

LEGEND

- Expressway
- Major Road
- Local Road
- Ferry Route
- Main Rail Line
- Sidetrack Rail Line
- Abandoned Rail Line
- Areas of Highest Densities of Potential Environmental Impact
- Park / Golf Course / Recreation Area
- Study Area

+ **High** (Examples include gasoline service stations, garages, motor vehicle repair shops, dry cleaners, heavy industrialized land use, waste disposal sites, presence of fuel and/or chemical storage tanks, federally contaminated sites and sites with spills reported to have a confirmed environmental impact).

+ **Medium** (Examples include construction and renovation companies, Ontario regulation 347 waste generators, light industrial facilities, foundry and/or metal works, railways, transport industries, printing and engraving activities and sites with spills reported to have a possible environmental impact).

+ **Low** (Examples include warehouses, commercial storage facilities, sites licensed for pesticide use, lumber companies, quarries, sites registered on National Pollutant Release Inventory, sites with certificates of approval on air, wastewater, and municipal sewage waterworks, sites with spills reported to have to anticipated environmental impact, and wood and coal yards).

Water Well (MOE Water Well Information System)

NOTE

This figure is to be read in conjunction with the accompanying Golder Associates Ltd. report No. 09-1121-0016

REFERENCE

Digital base map data supplied by DMTI Spatial Inc. CANMAP 2007
 Projection: L Transverse Mercator Datum: NAD 83 Coordinate System: UTM Zone 18

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

DRAWING:
AREAS OF POTENTIAL
ENVIRONMENTAL CONCERN

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DESIGN:

3-7

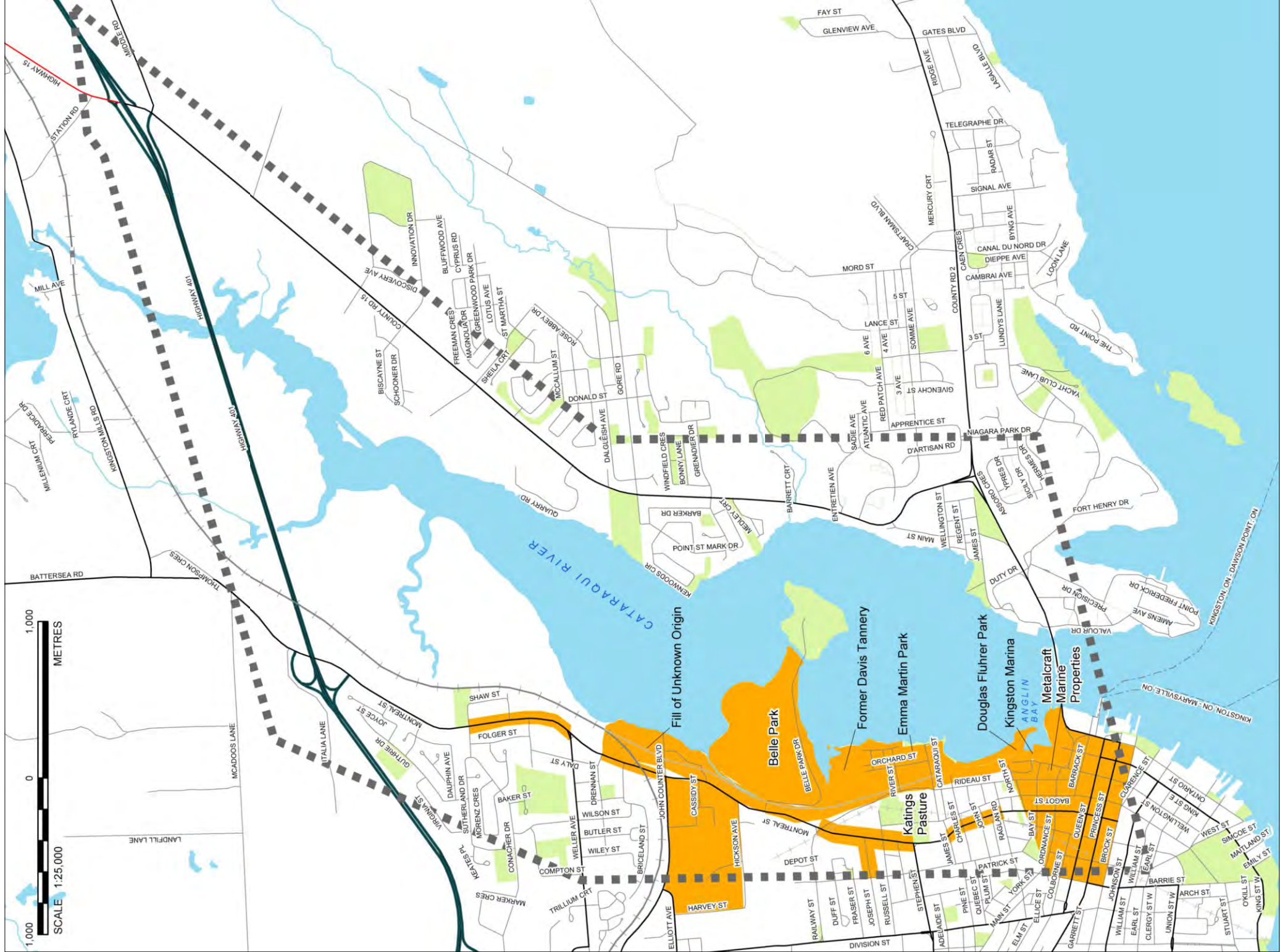
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PLOTTED: 26-Jan-12

JLR NO:

23446-02



LEGEND

- Expressway
- Major Road
- Local Road
- Ferry Route
- Main Rail Line
- Sidetrack Rail Line
- Abandoned Rail Line
- Areas of Highest Densities of Potential Environmental Impact
- Park / Golf Course / Recreation Area
- Study Area

NOTE

This figure is to be read in conjunction with the accompanying Golder Associates Ltd. report No. 09-1121-0016

REFERENCE

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

DRAWING:
HIGHEST DENSITY AREAS
FOR POTENTIAL
ENVIRONMENTAL IMPACT

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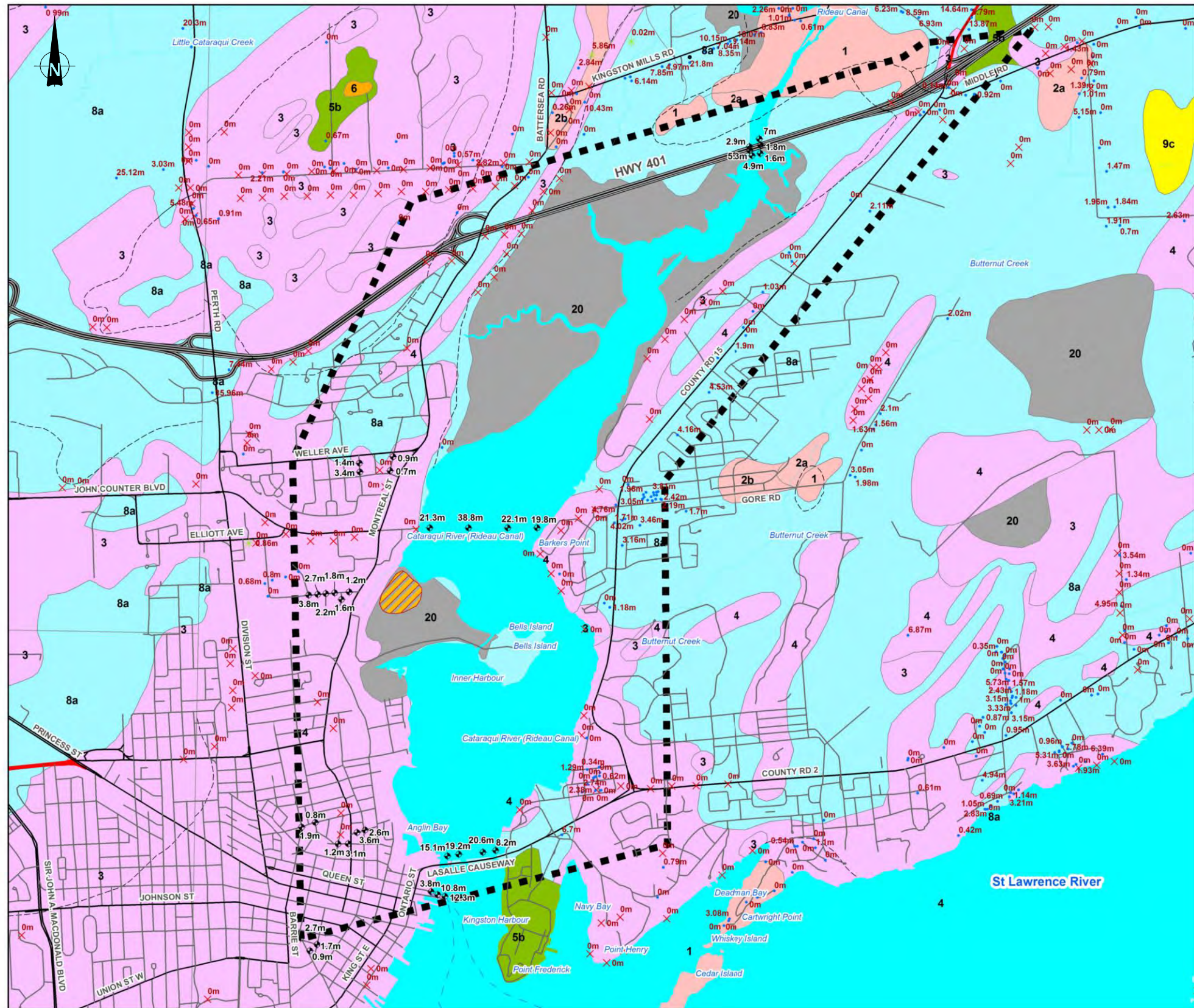


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 ENGINEERS ARCHITECTS-PLANNERS

DESIGN:
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 CHECKED:
 PLOTTED: 25-Jan-12

DRAWING NO.: **3-8**
 JLR NO.:
 23446-02



- 20 Organic deposits:** peat, muck, marl
- 9 Coarse-textured glaciolacustrine deposits:** sand, gravel, minor silt and clay
 - 9a: Deltaic deposits
 - 9b: Littoral deposits
 - 9c: Foreshore and basinal deposits
- 8 Fine-textured glaciolacustrine deposits:** silt and clay, minor sand and gravel
 - 8a: Massive to well laminated
 - 8b: Interbedded silt and clay and gritty, pebbly flow till and rainout deposits
- 5a Till:** Silty sand to sand-textured till on Precambrian terrain
- 5b Stone-poor, sandy silt to silty sand-textured till on Paleozoic terrain**
- 5c Stony, sandy silt to silty sand-textured till on Paleozoic terrain**
- 5d Clay to silt-textured till (derived from glaciolacustrine deposits or shale)**
- 5e Undifferentiated older till may include stratified deposits**
- 4 Bedrock-drift complex in Paleozoic terrain**
 - 4a: Primary till cover
 - 4b: Primary stratified drift cover
- 3 Paleozoic limestone bedrock (Gull River Formation)**
- 2 Bedrock-drift complex in Precambrian terrain**
 - 2a: Primary till cover
 - 2b: Primary stratified drift cover
- 1 Precambrian bedrock**

NOTE
 This figure is to be read in conjunction with the accompanying Golder Associates Ltd. report No. 09-1121-0016

REFERENCE
 Produced by Golder Associates Ltd. under License with the Ministry of Northern Development and Mines © Queen's Printer for Ontario, 2009. Armstrong, D.K. and Dodge, J.E.P. 2007. Paleozoic geology of southern Ontario; Ontario Geological Survey, Miscellaneous Release—Data 219. Gao, C., Shirota, J., Kelly, R.I., Brunton, F.R. and van Haften, S. 2006. Bedrock topography and overburden thickness mapping, southern Ontario; Ontario Geological Survey, Miscellaneous Release—Data 207. Projection: Transverse Mercator Datum: NAD 83 Coordinate System: UTM Zone 18



File Location: C:\Documents and Settings\judson\Desktop\23443-02 - Third Crossing ESRI\Figures\Figure 3-9 Geo Tech Conditions.dwg

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

DRAWING:
GEOTECHNICAL CONDITIONS

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DESIGN:
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 PLOTTED: 1-Feb-12

DRAWING NO.:
3-9
 JLR NO:
 23446-02

3.1.8 Landscape and Viewscape Conditions

As shown on Drawing 3.10, there is a series of paths and trails for active transportation in various states of planned development within and adjacent to the EA study area. These include:

1. An east-west route extending from the downtown, across the LaSalle Causeway, around RMC and Fort Henry and continuing along Highway 2.
2. A north-south route extending from the downtown-LaSalle Causeway along the west shoreline of the Cataraqui River and continuing northwest through City Centre Business Park and north of John Counter Boulevard and around Belle Park Fairways, ending north of John Counter Boulevard at Weller Avenue.
3. A north-south route extending through the Point St. Mark residential neighbourhood and along the east shoreline of the Cataraqui River to and beyond Highway 401.
4. Routes internal to Barriefield Village as well as the Grenadier Village and Greenwood Park subdivisions east of Kingston Road 15.

There are also a series of commuter cycling lanes in various states of planned development within and adjacent to the EA study area. These include:

1. Routes along the main roads in the downtown area and extending north along Montreal Street up to and beyond Highway 401 with east-west routes connecting to Montreal Street at John Counter Boulevard and Benson Street-Dalton Avenue on the west side of the Cataraqui River.
2. Routes extending from the downtown, across the LaSalle Causeway and continuing along Highway 2 and Kingston Road 15 on the east side of the Cataraqui River.

The current road network within and extending from the downtown on the west side of the Cataraqui River and its connection with the LaSalle Causeway, Highway 2, and Kingston Road 15 on the east side of the Cataraqui River play a major role in terms of system continuity and flows for both active travel and commuter cycling modes. As noted earlier, the LaSalle Causeway-Highway 2 corridor is located at the south end of the EA study area, while the Highway 401 crossing is located 6 km upstream. As a result, this road network cannot provide shorter loops along and across the Cataraqui River in order to improve east-west connections for active travel and commuter cycling modes.

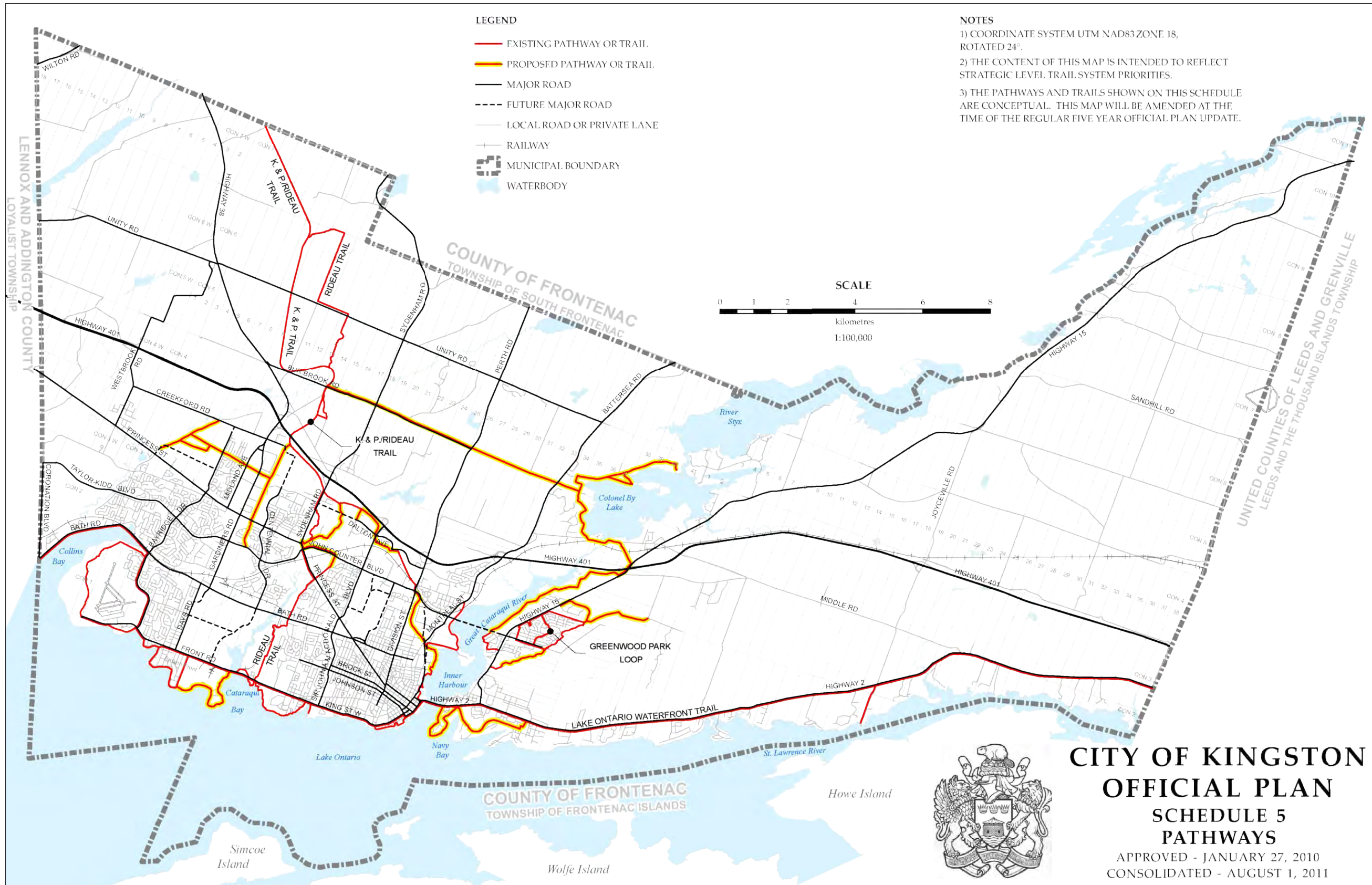
In addition, there are two landscape character types within the EA study area. The lower Cataraqui section of the Rideau Canal south from Highway 401 to the northern entrance of Kingston's Inner Harbour near Belle Island is a rare example of the waterway where the natural environment was not altered during canal construction. Over the intervening 178 years, the extensive wetlands of the Great Cataraqui Marsh, as well

as the river valley's sloped physiography and forested landscapes adjacent to the navigation channel proceeding south from Highway 401 have remained largely intact. The northern entrance of the Inner Harbour near Belle Island provides a transition point between a predominantly natural environment of the Cataraqui River to the north and a more urbanized, manicured landscape of the City to the south, east and west. This is depicted on Drawings 3.11 to 3.16, which are a series of on-water photographs taken at certain buoys marking the navigable channel within the EA study area. Drawings 3.11 to 3.13 show that as boaters proceed from the Highway 401 crossing southward (roughly 4 km north of the Inner Harbour entrance), the visible cattail portion of the Greater Cataraqui Marsh dominates the landscape at first, with its shallow water and emergent aquatic plants, near continuous overhanging tree canopy and shrub understory. The City's urban landscape then becomes increasingly more visible in the background as boaters pass through the visible cattails. At roughly 1 km north of the Inner Harbour entrance near Belle Island, boaters enter an open vista, where more of the City's urban landscape is in full view. Views further south of Belle Island are blocked by the tree line along the northern portion of Belle Park and Belle Island as well as by the extension of the eastern shoreline whereon the Gore Road Library, Point St. Mark residential neighbourhood and Rideau Marina are located. South of Belle Island, boaters then experience the full view of the City's Inner Harbour and downtown area.

The opposite is true as boaters proceed from the LaSalle Causeway roughly 2 km northward to the Inner Harbour exit near Belle Island. Drawings 3.14 to 3.16 highlight such features as the City's downtown, Kingston Marina and Douglas Fluhrer Park on the west side of the Inner Harbour and the HMCS Cataraqui Facility to east. Proceeding further northward, this then leads to more of the City's urban landscape, typified by the Woolen Mill heritage property and Emma Martin Park to the west and the Barriefield Village Conservation District to the east. As boaters near Belle Island, a sense of the urban-to-natural landscape transition begins, with Belle Island's old oak grove to the west juxtaposed with views of CFB Kingston and the Rideau Marina to the east-northeast. At the tip of Belle Island, boaters enter the open vista referenced above, where more of the City's urban landscape to the west (the Elliott Avenue Parkette, Village On The River apartments and the River Park subdivision, for example) and east (the Rideau Marina and Point St. Mark residential neighbourhood, for instance) is in full view. The visible cattail portion of the Greater Cataraqui Marsh begins to emerge in the background.

In addition, as noted earlier, the inscribed property of the UNESCO World Heritage Site includes the Rideau Canal National Historic Site as well as the Fort Henry and the Kingston fortifications (Fort Frederick and the Murney, Shoal and Cathcart Martello Towers) National Historic Sites in the southern portion of the EA study area. Drawing 3.17 is a photograph of the EA study area taken on the walkway leading from the public parking lot to Fort Henry. It shows that views of the Inner Harbour are obscured in the background, not only by distance but also by the CFB Kingston and RMC facilities in the foreground. The tree line along the southern portion of Belle Park and Belle Island as well as the extension of the eastern shoreline similarly blocks views of the remaining EA study area that extends further north to Highway 401.

File Location: C:\Documents and Settings\judson\Desktop\23443-02 - Third Crossing ESRI\Figures\Figure 3-10 Cycling and Pathways.dwg



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

DRAWING:
**OFFICIAL PLAN
CYCLING AND PATHWAYS**



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DESIGN:
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PLOTTED: 1-Feb-12

DRAWING NO.:
3-10
JLR NO:
23446-02



Key Plan



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Date of photo: 13 September 2010

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

DRAWING:
**ON WATER VIEW
 LOOKING SOUTH
 (AT BUOY S65)**



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ENGINEERS-ARCHITECTS-PLANNERS

DESIGN:	
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PLOTTED:	15-Mar-12

DRAWING NO.:	3-11
JLR NO.:	23446-02

File Location: P:\23000\23446-02 - Cataraqui River EA - Stage 2\23443-02 - Third Crossing ESRI\Figures\Figure 3-1.1 to 3-17 Area Photos.dwg

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Key Plan



St. Mary's Cathedral

Princess Towers

Village On The River

John Counter Place

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Date of photo: 13 September 2010

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

DRAWING:
**ON WATER VIEW
LOOKING SOUTH
(AT BUOY S47/5)**



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Date of photo: 13 September 2010

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

DRAWING:
**ON WATER VIEW
 LOOKING SOUTH
 (AT BUOY S33)**

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DRAWING NO.:
3-13
 JLR NO:
 23446-02

File Location: P:\23000\23446-02 - Cataraqi River EA - Stage 2\23443-02 - Third Crossing ESRI\Figures\Figure 3-1.1 to 3-17 Area Photos.dwg



Key Plan



File Location: P:\23000\23446-02 - Cataraqui River EA - Stage 2\23443-02 - Third Crossing ESRI\Figures\Figure 3-1.1 to 3-17 Area Photos.dwg

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Date of photo: 13 September 2010

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

DRAWING:
ON WATER VIEW
LOOKING NORTH
(AT BUOY S3)



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3-14
 JLR NO:
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Key Plan



Belle Island

Rideau Marina

CFB Kingston →

Date of photo: 13 September 2010

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

DRAWING:
**ON WATER VIEW
 LOOKING NORTH
 (AT BUOY S13)**



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DRAWING NO.:
3-15
 JLR NO:
 23446-02

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File Location: P:\23000\23446-02 - Cataraqui River EA - Stage 2\23443-02 - Third Crossing ESRI\Figures\Figure 3-1.1 to 3-17 Area Photos.dwg



John Counter Place

Village On The River

River Park

Music Marina

Rideau Marina

Belle Island /
Federal Dredged
Disposal Site

Residences / Southern
Boundary of Point St.
Mark Subdivision

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Date of photo: 13 September 2010

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

DRAWING:
**ON WATER VIEW
LOOKING NORTH
(AT BUOY S15)**

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Key Plan



John Counter Place

Village On The River

Belle Park / Belle Island Tree Line

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Date of photo: 28 September 2010

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

DRAWING:
**FORT HENRY VIEW
 LOOKING NORTH**



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DESIGN:
 DRAWN:
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 PLOTTED: 15-Mar-12

DRAWING NO.:
3-17
 JLR NO:
 23446-02

File Location: P:\23000\23446-02 - Cataraqi River EA - Stage 2\23443-02 - Third Crossing ESRI\Figures\Figure 3-1.1 to 3-17 Area Photos.dwg

3.2 EA Alternative Solutions

This EA study involves 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.

3.2.1 Retain the Status Quo or 'Do Nothing'

With an existing traffic volume in the order of 1,000 to 1,100 vehicles per hour in each direction during the PM peak hour, the LaSalle Causeway-Highway 2 corridor is currently operating below the City's target LOS D, which is based on an average estimated capacity of 900 vehicles per hour, per lane. Based on population and employment forecasts, the projected traffic volumes on the LaSalle Causeway, undertaken during Stage 1 and Stage 2 of this EA study, are expected to increase. As a result of 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 to 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 expected to increase by 27 percent on average. Delays on the LaSalle Causeway-Highway 2 corridor would also continue to increasingly impact emergency response agency resources 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.

In addition, focusing solely on active transportation (cycling and walking) and public transit, though laudable, would not be able to address the entire capacity on the LaSalle Causeway over the immediate-to-long-term, based on the following current and projected conditions:

1. The projected 2019 traffic congestion on the LaSalle Causeway takes into account the existing modal shares for active transportation (14 percent) and public transit (5 percent).
2. Though Kingston Transit expects the introduction of 2 new express bus routes serving the east and west sides of the City to increase the modal share for public transit from 5 percent to 6 percent by

2019, even at a simulated 9 percent public transit modal share by 2029, the LaSalle Causeway is still projected to operate below the City's target LOS D.

3. Significantly increasing the modal shares for active transportation and public transit over-and-above current and simulated projections would be very difficult to achieve within the next 15 to 20 years, given the size of the City in relation to the major infrastructure investment and aggressive policy approach that would be required.

Based on forecasted traffic modeling by AECOM in 2011 of the 'Cataraqui River screenline' to 2019, retaining the status quo would cause a portion of the local traffic wanting to cross the Cataraqui River to divert 6 km north to use the Highway 401 crossing, thereby leading to potential local-regional traffic conflicts on Highway 401 as well as further out of way travel and additional delays. Traffic infiltration through the adjacent road network could then also be expected to occur as drivers seek less congested routes to reach their destinations. An estimation of the total vehicle-kilometres of travel (veh-km)¹⁴ by 2019 during the PM peak hour is summarized by area on Drawing 3.18.

Thus, retaining the status quo would not address the EA Problem Statement for this EA study and is not considered a viable alternative solution.

3.2.2 Increase the Capacity of the LaSalle Causeway

As highlighted earlier, studies predating this EA study concluded that potential improvements along the LaSalle Causeway-Highway 2 corridor (channelization, signal timing and phasing, lane additions) and optimizing public transit use could enhance operations along the corridor but would not be able to solely address corridor deficiencies over the long-term. These studies also cautioned that expanding the capacity of the LaSalle Causeway could result in increased traffic congestion in the downtown core unless major changes to the surrounding intersections and street networks were effected.

Despite the above and as per the 2005 PPS, the need to maximize the use of existing infrastructure, technology and sustainable transportation initiatives before consideration is given to developing new infrastructure is duly noted. The 2011 HDR/iTrans report undertaken subsequent to Stage 1 of this EA study also reaffirmed that existing conditions on the LaSalle-Causeway-Highway 2 corridor would continue to negatively affect its LOS. The report outlines a preferred strategy to address existing and future deficiencies along the corridor. It consists of the following improvements (listed in terms of greatest-to-least benefit):

¹⁴ Vehicle-kilometre of travel is used to measure the relative change in overall usage of the roads within the neighbourhoods. It is calculated based on the volume on each road multiplied by the length of the road.



PROJECT:

**CATARAQUI RIVER THIRD CROSSING
EA - STAGE 2
ENVIRONMENTAL STUDY REPORT**

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ENGINEERS ARCHITECTS PLANNERS

DRAWING:

**2019 FORECAST PM PEAK
TRAFFIC INFILTRATION (VEH-KM)
LEVELS (RETAIN THE STATUS QUO)**

DESIGN:

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CHECKED:

PLOTTED: 26-Jan-12

DRAWING NO.:

3-18

JLR NO.:

23446-02

1. Installing adaptive traffic controls¹⁵ on Highway 2 at Fort Henry Drive-Duty Drive and Kingston Road 15¹⁶.
2. Installing a roundabout at the Highway 2-Kingston Road 15 intersection.
3. Transportation Demand Management (TDM) programs at the employer and City-wide level to provide vehicle trip reductions of 5 percent to 10 percent.
4. Installing a north-south road connection from Lance Street to Gore Road through CFB Kingston.
5. Optimizing traffic signal timing plans on Ontario Street and Highway 2, including the installation of Global Positioning System (GPS) synchronization of the traffic signal control clocks to maintain traffic signal coordination.
6. A 40 m eastbound left-turn lane extension on Highway 2 at Kingston Road 15¹⁷.
7. Installing an eastbound right-turn lane at the Ontario Street-Barrack Street intersection.
8. Optimizing traffic signal timing plans and increasing the cycle length on Kingston Road 15.
9. Incorporating a transit queue jump lane on Highway 2 at Fort Henry Drive.
10. Improving transit service through the proposed two new express bus routes serving the east and west sides of the City.

These improvements were then modelled relative to current and projected eastbound travel times on the LaSalle Causeway-Highway 2 corridor during the PM peak hour. As shown in Table 3.4 below, the report concluded that the City's target of LOS D on the corridor could be maintained until at least 2020 with the implementation of the improvements.

¹⁵ Note an adaptive control system continually adjusts signal timings and cycle lengths by collecting traffic volume and queuing data on every leg of the intersection. This allows the traffic signals to adapt to changing demand more effectively than non-adaptive signals, thereby reducing queues and delays for all intersection users.

¹⁶ Note an adaptive control system was tested at the Ontario Street-Barrack Street intersection but did not result in any reductions in travel delay and/or vehicle queuing.

¹⁷ Note the widening of Highway 2 to accommodate an extra lane (either for a through lane or an extended eastbound left-turn lane) between Duty Drive and Kingston Road or dual eastbound left-turn lanes at Kingston Road 15 were also considered. But the capital cost of the widening, combined with the property requirements and the impact on the Barriefield Rock Cut required to accommodate it, outweighed the benefits. In addition, the dual eastbound left-turn lane option would not be able to accommodate future vehicle queues and would also create unnecessary delay for vehicles travelling outside of the peak hour periods.

**Table 3.4
 Eastbound Travel Times on the LaSalle Causeway-Highway 2 Corridor (PM Peak Hour)**

Scenario	EB Modelled Travel Time (Minutes)	Improvement From Existing (Minutes)	Percent Improvement From Existing	LOS
2010 Existing	7.6			E
2020 Baseline (No Changes)	13.0	-5.4	(72%)	F
2020 Preferred Strategy (Without the Roundabout)	6.2	1.4	19%	D
2020 Preferred Strategy (With the Roundabout)	5.5	2.1	27%	D

The estimated cost of these improvements is roughly \$1.2 million which could be distributed over a ten-year period as part of a phased implementation program. As such, by maximizing the use of existing and committed infrastructure and using technology and sustainable transportation initiatives, these improvements are considered viable short-to-medium term solutions. But it is also acknowledged that the improvements may not be able to solely reduce congestion and accommodate future traffic volume demand on the LaSalle Causeway-Highway 2 corridor over the long-term.

Thus, increasing the capacity of the LaSalle Causeway may not be able to solely address the EA Problem Statement for this EA study over the long-term, but is considered a viable alternative solution in the short-to-medium term. Future monitoring of traffic conditions by the City would further confirm the viability of this scenario.

3.2.3 Increase the Capacity of Highway 401

With an existing traffic volume during the PM peak hour of 1,260 vehicles per hour per lane for eastbound travel and 1,252 vehicles per hour per lane for westbound travel, the Highway 401 crossing has ample capacity to accommodate additional traffic (based on its current two-way capacity of about 6,000 vehicles per hour given its current four-lane configuration). Its current widening from four to six lanes west of Sydenham Road to west of Montreal Street means that the Highway 401 crossing will also be able to handle even more traffic in the future.

However, 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. This is inconsistent with effective transportation engineering

practice. 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. As noted earlier, traffic infiltration through the adjacent road network could then also be expected to occur as drivers seek less congested routes to reach their destinations.

Thus, increasing the capacity of Highway 401 would not address the EA Problem Statement for this EA study and is not considered a viable alternative solution.

3.2.4 Implement a New Bridge Crossing

As shown on Drawing 3.19, for the purposes of evaluating the feasibility of implementing a new bridge crossing across the Cataraqui River, the EA study area was subdivided into six corridor areas and crossing alignment options were developed based on potential connections to existing infrastructure. The corridor areas and potential links are as follows:

1. Area 1 deals with the option to expand the LaSalle Causeway structure itself (as an additional means to potentially increase the capacity of the LaSalle Causeway) and also shows a crossing link via North Street on the west and James Street on the east (Option 1).
2. Area 2 covers the Inner Harbour area and shows a crossing link via Russell Street on the west and Craftsman Boulevard on the east (Option 2).
3. Area 3 deals with the Belle Island area and shows a crossing link from Belle Island on the west to Craftsman Boulevard on the east (Option 3).
4. Area 4, which focuses on the area between Belle Island and the visible cattail portion of the Greater Cataraqui Marsh, shows two crossing links. Option 4A shows a crossing from John Counter Boulevard on the west to Gore Road on the east. This is in response to the City's Official Plan which, as based on the 2004 KTMP, cites a 2-lane bridge crossing as a 'future major road extension', subject to the outcome of an EA study. Option 4B also extends from John Counter Boulevard on the west but connects to Kingston Road 15 on the east further north of Gore Road. This option responds to the potential impacts a bridge crossing could have on both the Point St. Mark residential neighbourhood south of Gore Road and the Gore Road Library at the northwest corner of Gore Road and Kingston Road 15.
5. Area 5, which covers the visible cattail portion of the Greater Cataraqui Marsh, also shows 2 crossing links. Option 5A shows a crossing from Weller Avenue on the west to Kingston Road 15 on the east. Option 5B shows a crossing from Sutherland Drive on the west to Kingston Road 15 on the east.

6. Area 6 deals with the option to expand the Highway 401 crossing by a parallel, but separate, crossing for local traffic (as an additional means to potentially increase the capacity of the Highway 401 crossing area).

The six corridor areas were short-listed for further assessment, as discussed below, based on six TAC meetings as well as specific consultations with senior staff at Parks Canada and CFB Kingston during Stage 1 of this EA study. The short-listed corridors are Area 2 and Area 4, as shown on Drawing 3.20.

.1 Area 1

Area 1 was not short-listed for the following main reasons:

1. Despite the proximity to Bay Street as part of the proposed Wellington Street Extension on the west side of the Cataraqui River, both the James Street-North Street alignment and the LaSalle Causeway expansion options could impact the fourteen registered shipwrecks that rest in the southern portion of the Inner Harbour and the other significant archaeological resources that are present representing Pre-Contact First Nations, French and British Military Periods (especially at Fort Frontenac, RMC and Fort Henry) and the subsequent Euro-Canadian urbanization of the City.
2. Widening the Bascule Lift Bridge portion of the LaSalle Causeway is not considered a practical option. The fill and additional loads from the expanded structure could overstress the clay and organic soils in the 'bedrock valley' within the Cataraqui River and cause differential settlement patterns between the existing structure and the expanded structure.
3. Though Area 1 is part of the City's 'urban landscape' (south of the Inner Harbour exit near Belle Island), this portion of the EA study area contains most of the identified heritage sites and protected views. In particular, the James Street-North Street alignment option would increase traffic in the Barriefield Village Heritage Conservation District area and would require a high navigable clearance to accommodate watercraft in the Inner Harbour, resulting in significant visual impacts.
4. It should also be noted that while Area 1 is south of the Greater Cataraqui Marsh wetland, both the James Street-North Street alignment and the LaSalle Causeway expansion options could impact aquatic resources and species at risk, for which mitigation measures would be required. Additional mitigation measures would also be required for the identified provincially significant woodlands on the eastern shoreline that could be impacted by the James Street-North Street alignment.
5. Both options could further encounter contaminated sediments within the Inner Harbour and contaminated soil and groundwater conditions on the western shore as this area was more heavily industrialized than other portions of the EA study area.