KING STREET WEST (DUNDAS) BRIDGE #248
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT STUDY

CITY OF HAMILTON

PUBLIC INFORMATION CENTRE (PIC) #1

February 1, 2017
PURPOSE OF PIC #1

➢ To review and obtain public input and comments on the alternative solutions for bridge rehabilitation works on the King Street West (Dundas) Bridge.

  • City of Hamilton and WSP (consultants) staff are available to discuss the project with you.

➢ We would like to hear your comments:

Please complete a comment sheet and drop it into the comment box before leaving or return comments via email totplanning@hamilton.ca by February 14, 2017.

➢ More details about the project are available on the project website:

www.hamilton.ca/kingstwbridgeEA
The City of Hamilton, through WSP Canada Inc., has initiated a Municipal Class Environmental Assessment (EA) process to facilitate bridge rehabilitation works on the King Street West (Dundas) Bridge (#248).

The EA documentation will include the following:

- problem/opportunity statement
- generate and assess alternative planning solutions such as repairing or replacing the bridge
- document the natural, historical, technical, socio-economic, and cultural environments in the area
- develop the evaluation criteria and identify the preferred alternative based on input through the study consultation activities
Study is following the Municipal Class Environmental Assessment (EA) planning process

PHASE 1
Identify problem/opportunity

PHASE 2
Identify alternative solutions
Evaluate solutions and identify preferred solution

PHASE 3
Identify alternative designs
Evaluate alternative designs and identify technically preferred design

PHASE 4
Document findings in environmental study report (ESR)

PHASE 5
Implementation

30-day review period

SCHEDULE “B”

SCHEDULE “C”

We are here:
Public Information Centre #1

Public Information Centre #2

Notice of study completion and filing the ESR

There is an opportunity at any time during the Class EA process for public input, including this Public Information Centre (PIC).
The objective of this study is to complete at a minimum Phases 1 and 2 (Schedule B) of the Municipal Engineers Association Municipal Class Environmental Assessment (October 2000, as amended in 2007, 2011, and 2015), which is approved under the Ontario EA Act.

The Municipal Class EA enables the planning of municipal infrastructure projects in accordance with a proven procedure for protecting the environment.

- Phase 1 consists of identifying the problem or opportunity.
- Phase 2 consists of identifying and evaluating alternative solutions, assessing the effects on the environment, identifying measures to mitigate adverse effects, consulting with stakeholders, selecting the preferred solution(s), and confirming the Municipal Class EA schedules for subsequent phases to design and implement the solution(s).

Additional works, if needed, will be determined as part of the study process.
The Problem/Opportunity Statement:

Identify the preferred alternative for improvements to the King Street West Bridge. Improvements are required to address the existing condition of the structure.

In addressing the problem/opportunity, consideration will be given to:
- current and future travel demands
- accommodating all modes of transportation
- bridge structure and approaches
- user safety
- net positive effect to socio-economic, cultural and natural environments
- aesthetics
NEED AND JUSTIFICATION

- In 2004 the King Street West (Dundas) Bridge underwent rehabilitation.
- In 2009, a visual inspection was conducted which found several major deficiencies.
- Due to the significant deterioration of the structure, a bi-annual monitoring program is in place (since 2012).
- A detailed delamination survey completed in 2015 identified the need for bridge rehabilitation.
- A study in March 2016 confirmed the feasibility of a potential road realignment and construction of a new bridge and retaining walls to the south.
The King Street West (Dundas) Bridge provides a connection between the communities of Dundas and Greensville, crossing over Spencer Creek.

The bridge is located approximately 145 m north of Bond Street, in Dundas, Ontario (north of Fisher’s Mill Park).

The original bridge was constructed around 1926 and consists of a single span cast-in-place reinforced concrete T-beam structure. The bridge spans about 10 m and consists of two 3.65 m wide traffic lanes and a 2.5 m wide sidewalk along the north side of the bridge.
ROADWAY CHARACTERISTICS

- King Street West is a 2-lane arterial road.
- There is a grade-separated rail crossing approximately 330 m west of the bridge with a vertical clearance of 4.0 m.
- No signalized intersections along King Street West within the study area.
- Posted speed limit on King Street West is 50 km/h and there are advisory speed limit signs before the bridge (30 km/h).
- King Street West has an urban cross section east of the King Street West (Dundas) Bridge and rural cross section west of the bridge.
EXISTING NATURAL HERITAGE FEATURES

- A Natural Heritage Characterization Report for the bridge and surrounding areas was completed in 2015. The following are key points drawn from the report:
  - The Study Area includes Spencer Creek, a permanent coldwater creek.
  - Fish community information for the reach has been provided by the Ministry of Natural Resources and Forestry, and includes a few cool-water species and darter species.
  - Species at Risk potential was noted for twelve species; two vegetation species and ten wildlife species.
  - One species at risk was identified during field investigations (Bank Swallow).
A CHER determines the cultural heritage value or interest of a bridge based on Ontario Regulation 9/06. This occurs through development of a detailed background history, site assessment, and evaluation based on a review of its Design/Physical Value, Contextual Value and Historical/Associative Value.

Based on knowledge of similar structures, there is no indication that the Bond Street Bridge has elements that would be described as significant from a design or construction perspective. However, the heritage value of the structure is derived primarily from its association with historical elements and its physical position in that cultural heritage landscape.
Table 1: Annual Average Daily Traffic (AADT) on King Street West / Highway 8 within Study Area

<table>
<thead>
<tr>
<th>Year</th>
<th>EB Count</th>
<th>WB Count</th>
<th>Total AADT</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>4644</td>
<td>4656</td>
<td>9,300</td>
</tr>
<tr>
<td>2016</td>
<td>4358</td>
<td>4386</td>
<td>8,744</td>
</tr>
</tbody>
</table>

Table 2: 2016 Existing Conditions Link Capacity Analysis on King Street West/ Highway 8 between Bond Street and Woodleys Lane

<table>
<thead>
<tr>
<th>Peak Hour</th>
<th>Hourly Volume (peak direction)</th>
<th>v/c</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:45AM – 8:45AM</td>
<td>428 (EB)</td>
<td>0.49</td>
</tr>
<tr>
<td>4:30PM – 5:30PM</td>
<td>384 (WB)</td>
<td>0.44</td>
</tr>
</tbody>
</table>

- A maximum link capacity of 880 vehicles per hour per lane is typically assumed.
- Volumes higher than 792 vehicles per hour per lane will indicate the need for additional link capacity as the volume-over-capacity ratio (v/c) will be greater than 0.90.
- Based on these link v/c ratios, currently there is no need to widen King Street West/ Highway 8 within the study area.
TRAFFIC – FUTURE CONDITIONS

- Population growth in the study area is estimated at approximately 1.0 % per year.

**Table 3:** Volume information from the City’s Travel Demand Model (based on forecasted average growth rate of approximately 0.9 % per year) for both directions

<table>
<thead>
<tr>
<th>Year</th>
<th>Link Flow</th>
<th>EB</th>
<th>WB</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td></td>
<td>343</td>
<td>505</td>
<td>848</td>
</tr>
<tr>
<td>2031</td>
<td></td>
<td>685</td>
<td>330</td>
<td>1015</td>
</tr>
</tbody>
</table>

**Table 4:** Comparison of existing and future volumes and volume-over-capacity ratios

<table>
<thead>
<tr>
<th>Peak Hour</th>
<th>Hourly Volume (peak direction)</th>
<th>v/c</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7:45AM – 8:45AM</td>
<td>2016 428 (EB)</td>
<td>0.49</td>
<td>2016</td>
</tr>
<tr>
<td></td>
<td>2026 473 (EB)</td>
<td>0.54</td>
<td>2026</td>
</tr>
<tr>
<td>4:30PM – 5:30PM</td>
<td>2016 384 (WB)</td>
<td>0.44</td>
<td>2016</td>
</tr>
<tr>
<td></td>
<td>2026 424 (WB)</td>
<td>0.48</td>
<td>2026</td>
</tr>
</tbody>
</table>

- Future (2026) traffic for the study horizon was calculated by applying a 1.0 % annual growth rate over ten years to the existing volumes.
- Based on these link v/c ratios, there is no need to widen King Street West/ Highway 8 within the study area for the following ten years.
ACTIVE TRANSPORTATION

- This location is identified as a cycling route in Hamilton’s Cycling Master Plan (2007)
- This location is identified as an on-road cycling route in Hamilton’s Recreational Trails Master Plan (2016)
- It is expected that the bridge will provide accommodation for bicyclists and pedestrians.

Source: Hamilton’s Recreational Trails Master Plan
ALTERNATIVE SOLUTIONS

- Alternative solutions are developed to address the problem and opportunity statement with a specific focus on improving structural integrity of the subject bridge and minimizing impact to safety and traffic operations on King Street West.

- In addition to the “Do Nothing” alternative, specific alternatives were developed based on other possibilities than bridge replacement.

- Rehabilitating the existing bridge and replacing the bridge will both be considered, as well as removing the existing bridge and constructing a new bridge downstream and realigning King Street West.
# ALTERNATIVE SOLUTIONS

<table>
<thead>
<tr>
<th>Alternative Planning Solutions</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Alternative 1</strong> Do Nothing (this alternative provides a base to which the other alternatives can be compared)</td>
<td>Under this alternative, no measures to improve the condition of the bridge are considered (status quo).</td>
</tr>
<tr>
<td><strong>Alternative 2</strong> Rehabilitate Existing Bridge</td>
<td>Repair and rehabilitate the existing bridge to address the structural deficiencies</td>
</tr>
<tr>
<td><strong>Alternative 3</strong> Replace Bridge at existing location</td>
<td>Replace existing bridge with new bridge that complies with current design standards (including the provision of active transportation)</td>
</tr>
<tr>
<td><strong>Alternative 4</strong> Replace Existing Bridge and Realign King Street West</td>
<td>Remove the existing bridge and construct a new bridge downstream and realign King Street West (including the provision of active transportation)</td>
</tr>
</tbody>
</table>
EVALUATION CRITERIA

Technical-Transportation
- Traffic Operations and Accommodation of Current and Future Travel Demand
- Traffic Safety
- Road Network Compatibility/Connectivity
- Accommodation of Pedestrians/Cyclists
- Response Times/Access for Emergency Vehicles

Engineering Considerations-Constructability
- Bridge Design and Accessibility
- Services/Utilities
- Construction Staging
- Drainage/Stormwater Management

Social/Economic Environment
- Sustainability and City/ Regional Planning
- Potential sustainability improvements to the community
- Construction Related Impacts
- Potential Impact on Heritage Resources and Archaeological Features
- Noise Impacts
- Impacts to Communities
- Community connectivity

Cultural Environment
- Archaeological Resources
- Built Heritage Resources

Natural Environment
- Species at Risk (SAR)
- Vegetation and wildlife
- Water Resources and Fisheries
- Natural Hazards

Capital Cost/ Implementation
- Effects on Travel Time
- Effect on Road Operation
- Maintenance Costs
- Capital Costs
# EVALUATION MATRIX FOR ALTERNATIVES

<table>
<thead>
<tr>
<th>Alternative Solution Criteria</th>
<th>Alternative Solution #1 Do Nothing</th>
<th>Alternative Solution #2 Rehabilitate Existing Bridge</th>
<th>Alternative Solution #3 Replace Bridge at existing location</th>
<th>Alternative Solution #4 Replace Existing Bridge and Realign King Street West</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical Criteria (Transportation and Engineering considerations)</td>
<td><img src="circle.png" alt=".circle" /></td>
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<tr>
<td>Natural Environment Criteria</td>
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<tr>
<td>Socio-Cultural Environment Criteria</td>
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<tr>
<td>Cost Criteria Overall Rating</td>
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</table>

**Summary: Level of response to the Problem Statement**

**Alternative Solution #1 Do Nothing**: Results in limited service life. Potential for bridge to require load restrictions or to be taken out of service. Does not meet roadway geometrics and sightline required standards at bridge western approach. Does not address pedestrian and cyclist requirements and safety. Least impacts on natural environment. This alternative cannot address the problem statement on its own. Not preferred.

**Alternative Solution #2 Rehabilitate Existing Bridge**: Requires staging of traffic with a single lane in alternating directions and temporary full road closures. Requires significant roadway protection during staging. Based on current condition, rehabilitation is not anticipated to provide the same extended service life as a new structure. Cost of rehabilitation is comparable to bridge replacement. Will not provide opportunities for improved public facilities to encourage and promote alternative modes of transportation (walking, cycling). Minor impacts on natural environment. Not preferred.

**Alternative Solution #3 Replace Bridge at existing location**: Requires staging of traffic with a single lane in alternating directions and temporary full road closures. Requires significant roadway protection during staging. Foundation replacement impacts Spencer Creek. Does not meet roadway geometrics and sightline required standards at bridge western approach. Higher potential to accommodate active transportation (pedestrian and cyclist) requirements. More clearing of vegetation during bridge replacement. Greater impacts on natural environment. Not preferred.

**Alternative Solution #4 Replace Existing Bridge and Realign King Street West**: Requires retaining walls at bridge approaches (south). Improvement to the safety of bridge users (sightlines, road geometrics). Minimizes traffic impacts by maintaining two lanes on existing bridge during new construction. Lowest cost for on-going new bridge maintenance. Most clearing of vegetation during demolition/construction for new bridge. Greatest natural environment impacts during construction. Accommodates active transportation (pedestrian and cyclist) requirements. This planning solution fully addresses the problem statement. Preliminary recommended alternative.

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King Street West (Dundas) Bridge #248
Municipal Class Environmental Assessment
February 1, 2017
PRELIMINARY
RECOMMENDED ALTERNATIVE SOLUTION

- Alternative #4 - Replace existing bridge and realign King Street West

Potential realignment of King Street West (to the south)
NEXT STEPS AND STUDY CONTACTS

Following this Public Information Centre, the Study Team will:

- review all comments
- confirm the preferred solution and confirm Project Schedule (B or C):
  - If Schedule B, prepare Study Report
  - If Schedule C, undertake Phases 3 & 4 and then prepare Study report
- obtain Council approval and file for public review for 30 days

Please talk with a Study Team member and complete / submit a comment sheet by February 14, 2017.

You can also provide comments via email or phone to:

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