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Sent: Monday, October 18, 2010 10:59 AM
To: Shoniker, Blair
Cc: colin.cassar@vaughan.ca; Duclos, Bert (MTC); gwilkins@trca.on.ca
Subject: Bowstring Arch Bridges, Municipal Class EA

**Projects: Bowstring Arch Bridges, Humber Bridge trail and McEwen Bridge, Schedule "B",
Municipal Class EA**
Location: City of Vaughan, Region of York

Blair Shoniker,

On October 13, 2010 the Ministry of Tourism and Culture (MTC) received your letter with respect to the Municipal Class Environmental Assessment for two bowstring arch bridges located in the City of Vaughan, and within the Humber River watershed.

As part of the Class Environmental Assessment process, the Ministry of Tourism and Culture has an interest in the conservation of cultural heritage resources including:

- o Archaeological resources;
- o Built heritage resources; and
- o Cultural heritage landscapes.

The Provincial Policy Statement, 2005 issued under the authority of the *Planning Act* defines "conserved" as "the identification, protection, use and/or management of cultural heritage and archaeological resources in such a way that their heritage values, attributes and integrity are retained. This may be addressed through a conservation plan or heritage impact assessment."

Archaeology:

As per our checklist for determining archaeological potential, a primary water source is located within both study areas, confirming the archaeological potential of the property. An archaeological assessment by a licensed consultant archaeologist of all lands that are part of this development proposal will be necessary for this project prior to any ground disturbance and/or site alterations. Once the assessment is complete, the licensed archaeologist will file an archaeological assessment report (3 copies) to the Ministry of Tourism and Culture for review by an Archaeology Review Officer. The ministry will review the report to ensure that the licensed archaeologist has met the terms and conditions of his or her licence, including ministry requirements for fieldwork and reporting.

Built Heritage and Cultural Heritage Landscapes:

Both bridges are located within the Humber River Watershed, which is designated as a Canadian Heritage River. Furthermore, the Ministry is aware that both bridges have been identified as having heritage interest by the heritage sub-committee of the Humber Watershed Alliance of the Toronto and Region Conservation Authority. Based on this information a heritage impact assessment report, which includes an evaluation of the cultural heritage value or interest of the bridges will be necessary for both projects. The Ministry recommends that several conservation options be considered when work is proposed for a heritage bridge, with conservation and retention *in situ* being the preferred alternative. These options, in descending order of preference, are as follows:

- a) Retention of existing bridge with no major modifications undertaken;
- b) Retention of existing bridge with sympathetic modifications;
- c) Retention of existing bridge with sympathetically designed structure in proximity;
- d) Retention of existing bridge no longer in use for vehicular purposes but adapted for pedestrian walkways, cycle paths, scenic viewing, etc.;

- e) Relocation of bridge to appropriate new site for continued use (see C) or adaptive re-use (see D);
- f) Retention of bridge as heritage monument for viewing purposes only;
- g) Salvage of elements/members of bridge for incorporation into new structure or for future conservation work or displays;

- h) Full recording and documentation of structure if it is to be demolished.

Options (g) and (h) should only be considered as a last resort.

The heritage impact assessment should be sent to the local municipality, its Municipal Heritage Committee, and the heritage sub-committee of the Humber Watershed Alliance for their review and information as part of the Environmental Assessment process.

Please do not hesitate to contact me if you have any questions.
Regards,
Paula

Paula Kulpa

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Our offices have moved!

Ministry of Tourism and Culture

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City of Vaughan

Cultural Heritage Existing Conditions Report for the Humber Bridge Trail Bowstring Arch Bridge

Project Number:

60160807

Date:

October, 2010

Cultural Heritage Evaluation Report - DRAFT

**Humber River (West Branch) Bridge, Structure No. 008601
Class Environmental Assessment for Bowstring Arch Bridges
on Humber River Trail and McEwen Bridge on Kirby Road
City of Vaughan, Ontario**



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October 2010



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Cultural Heritage Evaluation Report - DRAFT

Humber River (West Branch) Bridge, Structure No. 008601 Class Environmental Assessment for Bowstring Arch Bridges on Humber River Trail and McEwen Bridge on Kirby Road City of Vaughan, Ontario

EXECUTIVE SUMMARY

Archaeological Services Inc. was contracted by AECOM, Markham, to conduct a cultural heritage evaluation of the Humber River (West Branch) Bridge (Structure No. 008601) in order to establish the cultural heritage significance of the structure. This evaluation is being conducted as part of the Class Environmental Assessment for Bowstring Arch Bridges on Humber River Trail and McEwen Bridge on Kirby Road. The Humber River (West Branch) Bridge was built in 1918 to carry the Humber Bridge Trail (formerly Major Mackenzie Road) over the west branch of Humber River in the City of Vaughan, Ontario. The structure is a concrete bowstring arch bridge which is currently owned and maintained by the City of Vaughan.

Based on the results of archival research, an analysis of bridge design and construction in Ontario, a field review, application of the Ontario Heritage Bridge Program criteria for the evaluation of heritage bridges and consideration of evaluation criteria under *Ontario Heritage Act* Regulation 9/06, the Humber River (West Branch) Bridge was determined to retain high heritage value. The structure's significance revolves around its historic, contextual, and design-related values. Given that it achieved a score over the 60 point threshold, the Humber River (West Branch) Bridge is recommended for inclusion on the Ontario Heritage Bridge List.



**ARCHAEOLOGICAL SERVICES INC.
ENVIRONMENTAL ASSESSMENT DIVISION**

PROJECT PERSONNEL

<i>Senior Project Manager:</i>	Robert Pihl, MA, CAHP <i>Partner and Senior Archaeologist Manager, Environmental Assessment Division</i>
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<i>Project Manager:</i>	Lindsay Popert, MA, CAHP <i>Cultural Heritage Specialist</i>
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<i>Graphics Preparation:</i>	Annie Veilleux
<i>Report Reviewer:</i>	Rebecca Sciarra



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1.0 INTRODUCTION

Archaeological Services Inc. (ASI) was contracted by AECOM, Markham, to conduct a cultural heritage evaluation of the Humber River (West Branch) Bridge (Structure No. 008601) in order to establish the cultural heritage significance of the structure. This evaluation is being conducted as part of the Class Environmental Assessment for Bowstring Arch Bridges on Humber River Trail and McEwen Bridge on Kirby Road. The Humber River (West Branch) Bridge was built in 1918 to carry the Humber Bridge Trail (formerly Major Mackenzie Road) over the west branch of Humber River in the City of Vaughan, Ontario (Figure 1). The structure is a concrete bowstring arch bridge which is currently owned and maintained by the City of Vaughan. The Humber River (West Branch) Bridge is currently listed on the Vaughan Heritage Inventory, which is an inventory of resources of cultural heritage interest within the City of Vaughan. It is not listed on the Listing of Structures of Heritage Significance (LSHS) which serves as the City's Heritage Register, as described under Section 29 of the *Ontario Heritage Act*.¹ Further, it is not designated under Part IV or V of the *Ontario Heritage Act* and it is not listed on the Ontario Heritage Bridge List.

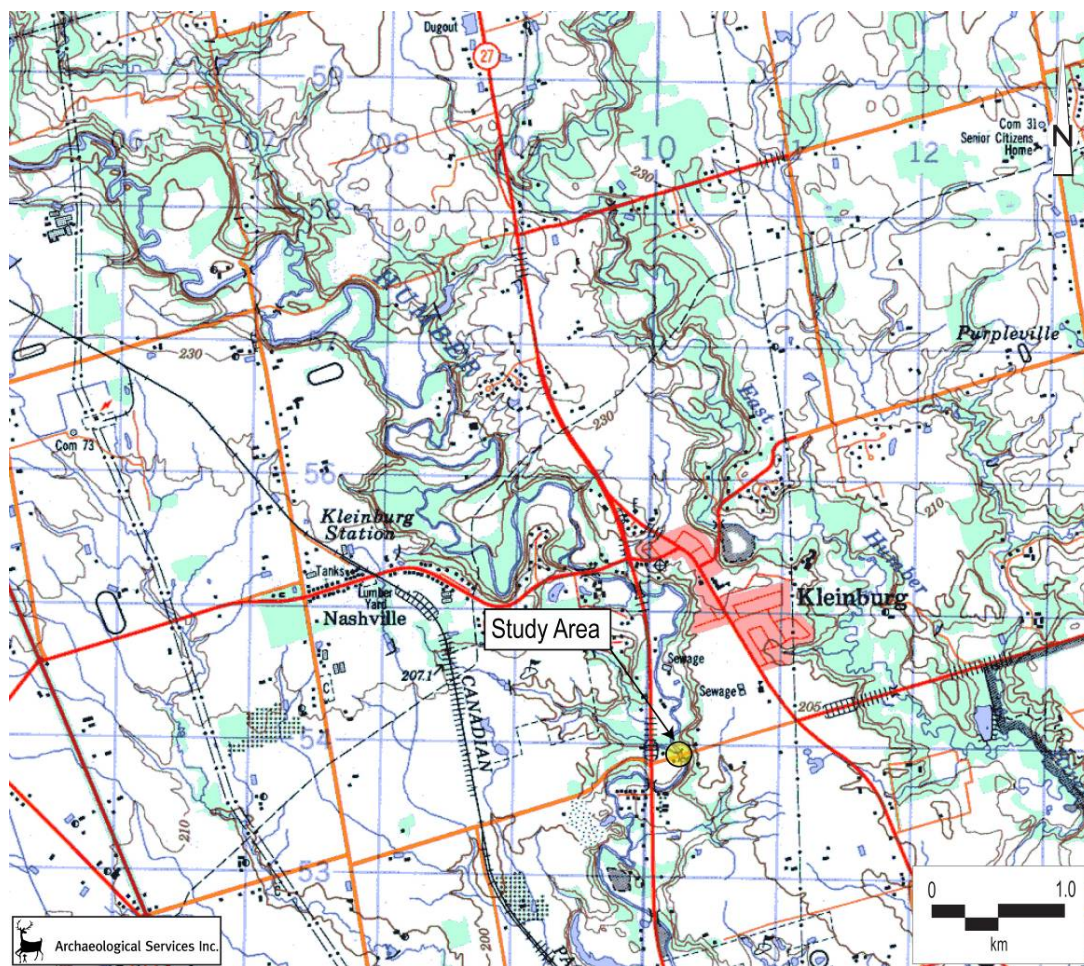


Figure 1: Location of the Humber River (West Branch) Bridge in the City of Vaughan, Ontario
Source: NTS Sheet Bolton 30 M/13

¹ Personal Communications, Lauren Archer (Cultural Heritage Co-ordinator, City of Vaughan), August 26 2010

The cultural heritage evaluation of bridges older than forty years is part of an approved planning and design process subject to Provincial and Federal Environmental Assessment (EA) requirements. The principal aims of this report are to:

- Describe the methodology that was employed and the legislative and policy context that guides heritage evaluations of bridges over forty years old (Section 2.0);
- Provide an historical overview of the design and construction of the bridge within the broader context of the surrounding townships and bridge construction generally (Section 3.0);
- Describe existing conditions and heritage integrity (Section 4.0);
- Evaluate the bridge within the *Ontario's Heritage Bridge Program* (Ministry of Transportation and Ministry of Culture and Communications [MTO & MCC] 1991) guidelines and under *Ontario Heritage Act* Regulation 9/06. Based on these evaluation criteria, draw conclusions about the heritage attributes of the structure (Section 5.0); and
- Ascertain sensitivity to change in the context of identified heritage attributes and recommend appropriate mitigation measures (Section 6.0).

The following documents relating to the Humber River (West Branch) Bridge were provided to ASI by AECOM:

- Summary Action Report – Structure 008601 (MTO Site No. 037-0119) Humber River (West Branch) Bridge;
- City of Vaughan Bridge Inventory;
- Region of York Bridge Inventory; and
- Humber River Heritage Bridge Inventory: Overview of the Humber River Heritage Bridge Inventory (Full inventory was not available at the time of this report).

2.0 POLICY FRAMEWORK

Pursuant to the *Environmental Assessment Act*, applicable infrastructure projects are subject to assessment so as to determine related impacts on above ground cultural heritage resources. Infrastructure projects have the potential to impact cultural heritage resources in a variety of ways. These include loss or displacement of resources through removal or demolition and the disruption of resources by introducing physical, visual, audible or atmospheric elements that are not in keeping with the resources and/or their setting.

When considering cultural heritage resources in the context of improvements to specified areas, a forty year old threshold is used as a guiding principle when identifying cultural heritage resources. While identification of a resource that is forty years old or older does not confer outright heritage significance, this threshold provides a means to collect information about resources that may retain heritage value. Similarly, if a resource is slightly younger than forty years old, this does not preclude the resource from retaining heritage value.

The analysis used throughout the cultural heritage evaluation process addresses cultural heritage resources under various pieces of legislation and their supporting guidelines. Under the *Environmental Assessment Act*, *environment* is defined in subsection 1(c) to include:

Cultural conditions that influence the life of man or a community;



as well as,

Any building, structure, machine or other device or thing made by man.

The Minister of Culture is charged under Section 2 of the *Ontario Heritage Act* with the responsibility to determine policies, priorities and programs for the conservation, protection and preservation of the heritage of Ontario and has published two guidelines to assist in assessing cultural heritage resources as part of an environmental assessment: *Guideline for Preparing the Cultural Heritage Resource Component of Environmental Assessments* (1992) and *Guidelines on the Man-Made Heritage Component of Environmental Assessments* (1980). Accordingly, both guidelines have been utilized in this assessment process.

The *Guidelines on the Man-Made Heritage Component of Environmental Assessments* states the following:

When speaking of man-made heritage we are concerned with the works of man and the effects of his activities in the environment rather than with movable human artifacts or those environments that are natural and completely undisturbed by man.

In addition, environment may be interpreted to include the combination and interrelationships of human artifacts with all other aspects of the physical environment as well as with the social, economic and cultural conditions that influence the life of the people and communities in Ontario. The *Guidelines on the Man-Made Heritage Component of Environmental Assessments* distinguish between two basic ways of visually experiencing this heritage in the environment, namely as *cultural landscapes* and as *cultural features*.

Within this document *cultural landscapes* are defined as follows:

The use and physical appearance of the land as we see it now is a result of man's activities over time in modifying pristine landscapes for his own purposes. A cultural landscape is perceived as a collection of individual man-made features into a whole. Urban cultural landscapes are sometimes given special names such as townscapes or streetscapes that describe various scales of perception from the general scene to the particular view. Cultural landscapes in the countryside are viewed in or adjacent to natural undisturbed landscapes, or waterscapes, and include such land-uses as agriculture, mining, forestry, recreation, and transportation. Like urban cultural landscapes, they too may be perceived at various scales: as a large area of homogenous character; or as an intermediate sized area of homogenous character or a collection of settings such as a group of farms; or as a discrete example of specific landscape character such as a single farm, or an individual village or hamlet.

A *cultural feature* is defined as the following:

...an individual part of a cultural landscape that may be focused upon as part of a broader scene, or viewed independently. The term refers to any man-made or modified object in or on the land or underwater such as buildings of various types, street furniture, engineering works, plantings and landscaping, archaeological sites, or a collection of such objects seen as a group because of close physical or social relationships.



The *Planning Act* and related *Provincial Policy Statement (PPS)* also make a number of provisions relating to heritage conservation. One of the general purposes of the *Planning Act* is to integrate matters of provincial interest into provincial and municipal planning decisions. In order to inform all those involved in planning activities of the scope of these matters of provincial interest, Section 2 of the *Planning Act* provides an extensive listing. These matters of provincial interest shall be regarded when certain authorities, including the council of a municipality, carry out their responsibilities under the *Act*. One of these provincial interests is directly concerned with:

- 2(d) the conservation of features of significant architectural, cultural, historical, archaeological or scientific interest...;

The *PPS* indicates in Section 4 - Implementation/Interpretation, that:

- 4.5 The official plan is the most important vehicle for implementation of this Provincial Policy Statement.

Comprehensive, integrated and long-term planning is best achieved through municipal official plans. Municipal official plans shall identify provincial interests and set out appropriate land use designations and policies. Municipal official plans should also coordinate cross-boundary matters to complement the actions of other planning authorities and promote mutually beneficial solutions.

Municipal official plans shall provide clear, reasonable and attainable policies to protect provincial interests and direct development to suitable areas.

Those policies of particular relevance for the conservation of heritage features are contained in Section 2, *Wise Use and Management of Resources*, in which the preamble states that “Ontario's long-term prosperity, environmental health, and social well-being depend on protecting natural heritage, water, agricultural, mineral and cultural heritage and archaeological resources for their economic, environmental and social benefits.”

Accordingly, in subsection 2.6, *Cultural Heritage and Archaeological Resources*, makes the following relative provisions:

- 2.6.1 Significant built heritage resources and cultural heritage landscapes shall be conserved.
- 2.6.3 Development and site alteration may be permitted on adjacent lands to protected heritage property where the proposed development and site alteration has been evaluated and it has been demonstrated that the heritage attributes of the protected heritage property will be conserved. Mitigation measures and/or alternative development approaches may be required in order to conserve the heritage attributes of the protected heritage property affected by the adjacent development or site alteration.

This provides the context not only for discrete planning activities detailed in the *Act* but also for the foundation of policy statements issued under Section 3 of the *Act*.

A number of definitions that have specific meanings for use in a policy context accompany the policy statement. These definitions include built heritage resources and cultural heritage landscapes (*PPS* 2005):



Built heritage resources mean one or more buildings, structures, monuments, installations or remains associated with architectural, cultural, social, political, economic, or military history, and identified as being important to a community.

Cultural heritage landscapes mean a defined geographical area of heritage significance that has been modified by human activities. Such an area is valued by a community, and is of significance to the understanding of the history of a people or place. Examples include farmscapes, historic settlements, parks, gardens, battlefields, mainstreets and neighbourhoods, cemeteries, trailways, and industrial complexes of cultural heritage value.

In addition, *significance* is also more generally defined. It is assigned a specific meaning according to the subject matter or policy context, such as wetlands or ecologically important areas. With regard to cultural heritage and archaeology resources, resources of significance are those that are valued for the important contribution they make to our understanding of the history of a place, an event, or a people (*PPS 2005*).

Criteria for determining significance for the resources are recommended by the Province, but municipal approaches that achieve or exceed the same objective may also be used. While some significant resources may already be identified and inventoried by official sources, the significance of others can only be determined after evaluation (*PPS 2005*).

2.1 Municipal Heritage Bridge Assessment

The scope of this report is outlined in the *Ontario Heritage Bridge Program (OHBP)* (MTO & MCC 1991). While written for provincially-owned bridges, these guidelines provide a relevant framework for the effective documentation and evaluation of heritage road bridges generally.

The purpose of the present cultural heritage evaluation report (CHER) is to examine the property as whole, its relationship to surrounding landscapes, and its individual elements. Conducting scholarly research and site visits inform such an examination. Background information is gathered from heritage stakeholders where available, local archives, land registry offices, local history collections at public libraries, and the Ministry of Culture when appropriate. Once background data collection is complete, a site visit is carried out to conduct photographic documentation and site analysis. These components provide a means to soundly establish the resource's cultural heritage value.

Using background information and data collected during the site visit, the resource, in this case a bridge, is evaluated using criteria contained within the *OHBP* (MTO & MCC 1991). These evaluative criteria have been designed to specifically consider a bridge's potential heritage significance and are appropriate for evaluating municipally-owned structures (MTO & MCC 1991:13). If the bridge is evaluated at a score of 60 or higher, it is recommended for inclusion onto the Ontario Heritage Bridge List and a Statement of Cultural Heritage Value and description of the structure's heritage attributes is developed and incorporated into the CHER. The CHER then serves as a conservation manual for the structure/property and also functions as a background document for property managers because it contains useful information about the history of the property and its individual assets.



In cases where a bridge is scored below the threshold score of 60 but does retain elements or attributes that are considered significant from a cultural heritage point of view, the CHER will identify these elements and provide recommendations and mitigation measures as appropriate.

While the *OHBP* (MTO & MCC 1991) document provides a method for evaluating municipally-owned bridges, 2005 amendments to the *Ontario Heritage Act* have since provided criteria for evaluating the heritage significance of municipally-owned resources. As such, evaluative criteria contained within *Ontario Heritage Act* Regulation 9/06 are also used to evaluate the heritage significance of municipally-owned bridges.

Additionally, during the site visit and as part of the evaluation process, attention is paid to surrounding cultural heritage resources that are situated in close proximity to the bridge.

3.0 HISTORICAL CONTEXT AND CONSTRUCTION

3.1 Introduction

The Humber River (West Branch) Bridge is a single span, concrete bowstring arch bridge that carries Humber Bridge Trail over the West Branch of the Humber River. The structure was built in 1918 and likely replaced an earlier structure at this site. Historically, the study area is located on part of the road allowance between Lots 20 and 21, Concession 8, in the former Township of Vaughan, County of York, now part of the City of Vaughan.

Cultural heritage resources are those buildings or structures that have one or more heritage attributes. Heritage attributes are constituted by and linked to historical associations, architectural or engineering qualities and contextual values. Inevitably many, if not all heritage resources, are inherently tied to “place”, geographical space, within which they are uniquely linked to local themes of historical activity and from which many of their heritage attributes are directly distinguished today. In certain cases, however, heritage features may also be viewed within a much broader context. Section 3 of this report provides a brief historical background of settlement in the surrounding area. A description is also provided of the construction of the bridge within its historical context.

3.2 Land Use History

The land within the Township of Vaughan was acquired by the British from the Mississaugas in 1784. The first township survey was undertaken in 1793, and the first legal settlers occupied their land holdings in 1796. The township was named in honour of Benjamin Vaughan, who was one of the negotiators for the Treaty of Paris which ended the American Revolutionary War in 1783. In 1805, Boulton (1805:89) described that the soil in Vaughan was “much improved,” and due to its proximity to York “may be expected to form an early and flourishing settlement.” Vaughan was initially settled by Loyalists, the children of Loyalists, disbanded soldiers, and by Americans including the Pennsylvania Dutch, French Huguenots, and Quakers. By the 1840s, the township was noted for its excellent land and “well cleared and highly cultivated farms” (Armstrong 1985:148; Reaman 1971:19; Rayburn 1997:355; Smith 1846:199).

The following land use history is based on a combination of land registry records, historic mapping and local history resources where available. Given that the bridge is located between Lot 20 and Lot 21 in Concession 8, the abstract index to the land deeds for both parcels were investigated.



According to the index, all 200 acres of Lot 20, Concession 8 in the Township of Vaughan was patented to the Canada Company by the Crown in 1831. It was subsequently sold to Allen Stevenson, who in 1846, proceeded to divide the parcel into halves: the west half was purchased by John Stevenson and the east half was purchased by James Stevenson. The subject bridge is located in the west half of Lot 8. In 1877, John Stevenson sold the west half to Samuel McDonald for \$4475. Samuel McDonald and his descendants retained ownership of the property well into the twentieth century. There were no references to the construction of a bridge on this property found at the land registry.

Lot 21, Concession 8 in the Township of Vaughan was delivered by Crown Patent to Charles Tumble in 1802. Ownership of the 200 acre parcel was transferred a number of times in the first half of the nineteenth century, and remained under the sole ownership of the Capner family from 1852 until 1913. In 1913, the property was bequeathed to James I. H. Devins, who later proceeded to subdivide and sell off small parcels of the original property. There were no references to the construction of a bridge on this property found at the land registry.

Historic mapping from 1860 depicts John Stevenson as the owner of the portion of Lot 20 (the west half) that contains the present study area (Figure 2). “Capner” is depicted as the owner of Lot 21 as a whole. No structures appear to have been located within the study area boundaries. However, one structure, most likely a homestead, is located just southwest of the study area, within John Stevenson’s property. Historic mapping from 1878 depicts Samuel McDonald in the west half of Lot 20 and Joseph Capner in Lot 21 (Figure 3). Historic mapping from both 1860 and 1877 indicate that the study area is a traditional bridge crossing point. It should be noted, however, that not all features of interest were mapped systematically in the Ontario series of historical atlases, given that they were financed by subscription, and subscribers were given preference with regard to the level of detail provided on the maps. Moreover, not every feature of interest would have been within the scope of the atlases.

A review of twentieth century topographic mapping indicates that the bridge was in use as part of the Major Mackenzie Road thoroughfare until at least the 1960s. The earliest topographic map available dates to 1919, and indicates that the subject bridge was in place by this time (Figure 4). The letter ‘M’ (masonry) indicates that the bridge was either stone or concrete. The 1985 topographic map indicates that Major Mackenzie Road was no longer a through road, and a by-pass has since been constructed to the south of the study area.





Figure 2: Location of study area in the Township of Vaughan, 1860

Source: Tremaine Map of York County

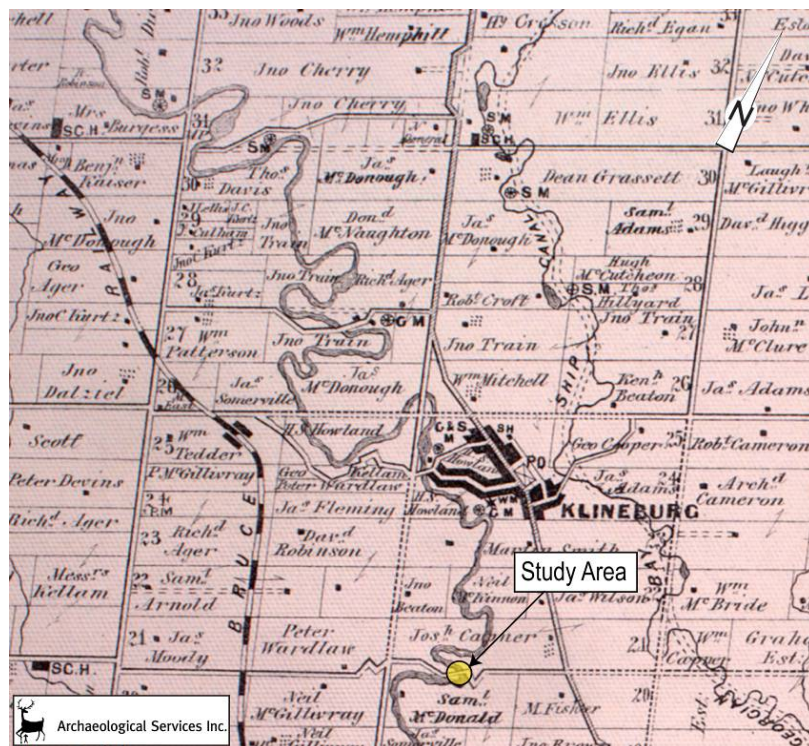


Figure 3: Location of study area in the Township of Vaughan, 1878

Source: Illustrated Historical Atlas of York County, Ont.



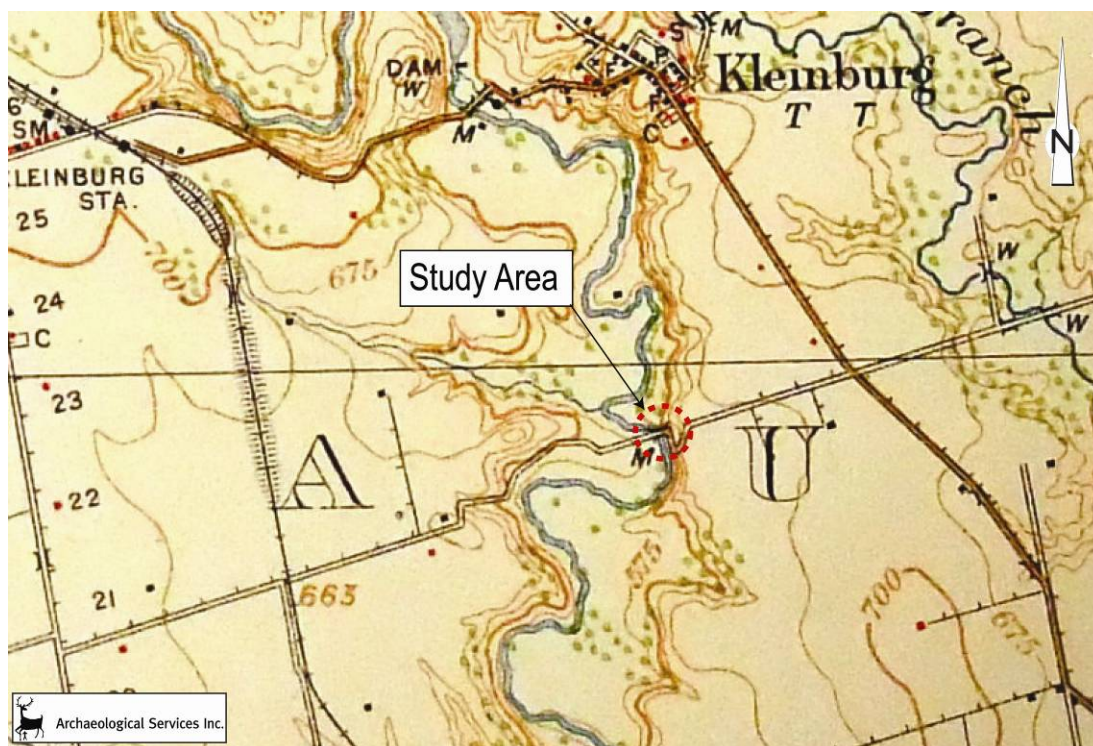


Figure 4: Location of study area on a 1919 topographic map.

Source: Department of Militia and Defence

3.3 Bridge Construction

3.3.1 Early Bridge Building in Ontario

Up until the 1890s, timber truss bridges were the most common bridge type built in southern Ontario. Stone and wrought iron materials were also employed, but due to their higher costs and a lack of skilled craftsman, these structures were generally restricted to market towns. By the 1890s, steel had become the material of choice when constructing bridges given that it was less expensive and more durable than its wood and wrought iron predecessors. Steel girder and truss structures were very common by 1900. The use of concrete in bridge construction was introduced at the beginning of the twentieth century, and by the 1930s, it was challenging steel as the primary bridge construction material in Ontario (Heritage Resources Centre 2005:7-8).

Structural steel in highway bridges had become a popular choice in the early twentieth century, given the increasing price of timber and its short lifespan of approximately ten years. Steel bridges with concrete abutments, instead of a traditional masonry substructure, were recognized for their durability and affordability ([...] 1907:62). Concrete arch bridges also made an appearance by the beginning of the twentieth century, having been successfully employed in Europe and in the United States since the 1880s (Cuming 1983:44). Reinforced concrete was first used in an arch bridge at Massey in 1906 and by 1909, the first concrete truss or tied arch bridge was constructed on the Middle Road at Etobicoke Creek by Frank Barber and C. W. Young (Cuming 1983:44, 47).

3.3.2 Concrete Bowstring Arch Bridge Construction

The concrete bowstring arch bridge, introduced to Ontario's landscape in 1909 with the construction of the Middle Road Bridge at Etobicoke Creek, was widely used across Ontario to span waterways. This type of bridge used a concrete compression arch over the bridge deck which was tied to the road bed, while vertical tension members from the arches supported the deck. In 1910, after the successful completion of the Middle Road Bridge, Frank Barber submitted an article to *The Canadian Engineer* (1910:184) promoting the use of this bridge type in Ontario's highways by advocating for their structural stability and permanence, aesthetic appeal, comparative costing to contemporary steel bridges of the day, and adaptability to different contexts (it could be built on a skew; did not require deep abutments; or could be built upon older abutments).

3.3.3 Construction of the Humber River (West Branch) Bridge

According to Township of Vaughan Council Minutes, the Humber River (West Branch) Bridge (referred to as the Bell Bridge in the minutes²) was built in 1918 to the designs and specifications of Frank Barber, Consulting Engineer.³ In the minutes, Frank Barber is also indicated as serving as the Township Engineer. The single span, reinforced concrete, bowstring arch bridge was constructed by the firm Ritchie Construction Company of Beamsville, Ontario for \$2587.00 in accordance with the plans and specifications as prepared by Frank Barber. The original drawings for this structure are not believed to exist. A review of archival holdings located at the Ontario Archives, the City of Vaughan Archives, and the County of York Land Registry did not provide any original documents such as bridge designs or surveys, or historical photographs. The Ministry of Transportation (Central Region), the Toronto and Region Conservation Authority (TRCA), and the Cultural Services Division at the City of Vaughan were also consulted.

The available documentation for the Humber River (West Branch) Bridge indicates that the structure has not previously undergone any major rehabilitation or repair work. As such, the original features and design of the bridge appear to be intact. Additionally, historic research did not reveal any details regarding previous structures at this location. Historic mapping indicates that there were probably structures at this crossing since the mid-nineteenth century. These were likely timber structures which generally had a lifespan of ten years. Timber bridges were becoming obsolete by this time given their short life expectancy; susceptibility to flooding; maintenance costs; and inability to accommodate the new farm machinery and automobiles of the day.

4.0 EXISTING CONDITIONS AND INTEGRITY

A field review was undertaken by Lindsay Popert, ASI, on September 10, 2010, to conduct photographic documentation of the bridge crossing and to collect data relevant for completing a heritage evaluation of the structure. Results of the field review and bridge inspection reports received from the client were then utilized to describe the existing conditions of the bridge crossing. This section provides a general

² Available historic records do not indicate why this bridge was called the Bell Bridge in the early twentieth century. There is no evidence of a 'Bell Family' living on Lots 20 and 21 in Concession 8.

³ The bridge was thought to have been built in 1914, as indicated in the Municipal Structure Inspection Form. It is possible that the original designs for the bridge date to 1914, and perhaps the construction of the bridge was delayed to 1918 due to the War. This date was obtained from Township of Vaughan Council Minutes.



description of the bridge crossing and associated cultural heritage features. Photographic documentation of the bridge crossing is provided in Section 7.0.

The Humber River (West Branch) Bridge is a concrete bowstring arch bridge that carries Humber Bridge Trail (formerly Major Mackenzie Road) over the Humber River in the City of Vaughan, Ontario. Located approximately 0.4 km east of Highway 27, the structure served as a major river crossing until the Major Mackenzie Road alignment was moved to its present position in the late twentieth century. The bridge continues to serve vehicular traffic and provides access across the river to a single residential property. A review of historic mapping indicates that this bridge was predated by earlier structures.

The Humber River (West Branch) Bridge is a single span, concrete bowstring arch bridge measuring 20 m in length and 4.9 m in width. A plaque, likely recording the date of erection and the construction company, was formerly located on the easterly portion of the top chord, north elevation. The single span bridge features a cast-in-place concrete deck resting on concrete abutments and concrete arched trusses. The deck is bounded by the original concrete post and double rail handrail system. There are no sidewalks.

The last biennial inspection took place in late 2008. The Summary Action Report for the subject bridge (AECOM 2009) indicated that the Humber River (West Branch) Bridge presents a number of performance deficiencies and indicated that a number of structural elements require replacement due to their poor condition. The report notes that many components of the bridge are severely deteriorated and are suffering from severe spalling, scaling, delaminations, loss of concrete, and exposed and deteriorating steel components. Field review confirmed that the bridge is in a state of disrepair.

4.1 Comparative Analysis

According to the City of Vaughan Bridge Inventory, there are a total of two concrete bowstring arch bridges owned and maintained by the municipality. The Humber River (West Branch) Bridge is the older of the two, dating to 1918 while the second bridge, known as the McEwen Bridge, dates to 1923. A third bridge, formerly owned by the City of Vaughan and presently under the ownership of the TRCA and within the Boyd Conservation Area, is located just north of Langstaff Road on the Humber River in Vaughan (Figure 5). A review of the 1919 topographic map indicates that a concrete bridge was located at this site by 1919 and most likely corresponds to the bridge that is presently located in the Boyd Conservation Area. The TRCA indicated that a fourth concrete bowstring arch bridge is located on the Humber River in the Claireville Conservation Area in Brampton. Known as the Wiley Bridge, this structure was built in circa 1924 and has recently undergone rehabilitation work.⁴ Further, it was confirmed that there are no concrete bowstring arch bridges remaining on the Humber River in the Town of Caledon⁵.

According to the Region of York Bridge Inventory, the Region does not own/maintain any concrete bowstring arch bridges⁶.

⁴ Personal Communications, Susan Robertson (Humber River Project Manager, Watershed Planning), October 2 2010

⁵ Personal Communications, Sally Drummond (Heritage Resource Officer, Town of Caledon), October 4 2010

⁶ Bridge Inventory provided by AECOM, October 18, 2010.





Figure 5: Former Langstaff Road Bridge in the Boyd Conservation Area, Vaughan
Source: ASI, October 2010

4.2 Additional Cultural Heritage Resources

The subject bridge spans the Humber River, which is a recognized Canadian Heritage River. A review of the heritage mapping layer at the City of Vaughan's online Map Viewer indicated that there are no previously identified heritage properties in the vicinity of the study area.

5.0 HERITAGE EVALUATION

5.1 Introduction

This section will evaluate the significance of the structure within the guidelines of the *Ontario Heritage Bridge Program (OHBP)* (MTO & MCC 1991) and in accordance with *Ontario Heritage Act* Regulation 9/06 (criteria for determining cultural heritage value or interest). Although the Humber River (West Branch) Bridge is not listed on the Ontario Heritage Bridge List, it is over forty years old and is required to be evaluated as a potential heritage structure. Additionally, the Humber River (West Branch) Bridge has not been designated under Part IV of the *Ontario Heritage Act*.

The rehabilitation of a bridge has the potential to affect cultural heritage resources in a variety of ways. These include the loss or displacement of resources through removal or demolition and the disruption of resources by introducing physical, visual, audible or atmospheric elements that are not in keeping with the resources and/or their setting. This cultural heritage assessment considers cultural heritage resources in the context of improvements to specified areas, pursuant to the *Environmental Assessment Act*. The following section provides a summary of the context for conducting heritage assessments of bridges over forty years old. Subsequently, a summary of the steps taken to evaluate the Humber River (West Branch) Bridge is provided.

5.2 The Ontario Heritage Bridge Program



The *OHBP* (MTO & MCC 1991) was established in July 1983 in order to provide a framework for the consistent and considered decisions in allocating funds for the conservation of heritage road bridges. Key elements of the program comprise: a formal system of listing; the use of evaluation criteria; and consideration and application of a number of conservation strategies for any listed bridge subject to repair or replacement, including those subject to environmental assessment. Listing in the *OHBP* (MTO & MCC 1991) is intended to be a serious statement of heritage status. Listing does not confer outright protection.

Following the *OHBP* (MTO & MCC 1991) guidelines, twelve criteria within four categories are used to evaluate bridges with maximum scores as follows:

Table 1: Heritage Evaluation Form

Category	Criteria	Score
Documentation	Builder	6
	Age	14
Technology	Materials	4
	Design/Style	16
	Prototype	10
	Structural Preservation	10
Bridge Aesthetics and Environment	Visual Appeal	12
	Location	4
	Landmark	6
	Gateway	4
	Character contribution	4
Historical	Historical Association	10
	Total Score	100

Any bridge scoring higher than 60 points will automatically be considered for listing. A listed bridge will not necessarily be conserved irrespective of technical, financial or other consideration. Nonetheless, decisions and strategies concerning the conservation of a listed bridge should take into account the evaluation criteria and the individual score the bridge has achieved. The higher the score, the more diligent should be the efforts to conserve the bridge in the most desirable manner possible.

5.2.1 Ontario Heritage Bridge Programs' Conservation Options

For all bridges included on the Ontario Heritage Bridge List or bridges eligible to be listed that are subject to repair, rehabilitation or proposed for replacement, a number of conservation/mitigation options are to be considered. The following options are arranged according to level or degree of intervention from minimum to maximum:

1. Restoration of missing or deteriorated elements where physical or documentary evidence (e.g. photographs or drawings) exists for their design;



2. Retention of existing bridge with no major modifications undertaken;
3. Retention of existing bridge with sympathetic modification;
4. Retention of existing bridge with sympathetically designed new structure in proximity;
5. Retention of existing bridge no longer in use for vehicular purposes but adapted for pedestrian walkways, cycle paths, scenic viewing, etc.;
6. Relocation of bridge to appropriate new site for continued use (see 4) or adaptive re-use (see 5);
7. Retention of bridge as heritage monument for viewing purposes only;
8. Salvage of elements/members of bridge for incorporation into new structure or for future conservation work or displays; and
9. Full recording and documentation of structure if it is to be demolished.

5.3 Ontario Heritage Act Regulation 9/06

Ontario Heritage Act Regulation 9/06 provides a set of criteria, grouped into the categories of Design/Physical Value, Historical/Associative Value, and Contextual Value, which determine the cultural heritage value or interest of a potential heritage resource in a municipality. Should the potential heritage resource meet one or more of the above mentioned criteria, it may be considered for designation under the *Ontario Heritage Act*.

5.4 Humber River (West Branch) Bridge: Evaluation

Using the *OHBP* (MTO & MCC 1991) criteria for evaluating bridges, the heritage evaluation resulted in a score of 70 with score summaries noted below.

Table 2: *Ontario Heritage Bridge Program* (1991) Evaluation of the Humber River (West Branch) Bridge

Criteria (Max. Score)	Assigned Score	Comments
Builder or Designer (6)	6	Frank Barber, Consulting Engineer, is responsible for the design of bowstring bridges across Southern Ontario in the early twentieth century. He is noted for his involvement in the design of a number of early concrete bridges, many of which were prototypes (The Middle Road Bridge in 1909; the first open spandrel concrete arch at Weston in 1910).
Age (14)	12	According to the Township of Vaughan Council Minutes, the bridge was erected in 1918. The original drawings for this bridge are no longer available and have presumably been lost.
Materials (4)	0	Steel and concrete are common building materials from this time period.
Design and Style (16)	12	Concrete bowstring arch bridges were a favoured bridge type in the design and construction of water crossings in municipalities in southern Ontario during the early twentieth century. However, as roads were widened and graded throughout the twentieth century, the construction of this bridge type declined and the stock of concrete bowstring bridges has since been significantly reduced. In the City of Vaughan, this is one of three known concrete bowstring bridges to remain intact, and the only one that continues to serve vehicular traffic. The McEwen Bridge was built a few years after the subject bridge, and the Boyd Conservation Area



		structure was likely built around the same time as the Humber River (West Branch) Bridge.
Prototype (10)	0	It is not known to be a prototype.
Structural Integrity (10)	10	There does not appear to be any major modifications made to this bridge. No bridge rehabilitation records are available. As such, the original form of this bridge remains intact and it continues to serve vehicular traffic.
Visual Appeal (12)	6	While there is no notable decoration or ornamentation associated with this bridge, it still retains strong visual appeal given its arched design, picturesque setting, and appearance of floating above the river.
Location Integrity (4)	4	The structure is at its original location.
Landmark (6)	6	The bridge is a prominent feature in the landscape, particularly when viewed from the Humber River and when experienced by pedestrians and drivers who use the bridge to cross the river. Additionally, given that it is listed on the municipal inventory of resources of cultural heritage interest, it is considered to have perceived importance and value within the community.
Gateway (4)	0	It is not a gateway structure.
Character (4)	4	The design, scale and general massing of the bridge was built to accommodate early rural vehicular traffic and agricultural machinery in the early twentieth century. This bridge continues to compliment the rural character of the area and contributes to the picturesque setting of the Humber River corridor.
Historical (10)	10	The bridge retains historical associations with former bridges at this location given that it has been a traditional water crossing point since the early to mid-nineteenth century. Further, it retains important associations with Major Mackenzie Road, an early surveyed thoroughfare which is directly related to nineteenth century settlement and development, as well as transportation improvements that occurred in this part of the former Township of Vaughan.
Total (100)	70	

Additionally, evaluation of the Humber River (West Branch) Bridge against criteria as set out in *Ontario Heritage Act Regulation 9/06* was carried out (Table 3).

Table 3: Evaluation of the Humber River (West Branch) Bridge using *Ontario Heritage Act Regulation 9/06*

1. The property has design value or physical value because it :

i. is a rare, unique, representative or early example of a style, type, expression, material or construction method;	Concrete bowstring arch bridges were a very common bridge type throughout southern Ontario during the 1910s through to the 1930s and 1940s, but since have declined in number given their inability to accommodate modern vehicular and highway needs. Constructed in the late 1910s and currently in poor condition, the subject bridge represents a simple, earlier concrete bowstring arch design, but given its poor condition, it is not a particularly representative example of this bridge type. However, given that there are likely only four of this type remaining on the Humber River, three of which are
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Table 3: Evaluation of the Humber River (West Branch) Bridge using Ontario Heritage Act Regulation 9/06

	in Vaughan, it is considered to be an important example of a rare or vanishing bridge type in Ontario.
ii. displays a high degree of craftsmanship or artistic merit, or;	The subject bridge does not feature any decorative elements or evidence of superior craftsmanship. It is acknowledged that bridge elements indicating a high degree of craftsmanship or artistic merit may have been lost given the poor condition of the bridge. While likely a common detail on concrete bowstring arch bridges (it is also extant on the other remaining concrete bowstring arch bridges in Vaughan), the chamfered edges of some concrete elements (including the posts, rails and chords) are noted.
iii. demonstrates a high degree of technical or scientific achievement.	There are three known concrete bowstring arch bridges in the City of Vaughan. While hundreds of these structures were built across southern Ontario, relatively few remain. The bridges feature roughly the same dimensions, design, and date to the same time period. The Humber River (West Branch) Bridge is not known to exhibit any particular technical value from an engineering perspective.

2. The property has historical value or associative value because it:

i. has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community;	The structure retains historical associations with the original Major Mackenzie Road alignment, which was first surveyed and established in the early to mid-nineteenth century. Given that this is a traditional bridge crossing, it retains important associations with early township settlement and development.
ii. yields, or has the potential to yield, information that contributes to an understanding of a community or culture, or;	This bridge crossing and its associations with the original Major Mackenzie Road alignment help to communicate patterns of township development as well as improvements in transportation infrastructure in the nineteenth and twentieth centuries.
iii. demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.	The structure was designed by Frank Barber of Toronto, a consulting engineer and who was also noted as serving as Township Engineer in 1918. The bridge was constructed by the firm Ritchie Construction Company of Beamsville and built for the Township of Vaughan. Frank Barber is a notable engineer who was responsible for the design of concrete bowstring arch bridges across Southern Ontario in the early twentieth century. He was involved in the design of a number of early concrete bridges, many of which were prototypes (The Middle Road Bridge in 1909; the first open spandrel concrete arch at Weston in 1910).

3. The property has contextual value because it:

i. is important in defining, maintaining or supporting the character of an area;	The design, scale and general massing of the bridge was built to accommodate early rural vehicular traffic and agricultural machinery in the early twentieth century. This bridge continues to compliment the rural character of the area and contributes to the picturesque setting of the Humber River valley.
ii. is physically, functionally, visually or historically linked to its surroundings, or;	The bridge is physically, functionally and historically linked to its surroundings. It serves as a bridging point for vehicles and pedestrians over the west branch of the Humber River and is physically associated with the Humber River and the surrounding rural landscape.



Table 3: Evaluation of the Humber River (West Branch) Bridge using *Ontario Heritage Act* Regulation 9/06

iii. is a landmark.	The bridge is a prominent feature in the landscape, particularly when viewed from the Humber River and when experienced by pedestrians and drivers who use the bridge to cross the river. Additionally, given that it is listed on the municipal inventory of resources of cultural heritage interest, it is considered to have perceived importance and value within the community.
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6.0 CONCLUSIONS AND MITIGATION RECOMMENDATIONS

6.1 Conclusions

Following application of the *OHBP* (MTO & MCC 1991) criteria for the evaluation of heritage bridges, the Humber River (West Branch) Bridge scored 70. Furthermore, evaluation of the structure using criteria set out under *Ontario Heritage Act* Regulation 9/06 confirmed that the subject structure meets the majority of the criteria that fall under the historical, architectural/design and contextual significance categories. Based on the results of evaluation, the Humber River (West Branch) Bridge retains high heritage significance.

The Humber River (West Branch) Bridge is a concrete bowstring arch bridge that carries Humber Bridge Trail (formerly Major Mackenzie Road) over the Humber River in the City of Vaughan, Ontario. Built in 1918, the bridge was designed by Frank Barber and constructed by the firm Ritchie Construction Company of Beamsville. Located approximately 0.4 km east of Highway 27, the structure served as a major river crossing until the Major Mackenzie Road alignment was moved to its present position in the late twentieth century. The bridge continues to serve vehicular traffic and provides access across the river to a single residential property.

The following sections provide a summary of the structure's cultural heritage significance and associated heritage attributes.

6.1.1 *Historical Associations*

- Traditional bridge crossing retaining historical associations with early township transportation networks, settlement patterns and infrastructure improvements;
- The present and previous bridges at this location contributed to the growth and development of the township and served as a vital east-west link; and
- Designed by Frank Barber, a noted early twentieth century engineer.

6.1.2 *Design Value*

- A common bridge type built throughout southern Ontario in the early twentieth century, but has since declined in numbers as they have been steadily replaced by modern bridges which can more suitably accommodate modern traffic loads; and
- The Humber River (West Branch) Bridge is one of four known concrete bowstring arch bridges remaining on the Humber River and possibly the oldest remaining of this bridge type on the Humber River; as such, it is considered an early example and therefore important example of a rare and vanishing bridge type in Ontario.



6.1.3 Contextual Value

- An important element in understanding a family of bridges within the Humber River corridor. There are three remaining concrete bowstring arch bridges in Vaughan, and one known additional bridges of the same style elsewhere on the river corridor. Together, these contribute to the character of the Humber River, a recognized Canadian Heritage River, and its long history relating to settlement in this township;
- Recognition by the community as a cultural heritage resource;
- Association with previous bridges at this point on the Humber River; and
- Landmark value and contribution to the picturesque qualities of the surrounding area.

6.2 Recommendations

Based on the results of archival research, an analysis of bridge design and construction in Ontario, a field review and application of the Ontario Heritage Bridge Program (MTO & MCC 1991) criteria for the evaluation of heritage bridges and consideration of evaluation criteria under *Ontario Heritage Act* Regulation 9/06, the Humber River (West Branch) Bridge was determined to retain high heritage value. The structure's significance revolves around its historic, contextual, and design-related values. Given that it achieved a score over the 60 point threshold, the Humber River (West Branch) Bridge is recommended for inclusion on the Ontario Heritage Bridge List.

The following conservation options should be adopted as compensation for the proposed repair, rehabilitation or replacement of the resource, and are arranged in order of preference and degree of intervention from minimum to maximum:

1. Restoration of missing or deteriorated elements where physical or documentary evidence (e.g. photographs or drawings) exists for their design;
2. Retention of existing bridge with no major modifications undertaken;
3. Retention of existing bridge with sympathetic modification;
4. Retention of existing bridge with sympathetically designed new structure in proximity;
5. Retention of existing bridge no longer in use for vehicular purposes but adapted for pedestrian walkways, cycle paths, scenic viewing, etc.;
6. Relocation of bridge to appropriate new site for continued use (see 4) or adaptive re-use (see 5);
7. Retention of bridge as heritage monument for viewing purposes only;
8. Salvage of elements/members of bridge for incorporation into new structure or for future conservation work or displays; and
9. Full recording and documentation of structure if it is to be demolished.

The following conservation and mitigation measures should be undertaken as part of the recommended retention strategy:

1. Should retention of the bridge for vehicular purposes not be possible for structural reasons, a structural engineer should be consulted to determine the feasibility of adapting the structure for pedestrian use and incorporation into a recreational trail system;
2. The bridge should be secured structurally with no major modification undertaken, so as not to detract from the design values associated with the structure;



3. Restoration of missing or deteriorated elements are permitted where physical or documentary evidence is available for their design; and
4. A plaque recording the heritage significance of this structure and the significance of this site as a traditional bridge crossing should be installed at the present site. The location and wording of the heritage plaque should be decided upon through consultation with the local community and local heritage stakeholders.

Should a relocation strategy be undertaken, the following conservation and mitigation measures should be undertaken:

1. A structural engineer should be consulted to determine the feasibility of relocating the structure to an alternate location;
2. The selected new location should remain in close association with the west branch of the Humber River, and site selection should be reviewed by a heritage consultant for advice;
3. Full photographic documentation of the structure prior to and during relocation; and
4. A plaque recording the heritage significance of this structure and the significance of this site as a traditional bridge crossing should be installed at the present site and/or future site. The location and wording of the heritage plaque should be decided upon through consultation with the local community and local heritage stakeholders.

Should the bridge be removed and replaced, the following conservation and mitigation measures should be undertaken:

1. The bridge replacement should be designed in a sympathetic manner in order to respect the scale, massing and design of the current structure;
2. Where possible, elements of the bridge should be incorporated into the new structure. Further details regarding this conservation option are provided in the *Ontario Heritage Bridge Guidelines*;
3. Full photographic documentation of the subject bridge prior to removal; and
4. A plaque recording the heritage significance of this structure and the significance of this site as a traditional bridge crossing should be installed at the present site. The location and wording of the heritage plaque should be decided upon through consultation with the local community and local heritage stakeholders.

This report should be submitted to Heritage Vaughan and Cultural Services Division at the City of Vaughan for comment and subsequently filed and archived. Additionally, this report should be submitted to the Ministry of Culture for comment given that the Humber River (West Branch) Bridge has been recommended for inclusion onto the Ontario Heritage Bridge List. This report should be filed at the City of Vaughan Archives.



7.0 PHOTOGRAPHIC DOCUMENTATION



Plate 1: View of bridge crossing from the west.



Plate 2: View of bridge crossing from the east.



Plate 3: View of south elevation from the west bank.





Plate 4: Oblique view of south elevation from the east bank.



Plate 5: View of north elevation from the east bank.



Plate 6: View of north elevation from the west bank.





Plate 7: View under the bridge,
looking east from the west
abutment.



Plate 8: Detail of spalling soffit



Plate 9: Detail of exposed rebar.





Plate 10: View of west abutment from the north.



Plate 11: Detail of northwest wingwall.



Plate 12: View of the bridge deck.





Plate 13: View of the north truss.



Plate 14: View of the south truss.



Plate 15: Detail of handrail and end post.





Plate 16: Location of former plate marker.



Plate 17: Detail of chamfered edges.



Plate 18: Detail of damaged handrail and vertical members.





Plate 19: Detail of former patch-up work.



Plate 20: Humber River looking north.



Plate 21: Humber River looking south.



8.0 REFERENCES CITED

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October 18, 2010

CFN 44715, CFN 44716

BY MAIL AND EMAIL (colin.cassar@vaughan.ca)

Colin Cassar, C.E.T.
Senior Engineering Assistant
City of Vaughan Engineering Services Department
2141 Major MacKenzie Dr.
Vaughan, ON
L6A 1T1

Dear Mr. Cassar:

**Re: Response to Notice of Commencement
Vaughan Bowstring Arch Bridges (Humber Bridge Trail & McEwen Bridge)
Municipal Class Environmental Assessment - Schedule B
Humber River Watershed; City of Vaughan; Regional Municipality of York**

Toronto and Region Conservation Authority (TRCA) staff received the Notice of Commencement for the above noted Environmental Assessment (EA) on September 10, 2010.

It is our understanding that this undertaking involves the proposed rehabilitation of two bowstring arch bridges over the Humber River. Both bridges are more than 90 years old and in similar states of advanced disrepair. The first bridge is located on Humber Bridge Trail, east of Highway 27, and provides vehicular access to one residential property. The McEwen Bridge, the second bridge in this study, is located just east of Huntington Road on the Kirby Road right-of-way, and is not currently open to vehicular traffic, serving instead as part of the Humber Valley Heritage Trail system.

The City of Vaughan has initiated this study to determine how to best address the potential access issues created by the deterioration of these two bridges, and identify appropriate courses of action to improve the structural integrity of the bridges.

TRCA Areas of Interest

Staff has identified the following Areas of Interest within the study area:

Regulated Areas

- Regulation Limit
- Crest of Slope
- Regulatory Flood Plain
- Watercourses

TRCA Program and Policy Areas

- Aquatic Species and Habitat
- Archaeological and Heritage Resources

- Conservation Land -TRCA property (McEwen Bridge)
- Habitat Implementation Plans
- Terrestrial Natural Heritage Strategy
- Terrestrial Species and Habitat

Provincial Program Areas

- Greenbelt (McEwen Bridge)



Available mapping and program information regarding these Areas of Interest will be sent under separate cover for your reference. Please ensure that the status, potential impacts and opportunities for enhancement related to these Areas of Interest are documented and assessed through a review of background material, technical study, field assessment and detailed evaluation, as appropriate.

Pursuant to Resolution #A287/07, the typical fee for reviewing this Schedule B project is \$5100 per project. However, further to our partnership agreement on this projects and TRCA's commitment to working in partnership with the City to recognize the importance of managing these structures in light of the Humber River's designation as a Canadian Heritage River, the review fees for both bridges will be waived.

Selection of Alternatives

In consideration of TRCA's *Valley and Stream Corridor Management Program*, Ontario Regulation 166/06, and TRCA's other programs and policies, staff requires that the preferred alternative meets the following criteria:

1. Prevents the risk associated with flooding, erosion or slope instability.
2. Protects and rehabilitates existing landforms, features and functions.
3. Provides for aquatic, terrestrial and human access.
4. Minimizes water/energy consumption and pollution.
5. Addresses TRCA property and heritage resource concerns.

TRCA staff recommends that a summary of detailed design commitments be included in the EA as a Pre-design Brief. This summary should include, but not be limited to:

- a. An aerial photo indicating the study area, regulated area, existing conditions and preferred solution/design;
- b. Text indicating the preferred alternative solution/design;
- c. A Reference list of alternative solutions and designs considered;
- d. A synopsis of all TRCA requirements and technical commitments.

It is intended that the proponent and their consultants, as well as TRCA, would use the Pre-design Brief during the preliminary stages of detailed design. In the Pre-design Brief, commitments made during the EA would be clearly articulated in order to facilitate a 90 % detailed design submission to TRCA for all required permits. TRCA staff would then be able to review the required studies, reports or plans; and confirm any additional study requirements or revisions to the submitted materials. Ideally, the completion of the Pre-Design Brief will result in a more timely and streamlined permit approval process in the future.

TRCA Review

Prior to selecting the preferred alternative solution and design, please arrange a meeting to discuss issues that relate to our program and policy concerns. In addition, please add TRCA's Watershed Specialist Gary Wilkins (gwilkins@trca.on.ca) and Susan Robertson, Humber River Project Manager, (srobertson@trca.on.ca) to the project mailing list to receive any public information updates.

A copy of the TRCA Environmental Assessment Review Program Service Delivery Standards, and a summary chart is enclosed for your reference. We recommend you refer to these submission standards during the study to facilitate TRCA review. Please provide the following submissions to expedite TRCA review.

- Notices of public meetings and display material and handouts
- Four hard copies of the Draft EA Document, and
- One hard copy and one digital copy of the Final EA Document.

Should you have any questions, please contact me at extension 5744 or by email at bstorozinski@trca.on.ca.

Yours truly,



for Brian Storozinski, M.E.S.
Planner I, Environmental Assessment Planning
Planning and Development

Encl.: TRCA Areas of Interest Summary Table
Service Delivery Standards - Recommended TRCA Contact Points

CC: BY EMAIL

Consultant	Blair Shoniker, MA., MCIP, RPP (blair.shoniker@aecom.com)
Humber Watershed Alliance	Heather Boradbent, Co-Chair, Heritage SubCommittee (neffie@sympatico.ca)
TRCA	Beth Williston, Manager, Environmental Assessment Planning Suzanne Bevan, Acting Senior Planner, Environmental Assessment Planning Gary Wilkins, Humber Watershed Specialist Susan Robertson, Humber River Project Manager Cathy Crinnion, TRCA Archaeologist George Leja, Real Estate Coordinator

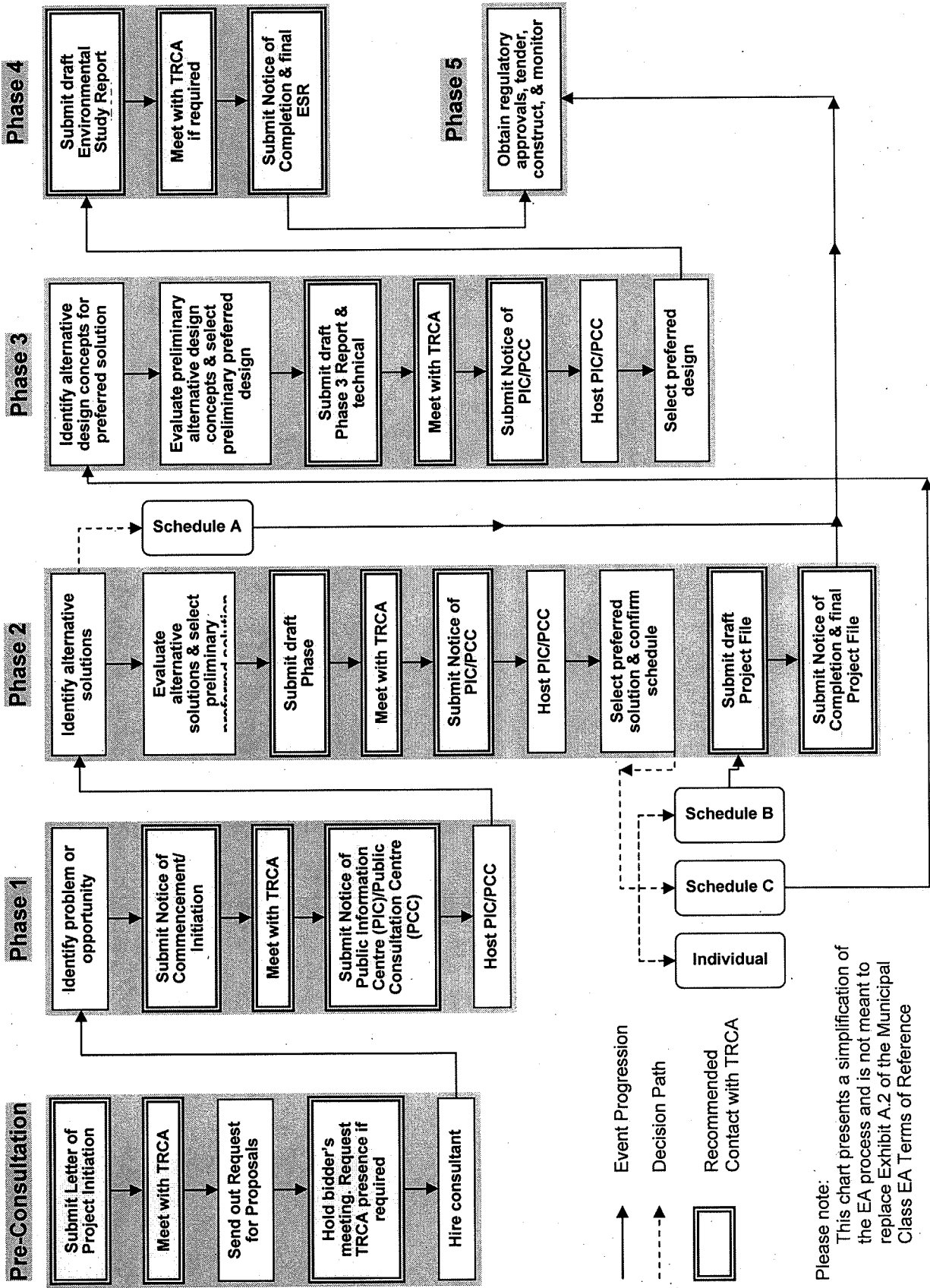
EA Requirements

Document and assess the status, potential impacts and opportunities for enhancement that relate to the following Areas of Interest through a review of background material, technical study, field assessment and detailed evaluation, as appropriate. Make reference to the applicable Program and Policy documents. Include in the EA Document appendices any minutes, structure summary sheets for watercourses or wetlands, or other material collected through meetings with TRCA staff. Natural features may need to be confirmed on site by TRCA staff.

Area of Interest / Data Availability	Program and Policy Concerns
TRCA REGULATED AREAS	
Regulation Limit <i>GIS data available</i>	<p>In accordance with Ontario Regulation 166/06 (Development, Interference with Wetlands and Alterations to Shorelines and Watercourses), a permit is required from the TRCA prior to any development (e.g. construction) if, in the opinion of TRCA, the control of flooding, erosion, dynamic beaches or pollution or the conservation of land may be affected. The Regulation Limit defines the greater of the natural hazards associated with Ontario Regulation 166/06 (listed below).</p> <p>NOTE: The Regulation Limit provides a geographical screening tool for determining if Ontario Regulation 166/06 will apply to a given proposal. Through site assessment or other investigation, it may be determined that areas outside of the defined Regulation Limit require permits under Ontario Regulation 166/06. In these instances, it is the text of the regulation that will prevail; modifications to the regulation line may be required.</p> <p>Any development within the Regulation Limit must comply with the applicable sections of TRCA's <i>Valley and Stream Corridor Management Program</i>.</p>
Crest of Slope	<p>Valley and stream corridors are dynamic systems that provide important natural functions and linkages for the physical, chemical and biological processes of wildlife, watercourses, and other natural features. The Crest of Slope identifies the physical limit of these corridors; however, due to ecological sensitivities, development restrictions typically extend beyond the actual Crest of Slope.</p>
Regulatory Flood Plain <i>Engineered maps may be available</i>	<p>The Regulatory Flood Plain is the approved standard used in a particular watershed to define the limit of the flood plain for regulatory purposes. Within TRCA's jurisdiction, the Regulatory Flood Plain is based on the greater of the regional storm, Hurricane Hazel, and the 100 year flood.</p> <p>Any development or alterations to existing structures within the Regulatory Flood Plain may introduce risk to life or property, and may not be compatible with existing natural features. TRCA's framework for Flood Plain Management is the <i>Valley and Stream Corridor Management Program</i>.</p> <p>TRCA may require a flood study or hydraulic update to confirm that there will be no impacts to the storage or conveyance of flood waters.</p>
Watercourses <i>Partial GIS data available</i>	<p>Typically, watercourses are associated with aquatic species and habitat. Any alteration or interference to a watercourse (e.g. straightening, diverting, realigning, altering baseflow) has the potential to impact fish communities, but may also affect the Regulatory Flood Plain, erosion or other natural channel processes. TRCA may require an environmental study or site confirmation of watercourse locations.</p>
TRCA PROGRAM AND POLICY AREAS	
<p>Note: Additional program and policy information may be available at www.trca.on.ca, or by request.</p>	
Aquatic Species and Habitat <i>GIS data available</i>	<p>Under the <i>Fisheries Act</i>, the Harmful Alteration, Disruption or Destruction (HADD) of fish habitat is prohibited, unless authorized by Fisheries and Oceans Canada (DFO). TRCA reviews projects under the <i>Fisheries Act</i> based on our Level III Agreement with DFO to ensure that any potential impacts to fish habitat are appropriately mitigated, or that adequate compensation is provided where a HADD is unavoidable. Alternatives should be designed with appropriate mitigation measures to avoid a HADD. If a HADD is unavoidable, a suitable compensation plan must be developed, and Authorization from DFO will be required.</p>

	TRCA may require a quantification and assessment of existing conditions and proposed changes to fish habitat and communities to confirm impacts to these resources.
Archaeological and Heritage Resources	<p>TRCA watershed strategies include recommendations for the management of archaeological and heritage resources in accordance with Ministry of Culture and Municipal standards. Preserve and protect archaeological resources where possible.</p> <p>TRCA may require a Stage 1, 2, 3, or 4 archaeological assessment to confirm impacts to these resources. Note that an archaeological investigation by TRCA's archaeological staff must precede any disturbance to TRCA property, at the cost of the proponent. Scheduling will be subject to weather, seasonal programs and other field work.</p>
Conservation Land (TRCA Property) <i>GIS data available</i>	<p>If TRCA property is needed for the implementation of the preferred alternative, permission and approval from TRCA and the Minister of Natural Resources are required. The design must demonstrate that TRCA program and policy objectives are met. Formal approval typically takes 12 to 18 months from the completion of the EA document. As noted above, an archaeological investigation by TRCA's archaeological staff must precede any disturbance to TRCA property.</p> <p>Applicable programs and strategies for works on TRCA property may include: <i>TRCA Strategy for Public Use of Authority Lands, TRCA Greenspace Strategy, Archaeological Resource Management Procedures: Guidelines</i>, master plans for specific conservation lands, watershed strategies, or other programs or policies referenced in this document.</p>
Habitat Implementation Plans	<p>TRCA staff has identified management opportunities for habitat restoration and enhancement on TRCA property and some privately owned lands. The Habitat Implementation Plans target priority sites to improve natural form and function based on targets in the watershed strategies.</p> <p>Detailed plans have been developed or implemented for certain sites, while other locations have been identified for future work. Consultation with TRCA should take place to ensure that impacts to priority areas are avoided, or that opportunities to implement restoration plans are identified.</p>
Terrestrial Natural Heritage System Strategy <i>GIS data available</i>	TRCA has identified the need to improve both the quality and quantity of terrestrial habitat. TRCA's <i>Terrestrial Natural Heritage System Strategy</i> sets measurable targets for attaining a healthier natural system by creating an expanded and targeted land base. It includes strategic directions for stewardship and securement of the land base, a land use policy framework to help achieve the target system, and other implementation mechanisms.
Terrestrial Species and Habitat <i>GIS data available</i>	<p>The terrestrial system includes landscape features, vegetation communities and flora and fauna species. Terrestrial species and habitat should be assessed based on their conservation status according to sensitivity to disturbance and specialized ecological needs, as well as rarity.</p> <p>TRCA may require a site assessment and terrestrial inventory to confirm impacts to these resources. TRCA's <i>Terrestrial Natural Heritage Strategy</i> may be applicable to any work that impacts terrestrial species and habitat. In addition, relevant legislation (e.g. <i>Migratory Bird Convention Act, Species at Risk Act</i>) should be applied.</p>
PROVINCIAL AND FEDERAL PROGRAM AREAS	
Greenbelt	<p>The Greenbelt consists of approximately 728,000 hectares of environmentally sensitive land and agricultural land in the Golden Horseshoe. The <i>Greenbelt Plan</i> identifies limits to urbanization to provide permanent protection to the agricultural land base and the ecological features and functions occurring within this landscape. Contact the Ministry of Municipal Affairs and Housing for more details.</p> <p>Alternatives must conform with Section 4.2 of the <i>Greenbelt Plan</i>.</p>

Service Delivery Standards Recommended TRCA Contact Points in the Municipal Class EA Planning & Design Process



Please note:
This chart presents a simplification of the EA process and is not meant to replace Exhibit A.2 of the Municipal Class EA Terms of Reference