CITY OF VAUGHAN

EXTRACT FROM COUNCIL MEETING MINUTES OF MARCH 20, 2018

Item 4, Report No. 10, of the Committee of the Whole, which was adopted without amendment by the Council of the City of Vaughan on March 20, 2018.

4 KING-VAUGHAN ROAD BRIDGE REPLACEMENT CLASS ENVIRONMENTAL ASSESSMENT STUDY NOTICE OF STUDY COMPLETION

The Committee of the Whole recommends approval of the recommendation contained in the following report of the Deputy City Manager, Public Works, dated March 6, 2018:

Purpose

To inform Council of the findings and recommendations of the King-Vaughan Road Bridge Replacement Class Environmental Assessment study in advance of filing the Notice of Study Completion.

Recommendations

1. That this report be received for information purposes.

Report Highlights

- The City of Vaughan has completed a Schedule 'C' Municipal Class Environmental Assessment (Class EA) to assess an appropriate rehabilitation / replacement strategy for the King-Vaughan Road Bridge.
- This Environmental Study Report (ESR) documents the rationale for the project, the background to the study, existing and future conditions within the study area, the planning, design and consultation process leading to the preferred alternative, anticipated positive and negative impacts, and proposed mitigation measures.
- The preferred alternative is to replace the existing temporary bridge with a new two-lane bridge structure at the existing location.

Background

The King-Vaughan Road Bridge was an arch bridge originally constructed in 1920, and carries one lane of vehicular traffic across the East Humber River. The crossing experiences low traffic activity, with average daily traffic of 704 vehicles per day. The speed limit at this location is 60 km per hour, with a posted load limit of 12 metric tonnes.

…/2

On April 21, 2015, Council approved the recommendations to award Amec Foster Wheeler Environment and Infrastructure to undertake the Class Environmental Assessment Study (Class EA) and preliminary design for the King-Vaughan Road Bridge replacement. Subsequently, a Notice of Study Commencement was issued on July 2, 2015.

During routine inspections in the summer of 2015, structural deficiencies were identified on the bridge that required immediate attention. Consequently, a temporary single-lane bridge structure was constructed over the existing concrete bridge structure in and opened in December 2015 to provide safe access across the bridge to the travelling public, while the Class EA study is being completed.

Previous Reports/Authority

April 14, 2015, Committee of the Whole (Item11, Report No.17)

July 2, 2015, King-Vaughan Road Bridge EA; Notice of Study Commencement

Analysis and Options

The Class EA Study examined the problem and opportunities with the existing bridge structure

The purpose of the Class EA study is to confirm the structural condition, along with the hydraulic and safety concerns related to the existing single-lane bridge, and to determine the appropriate structural rehabilitation/replacement strategy that will address the concerns and accommodate the future traffic demands. Based on initial investigation and consultation, the following deficiencies and opportunities with the bridge structure were identified:

- significantly deteriorated structural condition of the existing concrete bridge;
- sub-standard (single lane) travel width;
- sub-standard hydraulics; and
- opportunity to improve structure opening to enhance the natural environment.

Public Information Centres were held to inform and obtain input from the public and stakeholders

As part of the Class EA process, Public Information Centres (PIC) were held where the project team presented the study background and alternate planning solutions to the

issue(s). The first PIC was held on April 7, 2016 and the second public consultation was held on March 2, 2017. Comments received at these PICs have been incorporated in the Class EA Study.

A new two-lane bridge is the recommended option for the replacement of the existing bridge

Through an evaluation of the planning alternatives based on a set of criteria that broadly represents the specific environments for the study area (land use, transportation, road network, existing and future traffic demands, natural and socio-economic environment, bridge conditions, etc.) it was determined that:

- The replacement of the existing structure with a new two-lane bridge at the existing location would be the preferred alternative. The bridge will consist of two 3.25 m lanes with a 1.5 m shoulder. The preferred alternative will provide a new bridge that meets current design standards, as well as two lanes for traffic, improve hydraulic capacity of the East Humber River, and provide opportunity to enhance the local natural environment. By maintaining the existing alignment, it alleviates the need for property acquisition and mitigates environmental impacts.

- For rural arterial roads, in accordance with the MTO criteria, the acceptable requirement for bridge structures is to pass a 50 year storm event with a minimum freeboard requirement of 0.5 m. A concrete precast girder bridge with the vertical profile at the bridge raised by 1.0 metre provides adequate vertical clearance and will increase the hydraulic capacity from the existing 10 year storm event to a 100 year storm event. The backwater impact resulting from the proposed design increases marginally from the previously accepted impact by the affected upstream property owners caused by the current temporary bridge.

Filing the Environmental Study Report (ESR) for Agency and Public Review is the next step in the study process

The next steps in the study are as follows:

- Finalize the ESR and Technical Reports based on comments from reviewers, regulatory agencies and stakeholders.
- Issue a Notice of Study Completion and place the ESR for the minimum 30-day public review period. During this period, the public may further review and submit comments and/or concerns to the City and the Minister of Environment and Climate Change (MOECC). Staff will address these comments and should any member of the public not be satisfied with the responses, a Part II Order request may be submitted directly to the Minister of the Environment and Climate Change thereby initiating an independent Ministry review.

Financial Impact

There are no financial impacts at this time.

Broader Regional Impacts/Considerations

The recommendations of the King-Vaughan Road Bridge Municipal Class EA Study has considered the impacts of the York Region's Regional Official Plan and the Greater Toronto Area West Corridor Class EA.

Greater Toronto Area West (GTA West) Corridor Study has been suspended by the Province

In December 2015, the Ministry of Transportation (MTO) suspended its work on the environmental assessment of the GTA West highway corridor to conduct an internal review of the work undertaken since 2007. The GTA West Corridor Planning Study Area includes King-Vaughan Road between Pine Valley Drive and Highway 27.

On February 9, 2018 MTO issued an update advising the Ministry has accepted an expert advisory panel's recommendation that a proposed highway in the GTA West corridor is not the best way to address changing transportation needs. It also noted that in light of the panel's recommendation, the transportation needs of the corridor will be evaluated from a regional perspective through the Greater Golden Horseshoe (GGH) Transportation Plan, which considers the many ways people and goods move around the region, and will incorporate new and emerging transportation technologies into future projects.

In this regard, staff will continue to communicate with MTO for the implementation of the preferred alternative in the Municipal Class EA study for the King-Vaughan Road Bridge.

Conclusion

The Municipal Class EA study for the King-Vaughan Road Bridge is now complete and the Notice of Study Completion will be advertised as per the Municipal Class EA process. Stakeholders and the general public have been engaged throughout the study process. Staff will continue to work with all partners to address any comments receive during the review period.

The preferred alternative is to replace the existing bridge with a two-lane precast concrete girder bridge at its current location.

Following filing of this Environmental Study Report, subject to resolution of any issues raised during the filing period, the City may proceed to detailed design and construction of this project.

CITY OF VAUGHAN

EXTRACT FROM COUNCIL MEETING MINUTES OF MARCH 20, 2018

Item 4, CW Report No. 10 – Page 5

For more information, please contact: Jack Graziosi, Director Infrastructure Delivery, Ext.8201

Attachments

1. Location Map
2. Municipal Class Environmental Assessment King-Vaughan Bridge Replacement - Draft Executive Summary

Prepared by

Pat Marcantonio, Project Manager, Ext.8468
Mohan Toor, Manager, Design and Construction (West), Ext.8144

(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.)

Item:

Committee of the Whole Report

DATE: Tuesday, March 06, 2018 **WARD(S):** 1

TITLE: King-Vaughan Road Bridge Replacement Class Environmental Assessment Study
Notice of Study Completion

FROM:
Stephen Collins, Deputy City Manager, Public Works

ACTION: FOR INFORMATION

Purpose

To inform Council of the findings and recommendations of the King-Vaughan Road Bridge Replacement Class Environmental Assessment study in advance of filing the Notice of Study Completion.

Recommendations

1. That this report be received for information purposes.

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Background

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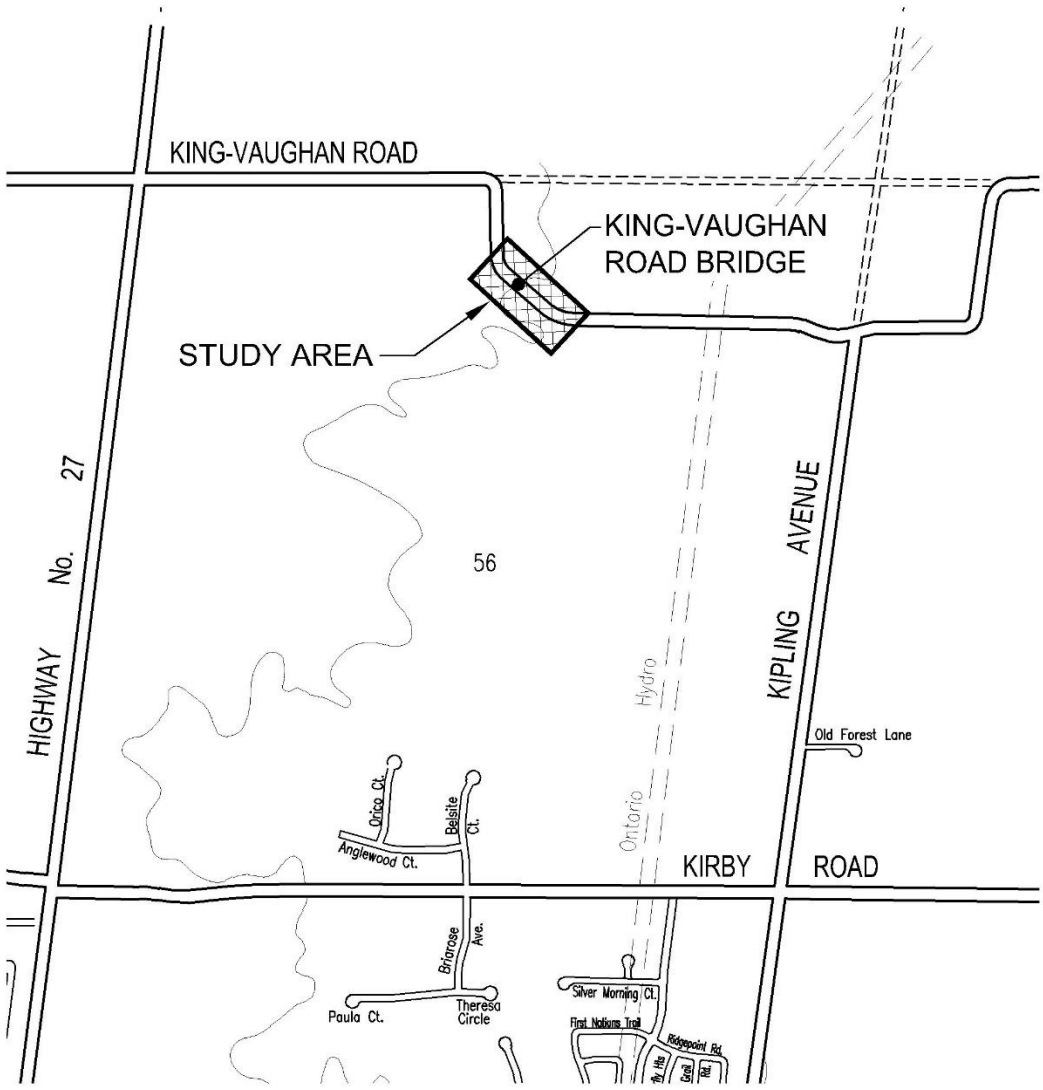
ATTACHMENT No. 1



RFP15-070
KING - VAUGHAN ROAD BRIDGE REPLACEMENT
CLASS ENVIRONMENTAL ASSESSMENT STUDY
BLOCK 56

LEGEND

SUBJECT AREA

NOT TO SCALE

Printed on: 3 April 2012

File path: C:\vaughan\KING VAUGHAN ATTACH.dwg

CITY OF VAUGHAN – INFRASTRUCTURE DELIVERY

Engineering Design Technician: M.E.O.

ATTACHMENT NO. 2

DRAFT EXECUTIVE SUMMARY

Environmental Study Report

The City of Vaughan (the City) has completed a Schedule 'C' Municipal Class Environmental Assessment (Class EA) to assess an appropriate rehabilitation / replacement strategy for the King-Vaughan Road Bridge. Amec Foster Wheeler was retained by the City to complete the study. This Environmental Study Report (ESR) documents the rationale for the project, the background to the study, existing and future conditions within the study area, the planning, design and consultation process leading to the preferred alternative, anticipated positive and negative impacts, and proposed mitigation measures.

Background to the Study

The King-Vaughan Road Bridge is an arch bridge constructed in 1920, and carries one lane of vehicular traffic across the East Humber River in one continuous span. The crossing is very lightly used, with average daily traffic of 704 vehicles per day. The speed limit at this location is 60 km per hour, with a posted load limit of 12 metric tonnes. At the time of this study, the City has not designated the bridge as a Heritage Site under the *Ontario Heritage Act*. King-Vaughan Road is a minor arterial road under the City's Official Plan (2010).

Structural inspection of the King-Vaughan Road Bridge identified that immediate attention was required. Consequently, a temporary single-lane bridge structure was constructed in late 2015. However, in order to determine an appropriate long-term solution, a Schedule C Municipal Class EA Study was initiated to assess an appropriate rehabilitation / replacement strategy.

Existing and Future Conditions

As part of the Class EA, a review of existing and future conditions was completed. The objective of the review was to confirm the need and justification for the rehabilitation / replacement of the bridge, as well as to identify environmental constraints and sensitivities. Investigations have been completed for the following:

- Land use
- Existing Roadway Network
- Existing Traffic Conditions
- Future Traffic Conditions
- Existing Structure Condition and Temporary Bridge
- Transportation
- Natural Environment
- Hydraulic capacity
- Socio-Economic Environment

Problem/Opportunity Definition

The purpose of this study is to confirm the structural condition, along with the hydraulic and safety concerns related to the existing single-lane bridge, and to determine the appropriate structural rehabilitation/replacement strategy that will address the concerns and accommodate forecasted traffic demands. Based on initial investigation and consultation, the following deficiencies and opportunities have been identified:

- significantly deteriorated structural condition;
- sub-standard (single lane) width;
- sub-standard hydraulics; and
- opportunity to improve structure opening to enhance geomorphology.

Development and Assessment of Alternative Planning Solutions

Four (4) planning alternatives have been identified for consideration in addressing the problems and opportunities discussed above:

Alternative 1: **Do Nothing:** Leave the King-Vaughan Road Bridge over the East Humber River Tributary in its current state (temporary bridge over pre-existing structure). This alternative will result in continuing deterioration of the pre-existing structure and continued single lane operations.

Alternative 2: **Rehabilitation of the Structure:** Complete rehabilitation of the pre-existing structure as required to maintain vehicular access with minimal disruption to traffic.

Alternative 3: **Replacement of the Structure**: New two-lane vehicle bridge using existing or alternative bridge alignment.

Alternative 4: **Remove Bridge Structure:** This would interrupt continuous access of King-Vaughan Road from Hwy 27 to Pine Valley Drive. No new structure would be constructed and vehicular traffic would be diverted to the north to King Road or south to Kirby Road.

Based on the review of existing and future conditions, the assessment of planning alternatives, as well as consultation with stakeholders, the project team has selected as the **Preferred Planning Alternative 3: Replacement of the Structure: New two-lane bridge using existing or alternative bridge alignment.** The Preferred Planning Alternative selected would provide a new bridge that meets current design standards, two lanes of traffic, improve hydraulic capacity, and provide opportunity to enhance the local fluvial geomorphology. With proper environmental constraint avoidance and mitigation planning, the benefits of the Preferred Planning Alternative outweigh its potential impacts to the natural and cultural environment.

Development and Assessment of Alternative Designs Concepts

Horizontal Alignment Alternatives

- Alternative Design 1: Maintain Existing King-Vaughan Road alignment
- Alternative Design 2: Realign King-Vaughan Road northerly
- Alternative Design 3: Realign King-Vaughan Road southerly

The preferred alternative is Alternative Design 1: Maintain Existing King-Vaughan Road Alignment, as it minimizes grading, property, and environmental impacts.

Vertical Alignment Alternatives

The following vertical alignment alternatives were developed and assessed:

- Alternative Design 1: Maintain Pre-existing King-Vaughan Road profile
- Alternative Design 2: Raise King-Vaughan Road by 1.0 meter

The preferred vertical alignment alternative is Alternative Design 2: Raise King-Vaughan Road by 1.0 meter, as it provides adequate vertical clearance to meet the hydraulic requirements.

Cross-Section Alternatives

The following cross-section alternatives were developed and assessed:

- Alternative Design 1: Apply Standard roadway grading design and standard side slopes
- Alternative Design 2: Provide a Retained Soil System (RSS) to reduce grading impacts

The preferred alternative is Alternative Design 2: Provide Retained Soil System (RSS) to reduce grading impacts. By providing an RSS wall, the environmental impact area adjacent to sensitive Red Side Dace habitat is minimized

Structural Alternatives

The following structural alternatives were developed and assessed:

- Alternative Design 1: CPCI Girder Bridge
- Alternative Design 2: Prestressed Box Girder Bridge
- Alternative Design 3: Cast-in-Place Concrete Rigid Frame Structure
- Alternative Design 4: Bebop/Arch System

In order to minimize construction work in the watercourse, all the above options must span the length of the existing concrete arch bridge.

The preferred alternative is Alternative Design 2: Prestressed Box Girder Bridge, as it is the most economical alternative, with the least environmental impact.

Description of Preferred Design

The preliminary design is documented in detail in Section 6 of this Environmental Study Report.

The following is a summary of the key aspects of the preferred design:

- Single span, integral abutment bridge with side-by-side pre-stressed concrete box girders
- Cast-in-place concrete distribution slab
- Asphalt surface
- Two 3.25 m lanes and with 1.5 m shoulders
- Bridge opening of 16.4 m, centered and perpendicular to the existing channel alignment centerline
- Flows up to and including the 100 Year storm event will be accommodated by the new opening
- Design speed of 70 km/h
- Existing horizontal alignment maintained
- Vertical roadway profile will be raised by 1.0 metre
- No property acquisition is required for the preferred design
- No existing utilities within the study area
- Agency approvals are required from Ministry of Environment and Climate Change (MOECC), Toronto and Region Conservation Authority (TRCA), and Ministry of Natural Resources and Forestry (MNRF)
- Full road closure of King-Vaughan Road will be required to facilitate bridge replacement

Following filing of this Environmental Study Report, subject to resolution of any issues raised during the filing period, the City may proceed to detailed design and construction of this project.