglin Bay.

7. The Kingston Coal Gasification Plant in the downtown area.

8. The fill material along the western shoreline of the Cataraqui River between the Canadian National (CN) / Canadian Pacific (CP) railway tracks and the western shoreline of the Cataraqui River from approximately Place D'Armes in the south to Drennan Street in the north.

Drawings 3.7 and 3.8 highlight areas having the highest densities of potential environmental impact. These include:

1. The Downtown area bounded by Brock Street, Barrie Street, North Street and Ontario Street.

2. The Cataraqui Street - Orchard Street - River Street area.

3. Joseph Street between Montreal Street and Patrick Street.

4. Segments of Montreal Street in the downtown area and between Raglan Road and James Street, Stephen Street and Railway Street, John Counter Boulevard and Drennan Street as well as Weller Avenue and Sutherland Drive.

5. Belle Park and its vicinity.

6. Areas bounded by Hickson Avenue, Harvey Street, John Counter Boulevard and Montreal Street.

7. The southwestern portion of the Inner Harbour, where sediment contamination has been found to exceed Provincial and Federal guidelines.

3.1.7 Geotechnical Conditions

The EA study area is located in the physiographic region of Southern Ontario known as the Napanee Plain. The Napanee Plain is flat to undulating, and is characterized by relatively shallow soil deposits overlying bedrock. Geologic mapping indicates that the bedrock within the Napanee Plain consists of grey limestone/dolostone of the Gull River Formation, which contains some shale partings and seams.

The overburden soils within the Napanee Plain generally consist of glacial till, although alluvium is present in river and stream valleys. In the southern portion of the Plain, low-lying areas are typically covered with deposits of stratified clay. Water well records indicate that the average depth to bedrock within the Napanee Plain is approximately 2 m. However, in many areas, bedrock outcrops are observed at ground surface, while deeper soil deposits (in the order of 10 m) are present in the northern portion of the Plain and within and adjacent to river valleys throughout the Plain.

As shown on Drawing 3.9, the EA study area is generally characterized by shallow limestone bedrock. Where overburden is present, it consists mostly of post-glacial silts and clays. Much of the Cataraqui River bank south of Highway 401 and north of Weller Avenue as well as Belle Park (excluding the federal dredged sediment disposal site along the north shore) are lined with organic deposits. The elevation of the Cataraqui River is at roughly 74.5 m (+/-). The bedrock at either shoreline is at elevation 73 m (+/-) which dips to elevations that vary from 36 m to 55 m (+/-) within the Cataraqui River. This 'bedrock valley' is made up of clay soils and organic deposits.