Report to Civic Works Committee

To: **Chair and Members**
Civic Works Committee
From: **Kelly Scherr, P. Eng., MBA, FEC**
Deputy City Manager, Environment & Infrastructure
Subject: **Kensington Bridge**
Environmental Study Report, Notice of Completion
Date: **October 24, 2023**

Recommendation

That, on the recommendation of the Deputy City Manager, Environment and Infrastructure, the following actions **BE TAKEN** with respect to the Kensington Bridge Municipal Class Schedule C Environmental Assessment:

a) The Kensington Bridge Environmental Assessment Study **BE ACCEPTED**;

b) A Notice of Study Completion for the Project **BE FILED** with the Municipal Clerk; and,

c) The Environmental Study Report **BE PLACED** on the public record for a 30-day review period.

Executive Summary

Purpose

This report provides an overview of the Municipal Class Environmental Assessment (EA) process that was completed and seeks direction to finalize the Environmental Study Report (ESR) and provide it for the necessary 30-day public review period. The bridge is displaying structural deterioration needs. The age of the bridge requires that an EA is required to determine the solution. The EA identifies that a rehabilitation of the Kensington Bridge is the preferred alternative to address the structural deterioration and service life of the structure.

Context

Constructed in 1930, the Kensington Bridge is a three-span steel modified Warren pony-truss structure with an exposed concrete deck. The bridge currently accommodates two eastbound lanes of traffic and two pedestrian sidewalks on Riverside Drive over the North Branch of the Thames River, as well as a bi-directional cycle track located on the south side of the bridge.

Kensington Bridge is in an area of London with significant cultural heritage value and interest. The bridge is designated under Part V of the Ontario Heritage Act and is a gateway structure between the Blackfriars/Petersville Heritage Conservation District to the west and the Downtown London Heritage Conservation District to the east.

The City has completed an EA to address the structural deterioration and service life of Kensington Bridge. The entire planning process has been documented in an Environmental Study Report, to identify, evaluate and determine the best long-term solution and design concept for Kensington Bridge. The implementation of the bridge renewal is tentatively planned for 2028.

The study area is centred around Riverside Drive / Dundas Street from Wharncliffe Road North to Ridout Street North as illustrated in Figure 1. The primary focus of the study is centred in the immediate area around Kensington Bridge.

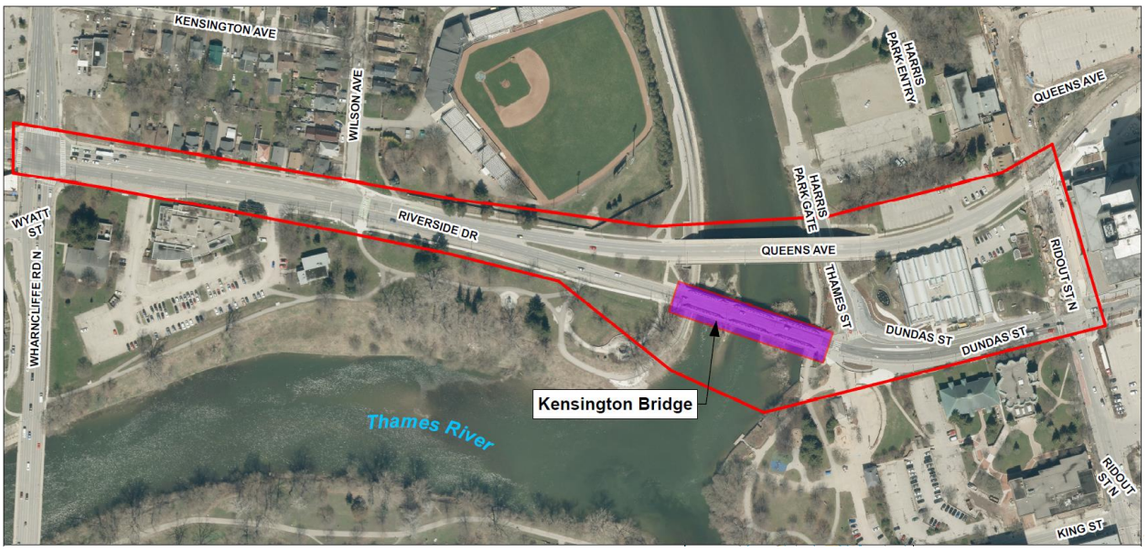


Figure 1: Study Area

Linkage to the Corporate Strategic Plan

Municipal Council's Strategic Plan identifies "Mobility and Transportation" as a strategic area of focus. This report supports the Strategic Plan by identifying the building of infrastructure that provides safe, integrated, connected, reliable and efficient transportation choices.

Analysis

1.0 Background Information

1.1 Previous Reports Related to this Matter

- Civic Works Committee – September 21, 2021 – Kensington Bridge – Class C Environmental Assessment Appointment of Consulting Engineer

2.0 Discussion and Considerations

2.1 Study Description

The Kensington Bridge EA was carried out in accordance with Schedule C of the Municipal Class Environmental Assessment (Class EA) requirements. The Class EA process is approved under the Ontario Environmental Assessment Act and outlines the process whereby municipalities can comply with the requirements of the Act.

The Class EA study has satisfied the requirements of the Ontario Environmental Assessment Act by providing a comprehensive, environmentally sound planning process with public participation. The Environmental Study Report (ESR) documents the process followed to determine the recommended undertaking and the environmentally significant aspects of the planning, design, and construction of the proposed improvements. It describes the problem being addressed, the existing social, natural and cultural environmental considerations, the planning and design alternatives that were considered, and a description of the recommended alternative.

The ESR also identifies environmental effects and proposed mitigation measures, commitments to further work, and consultation associated with the implementation of the project. To view a copy of the full draft ESR, follow the link: https://getinvolved.london.ca/kensingtonbridge

2.2 Problem and Opportunity Statement

Phase I of the Municipal Class EA (MCEA) process involved the identification of the problem and opportunity statement. The problems and opportunities for the Kensington Bridge EA are provided below:

Problems:

- To address the ongoing maintenance issues with the bridge and achieve an additional service life objective of 50 years, it is necessary to complete the bridge deck replacement, steel recoating and other major repairs.
- The Thames Valley Parkway passes below the east and west spans of the bridge, with height clearances of 2.5 m to 4.0 m.
- The bridge meets the criteria to merit heritage designation under the Ontario Heritage Act and is currently designated under Part V of the Ontario Heritage Act as part of Blackfriars / Petersville Heritage Conservation District.

Opportunities:

- To identify the preferred solution for the replacement or rehabilitation of Kensington Bridge through supporting background studies, field investigations and a systematic evaluation process.
- Gather feedback from public, area community partners, agencies and Indigenous communities allowing the sharing of ideas and information.
- Coordinate any bridge work with planned improvements to the Thames Valley Parkway and other adjacent projects.

2.3 Alternative Planning Solutions

Phase II of the MCEA process includes an inventory of the existing socio-economic, cultural and natural environments, and technical considerations to identify alternative solutions to address the problem/opportunity statement. The following three alternative solutions were developed for Kensington Bridge:

- **Alternative 1: Do Nothing** – this alternative provides a basis to which other alternative planning solutions can be compared.

- **Alternative 2: Rehabilitate the Existing Structure** – this alternative involves completing the recommended works to achieve a minimum of 50-year service life objective.

- **Alternative 3: Replace the Existing Structure** – this alternative involves replacing the structure with a new bridge:
    - Alternative 3a – Replace the structure on the existing alignment.
    - Alternative 3b – Replace the structure on a new alignment.

Alternative solutions were identified and evaluated based on their ability to reduce impacts associated with socio-economic, cultural environment, natural environment, technical environment, and cost.

Through the evaluation of the above listed alternatives, **Alternative 2** was recommended to be carried forward to Phase III of the EA Study.

2.4 Alternative Design Concepts

Following confirmation of the preferred planning solution, the next stage of the Municipal Class EA process is to determine design alternatives to feasibly implement the recommendation.

Together with a base scope of rehabilitation to address condition issues on the structure, three design alternatives were formulated based on general considerations that included:

- Provide a reliable and Bridge Code compliant bridge structure suitable for a remaining service life of 50 years.
- Upgrade and increase safety related components such as the pedestrian and bridge railing systems.
- Preserve and maintain heritage features and structural attributes of the existing bridge.
- Promote construction efficiencies, where possible, to reduce costs, construction schedule and impacts to the public.

In addition to the base scope of bridge rehabilitation (to address general deterioration and structural deficiencies), three alternative design concepts were considered:

- Pedestrian Railing System Alternatives.
- Bridge Barrier System Alternatives.
- Decorative Gateway Pillar Alternatives.

Pedestrian Railing System Design Concepts

To facilitate the repairs and to ensure the railing meets current safety standards of modern design codes, two design concepts were identified for the design of the Pedestrian Railing System:

Design Concept PR1: Rehabilitate and reuse the existing railing system.

Design Concept PR2: Replacement of the existing railing with a replicated / sympathetic design approach.

Design Concept PR2 is recommended.

Bridge Barrier System Concepts

Kensington Bridge does not have any type of bridge barrier system to protect the truss structure and motorists from vehicle impacts. Provision of a bridge barrier was deemed necessary on the north side only. Protection of the south truss line is proposed with a raised cycle lane and 2.4 m wide buffer between vehicle traffic lane and truss itself.

As part of the rehabilitation design, three bridge barrier system concepts were identified for review:

Design Concept BB1: **Do Nothing** – Maintain the status quo and do not implement a bridge barrier system as part of the rehabilitation. The structure will not be provided with additional protection from vehicle impacts.

Design Concept BB2: **Construct a concrete parapet wall** – A concrete parapet wall would be constructed along the north curb line (between the traffic lane and truss structure) for protection against impacts. The parapet wall arrangement would be a crashed tested design and consist of a solid reinforced concrete wall to a height of 800 mm above the top of asphalt pavement.

Design Concept BB3: **Construct a metal tube rail system** – A metal tube barrier would be constructed along the north curb line (between the traffic lane and truss structure) for protection against impacts. The metal tube barrier would meet crash test standards and consist of an open two steel tube system to a height of approximately 815 mm above the top of asphalt pavement.

Design Concept BB3 is recommended.

Pillar Design Concepts
The original Kensington Bridge arrangement featured distinctive concrete and stone pillars located on the four corners and aligned with the truss. The pillars featured the bridge name and date of construction. Due to safety concerns, general deterioration and hazards from falling debris, the pillars were removed in 2006. While the pillars were not designated as a heritage attribute of the bridge, the pillars were a unique and interesting feature of the bridge. Sympathetic reconstruction of the pillars would provide an aesthetic feature to the bridge and area, and a gateway feature leading into the downtown. As part of the rehabilitation design, three pillar design concepts were identified for review.

Design Concept P1: **Do Nothing** – Maintain the status quo, no pillars would be constructed.

Design Concept P2: **Construct Sympathetic Pillars at the west end of the bridge in alignment with the truss –** Two new pillars would be constructed on the west side of the bridge in alignment with the truss similar to the original location**.** Given the existing pedestrian crossover, potential sight line obstructions and general available space on the east end of the bridge, only pillars on the west side are proposed.

Design Concept P3: **Construct Sympathetic Pillars at the west end of the bridge, close to the bridge and outside of the sidewalk –** Two new pillars would be constructed on the west side of the bridge positioned farther to the west and on the outside of the sidewalk on the north and south sides of the bridge. Similar to Design Concept P2, new pillars are proposed for the west side only.

Design Concept P3 is recommended.

2.5 Recommended Alternative

The existing overall bridge width will be maintained with a proposed cross-sectional width of 15.56 m. The proposed cross-section of the rehabilitated bridge is summarized in Figure 2.

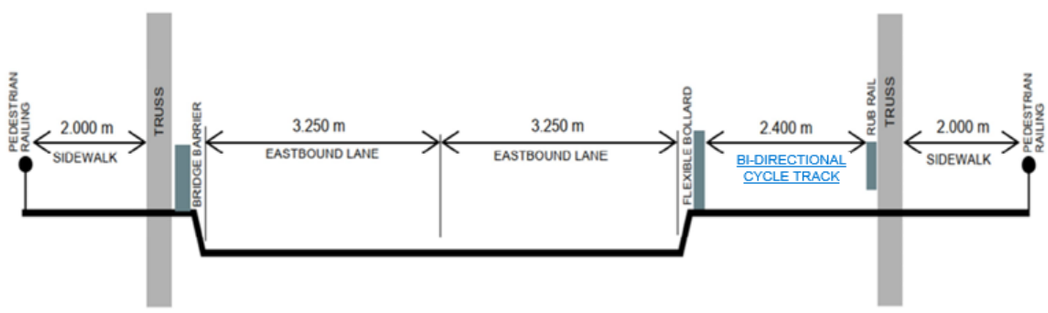


Figure 2: Proposed Rehabilitated Bridge Cross Section

Bridge Cross Section

The cross-section dimensions are similar to the existing layout and are dictated by the existing total width of the bridge. The overall cross sectional bridge width of 15.56 m includes space for the barrier systems (bridge barrier and rub rail), cycle lane buffers, flexible bollard delineators, pedestrian railings and the truss structure projecting through the deck.

Pedestrian Railing System

The existing railing system will be removed and replaced with a sympathetic replication of the original system. The new railing will be designed to replicate the existing aesthetic appeal such that the cultural heritage value of the bridge is conserved.

The railing design will be patterned from the original 1929 design drawings and maintain a very similar aesthetic with the existing railing. Although a full review of details and

connections is required during detailed design, some potential modifications will include a smaller diameter continuous top rail, an intermediate vertical post connected to the sidewalk slab (between existing post locations which are connected to the floor beams) and general member connection methods. The height of the railing will be 1.07 m above the sidewalk surface and railing openings will not exceed 100 mm in accordance with the Bridge Code.

Bridge Barrier System

A crash tested bridge barrier system is proposed for the north side of the bridge adjacent to the travel lanes. In particular, a steel tube system will be designed and anchored into the sidewalk curb.

The two-tube system will provide protection for the structure / vehicles from collisions with the truss structure and will transition to a steel beam guide rail on the northwest approach of the bridge.

West End Pillars

New pillars will be constructed on the west end of the bridge (north and south sides) and positioned on the outside of the clear sidewalk width. Design for the new pillars will be visually similar to the original pillars and include a name and date stone.

Although there is no existing information, the sizing of the pillars will replicate to the best extent possible the original sizing. Overall size, height and material selection will be reviewed during detailed design in consultation with City Heritage staff.

Bridge Lighting

The existing two light standards located over the piers and between the trusses will be removed and replaced with new poles. Four poles are proposed in the locations of the original poles including the current two pole positions. These will align with the symmetry of the bridge and enhance the lighting of the bridge. The lighting design will meet current standards.

Despite the loss of the original sleeves of the lamp posts, decorative lamp posts are proposed to be sympathetic to the current posts. A review of decorative pole bases will be undertaken during detailed design regarding the feasibly of replicating the existing pole base in some manner. The opportunity to reinstall a decorative base, arm and light fixture is a positive opportunity and mitigates the direct adverse impact of removing this existing heritage attribute. Consultation with City Heritage staff will be completed during detailed design and as part of the heritage alteration permit process.

Active Transportation

Beyond the bridge, there are no proposed changes to bicycle facilities. With the overall constrained bridge width, the proposed rehabilitation efforts will maintain a bi-directional cycle track width of 2.4 m, conforming to the requirements of the Ontario Traffic Manual, Book 18. Additional protection for the cycle track is proposed over the current arrangement by placing the bicycle facilities on a raised sidewalk curb with a buffer from the driving lane and delineating with flexible bollards along the edge. An additional separation width of 300 mm from the rub rail is also proposed adjacent to the truss. Alternate arrangements for enhanced protection measures will be reviewed during detailed design.

All sidewalk facilities on the bridge will be maintained and connected with sidewalks to the east and west sides of the bridge. The clear width of the cantilevered sidewalks on both sides of the bridge will be marginally increased from 1.83 m to 2.0 m.

The current Thames Valley Parkway vertical clearances underneath the east and west ends of the bridge meet the minimum requirements of 2.5 m of Ontario Traffic Manual,

Book 18. Raising the bridge superstructure was considered to increase the vertical clearance; however, significant approach work would be required for the recently reconstructed sections of Dundas Street and Harris Park Gate. The cost of such an undertaking would also be significant to complete bridge jacking, temporary supports, substructure modifications and east approach reconstruction. There are no operational concerns with the current clearance and users of this section of the pathway also traverse other lower vertical clearances such as the King Street Footbridge, located just south of Kensington Bridge. Additional hazard and warning signage is recommended.

No other changes are proposed to the Thames Valley Parkway below the east and west spans of Kensington Bridge as part of bridge rehabilitation. Other area studies may provide upgrades to the Thames Valley Parkway. This work would generally require coordination with bridge rehabilitation.

Localized closures of the pathway at Kensington Bridge will require full and temporary closures of the pathway system during construction.

3.0 Financial Impact/Consideration

3.1 Preliminary Cost Estimates

Preliminary cost estimates were developed for the recommended design concept. The cost estimate breaks down the project into various parameters such as roadways, underground infrastructure, bridge work and electrical. The preliminary capital cost of implementation is estimated to be approximately $9.1 M with contingencies applied. The final cost estimate will be further refined during detailed design based on the design details and construction and material cost variations between now and the construction year. Preliminary cost estimates for Kensington Bridge are shown in Table 1 below.

Table 1: Preliminary Construction Costs (2023 dollars)

Item	**Cost**
Road Work	$440,000
Electrical and Utility Work	$300,000
Landscaping	$150,000
Bridge Work	$5,325,000
Miscellaneous	$295,000
Subtotal	**$6,510,000**
Construction Contingency (10%)	$651,000
Total Estimated Capital Value	**$7,161,000**
Engineering (Detailed Design/Construction) (12%)	$859,000
Contingency of Preliminary Estimate (15%)	$1,074,000
Total Preliminary Project Estimate (rounded)	**$9,100,000**

The project is proposed to be funded from the annual capital budget account for the lifecycle renewal of bridges.

4.0 Key Issues and Considerations

4.1 Property Impacts

There are no requirements for property acquisition related to the preferred design alternative of rehabilitation.

4.2 Traffic Management

Due to the complications and challenges with staging rehabilitation work on a truss structure, staging traffic on the bridge itself during construction is not feasible.

It is recommended that eastbound Riverside Drive traffic be reduced to one lane and be diverted onto Queens Avenue, using the Queen's Bridge to cross the Thames River. The Riverside Drive eastbound lanes traffic would be closed from west of the bridge on Riverside Drive, to the east side of the bridge at Ridout Street North. Eastbound traffic on Riverside Drive would be diverted onto Queens Avenue, to southbound on Ridout Street, and connect at the Dundas Street / Ridout Street intersection. Westbound traffic would be maintained on Queens Avenue, while conveying two-way traffic over Queen's Bridge. The Queen's Bridge is scheduled for rehabilitation in 2026 and planned to be completed prior to the Kensington Bridge rehabilitation.

A single lane eastbound detour onto the Queens Bridge represents a reduced overall impact to eastbound traffic compared to a longer detour scenario and is recommended for the rehabilitation of Kensington Bridge. This traffic management approach has been implemented in the past.

4.3 Access Management

The shipping / receiving dock at Museum London currently requires one lane of Queens Avenue when receiving large deliveries for exhibits. With this section of Queens Avenue becoming a temporary two-way street, closing one lane of traffic for long periods of time to receive deliveries will cause traffic and safety concerns. Through initial consultation with Museum London, some proposed methods were discussed and should be explored. These include, but are not limited to:

- Using flag persons to direct traffic during deliveries;
- Schedule deliveries during late evenings or other times of low traffic to reduce traffic disruptions; and,
- Schedule museum exhibits that use onsite stored displays during the time of construction.

During detailed design and prior to construction, further consultation with Museum London will be required to facilitate safe delivery of exhibits.

4.4 Climate Change

The City of London's "Climate Emergency Action Plan" was finalized in April 2022 which outlines the City's plan to achieve three main goals:

- Net-zero community greenhouse gas emissions by 2050;
- Improved resilience to climate change impacts; and,
- Bring everyone along (e.g., individuals, households, businesses, neighbourhoods).

Although this project has a relatively small footprint and the climate change impacts can be considered relatively minor, it does not preclude consideration. Removal of any naturalized vegetation in the study area can result in a reduction carbon sequestration capacity which has been taken into consideration for this study. The main consideration for this project would be potential greenhouse gas emissions related to alternative solutions, including construction methods and duration and the overall improvements to active transportation facilities which produce positive benefits to air quality and climate change effects by reducing automobile reliance. As such greenhouse gas emissions were considered in the evaluation of alternative solutions and improving active transportation facilities such as improved bicycle lanes, and sidewalks has been considered and incorporated into the design alternatives for this study.

Further, the City declared a climate emergency on April 23, 2019 for the purposes of naming, framing, and deepening its commitment to protecting its economy, ecosystems and its communities from climate change. The guidelines in the City's Climate

Emergency Action Plan for transportation planning states that “transportation planning accounts for the movement of people and goods. In an ideal world, you would minimize the interactions between the two. However, the reality is that a city’s transportation network often must serve both needs at the same time. An energy-efficient transportation system is one that provides several competitive choices for the movement of people and goods.” The City of London has also created the Climate Emergency Action Plan Tool, which is a questionnaire regarding climate change and the types of effects that a project will have on it. The tool has been applied to the project and further opportunities to address climate change in terms of mitigation for greenhouse gas emissions and resiliency will be considered during the design phase.

4.5 Public and Agency Consultation

The involvement of the community, such as residents, agencies, community partners, Indigenous communities, and others who may be potentially affected by a project, is an integral part of the Municipal Class Environmental Assessment process.

A Notice of Study Commencement was issued on March 17, 2022. The study team received correspondence from the public and agencies indicating their interest in the study and requesting to be kept informed.

The following area Indigenous communities were notified of the study commencement and public information centres with opportunities to provide input and identify any issues or concerns: Aamjiwanaang First Nation, Bkejwanong (Walepole Island), Cladwell First Nation, Chippewas of Kettle and Stony Point, Chippewas of the Thames First Nation, Oneida Nation of the Thames, Elunaapeewii Lahkeewiit (Delaware Nation or Moravian of the Thames), Munsee-Delaware Nation, and Haudenosaunee Development Institute. No comments or concerns were received from any of the consulted Indigenous communities.

The first Public Information Centre was held on June 8, 2022 in a virtual format with a formal presentation followed by a ‘question-and-answer’ period. The purpose of Public Information Centre No. 1 was to share study findings to date and gather comments on the problem and opportunity statement, existing conditions, alternative planning solutions and the evaluation of the recommended solution.

The second Public Information Centre was held on March 2, 2023 in a virtual format with a format presentation followed by a ‘question-and-answer’ period. The purpose of Public Information Centre No. 2 was to share study findings to date and gather comments on the evaluation of design alternatives, the recommended design alternative and next steps.

Project information was presented to the following City of London Advisory Committees for feedback: Integrated Transportation Community Advisory Committee, Ecological Community Advisory Committee and the Community Advisory Committee on Planning.

During the upcoming 30-day public review, the Environmental Study Report (ESR) will be made available on the City of London website, at City Hall, and at the Central Library. The ESR is also available on the City’s website: https://getinvolved.london.ca/kensingtonbridge and the Environmental Study Report Executive Summary is attached as Appendix A. As per Ministry of the Environment, Conservation and Parks’ (MECP) request, the draft ESR has been submitted for their technical review

If a member of the public choses, they may make a request to the Ministry of the Environment, Conservation and Parks (MECP) for an order requiring a higher level of study (ie. requiring an individual/comprehensive EA approval before being able to proceed), or that conditions be imposed (ie. require further studies). These requests will be considered only on the grounds that the requested order may prevent, mitigate or remedy adverse impacts on constitutionally protected Indigenous and treaty rights.

4.6 Implementation

Construction timing is tentatively scheduled for 2028 and shall be coordinated with the construction timing of upcoming major projects such as the Labatt siphon replacement, West London Dyke sanitary trunk sewer replacement, Queen's Bridge rehabilitation, and the West London Dyke.

With a detoured traffic staging arrangement, the duration of construction for the bridge rehabilitation is estimated to be 26 weeks. An early construction contract award is recommended to enable a construction start in April of the construction year. The completion of construction should be targeted for the end of October in the same year.

More consideration and construction timing estimates will be completed during detailed design to confirm the required schedule.

Conclusion

Rehabilitation of the Kensington Bridge is required to address the structural deterioration and service life of Kensington Bridge. A Municipal Class Environmental Assessment (EA) study was undertaken to confirm the preferred long-term solution in accordance with Schedule C of the Municipal Class Environmental Assessment process. The draft ESR has been uploaded to the project webpage and will be reviewed by the MECP prior to posting for the final public review. The implementation of the bridge renewal is tentatively planned for 2028.

Consultation was a key component of this study. The Class EA was prepared with consultation with Indigenous Communities, the public, advisory committees, agencies, utilities, and property owners in proximity to the study. Further consultation will occur during the detail design process. Pending Council acceptance, a Notice of Study Completion will be filed, and the ESR will be placed on public record for a 30-day review period. Interested parties and the public are encouraged to provide input and comments regarding the study during this time. Accommodation will be made for those requiring hard copy review. Requests for a higher level of study or conditions may be submitted to the MECP based on impacts to constitutionally protected Indigenous and treaty rights.

Prepared by:	**Garfield Dales, P. Eng, Division Manager, Transportation Planning and Design**
Submitted by:	**Doug MacRae, P. Eng., MPA, Director, Transportation and Mobility**
Recommended by:	**Kelly Scherr, P. Eng., MBA, FEC, Deputy City Manager, Environment and Infrastructure**

Attach: Appendix A – Environmental Study Report Executive Summary

cc: Integrated Transportation Community Advisory Committee
John Pucchio, AECOM Canada Ltd
Karl Grabowski, City of London
Andrew Denomme, City of London

Appendix A – Environmental Study Report Executive Summary

The City of London (the City), through their consultant AECOM Canada Ltd. (AECOM) has completed a Municipal Class Environmental Assessment Study to address the structural deterioration and service life of Kensington Bridge. The entire planning process has been documented in this Environmental Study Report, to identify, evaluate and determine the best long-term alternative solution and design concept for Kensington Bridge. This bridge Municipal Class Environmental Assessment Study (also known hereafter as the or "Study" and "Project") is classified as a Schedule 'C' project in the Municipal Engineers Association Municipal Class Environmental Assessment Manual (October 2000, as amended in 2007, 2011, and 2015).

Study Area

The Study Area is centred around Riverside Drive / Dundas Street from Wharncliffe Road North to Ridout Street North as illustrated in **Figure ES-1**. The primary focus of the Study is centred in the immediate area around Kensington Bridge.

Problem and Opportunity Statement

The problems and opportunities for Kensington Bridge Environmental Assessment are given below:

Problems:

- To address ongoing maintenance issues with the bridge and achieve an additional service life objective of 50 years, it is necessary to complete the deck replacement, steel recoating and other major repairs.
- The Thames Valley Parkway passes below the east and west spans of the bridge, with height clearances of 2.5 m to 4.0 m.
- The bridge meets the criteria to merit heritage designation under the Ontario Heritage Act and is currently designated under Part V of the Ontario Heritage Act as part of Blackfriars / Petersville Heritage Conservation District.

Opportunities:

- To identify the preferred solution for the replacement or rehabilitation of Kensington Bridge through supporting background studies, field investigations and a systematic qualitative evaluation process.
- Gather feedback from public, area community partners, agencies and Indigenous communities allowing the sharing of ideas.
- Coordinate any bridge work with planned improvements to the Thames Valley Parkway.

Alternative Planning Solutions

For the purposes of the Kensington Bridge Municipal Class Environmental Assessment (MCEA), planning solutions to the undertaking included:

Alternative 1: Do Nothing – this alternative provides a basis to which other alternative planning solutions can be compared.

Alternative 2: Rehabilitate the Existing Structure – this alternative involves completing the recommended works to achieve a minimum of 50-year service life objective.

Alternative 3: Replace the Existing Structure – this alternative involves replacing the structure with a new bridge:

- **Alternative 3a** – Replace the structure on the existing alignment

- **Alternative 3b** – Replace the structure on a new alignment.

The above identified alternative solutions were screened against the problem and opportunity statement as outlined in **Section 4** of this Report, with the recommended planning solution being **Alternative 2: Rehabilitate the Existing Structure**.

Alternative Design Concepts to address the Recommended Planning Solution

Following confirmation of the preferred planning solution, the next stage of the Municipal Class EA process is to determine design alternatives to feasibly implement the recommendation.

Together with a base scope of rehabilitation to address condition issues on the structure, three design alternatives were formulated based on general considerations that included:

- Provide a reliable and Bridge Code compliant bridge structure suitable for a remaining service life of 50 years.
- Upgrade and increase safety related components such as pedestrian and bridge railing systems.
- Preserve and maintain heritage features and structural attributes of the existing bridge.
- Promote construction efficiencies, where possible, to reduce costs, construction schedule and impacts to the public.

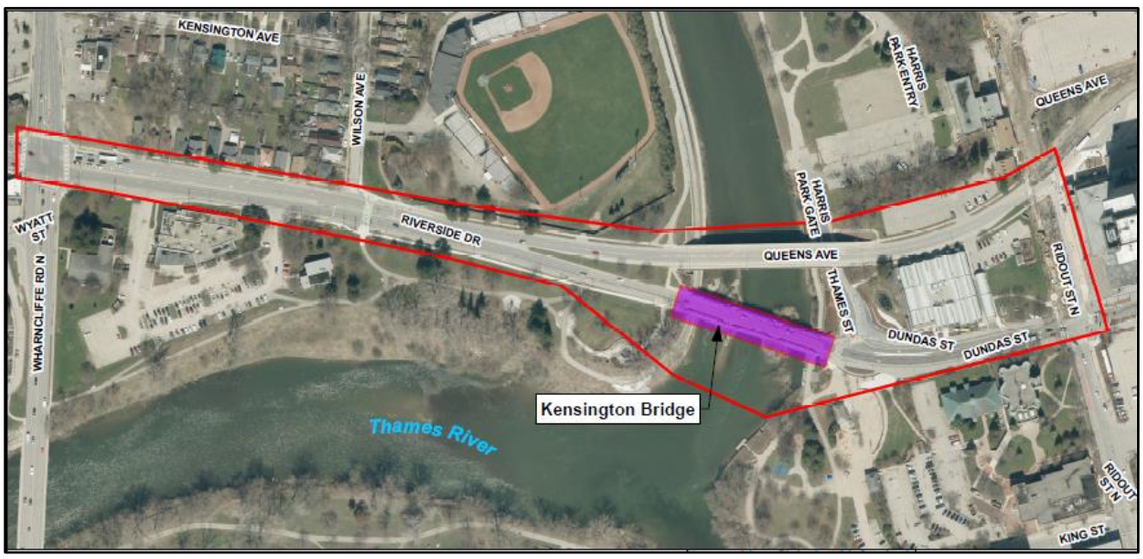


Figure ES-1: Study Area

In addition to the base scope of bridge rehabilitation (to address general deterioration and structural deficiencies), three alternative design concepts were considered:

- Pedestrian Railing System Alternatives.
- Bridge Barrier System Alternatives.
- Decorative Gateway Pillar Alternatives.

Pedestrian Railing System Design Concepts

To facilitate the repairs and to ensure the railing meets current safety standards of modern design codes, two (2) design concepts were identified for the design of the Pedestrian Railing System.

Design Concept PR1: Rehabilitate and reuse the existing railing system.

Design Concept PR2: Replacement of the existing railing with a replicated / sympathetic design approach. **Recommended**

Bridge Barrier System Concepts

Kensington Bridge does not have any type of bridge barrier system to protect the truss structure and motorists from vehicle impacts. Provision of a bridge barrier was deemed necessary on the north side only. Protection of the south truss line is proposed with a raised cycle lane and 2.4 m wide buffer between vehicle traffic lane and truss itself. As part of the rehabilitation design, three (3) bridge barrier system concepts were identified for review.

Design Concept BB1: Do Nothing – Maintain the status quo and do not implement a bridge barrier system as part of the rehabilitation. The structure will not be provided with additional protection from vehicle impacts.

Design Concept BB2 – Construct a concrete parapet wall – A concrete parapet wall would be constructed along the north curb line (between the traffic lane and truss structure) for protection against impacts. The parapet wall arrangement would be a crashed tested design and consist of a solid reinforced concrete wall to a height of 800 mm above the top of asphalt pavement.

Design Concept BB3 – Construct a metal tube rail system – A metal tube barrier would be constructed along the north curb line (between the traffic lane and truss structure) for protection against impacts. The metal tube barrier would meet crash test standards and consist of an open two steel tube system to a height of approximately 815 mm above the top of asphalt pavement. **Recommended**

Pillar Design Concepts

The original Kensington Bridge arrangement featured distinctive concrete and stone pillars located on the four corners and aligned with the truss. The pillars featured the bridge name and date of construction. Due to safety concerns, general deterioration and hazards from falling debris, all pillars were removed in 2006. While the pillars were not designated as a heritage attribute of the bridge, the pillars were a unique and interesting feature of the bridge. Sympathetic reconstruction of the pillars would provide an aesthetic feature to the bridge and area, and a gateway feature leading into the downtown. As part of the rehabilitation design, three (3) pillar design concepts were identified for review.

Design Concept P1 – Do Nothing – Maintain the status quo, no pillars would be constructed.

Design Concept P2 – Construct Sympathetic Pillars at the west end of the bridge in alignment with the truss – Two (2) new pillars would be constructed on the west side of the bridge in alignment with the truss similar to the original location**.** Given the existing pedestrian crossover, potential sight line obstructions and general available space on the east end of the bridge, only pillars on the west side are proposed.

Design Concept P3 – Construct Sympathetic Pillars at the west end of the bridge, close to the bridge and outside of the sidewalk – Two (2) new pillars would be constructed on the west side of the bridge positioned farther to the west and on the outside of the sidewalk on the north and south sides of the bridge. Similar to Design Concept P2, new pillars are proposed for the west side only. **Recommended**

Recommended Kensington Bridge Rehabilitation Project Description

The existing overall bridge width will be maintained with a proposed cross sectional width of 15.56 m. The proposed cross-section of the rehabilitated bridge is summarized in **Table ES-1** and illustrated in **Figure ES-2.**

Bridge Cross Section
In general, the eastbound lanes widths increase from the existing 3.00 m to 3.25 m to correspond closer to City standard. Pedestrian sidewalk widths slightly increase from

1.83 m to 2.00 m. The bi-directional cycle track width of 2.40 m remains the same as existing. The buffer width between the traffic lanes and cycle track will be maximized recognizing the overall width constraints. A buffer width will also be provided adjacent to the rub rail. The buffer widths and treatments including the use of flexible bollards will be finalized during detail design. A raised cycle track with barrier curb is proposed to provide additional protection. This arrangement will be further reviewed during detailed design.

Table ES-1: Proposed Bridge Cross Section

Bridge Component	Existing Width (m)	Proposed Width (m)
North Sidewalk	1.83	2.00
East Bound Lane (north side)	3.00	3.25
East Bound Lane (south side)	3.00	3.25
Two-Way Cycle Track (south side)	2.40	2.40
South side Sidewalk	1.83	2.00

The overall cross sectional bridge width of 15.56 m includes space for the barrier systems (bridge barrier and rub rail), flexible bollard delineator barrier, pedestrian railings and truss structure (projecting through the deck).

As mentioned previously, a base scope of rehabilitation work is required to address conditional and structural deficiencies on the bridge itself. Refer to **Section 9.2** of the main report for detailed summary of the base scope rehabilitation work.

Pedestrian Railing System

The existing railing system will be removed and replaced with a sympathetic replication of the original system. The new railing will be designed to replicate the existing aesthetic appeal such that the cultural heritage value of the bridge is conserved.
The railing design will be patterned from the original 1929 design drawings and maintain a very similar aesthetic with the existing railing. Although a full review of details and connections is required during detailed design, some potential modifications will include a smaller diameter continuous top rail, an intermediate vertical post connected to the sidewalk slab (between existing post locations which are connected to the floor beams) and general member connection methods. The height of the railing will be 1.07 m above the sidewalk surface and railing openings will not exceed 100 mm in accordance with the Bridge Code.

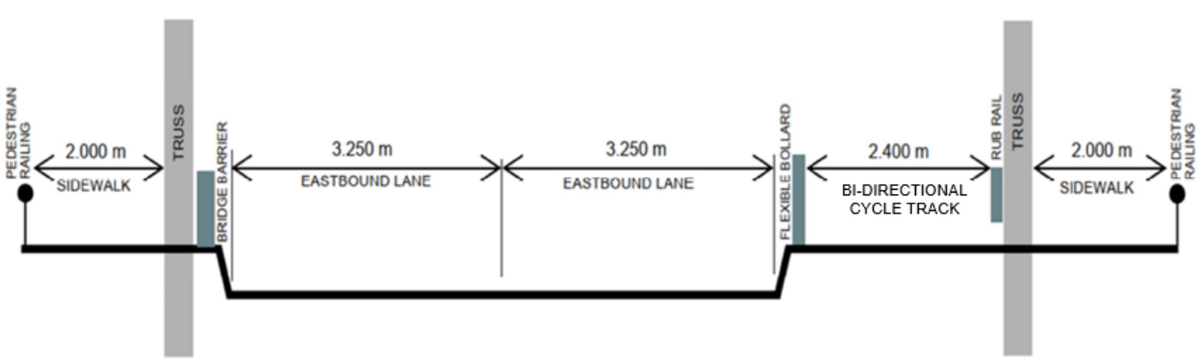
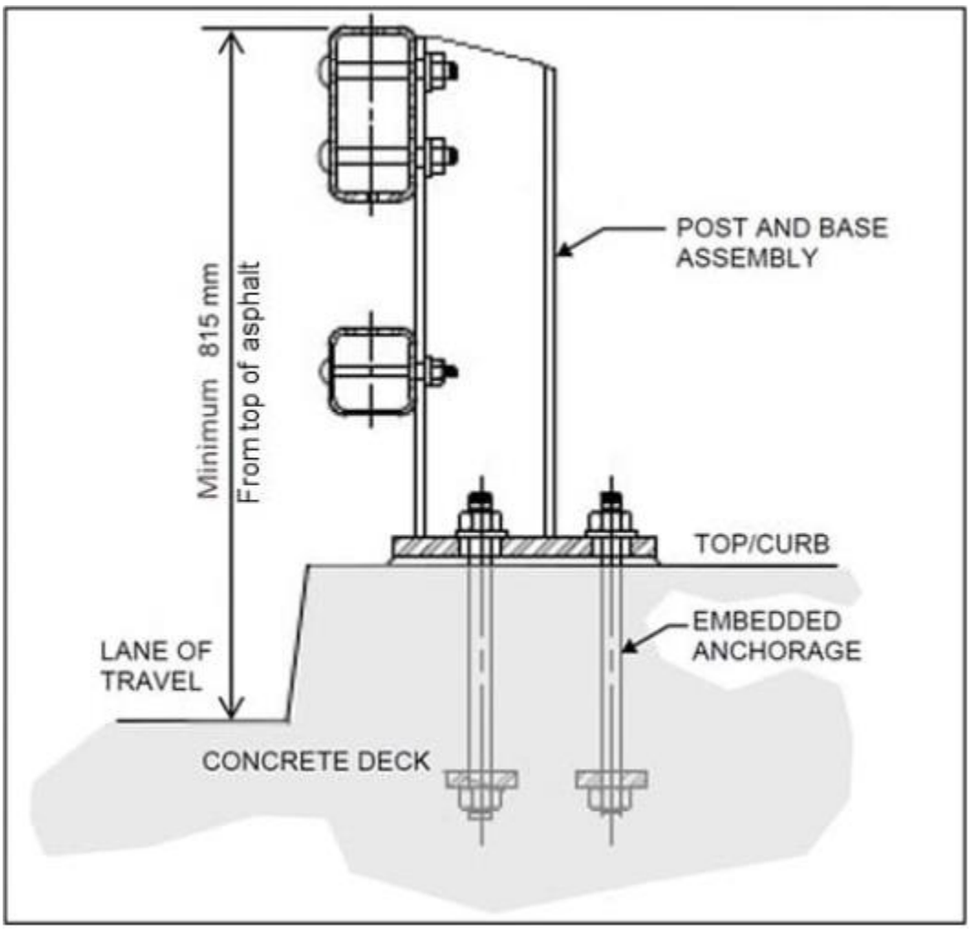


Figure ES-2: Proposed Rehabilitated Bridge Cross Section

Bridge Barrier System
A crash tested bridge barrier system is proposed for the north side of the bridge adjacent to the travel lanes. In particular, a steel tube system anchored into the sidewalk curb (similar to the system shown in **Figure ES-3)** is recommended.

Figure ES-3: Bridge Barrier System

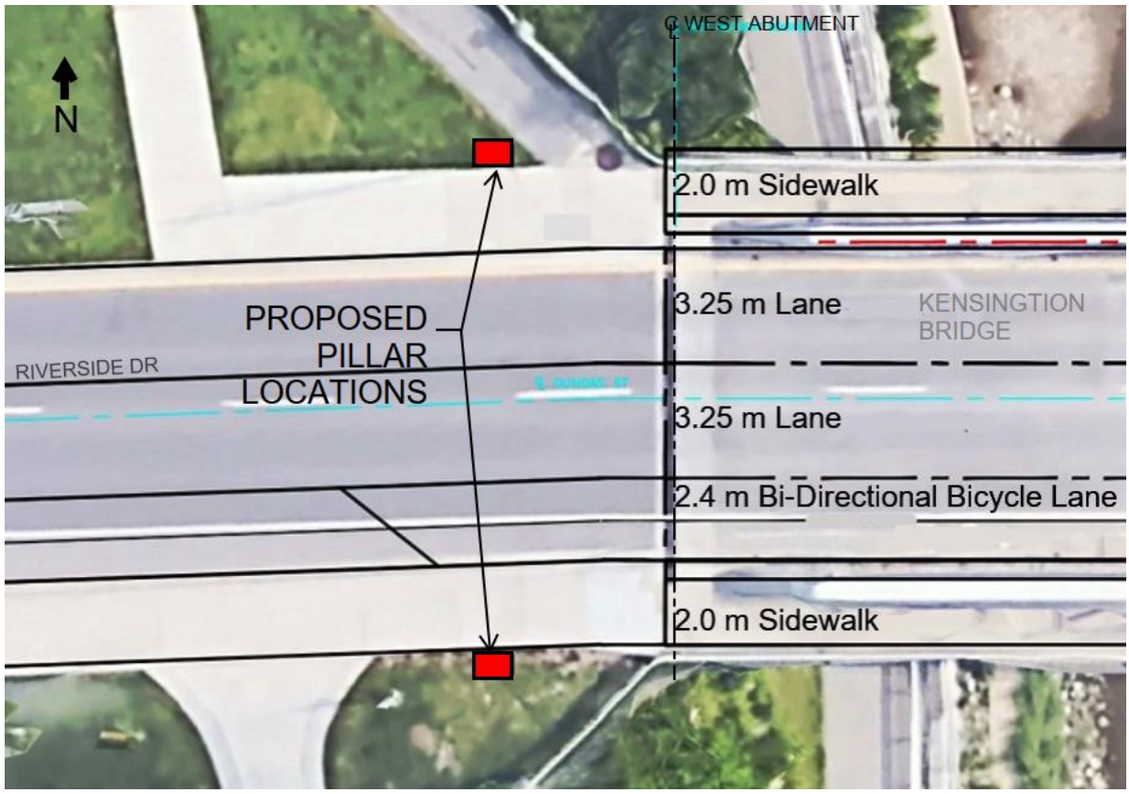


The two-tube system will provide protection for the structure / vehicles from collisions with the truss structure and will transition to a steel beam guide rail on the northwest approach of the bridge.

West End Pillars
New pillars will be constructed on the west end of the bridge (north and south sides) and positioned on the outside of the clear sidewalk width. Design for the new pillars will be visually similar to the original pillars and include a name and date stone.
Although there is no existing information, the sizing of the pillars will replicate to the best extent possible the original sizing. Overall size / height and material selection will be reviewed during detailed design in consultation with City Heritage staff.

The pillars will be supported on a reinforced concrete spread footing placed at a depth of 1.2 m (below the frost level). The pillars will be located approximately 6.5 m west of the existing bridge abutment as shown in **Figure ES-4**.

Figure ES-4: West End Pillar Locations



Bridge Lighting
The existing two light standards located over the piers and between the trusses will be removed and replaced with new poles. Four poles are proposed in the locations of the original poles (including the current two pole positions). These will align with the symmetry of the bridge and enhance the lighting of the bridge.

Despite the loss of the original sleeves of the lamp posts, decorative lamp posts are proposed to be sympathetic to the current posts. A review of decorative pole bases will be undertaken during detailed design for off-the-shelf type bases as well as the feasibly of replicating the existing pole base in some manner. The bracket arms and lighting are to be upgraded up to current standards. The opportunity to reinstall a decorative base, arm and light fixture is a positive opportunity and mitigates the direct adverse impact of removing this existing heritage attribute. Consultation with City Heritage staff will be completed during detailed design and as part of the heritage alteration permit process. The new fixtures will be LED and dark sky compliant in accordance with City standards. Pedestrian level lighting on the back side of the new poles can be considered during detailed design..

Active Transportation

Beyond the bridge, there are no proposed changes to bicycle facilities. With the over all constrained bridge width, the proposed rehabilitation efforts will maintain a bi-directional cycle track width of 2.4 m, conforming to the minimum requirements of the Ontario Traffic Manual, Book 18. Additional protection for cycle track is proposed over the current arrangement by placing the bicycle facilities on a raised sidewalk curb with delineating flexible bollards along the edge. An additional separation width of 300 mm with rub rail is also proposed adjacent to the truss itself. Alternate arrangements for enhanced protection measures will be reviewed during detailed design.

All sidewalk facilities will be maintained and connected with sidewalks to the east and west sides of the bridge. The clear width of the cantilevered sidewalks on both side of the bridge will be marginally increased from 1.83 m to 2.0 m.

The current Thames Valley Parkway vertical clearances underneath the east and west ends of the bridge meet the minimum requirements of 2.5 m of Ontario Traffic Manual, Book 18. Raising a portion of the bridge superstructure was considered; however, significant approach work would be required for the recently reconstructed sections of Dundas Street and Harris Park Gate. The cost of such an undertaking would also be costly to complete bridge jacking, temporary supports, substructure modifications and east approach reconstruction. There are no operational concerns with the current clearance and users of this section of the pathway also must navigate other lower vertical clearances such as King Street Footbridge, located just south of Kensington Bridge. Additional hazard and warning signage is recommended.

No other changes are proposed to the Thames Valley Parkway below the east and west spans of Kensington Bridge as part of bridge rehabilitation. Other area studies may provide general upgrade to the Thames Valley Parkway. This work would generally require coordination with bridge rehabilitation.

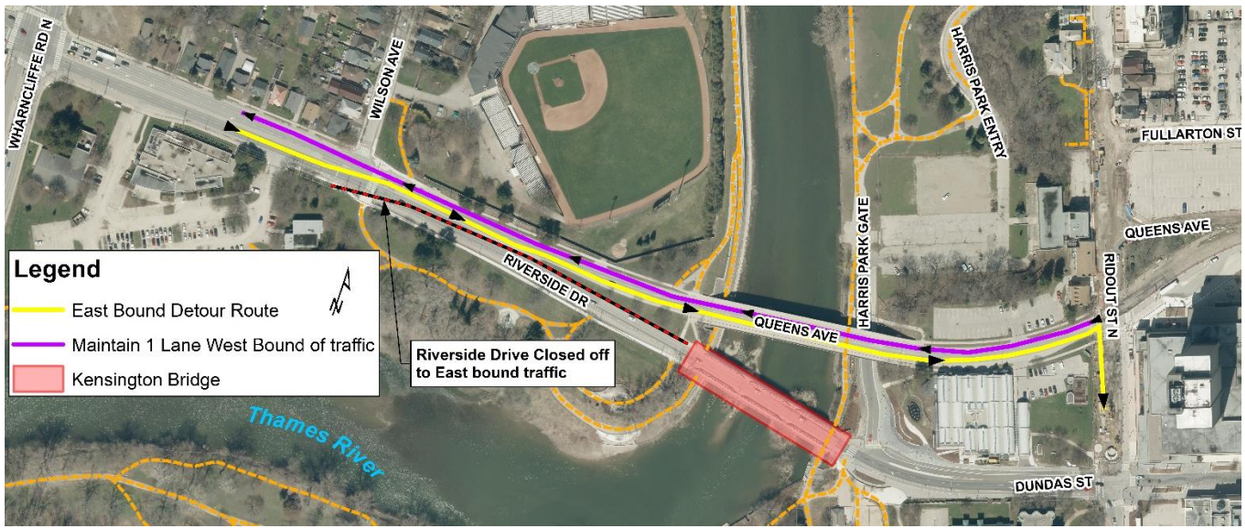
Localized closures of the pathway at Kensington Bridge will require full and temporary closures of the pathway system during construction.

Traffic Management

Due to the complications and challenges with staging rehabilitation work on a truss structure, staging traffic on the bridge itself during construction is not feasible.
It is recommended that eastbound Riverside Drive traffic be reduced to one lane and be diverted onto Queens Avenue, using the Queen's Bridge to cross the Thames River. Eastbound traffic would be closed from west of the bridge on Riverside Drive, to the east side of the bridge at Ridout Street North. Eastbound traffic on Riverside Drive would be diverted onto the Queens Avenue, to southbound on Ridout Street, and connecting at the Dundas Street / Ridout Street intersection. Westbound traffic would be maintained on Queens Avenue, while conveying two-way traffic over Queen's Bridge. The Queen's Bridge is scheduled for rehabilitation in 2026 and will be completed prior to the Kensington Bridge rehabilitation.

A single lane eastbound detour onto the Queen's Bridge represents a reduced overall impact to eastbound traffic compared to a longer detour scenario and is recommended for the rehabilitation of Kensington Bridge. This traffic management approach has been implemented in the past. The proposed staging is illustrated in **Figure ES-5**.

Figure ES-5: Proposed Detour Route



Property Requirements and Impacts

There are no requirements for property acquisition related to the preferred design alternative of rehabilitation.

The shipping / receiving dock at Museum London currently requires one lane of Queens Avenue when receiving large deliveries for exhibits. With this section of Queens Avenue becoming a temporary two-way street, closing one lane of traffic for long periods of time to receive deliveries will cause traffic and safety concerns. During detailed design and prior to construction, consultation with Museum London will be required to facilitate safe delivery of exhibits. Through initial consultation with Museum London, some proposed methods were discussed and should be explored. These include, but are not limited to:

- Using flag persons to direct traffic during deliveries.
- Schedule deliveries during late evenings to reduce traffic disruptions.
- Museum schedule exhibits that use onsite stored displays during construction, limiting the number of deliveries.

Preliminary Construction Schedule

With a detoured traffic staging arrangement, the duration of construction for the bridge rehabilitation is estimated to be 26 weeks. An early construction contract award is recommended to enable a construction start in April of the construction year. The completion of construction should be targeted for the end of October in the same year.

More consideration and construction timing estimates will be completed during detailed design to confirm the required schedule.

Preliminary Cost Estimate

A preliminary construction cost estimate (in 2023 dollars) has been prepared and is included in **Appendix C.2**

The total preliminary construction cost estimate for this project is **$9.1 Million** including contingencies but excluding HST, as shown in **Table ES-5**.

Table ES-5: Preliminary Construction Costs (2023 dollars)

Item	Total Cost
Road Work	$440,000
Electrical and Utility Work	$300,000
Landscaping	$150,000
Bridge Work	$5,325,000
Miscellaneous	$295,000
Subtotal	**$6,510,000**
Construction Contingency (10%)	$651,000
Total Estimated Capital Value	**$7,161,000**
Engineering (Detailed Design/Construction) (12%)	$859,000
Contingency of Preliminary Estimate (15%)	$1,074,000
Total Preliminary Project Estimate (rounded)	**$9,100,000**

Project Coordination

There are several area projects and studies at some stage of completion including:

- City of London, Erosion Study.
- City of London, Labatt Siphon Replacement.
- City of London, West London Dyke Sanitary Trunk Sewer Replacement.
- City of London, Queen’s Bridge Rehabilitation.
- Upper Thames River Conservation Authority, West London Dyke project.

Although impacts of the planned improvements to related area projects are likely to be minimal, coordination is required with the rehabilitation of Kensington Bridge.

Summary and Conclusion

The Environmental Study Report outlines the process required to ensure that the planning process and proposed recommended solutions / design concepts meet the requirements of the Environmental Assessment Act. The Municipal Class Environmental Assessment planning process has not identified any significant environmental concerns that cannot be addressed by incorporating established mitigation measures during construction.

The proposed project improvements resolve the problem and opportunity statement identified in this report. A preliminary evaluation of potential impacts has been included in the evaluation, which indicates minor and predictable impacts that can be addressed by recommended mitigation measures as presented in Section 11. The proposed mitigation measures will further be developed at the detailed design stage and will form commitments that will be adhered to by the City of London. Appropriate public notification and opportunity for comment was provided and no comments were received that could not adequately be addressed.

Subject to receiving Municipal Class Environmental Assessment clearance following the 30-day review period, the City of London can start the detailed design and permitting-approvals phase, eventually proceeding to construction as outlined in this Environmental Study Report.