CITY OF VAUGHAN

EXTRACT FROM COUNCIL MEETING MINUTES OF SEPTEMBER 25, 2012

Item 38, Report No. 33, of the Committee of the Whole, which was adopted without amendment by the Council of the City of Vaughan on September 25, 2012.

38 BOWSTRING ARCH BRIDGE ON HUMBER BRIDGE TRAIL CLASS ENVIRONMENTAL ASSESSMENT STUDY NOTICE OF STUDY COMPLETION WARD 1

The Committee of the Whole recommends approval of the recommendation contained in the following report of the Commissioner of Engineering and Public Works, dated September 4, 2012:

Recommendation

The Commissioner of Engineering and Public Works recommends that staff be directed to issue a Notice of Study Completion for the Class Environmental Assessment of the bowstring arch bridge on Humber Bridge Trail, recommending the rehabilitation of the bridge.

Contribution to Sustainability

The Class Environmental Assessment (Class EA) conducted on the bridge considers all environmental implications of each possible alternative action.

The recommended alternative is consistent with Green Directions Vaughan Goal #3: To ensure that Vaughan is a City that is easy to get around with a low environmental impact, in particular Objective 3.1: To develop and sustain a network of sidewalks, paths and trails that supports all modes of non-vehicular transportation.

Economic Impact

There is no direct economic impact as a result of this report. However rehabilitating the bowstring arch bridge on Humber Bridge Trail is estimated at a cost of $800,000.00, funded from taxation.

Communications Plan

A comprehensive public consultation program to obtain input from all affected stakeholders was completed as part of the study. The main components undertaken included:

- A Notice of Study Commencement
- A Public Information Centre
- Various individual stakeholder meetings

All notifications related to the study were directly mailed to the affected stakeholders on the project mailing list, advertised in local newspapers and posted on the City's website.

A final Notice of Study Completion will be issued to area residents and stakeholders in the Fall of 2012. Upon issuance of this notice, the final study report will be placed on public record for a 30-day review period, in accordance with the requirements of the Municipal Class Environmental Assessment process.

Purpose

The purpose of this report is to seek Council's approval in principle of the conclusions and recommendations of the Humber Bridge Trail Bowstring Arch Bridge Class Environmental Assessment. A Draft Executive Summary for the study is appended to this report.

…/2

Background - Analysis and Options

The 98 year old bridge requires rehabilitation or replacement

The Humber River, West Branch Bridge (Bridge No. 008601) is located on Humber Bridge Trail, approximately 200 m east of Highway 27 (See Attachment No.1). Humber Bridge Trail was the original alignment for Major Mackenzie Drive, however, when Major Mackenzie Drive was re-aligned to the south, the bridge and a portion of the road remained and the road was renamed as Humber Bridge Trail.

The existing bridge was constructed in 1914 and is an 18.3 metre single span, cast in place concrete bowstring arch bridge with a concrete deck and wearing surface. The bridge provides a roadway width of 3.7 metres and accommodates a single lane for two way vehicular traffic.

Regulations under the Highway Traffic Act (Section 123(2)) and the Bridges Act (Section 2) requires the City to ensure that the bridges are kept safe and in good repair. This requirement is completed through the performance of regular biennial structure inspections in accordance with the Ministry of Transportation Ontario Structure Inspection Manual. Recent inspections, carried out in 2010 and confirmed in 2012, indicate that the bridge is in an advanced state of disrepair and will require some form of rehabilitation or replacement for it to remain in service.

The bowstring arch bridge on Humber Bridge Trail provides the only vehicular access to 5789 Humber Bridge Trail, a residential property on the east bank of the Humber River. The City has a legal obligation to ensure that property road access is maintained. The City cannot close a road to deprive an owner of the only means of access, unless another is available. In addition, Humber Bridge Trail and the bridge are included in the City's Pedestrian and Bicycle Master Plan as a linkage to a future pedestrian hiking trail(s) along the Humber River.

A Class Environmental Assessment study to identify options and to recommend a solution is nearing completion

As the bridge is greater than 40 years of age, the City was required to undertake a Schedule "B" Class Environmental Assessment to identify an appropriate solution to address the structural and safety concerns, as well as access issues, associated with this bridge crossing the Humber River. This process includes developing alternative remedial solutions, evaluation of alternatives against a set of criteria, and selection of a preferred option. The City retained a consulting engineer, AECOM, to undertake this investigation.

The following are the three key areas of interest in relation to the bowstring arch bridge that factored heavily into this Class EA:

- Structural integrity
- Financial impact
- Heritage potential

A requirement of the Schedule "B" Class Environmental Assessment is that a review of the bridge's heritage potential must be undertaken. The heritage potential was assessed in accordance to the *Ontario Heritage Act* Regulation 9/06. The Act identifies criteria to be used in determining the cultural heritage value or interest of built heritage resources and cultural heritage landscapes. The set of criteria are grouped into the categories of Design/Physical Value, Historical/Associative Value and Contextual Value.

This bridge is not protected under the Ontario Heritage Act, therefore, there is no obligation for the City to preserve it. However, the bridge does have heritage significance which was reflected when evaluating the alternatives.

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Tradeoffs with respect to these three key areas were addressed in order to select a preferred option for the bridge.

The following alternatives were investigated for the bridge:

1. **Doing nothing puts the structural integrity of the bridge at risk and does not fulfill the City's obligation of providing access to 5789 Humber Bridge Trail**

   This alternative would allow the bridge to continue to deteriorate with minimal maintenance other than emergency repairs.

   As the bridge deteriorates over time, the City would have to decommission the bridge when it is determined that it is no longer able to accommodate any vehicular access. This would involve demolishing or closing the bridge without replacing it. Decommissioning and removing the bridge would cost the City approximately $284,000. However, access to 5789 Humber Bridge Trail would be eliminated as it is not technically and economically feasible to provide another access without crossing the Humber River. The potential for the alternative has been explored, and was found to be cost prohibitive, exceeding the cost of constructing a new bridge at this time.

   Since this option does not immediately improve the safety of the bridge, and does not ensure that access will be maintained at 5789 Humber Bridge Trail, this option was deemed not feasible.

2. **Decommissioning the bridge and constructing a new bowstring arch bridge would cost the City approximately $1,700,000**

   This option considers construction of a new bowstring arch bridge. The costs associated with this option include retaining working easements, property acquisition, decommissioning of the existing bridge and construction of the new bridge. This option does improve the bridge's integrity and ensures that access will be maintained for 5789 Humber Bridge Trail. However, the cost is higher than other alternatives and it does not preserve its heritage potential. It also has increased potential for environmental impacts, and is therefore deemed not feasible.

3. **Decommissioning the bridge and constructing a new "modern" bridge type would cost the City approximately $1,350,000 and causes the loss of the bridge's heritage value**

   This option considers construction of a precast concrete box girder bridge and a structural steel bridge, both typical modern bridge types. The costs associated with this option include retaining working easements, property acquisition, decommissioning of the existing bridge and construction of the new bridge. This option does improve the bridge's integrity and ensures that access will be maintained for 5789 Humber Bridge Trail. However, the cost is higher than other alternatives and it does not preserve its heritage potential. It also has increased potential for environmental impacts, and is therefore deemed not feasible.

4. **Rehabilitating the bridge is feasible and will cost the City approximately $800,000**

   The City's engineering consultant thoroughly investigated the existing bridge, and determined that rehabilitation is possible, which will improve the structural integrity of the bridge, while preserving its heritage value. Rehabilitation of the bridge is the most cost effective alternative with the lowest environmental impact. In addition, it is the only option that successfully addresses the key areas of interest considered in the Class EA, including the maintenance of access to 5879 Humber Bridge Trail.

A summary of the evaluation of each alternative solution according to all three key areas of interest in included in the Draft Executive Summary of the Environmental Assessment Report, which is attached to this report.

The Recommended Alternative

The recommended alternative contained within the DRAFT Environmental Study Report for the Humber Bridge Trail Bridge is to fully rehabilitate it. This is the most cost effective option, while improving the bridges safety and ensuring that access is maintained to 5789 Humber Bridge Trail. In addition, this is the only option that preserves the heritage potential, improves the structural integrity and minimizes impacts on the surrounding environment.

Relationship to Vaughan Vision 2020/Strategic Plan

In consideration of the strategic priorities related to Vaughan Vision 2020, the recommendations of the report will assist in enhancing and maintaining community safety, health and wellbeing, by ensuring that an appropriate level of service for bridge conditions are maintained for the citizens of Vaughan.

Regional Implications

None.

Conclusion

The DRAFT Environmental Study Report has been completed. The recommended alternative contained within the report is to fully rehabilitate the bridge.

Staff recommends that the DRAFT Environmental Study Report's Executive Summary be approved in principle, in order for the Notice of Study Completion to be publicly issued, allowing the process of finalizing the report to begin.

Attachments

1. Location Map
2. Draft Executive Summary – AECOM Canada

Report prepared by:

Colin Cassar, C.E.T., Senior Engineering Assistant, ext. 8756
Vince Musacchio, P. Eng., PMP, Manager of Capital Planning and Infrastructure, ext. 8311

CC:mc

(A copy of the attachments referred to in the foregoing have been forwarded to each Member of Council and a copy thereof is also on file in the office of the City Clerk.)

BOWSTRING ARCH BRIDGE ON HUMBER BRIDGE TRAIL
CLASS ENVIRONMENTAL ASSESSMENT STUDY
NOTICE OF STUDY COMPLETION
WARD 1

Recommendation

The Commissioner of Engineering and Public Works recommends that staff be directed to issue a Notice of Study Completion for the Class Environmental Assessment of the bowstring arch bridge on Humber Bridge Trail, recommending the rehabilitation of the bridge.

Contribution to Sustainability

The Class Environmental Assessment (Class EA) conducted on the bridge considers all environmental implications of each possible alternative action.

The recommended alternative is consistent with Green Directions Vaughan Goal #3: To ensure that Vaughan is a City that is easy to get around with a low environmental impact, in particular Objective 3.1: To develop and sustain a network of sidewalks, paths and trails that supports all modes of non-vehicular transportation.

Economic Impact

There is no direct economic impact as a result of this report. However rehabilitating the bowstring arch bridge on Humber Bridge Trail is estimated at a cost of $800,000.00, funded from taxation.

Communications Plan

A comprehensive public consultation program to obtain input from all affected stakeholders was completed as part of the study. The main components undertaken included:

- A Notice of Study Commencement
- A Public Information Centre
- Various individual stakeholder meetings

All notifications related to the study were directly mailed to the affected stakeholders on the project mailing list, advertised in local newspapers and posted on the City's website.

A final Notice of Study Completion will be issued to area residents and stakeholders in the Fall of 2012. Upon issuance of this notice, the final study report will be placed on public record for a 30-day review period, in accordance with the requirements of the Municipal Class Environmental Assessment process.

Purpose

The purpose of this report is to seek Council's approval in principle of the conclusions and recommendations of the Humber Bridge Trail Bowstring Arch Bridge Class Environmental Assessment. A Draft Executive Summary for the study is appended to this report.

Background - Analysis and Options

The 98 year old bridge requires rehabilitation or replacement

The Humber River, West Branch Bridge (Bridge No. 008601) is located on Humber Bridge Trail, approximately 200 m east of Highway 27 (See Attachment No.1). Humber Bridge Trail was the original alignment for Major Mackenzie Drive, however, when Major Mackenzie Drive was re-aligned to the south, the bridge and a portion of the road remained and the road was renamed as Humber Bridge Trail.

The existing bridge was constructed in 1914 and is an 18.3 metre single span, cast in place concrete bowstring arch bridge with a concrete deck and wearing surface. The bridge provides a roadway width of 3.7 metres and accommodates a single lane for two way vehicular traffic.

Regulations under the Highway Traffic Act (Section 123(2)) and the Bridges Act (Section 2) requires the City to ensure that the bridges are kept safe and in good repair. This requirement is completed through the performance of regular biennial structure inspections in accordance with the Ministry of Transportation Ontario Structure Inspection Manual. Recent inspections, carried out in 2010 and confirmed in 2012, indicate that the bridge is in an advanced state of disrepair and will require some form of rehabilitation or replacement for it to remain in service.

The bowstring arch bridge on Humber Bridge Trail provides the only vehicular access to 5789 Humber Bridge Trail, a residential property on the east bank of the Humber River. The City has a legal obligation to ensure that property road access is maintained. The City cannot close a road to deprive an owner of the only means of access, unless another is available. In addition, Humber Bridge Trail and the bridge are included in the City's Pedestrian and Bicycle Master Plan as a linkage to a future pedestrian hiking trail(s) along the Humber River.

A Class Environmental Assessment study to identify options and to recommend a solution is nearing completion

As the bridge is greater than 40 years of age, the City was required to undertake a Schedule "B" Class Environmental Assessment to identify an appropriate solution to address the structural and safety concerns, as well as access issues, associated with this bridge crossing the Humber River. This process includes developing alternative remedial solutions, evaluation of alternatives against a set of criteria, and selection of a preferred option. The City retained a consulting engineer, AECOM, to undertake this investigation.

The following are the three key areas of interest in relation to the bowstring arch bridge that factored heavily into this Class EA:

- Structural integrity
- Financial impact
- Heritage potential

A requirement of the Schedule "B" Class Environmental Assessment is that a review of the bridge's heritage potential must be undertaken. The heritage potential was assessed in accordance to the *Ontario Heritage Act* Regulation 9/06. The Act identifies criteria to be used in determining the cultural heritage value or interest of built heritage resources and cultural heritage landscapes. The set of criteria are grouped into the categories of Design/Physical Value, Historical/Associative Value and Contextual Value.

This bridge is not protected under the Ontario Heritage Act, therefore, there is no obligation for the City to preserve it. However, the bridge does have heritage significance which was reflected when evaluating the alternatives.

Tradeoffs with respect to these three key areas were addressed in order to select a preferred option for the bridge.

The following alternatives were investigated for the bridge:

1. **Doing nothing puts the structural integrity of the bridge at risk and does not fulfill the City's obligation of providing access to 5789 Humber Bridge Trail**

   This alternative would allow the bridge to continue to deteriorate with minimal maintenance other than emergency repairs.

   As the bridge deteriorates over time, the City would have to decommission the bridge when it is determined that it is no longer able to accommodate any vehicular access. This would involve demolishing or closing the bridge without replacing it. Decommissioning and removing the bridge would cost the City approximately $284,000. However, access to 5789 Humber Bridge Trail would be eliminated as it is not technically and economically feasible to provide another access without crossing the Humber River. The potential for the alternative has been explored, and was found to be cost prohibitive, exceeding the cost of constructing a new bridge at this time.

   Since this option does not immediately improve the safety of the bridge, and does not ensure that access will be maintained at 5789 Humber Bridge Trail, this option was deemed not feasible.

2. **Decommissioning the bridge and constructing a new bowstring arch bridge would cost the City approximately $1,700,000**

   This option considers construction of a new bowstring arch bridge. The costs associated with this option include retaining working easements, property acquisition, decommissioning of the existing bridge and construction of the new bridge. This option does improve the bridge's integrity and ensures that access will be maintained for 5789 Humber Bridge Trail. However, the cost is higher than other alternatives and it does not preserve its heritage potential. It also has increased potential for environmental impacts, and is therefore deemed not feasible.

3. **Decommissioning the bridge and constructing a new "modern" bridge type would cost the City approximately $1,350,000 and causes the loss of the bridge's heritage value**

   This option considers construction of a precast concrete box girder bridge and a structural steel bridge, both typical modern bridge types. The costs associated with this option include retaining working easements, property acquisition, decommissioning of the existing bridge and construction of the new bridge. This option does improve the bridge's integrity and ensures that access will be maintained for 5789 Humber Bridge Trail. However, the cost is higher than other alternatives and it does not preserve its heritage potential. It also has increased potential for environmental impacts, and is therefore deemed not feasible.

4. **Rehabilitating the bridge is feasible and will cost the City approximately $800,000**

   The City's engineering consultant thoroughly investigated the existing bridge, and determined that rehabilitation is possible, which will improve the structural integrity of the bridge, while preserving its heritage value. Rehabilitation of the bridge is the most cost effective alternative with the lowest environmental impact. In addition, it is the only option that successfully addresses the key areas of interest considered in the Class EA, including the maintenance of access to 5879 Humber Bridge Trail.

A summary of the evaluation of each alternative solution according to all three key areas of interest in included in the Draft Executive Summary of the Environmental Assessment Report, which is attached to this report.

The Recommended Alternative

The recommended alternative contained within the DRAFT Environmental Study Report for the Humber Bridge Trail Bridge is to fully rehabilitate it. This is the most cost effective option, while improving the bridges safety and ensuring that access is maintained to 5789 Humber Bridge Trail. In addition, this is the only option that preserves the heritage potential, improves the structural integrity and minimizes impacts on the surrounding environment.

Relationship to Vaughan Vision 2020/Strategic Plan

In consideration of the strategic priorities related to Vaughan Vision 2020, the recommendations of the report will assist in enhancing and maintaining community safety, health and wellbeing, by ensuring that an appropriate level of service for bridge conditions are maintained for the citizens of Vaughan.

Regional Implications

None.

Conclusion

The DRAFT Environmental Study Report has been completed. The recommended alternative contained within the report is to fully rehabilitate the bridge.

Staff recommends that the DRAFT Environmental Study Report's Executive Summary be approved in principle, in order for the Notice of Study Completion to be publicly issued, allowing the process of finalizing the report to begin.

Attachments

1. Location Map
2. Draft Executive Summary – AECOM Canada

Report prepared by:

Colin Cassar, C.E.T., Senior Engineering Assistant, ext. 8756
Vince Musacchio, P. Eng., PMP, Manager of Capital Planning and Infrastructure, ext. 8311

Respectfully submitted,

Paul Jankowski, P. Eng.
Commissioner of Engineering and Public Works

Jack Graziosi, P. Eng.
Director of Engineering Services

CC:mc

ATTACHMENT No. 1

BOWSTRING ARCH BRIDGE ON HUMBER BRIDGE TRAIL
CLASS ENVIRONMENTAL ASSESSMENT STUDY
NOTICE OF STUDY COMPLETION

LEGEND

SUBJECT BRIDGE

LOCATION: Part of Lots 20 & 21, Concession 8

N

Note: Aerial photography acquired in spring, 2011

NOT TO SCALE

LOCATION: P:\Common\ENG\ATTACHMENTS\ENGINEERING_SERVICES\ATTACHMENTS\HUMBER_RIVER_LOAD_RESTRICTIONS

CITY OF VAUGHAN - ENGINEERING SERVICES DEPARTMENT

DRAFTSPERSON: B.R

ATTACHMENT NO. 2

Draft Executive Summary
Humber Bridge Trail Bowstring Arch Bridge
Class Environmental Assessment Study

AECOM
300 – 300 Town Centre Boulevard
Markham, ON, Canada L3R 5Z6
www.aecom.com

905 477 8400 tel
905 477 1456 fax

Humber Bridge Trail Bowstring Arch Bridge Class EA
Draft Executive Summary

Project Background

The City of Vaughan (the City) recently carried out a Schedule "B" Class Environmental Assessment (EA) to identify an appropriate solution to address the structural and safety concerns, as well as access issues, associated with this concrete bowstring arch bridge crossing the Humber River on Humber Bridge Trail (See **Figure 1** attached). The bridge on Humber Bridge Trail, east of Highway 27, provides vehicular access to one residential property on the east bank of the Humber River along this road. The City retained AECOM to investigate and propose alternatives to improve the structural integrity of the bridge, as well as to identify a preferred solution for its rehabilitation or replacement.

Alternative Solutions Considered

As part of the Class EA process, several potential alternative solutions were considered for the bridge site, namely:

- Do Nothing – This is used in EAs as the base case to measure all other alternatives against. This option can include the posting of prohibition signs, or transfer of bridge ownership to another party, such as the TRCA. This option could also include buying the property from the homeowner on the east bank of the river (Municipal address # 5789), thus eliminating the need to keep the bridge in service.
- Full rehabilitation, including deck replacement, new handrails and repair/reinforcement of bridge components.
- Removal of the existing bridge and replacement with a new concrete bowstring arch bridge.
- Removal of the existing bridge and replacement with a typical modern design such as precast concrete or structural steel girders.
- Removal of the existing bridge. This would include construction of a new access road from the east side of the Humber River to provide access to the resident on the east bank.

The potential for ownership transfer to TRCA was explored but not included in the comparative evaluation. If this alternative was deemed to be viable and an agreement was put in place between the City and TRCA, the remainder of the Class EA process would not be required as TRCA would be the proponent of the bridge at that time. After internal discussions between the City and TRCA, it was determined that the City should proceed with the Class EA.

An evaluation of these alternatives can be found in **Table 1** (attached).

The abovementioned replacement alternative is based on the MTO (Ministry of Transportation of Ontario) Guidelines for Design of Bridges on Low Volume Roads with Annual Average Daily Traffic (AADT) of less than 200 vehicles per day and an operating speed of less than 70 kilometres per hour. This provides a required bridge deck width of 4.0 metres between barriers. If the bridge is widened to a full two lane section, under the assumption that it would no longer be classified as a Low Volume Road, the width would be increased to approximately 10.0 metres between curbs. The replacement alternatives are based on an increased span to provide construction of the new abutments beyond the limits of the river as is typically required for environmental permits. The estimated costs for bridge removal do not include property acquisition or the construction of alternative access roads.

Key Areas of Interest

There are three key areas of interest in relation to the bowstring arch bridge that factor heavily into the comparative evaluation of this EA:

1) Heritage potential;
2) Structural integrity; and,
3) Financial impact.

Tradeoffs with respect to these three key areas were included in the evaluation in order to select a preferred option for the bridge.

1 – Heritage Potential

Built in 1918, and having not previously undergone any major rehabilitation or repair work, the Humber Bridge Trail bridge can be considered an intact example of a concrete bowstring arch bridge commonly constructed across Ontario in the early 20th Century. Results from the heritage assessment carried out by Archaeological Services Inc. (ASI) confirmed that the Humber Bridge Trail bridge retains significant heritage potential, scoring 70 out of 100 on the Ontario Heritage Bridge Program evaluation. Given its age and the lack of any significant restoration in its past, the bowstring arch bridge is in an advanced state of disrepair, compromising its structural integrity, and in turn, the wellbeing of bridge users. This project provides an opportunity to both preserve the heritage features of the bowstring arch bridge as well as improve its structural integrity and the connection along Humber Bridge Trail; however, the cost of achieving these goals must be factored in as well.

2 – Structural Integrity

The Humber Bridge Trail Bridge was constructed in 1918 and is a 19.5 metre span concrete bowstring arch bridge providing a roadway width of 3.9 metres (i.e. one lane/car-width). Overall the bridge is in poor condition with a Bridge Condition Index (BCI) of 49.0 (a BCI of below 60 is considered poor based on the MTO methodology). The bridge deck, vertical arch hangers, bottom arch chord and handrails are extensively deteriorated. The top chord of the arch, transverse floor beams, abutments and wingwalls are in somewhat better condition, but have also experienced decay. The bridge has a 5 tonne load limit, which would support most vehicles, but not larger emergency vehicles. Due to the advance state of disrepair, there is a significant risk to users of this bridge, particularly in relation to the bridge's damaged and in some cases, obsolete guiderail. Further, portions of the bridge are showing a significant amount of spalling, where the concrete essentially breaks off in small pieces.

3 – Financial Impact

The estimates for the financial impact of the alternatives revealed that the rehabilitation option has similar costs to the remove and replace options. The estimates for each alternative are specified in **Table 1**. It should be noted that the "Do Nothing Option," while not incurring any immediate costs, does expose the City to the risk of high liability costs, should a personal injury or death occur in the event of an accident. Should the bridge ultimately collapse in the future, even without an injury, the cost of environmental remediation, emergency repair or removal, and legal claims for compensation would be significant.

Comparative Evaluation Results

In considering each of the key 'Areas of Consideration' (Technical, Natural Environment, Social Environment, Cultural Environment, and Financial) and weighing the potential tradeoffs, ***Full Rehabilitation of the Bridge*** was selected as the recommend solution for both the Humber Bridge Trail bridge. Implementing this solution was determined to be the only means of preserving the

heritage aspect of the bridge, as well as improving its structural integrity and minimizing impacts on the surrounding environment, thereby addressing the objectives for the Class EA study.

This recommended solution is the most cost effective solution for the City to implement which successfully addresses the problem/opportunity statement.

Public and Stakeholder Interest

Consultation with the public and government review agencies was carried out throughout the Class EA process in order to inform stakeholders of the project details and provide all interested parties an opportunity to contribute their input or comments related to the undertaking. A Notice of Commencement was published during the week of September 1, 2010 and notices were subsequently delivered to relevant stakeholders, government agencies, and residents in the vicinity of the bridge.

Additional consultation was undertaken through a Public Information Centre (PIC), which was advertised in *Vaughan Weekly* and through direct mailing. The purpose of the PIC was to present the existing environmental conditions in and around the bridge, provide the results of the comparative evaluation of the alternative solutions, and present the recommended alternative solution for the bridge.

The event was held in the Basement Meeting Room of the Kleinburg Public Library on July 21, 2011 from 6 p.m. to 9 p.m. The first hour of the PIC was an open house format, allowing participants to browse through display panels arranged around the room outlining the progress of the project to-date, and to ask questions of the Project Team members in attendance. A reference table including a binder with all of the existing condition reports, the comparative evaluation matrix, and relevant articles on other bowstring arch bridges was also set up in a corner of the room for perusal. A presentation was delivered at 7 p.m. providing a more detailed summary of the project, including the rationale; problem/opportunity statement; outline of the existing conditions; the comparative evaluation process; and the recommended alternative solution. Following the presentation, attendees were given the opportunity to ask questions.

A total of 19 people attended the PIC, most of who stayed for the duration of the evening. All attendees were asked to sign-in and were given the option to have their names added to the project-specific contact list to be notified of any project news. Each participant was given a comment sheet and encouraged to provide their comments on the event, the EA process, and recommended alternative solution.

Given its heritage potential, as well as its significance in regards to the residence on the east bank of the Humber River on Humber Bridge Trail, this EA has been found to be of considerable importance to certain agencies and members of the public. The project team has met with the TRCA to discuss this bridge and found the preference of TRCA to be the rehabilitation the bowstring arch bridge in a manner sympathetic to the original design. TRCA have completed their own inventory of heritage bridges that cross the Humber River, which has been designated as a Canadian Heritage River.

The recommended solution put forward at the PIC were well received by TRCA and the public attendees. Throughout the Class EA process, a number of comments have been received from the public regarding the Class EA.

Species At Risk Considerations

Field investigations determined that habitat compensation will be required to address construction-related disturbance (i.e., plantings to compensate for any disturbed substrate and/or tree removal) at the bridge site. Endangered Butternut was found to occur in the study area, (although not recorded within 30 metres of the bridge) and will require Ontario Ministry of Natural Resources (MNR) involvement in order to address the *Endangered Species Act* (ESA). The occurrence of regionally rare flora species in the study area may trigger growing season inventories in order to obtain regulatory permits from TRCA. In addition, other standard legislation will apply, including authorizations under the *Fisheries Act*, *Migratory Bird Act*, other MNR approvals, and tree removal by-laws. It should be noted that these items, while increasing project costs and delays, are not deemed to be "show-stoppers" and are not insurmountable for the recommend solution to proceed.

Next Steps

A draft Environmental Screening Document (ESD) has been prepared for the undertaking, documenting the required steps in a Schedule B Class EA process. Once Council have endorsed the findings of the project, we will finalize the report and issue a Notice of Completion to review agencies and the public and post the ESD for a minimum period of 30 calendar days. During this time, the public and review agencies have the ability to submit a Part II Order under the EA Act. Given that consultation has occurred and the public and agencies are in favour of the recommended solution, we do not anticipate any Part II Orders for this project.

Following the end of the review period, if there are no outstanding Part II Order requests, the City of Vaughan may proceed to Phase 5 of the Class EA process to complete contract drawings and tender documents, obtain additional permits (i.e. MNR and TRCA) and then move on to construction.

FIGURE 1

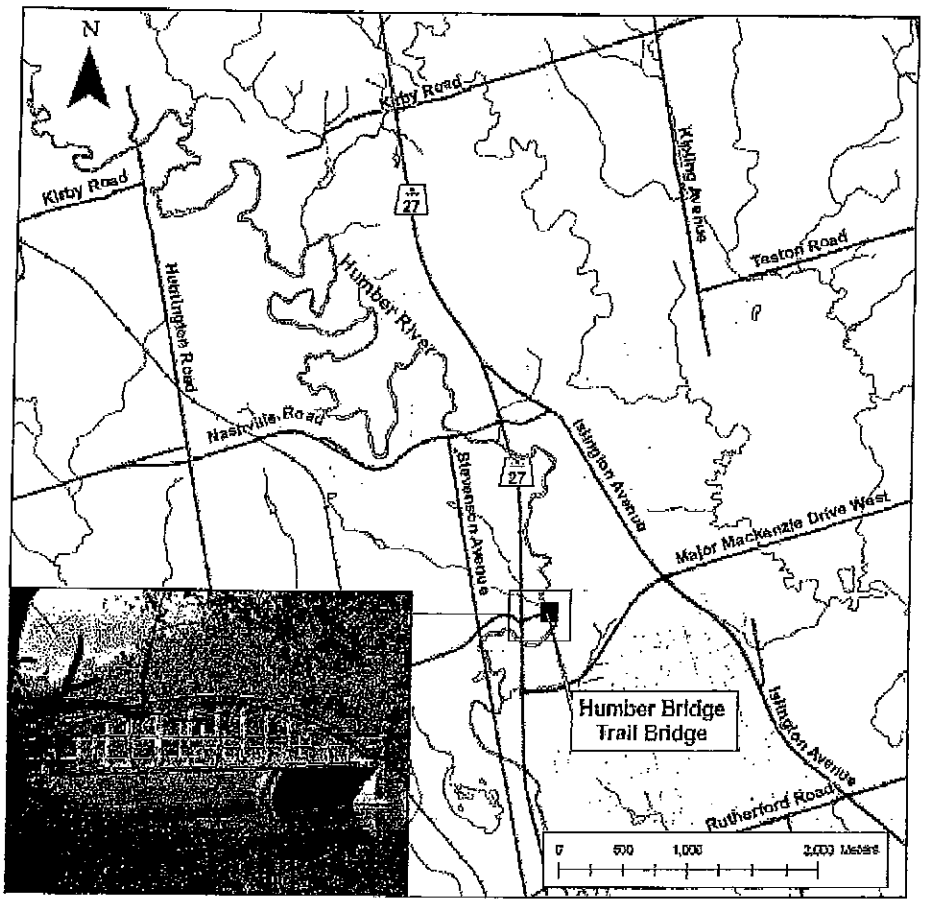
N
Kirby Road
Kirby Road
Huntington Road
Humber River
Nashville Road
27
Kipling Avenue
Teston Road
Islington Avenue
Major Mackenzie Drive West
Stevenson Avenue
Humber Bridge
Trail Bridge
Islington Avenue
Rutherford Road
0
500
1,000
2,000 Meters

Table 1 - Comparative Evaluation Summary of Alternatives for Replacement of the Humber Bridge Trail Bowstring Arch Bridge Class EA

Areas of Consideration/ Criteria	Alternative No. 1 Do Nothing	Alternative No. 2 Rehabilitate the Bridge	Alternative No. 3 Remove Existing Bridge and Build a New Concrete Bowstring Arch Bridge	Alternative No. 4 Remove Existing Bridge and Build a New Precast Concrete Box Girder Bridge	Alternative No. 5 Remove Existing Bridge and Build a New Structural Steel Girder Bridge	Alternative No. 6 Remove Bridge and Provide Alternative Access Road to House #8748
Description of Alternative	Bridge to left as is. Note: Transferring the bridge to TRCA/Private ownership, or building on the property owner at house #8748 are variations of this alternative, but their implications are not explored in this analysis.	The existing bridge structure on Humber Bridge Trail would be maintained, while reinforcing and/or replacing the deteriorating sections to improve the overall structural integrity of the bridge.	Complete removal of the existing bridge structure on Humber Bridge Trail and construction of a new 2-lane concrete bowstring arch bridge in the same vicinity.	Complete removal of the existing bridge structure on Humber Bridge Trail and construction of a new 2-lane precast concrete box girder bridge in the same vicinity.	Complete removal of the existing bridge structure on Humber Bridge Trail and construction of a new 2-lane structural steel girder bridge in the same vicinity.	Removal of the existing Humber Bridge Trail Bridge and construction of an alternative access road to Padre Pio Gardens to the east to service house #8748.
1. Design						
1.1 Potential to improve safety for bridge users.	The 'Do Nothing' alternative does not improve safety for bridge users. NONE	High potential for improvement to the safety of bridge users due to the enhanced structural integrity of the bridge. HIGH (POSITIVE)	High potential for improvement to the safety of bridge users due to the construction of the new bridge and the removal of the existing structure. HIGH (POSITIVE)	High potential for improvement to the safety of bridge users due to the construction of the new bridge and the removal of the existing structure. HIGH (POSITIVE)	High potential for improvement to the safety of bridge users due to the construction of the new bridge and the removal of the existing structure. HIGH (POSITIVE)	High potential for improvement to the safety of bridge users due to the construction of a new access route and the removal of the existing bridge. HIGH (POSITIVE)
1.2 Constructability of proposed infrastructure.	No infrastructure is required for the 'Do Nothing' alternative. NONE	Implementation will be difficult as rehabilitation will require the employment of unconventional construction methods. LOW/MODERATE CONSTRUCTABILITY	Implementation will be easier as conventional construction methods will be employed. HIGH CONSTRUCTABILITY	Implementation will be easier as conventional construction methods will be employed. HIGH CONSTRUCTABILITY	Implementation will be easier as conventional construction methods will be employed. HIGH CONSTRUCTABILITY	Implementation will be easier as conventional construction methods will be employed. HIGH CONSTRUCTABILITY
1.3 Potential for future maintenance requirements.	High potential for future maintenance requirements due to the continued deterioration of the bridge. HIGH	Moderate potential for future maintenance requirements for a standard/typical bridge structure. MODERATE	Moderate potential for future maintenance requirements for a standard/typical bridge structure. MODERATE	Moderate potential for future maintenance requirements for a standard/typical bridge structure. MODERATE	Moderate potential for future maintenance requirements for a standard/typical bridge structure. MODERATE	Moderate potential for future maintenance requirements for a standard/typical municipal rural roadway. MODERATE
2. Natural Environment						
2.1 Potential for short-term construction related effects on the aquatic environment.	No potential for short-term construction related effects on the aquatic environment. NONE	High potential for short-term disturbance to riparian vegetation, as well as sediment erosion and transport to the Humber River during construction. In-water works are likely required to rehabilitate the existing bridge footings, posing a risk to fish associated with harmful alteration, disruption or destruction of fish habitat. However, the implementation of Best Management Practices, in addition to compensation and restoration of disturbed areas, will serve to mitigate and minimize the overall effect. HIGH	High potential for short-term disturbance to riparian vegetation, as well as sediment erosion and transport to the Humber River during bridge decommissioning and construction. In-water works are required to remove existing bridge footings, and may be required to construct new bridge footings, posing a risk to fish associated with harmful alteration, disruption or destruction of fish habitat. However, the implementation of Best Management Practices, in addition to compensation and restoration of disturbed areas, will serve to mitigate and minimize the overall effect. HIGH	High potential for short-term disturbance to riparian vegetation, as well as sediment erosion and transport to the Humber River during bridge decommissioning and construction. In-water works are required to remove existing bridge footings, and may be required to construct new bridge footings, posing a risk to fish associated with harmful alteration, disruption or destruction of fish habitat. However, the implementation of Best Management Practices, in addition to compensation and restoration of disturbed areas, will serve to mitigate and minimize the overall effect. HIGH	High potential for short-term disturbance to riparian vegetation, as well as sediment erosion and transport to the Humber River during bridge decommissioning and construction. In-water works are required to remove existing bridge footings, and may be required to construct new bridge footings, posing a risk to fish associated with harmful alteration, disruption or destruction of fish habitat. However, the implementation of Best Management Practices, in addition to compensation and restoration of disturbed areas, will serve to mitigate and minimize the overall effect. HIGH	High potential for short-term disturbance to riparian vegetation, as well as sediment erosion and transport to the Humber River during bridge decommissioning. In-water works are required to remove existing bridge footings, posing a risk to fish associated with harmful alteration, disruption or destruction of fish habitat. However, the implementation of Best Management Practices, in addition to compensation and restoration of disturbed areas, will serve to mitigate and minimize the overall effect. HIGH
2.2 Potential for short-term construction related effects on the terrestrial environment.	No potential for short-term construction related effects on the terrestrial environment. NONE	Removal of terrestrial habitat required within the construction envelope and along the access route, including some mature trees and potential removal of rare species and SAR habitat. Design should avoid sensitive habitat features to the extent possible. HIGH	Removal of terrestrial habitat required within the construction envelope and along the access route, including some mature trees and potential removal of rare species and SAR habitat. Design should avoid sensitive habitat features to the extent possible. HIGH	Removal of terrestrial habitat required within the construction envelope and along the access route, including some mature trees and potential removal of rare species and SAR habitat. Design should avoid sensitive habitat features to the extent possible. HIGH	Removal of terrestrial habitat required within the construction envelope and along the access route, including some mature trees and potential removal of rare species and SAR habitat. Design should avoid sensitive habitat features to the extent possible. HIGH	Removal of terrestrial habitat required within the construction envelope (to decommission the existing bridge) and alternative access route, including intact forest, mature trees and potential removal of rare species and SAR habitat. Design should avoid sensitive habitat features to the extent possible. HIGH

Table 1 - Comparative Evaluation Summary of Alternative Routes for the Humber Bridge Trail Bowstring Arch Bridge Class EA

Areas of Consideration/ Criteria	Alternative No. 1 Do Nothing	Alternative No. 2 Rehabilitate the Bridge	Alternative No. 3 Remove Existing Bridge and Build a New Concrete Bowstring Arch Bridge	Alternative No. 4 Remove Existing Bridge and Build a New Precast Concrete Box Girder Bridge	Alternative No. 5 Remove Existing Bridge and Build a New Structural Steel Girder Bridge	Alternative No. 6 Remove Bridge and Provide Alternative Access Road to house #378
2.3 Potential for short-term construction related effects on baseflow and/or groundwater.	No potential short-term effects on baseflow and/or groundwater resources. NONE	Low potential for short-term effects on baseflow and groundwater as the rehabilitated structure will remain within the existing bridge footprint. LOW	Moderate potential for short-term effects on baseflow and groundwater due to the potential need for construction dewatering. Design should minimize work below the water table. Water taken during construction dewatering should be returned to the watercourse quickly following temperature and clarity controls. MODERATE	Moderate potential for short-term effects on baseflow and groundwater due to the potential need for construction dewatering. Design should minimize work below the water table. Water taken during construction dewatering should be returned to the watercourse quickly following temperature and clarity controls. MODERATE	Moderate potential for short-term effects on baseflow and groundwater due to the potential need for construction dewatering. Design should minimize work below the water table. Water taken during construction dewatering should be returned to the watercourse quickly following temperature and clarity controls. MODERATE	Low potential for effects on baseflow and groundwater as the decommissioned structure will remain within the existing bridge footprint. MODERATE
2.4 Potential for long-term effects on the aquatic environment.	No potential long-term effects on the aquatic environment. NONE	Low potential for long-term effects on the aquatic environment as the rehabilitated structure will remain within the existing bridge footprint and post-construction restoration methods are available to rehabilitate riparian and in-stream habitats following temporary disturbance. LOW	High potential for long-term effects as there is a possibility of permanent removal of fish habitat if the new bridge occupies a different footprint than the existing bridge within the 2 year storm elevation. Design should minimize or maintain a bridge footprint consistent with the existing structure to the extent possible. It would be optimal to clear span the watercourse, resulting in a net gain in fish habitat. HIGH	High potential for long-term effects as there is a possibility of permanent removal of fish habitat if the new bridge occupies a different footprint than the existing bridge within the 2 year storm elevation. Design should minimize or maintain a bridge footprint consistent with the existing structure to the extent possible. It would be optimal to clear span the watercourse, resulting in a net gain in fish habitat. HIGH	High potential for long-term effects as there is a possibility of permanent removal of fish habitat if the new bridge occupies a different footprint than the existing bridge within the 2 year storm elevation. Design should minimize or maintain a bridge footprint consistent with the existing structure to the extent possible. It would be optimal to clear span the watercourse, resulting in a net gain in fish habitat. HIGH	Low potential for long-term effects on the aquatic environment as post-construction restoration methods are available to rehabilitate riparian and in-stream habitats following temporary disturbance. LOW
2.5 Potential for long-term effects on the terrestrial environment.	No potential long-term effects on the terrestrial environment. NONE	Low potential for long-term effects on the terrestrial environment as post-construction restoration methods are available to compensate for temporary loss of habitat. LOW	Low potential for long-term effects on the terrestrial environment as post-construction restoration methods are available to compensate for temporary loss of habitat. LOW	Low potential for long-term effects on the terrestrial environment as post-construction restoration methods are available to compensate for temporary loss of habitat. LOW	Low potential for long-term effects on the terrestrial environment as post-construction restoration methods are available to compensate for temporary loss of habitat. LOW	High potential for long-term effects on the terrestrial environment, including permanent removal of intact forest habitat to accommodate a new residential access road. HIGH
2.6 Potential for long-term effects on baseflow and/or groundwater resources.	No potential long-term effects on baseflow and/or groundwater resources. NONE	Low potential for long-term effects on baseflow and groundwater as the rehabilitated structure will remain within the existing bridge footprint. LOW	Low potential for long-term effects on baseflow and groundwater as active water taking will end following the construction of a new bridge. LOW	Low potential for long-term effects on baseflow and groundwater as active water taking will end following the construction of a new bridge. LOW	Low potential for long-term effects on baseflow and groundwater as active water taking will end following the construction of a new bridge. LOW	Low potential for long-term effects on baseflow and groundwater as the decommissioned structure will remain within the existing bridge footprint. LOW
2.7 Social Environment						
3.1 Potential for disturbing existing residences, community, and recreation facilities through temporary effects (i.e., construction noise, dust, property access disruption, etc).	No potential to disturb existing residences, community, and recreation facilities through temporary effects. NONE	Moderate potential for temporary disturbance due to bridge access restrictions during construction. MODERATE	Moderate potential for temporary disturbance due to bridge access restrictions during decommissioning of the existing bridge and construction of the new bridge. MODERATE	Moderate potential for temporary disturbance due to bridge access restrictions during decommissioning of the existing bridge and construction of the new bridge. MODERATE	Moderate potential for temporary disturbance due to bridge access restrictions during decommissioning of the existing bridge and construction of the new bridge. MODERATE	Moderate potential for disturbance due to bridge access restrictions during decommissioning and the construction of the new access road. MODERATE
3.2 Potential to maintain and improve access to the resident on the eastern bank of the Humber River along Humber Bridge Trail.	Moderate potential to maintain access to the resident on the eastern bank of the Humber River along Humber Bridge Trail. No potential to improve access to resident on the eastern bank of the Humber River along Humber Bridge Trail. MODERATE/NONE	High potential to maintain and improve access to the resident on the eastern bank of the Humber River along Humber Bridge Trail. HIGH (POSITIVE EFFECT)	High potential to maintain and improve access to the resident on the eastern bank of the Humber River along Humber Bridge Trail through the construction of the new bridge. HIGH (POSITIVE EFFECT)	High potential to maintain and improve access to the resident on the eastern bank of the Humber River along Humber Bridge Trail through the construction of the new bridge. HIGH (POSITIVE EFFECT)	High potential to maintain and improve access to the resident on the eastern bank of the Humber River along Humber Bridge Trail through the construction of the new bridge. HIGH (POSITIVE EFFECT)	High potential to maintain and improve access to the resident on the eastern bank of the Humber River along Humber Bridge Trail through the construction of the new access route. HIGH (POSITIVE EFFECT)

Table 3 - Comparative Evaluation: Summary of Alternative Solutions for Humber Bridge Trail Bowstring Arch Bridge

Areas of Consideration/ Criteria	Alternative No. 1 Do Nothing	Alternative No. 2 Rehabilitate the Bridge	Alternative No. 3 Remove Existing Bridge and Build a New Concrete Bowstring Arch Bridge	Alternative No. 4 Remove Existing Bridge and Build a New Precast Concrete Box Girder Bridge	Alternative No. 5 Remove Existing Bridge and Build a New Structural Steel Girder Bridge	Alternative No. 6 Remove Bridge and Provide Alternative Access Road to house #5781
3.3 Potential for requiring the acquisition of private property.	No private property required. NONE	Moderate potential for requiring the acquisition of private property. MODERATE	High potential for requiring private property for the construction of the new bridge. HIGH	High potential for requiring private property for the construction of the new bridge. HIGH	High potential for requiring private property for the construction of the new bridge. HIGH	High potential for requiring private property for the construction of the new access route. HIGH
3.4 Degree of compatibility with Regional and Local Official Plans (OP), Pedestrian and Bicycle Plans, and other relevant policies and plans.	Through the conservation of a cultural heritage resource, as well being part of the active transportation system for pedestrians and cyclists, the 'Do Nothing' alternative conforms with the *York Region Official Plan*. The 'Do Nothing' alternative satisfies the *Vaughan Pedestrian and Bicycle Master Plan* by maintaining the connection along Humber Bridge Trail, as this road has been designated a Neighbourhood Signed Bike Route. HIGH COMPATABILITY	Through the conservation of a cultural heritage resource, as well being part of the active transportation system for pedestrians and cyclists, the rehabilitation of the bridge conforms with the policies of the *York Region Official Plan*. Rehabilitation of the bridge conforms with the policies of the *Vaughan Pedestrian and Bicycle Master Plan* by maintaining the connection along Humber Bridge Trail, as this road has been designated a Neighbourhood Signed Bike Route. HIGH COMPATABILITY	As part of the active transportation system for pedestrians and cyclists, the replacement of the bridge conforms with the policies of the *York Region Official Plan*. The decommissioning of the existing bridge does not, however, preserve a cultural heritage resource, as per the *Official Plan*. Replacement of the bridge satisfies the *Vaughan Pedestrian and Bicycle Master Plan* by maintaining the connection along Humber Bridge Trail, as this road has been designated a Neighbourhood Signed Bike Route. HIGH COMPATABILITY	As part of the active transportation system for pedestrians and cyclists, the replacement of the bridge conforms with the policies of the *York Region Official Plan*. The decommissioning of the existing bridge does not, however, preserve a cultural heritage resource, as per the *Official Plan*. Replacement of the bridge satisfies the *Vaughan Pedestrian and Bicycle Master Plan* by maintaining the connection along Humber Bridge Trail, as this road has been designated a Neighbourhood Signed Bike Route. HIGH COMPATABILITY	As part of the active transportation system for pedestrians and cyclists, the replacement of the bridge conforms with the policies of the *York Region Official Plan*. The decommissioning of the existing bridge does not, however, preserve a cultural heritage resource, as per the *Official Plan*. Replacement of the bridge satisfies the *Vaughan Pedestrian and Bicycle Master Plan* by maintaining the connection along Humber Bridge Trail, as this road has been designated a Neighbourhood Signed Bike Route. HIGH COMPATABILITY	The provision of an alternative access route does not preserve a cultural heritage resource, as per the *York Region Official Plan*. Elimination of the bridge, and therefore access across the Humber River along Humber Bridge Trail, does not support the active transportation system for pedestrians and cyclists and thus does not conform with the *Official Plan* policy. The provision of an alternative access route does not conform with the policies of the *Vaughan Pedestrian and Bicycle Master Plan* as it does not maintain the connection along the Humber Bridge Trail, designated as a Neighbourhood Signed Bike Route. LOW COMPATABILITY
3.5 Potential for creating a visually appealing structure.	Low potential for creating a visually appealing structure, as the existing bridge retains some visual appeal. LOW	High potential for creating a visually appealing structure, by applying rehabilitation techniques that are sympathetic to the design of the existing structure. HIGH (POSITIVE EFFECT)	Moderate potential for creating a visually appealing structure when constructing the new bridge. MODERATE	Moderate potential for creating a visually appealing structure when constructing the new bridge. MODERATE	Moderate potential for creating a visually appealing structure when construction the new bridge. MODERATE	No potential to create a visually appealing structure. NONE
4.0 Natural Environment						
4.1 Potential for effects on archaeological resources.	No effects on archaeological resources.	Low potential for effects on archaeological resources as rehabilitation will not require work beyond the existing bridge footprint. LOW	Low potential for effects on archaeological resources as decommissioning and new bridge will not require work beyond the existing bridge footprint. Moderate potential for effects on archaeological resources for construction staging areas. MODERATE	Low potential for effects on archaeological resources as decommissioning and new bridge will not require work beyond the existing bridge footprint. Moderate potential for effects on archaeological resources for construction staging areas. MODERATE	Low potential for effects on archaeological resources as decommissioning and new bridge will not require work beyond the existing bridge footprint. Moderate potential for effects on archaeological resources for construction staging areas. MODERATE	High potential for effects on archaeological resources as a new access route will require area beyond the existing bridge footprint. High potential for effects on archaeological resources for construction staging areas. HIGH
4.2 Potential for effects on built heritage resources.	No effects on built heritage resources. NONE	Despite not being included on the City of Vaughan's Listing of Structures of Heritage Significance, the cultural heritage study concluded that Humber Bridge Trail Bridge retains high heritage significance. Thus, there is moderate potential for effects on built heritage resources due to the rehabilitation of the existing bridge. However, because the design would be sympathetic to the original, the effects would be minimized. LOW	Despite not being included on the City of Vaughan's Listing of Structures of Heritage Significance, the cultural heritage study concluded that Humber Bridge Trail Bridge retains high heritage significance. Thus, there is high potential for effects on built heritage resources due to the removal of the existing bridge. However, because the design would be sympathetic to the original, the effects would be minimized. MODERATE	Despite not being included on the City of Vaughan's Listing of Structures of Heritage Significance, the cultural heritage study concluded that Humber Bridge Trail Bridge retains high heritage significance. Thus, there is high potential for effects on built heritage resources due to the removal of the existing bridge. HIGH	Despite not being included on the City of Vaughan's Listing of Structures of Heritage Significance, the cultural heritage study concluded that Humber Bridge Trail Bridge retains high heritage significance. Thus, there is high potential for effects on built heritage resources due to the removal of the existing bridge. HIGH	Despite not being included on the City of Vaughan's Listing of Structures of Heritage Significance, the cultural heritage study concluded that Humber Bridge Trail Bridge retains high heritage significance. Thus, there is high potential for effects on built heritage resources due to the removal of the existing bridge. HIGH

Table 1 - Comparative Evaluation Summary of Alternative Solutions for Humber Bridge Trail Bowstring Arch Bridge Class EA

Areas of Consideration/ Criteria	Alternative No. 1 Do Nothing	Alternative No. 2 Rehabilitate the Bridge	Alternative No. 3 Remove Existing Bridge and Build a New Concrete Bowstring Arch Bridge	Alternative No. 4 Remove Existing Bridge and Build a New Precast Concrete Box Girder Bridge	Alternative No. 5 Remove Existing Bridge and Build a New Structural Steel Girder Bridge	Alternative No. 6 Remove Bridge and Provide Alternative Access Route to House #6745
ECONOMIC						
5.1 Potential cost for acquiring property.	No potential costs for property acquisition. NONE	Moderate cost associated with temporary working easements for construction during rehabilitation. MODERATE	Moderate cost associated with temporary working easements for the decommissioning of the existing bridge and construction of the new bridge. Moderate costs associated with property acquisition for the land upon which the new bridge will be constructed. MODERATE	Moderate cost associated with temporary working easements for the decommissioning of the existing bridge and construction of the new bridge. Moderate costs associated with property acquisition for the land upon which the new bridge will be constructed. MODERATE	Moderate cost associated with temporary working easements for the decommissioning of the existing bridge and construction of the new bridge. Moderate costs associated with property acquisition for the land upon which the new bridge will be constructed. MODERATE	High cost associated with temporary working easements for the decommissioning of the existing bridge and construction of a new access route. Moderate costs associated with property acquisition for the new access route. HIGH
5.2 Potential Capital costs to the City of Vaughan for implementation.	No potential Capital costs for implementation. NONE	Approximately $783,000. MODERATE COST	Approximately $1,880,000. HIGH COST	Approximately $1,745,000. HIGH COST	Approximately $1,280,000. HIGH COST	Approximately $264,000 for decommissioning and between $700,000 to $1,000,000 for new decommissioning. HIGH COST
5.3 Potential future maintenance costs.	Future maintenance costs would remain the same or potentially increase as the bridge continues to deteriorate. HIGH COST	Moderate annual maintenance costs for a standard/typical bridge structure. MODERATE COST	Moderate annual maintenance costs for a standard/typical bridge structure. MODERATE COST	Moderate annual maintenance costs for a standard/typical bridge structure. MODERATE COST	Moderate annual maintenance costs for a standard/typical bridge structure. MODERATE COST	Moderate annual maintenance costs for a standard/typical municipal roadway/bridge. MODERATE COST
Ranking of Alternative Solutions	Pros: • low immediate cost Cons: • Does not address public/opportunity statement • Conflicts with City's Pedestrian and Cycling Master Plan • Liability issues continue to exist. 6th	Pros: • preserves cultural heritage • improves safety • best protects environment • moderately high cost Cons: • provides only 1-lane vehicular access 1st	Pros: • preserves cultural heritage • improves safety • provides 2-lane bridge Cons: • highest cost 2nd	Pros: • improves safety • provides 2-lane bridge Cons: • high cost • loss of cultural heritage 4th	Pros: • improves safety • provides 2-lane bridge Cons: • high cost • loss of cultural heritage 3rd	Pros: • improves safety Cons: • loss of cultural heritage • loss of recreational use • high cost • high disruption to environment due to vegetation removal along new access route 5th

Note: Recommended Solution