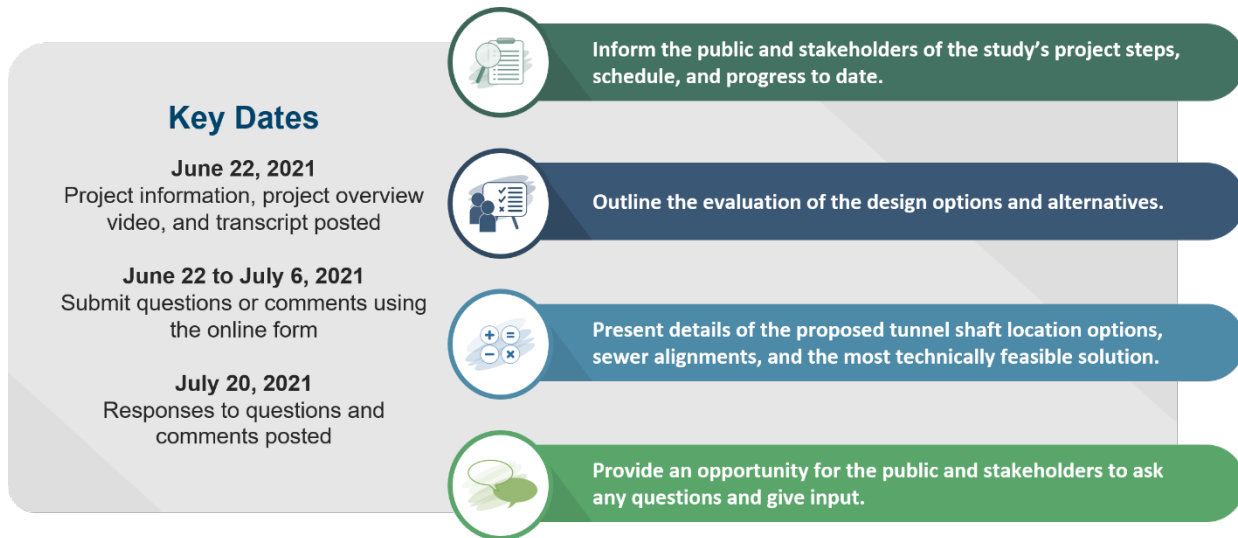


*This document is provided as an alternative format that is originally hosted using ESRI StoryMaps. It is provided for those who may not have the compatible browser to view the original virtual public information materials online.*

## Public Information Centre (PIC) Objectives



The objectives of this virtual PIC No. 2 are to:

1. Inform the public and stakeholders of the study's project steps, schedule, and progress to date.
2. Outline the evaluation of the design options and alternatives.
3. Present details of the proposed tunnel shaft location options, sewer alignments and the most technically feasible solution.
4. Provide an opportunity for the public and stakeholders to ask any questions and give input.

**Please note that this is the second and final PIC for this study.**

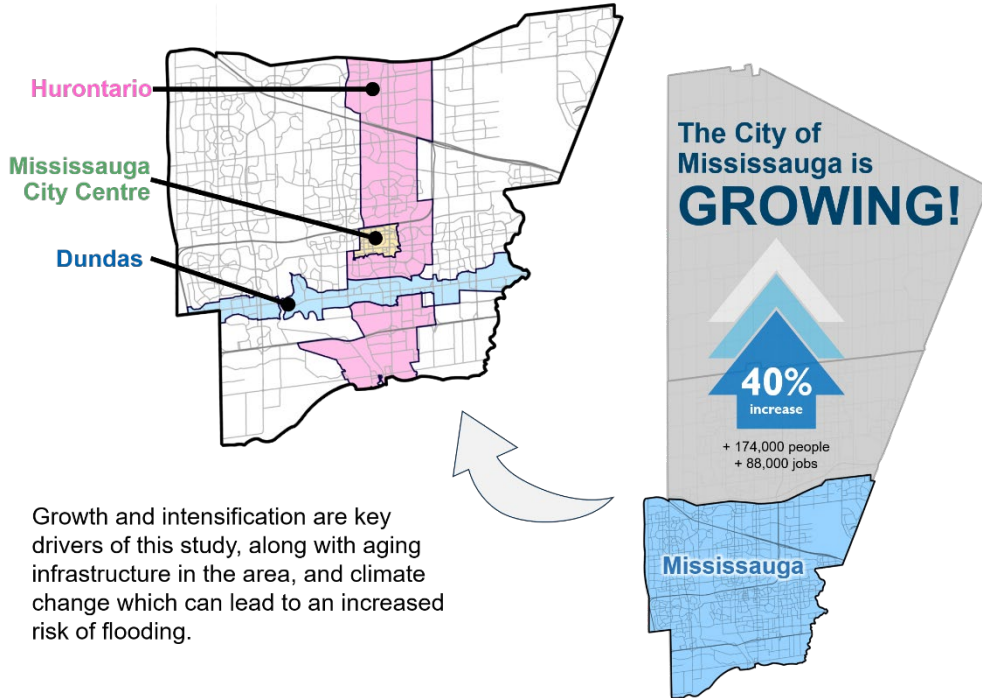
### How Can You Help?

**Provide your input!** After reviewing the materials in this PIC, navigate to the 'Next Steps' portion and click the button to submit your comments. Comments received will be open from June 22 to July 6, 2021 and be taken into consideration as the study progresses. However, once the study is complete and the Environmental Study Report (ESR) is filed, the project will continue to construction and no changes to the recommended solution will be made.

## Project Recap

### Why Is This Project Happening?

Intensification Corridors  
in the Study Area



Growth and intensification are key drivers of this study, along with aging infrastructure in the area, and climate change which can lead to an increased risk of flooding.

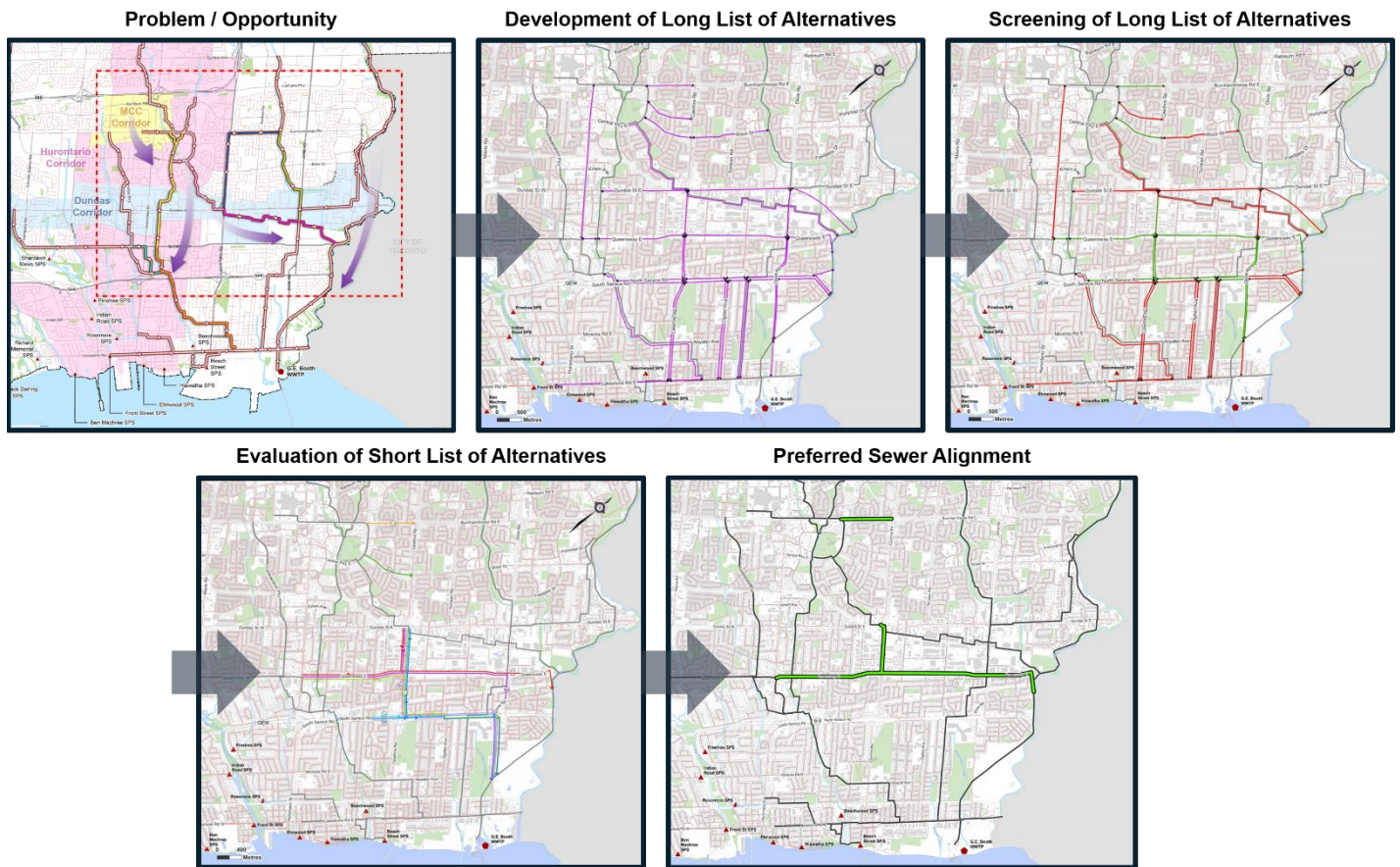
It is expected that the Central Mississauga area will experience significant growth over the next 20+ years by about 40%, specifically, within the Mississauga City Centre, Hurontario and Dundas Corridors. The current sewer system does not have available capacity for this increased growth, as identified in the [Region's Water and Wastewater Master Plan Update \(MP 2020\)](#). Through this project, we have investigated methods and evaluated how best to expand the capacity of the Central Mississauga Wastewater System and ensured it aligned with the Region's long-term plan to service future growth sustainably.

## What Have We Done So Far?

The study's problem and opportunity statement is as follows:

***The purpose of the Wastewater Capacity Improvements in the Central Mississauga Class Environmental Assessment is to increase the conveyance capacity of key trunk sewers to service future growth and ensure alignment with the Region's long-term plan for providing wastewater services within the Mississauga City Centre, Hurontario Corridor and Dundas Corridor areas.***

In Phase 2 of the study, the preferred conceptual alignment and general location of the shafts were selected along Burnhamthorpe Road, Cawthra Road, Queensway East and Etobicoke Creek Valley.



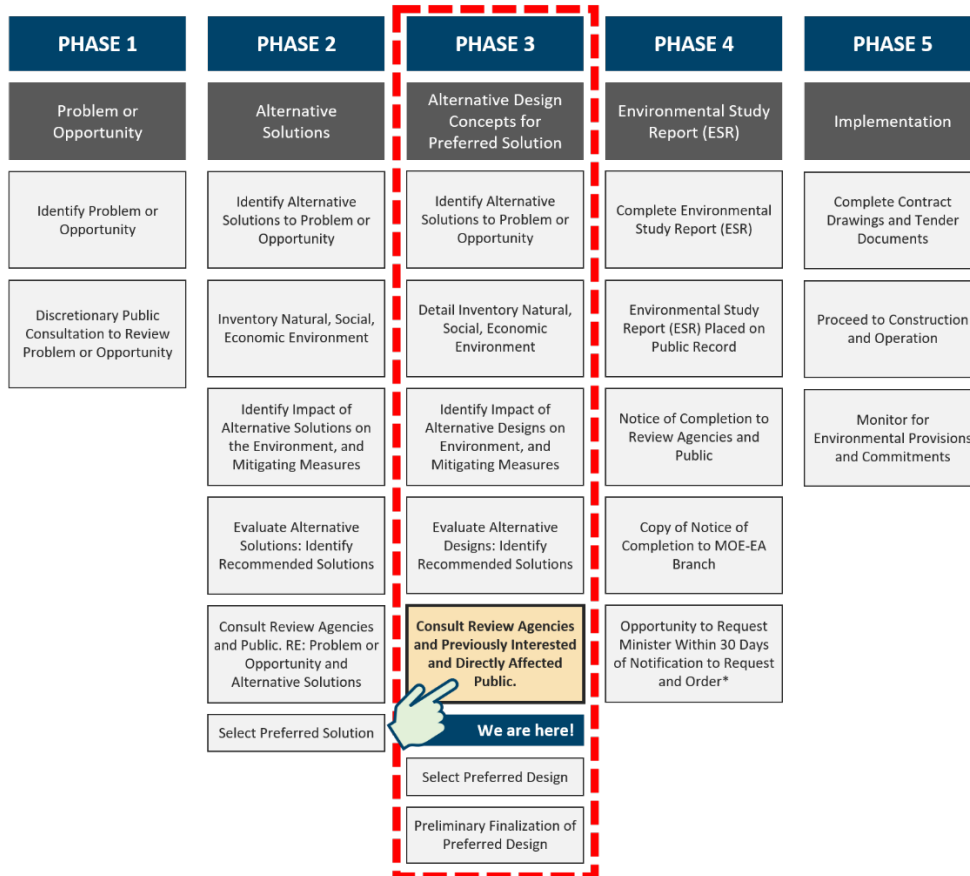
Summary of Phase 2 Evaluation Process

At the end of Phase 2, alternative shaft locations and alignments were identified. The detailed evaluation process and results were presented at [PIC No. 1](#).

## Where Are We Now In The Study Process?

The Wastewater Capacity Improvements in Central Mississauga project is being undertaken as a Schedule 'C' Class Environmental Assessment (EA) and will satisfy phases 1 to 5 of the Municipal Class EA Process.

We are currently at Phase 3 of the study, with the primary focus on completing the preferred solution inventory and identifying / evaluating the alternative design concepts.



MEA Mandated Requirements: <https://municipalclassea.ca/manual/page10.html>

Phase 3 includes the following:



- Identification of design concept alternatives
- Preparation of detailed inventory
- Evaluation of design concept alternatives using comprehensive evaluation criteria
- Selection of preliminary preferred conceptual design and technologies
- Identification of impacts and how to address them
- Public Information Centre (PIC) No. 2
- Confirmation of preferred conceptual design and technologies



## What Investigations Have Been Completed?

Following selection of the preferred strategy in Phase 2, further site specific reviews and investigations were undertaken to inform the evaluation of the design alternatives including:

### Archaeological

The purpose of the archaeological assessment is to determine whether there is potential for archaeological sites within the study area and along the preferred route.

- Stage 1 and Stage 2 archaeological assessment completed.
- **Result: No areas have been identified as having archaeological importance. No further archaeological investigations are required.**

### Cultural Heritage

The purpose of the cultural heritage assessment is to identify if there are any potential impacts to cultural heritage resources caused by the project and if so what mitigative measures will be required.

- Screening report (CHSR) and existing conditions and preliminary impact assessment (CHECPIA) completed.
- **Result: Potential impacts can be fully mitigated. No further cultural heritage assessments are required.**

### Natural Environment

The purpose of the natural environment desktop review and field investigations are to document the existing natural environment features within the study area and identify any potential impacts and mitigation measures for the preferred solution.

- Baseline assessment and field investigations completed.
- **Result: No significant environmental constraints for the majority of the alignment and shaft compounds that cannot be mitigated. Environmental conditions will be restored after completion of construction.**
- Cooksville Creek hazard assessment and natural environment impact assessment underway and will inform preparation of ESR and required mitigation.
- Commitment to further environmental investigations during detailed design.

#### Etobicoke Creek

- Additional investigations completed at Etobicoke Creek include hydraulic and geomorphic hazard assessment and tree screening.
- **Results: Etobicoke Creek sewer connection and open cut creek crossing will require remediation and mitigation during and following construction to safeguard against scour and geo-fluvial hazards and minimize impact to the natural environment. Mitigation can include bank, stream bed and/or floodplain trench armouring.**
- Mitigation measures to be determined through detailed design to support permitting and approvals.

## Hydrogeological and Geotechnical

The purpose of the hydrogeological and geotechnical analysis is to establish the existing groundwater, soil and rock conditions, assess the potential impacts to groundwater and surface water resources, and identify the necessary mitigation measures along the preferred route.

- Desktop and baseline hydrogeological analysis completed.
- Topographical survey completed within Etobicoke Creek valley.
- **Result: Suitable hydrogeological conditions for shaft site and tunnel construction; dewatering considerations required.**
- Commitment to further hydrogeological and geotechnical investigations during detailed design.

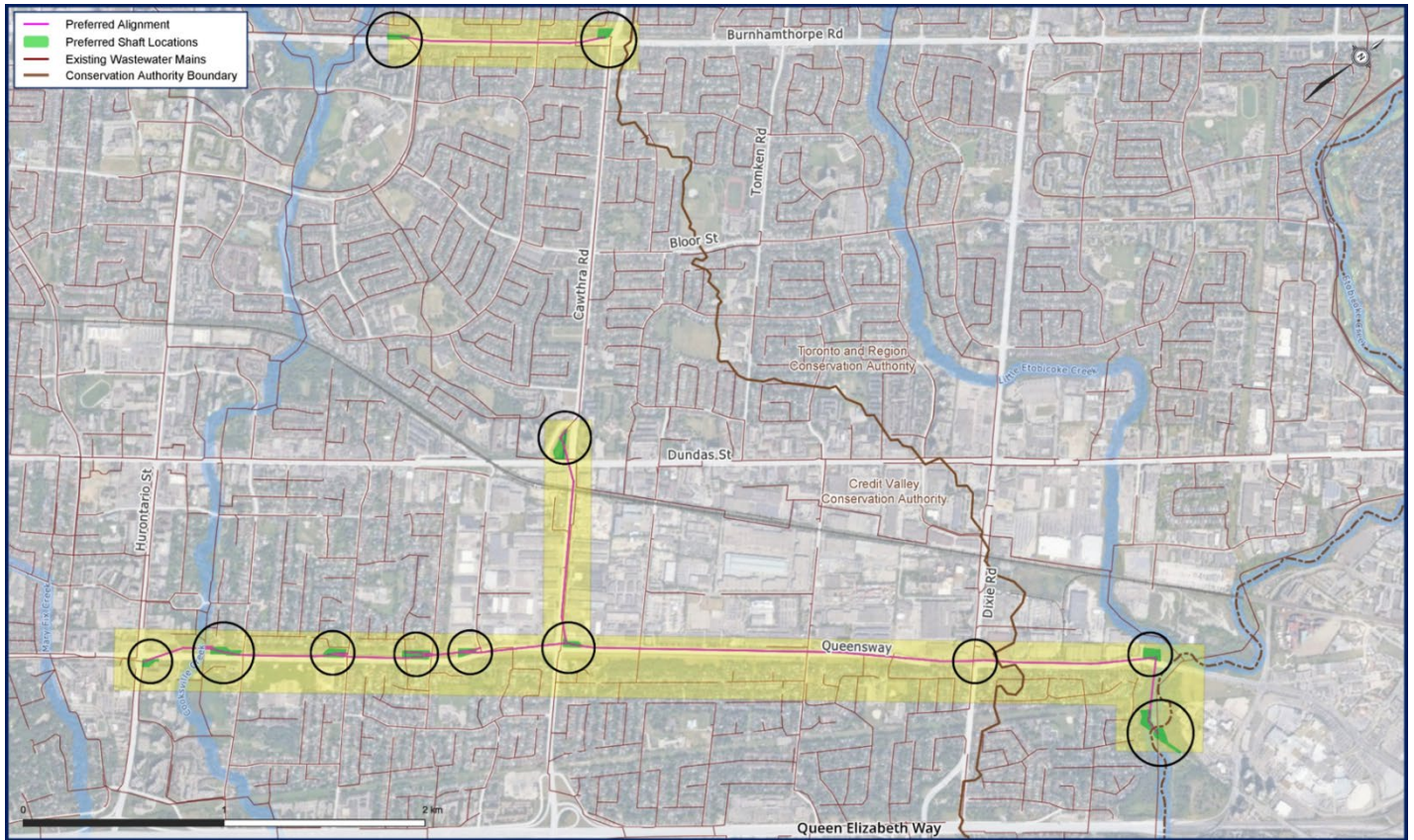
## Traffic Investigation

The purpose of the traffic analysis is to assess potential impacts to traffic and transit operations due to the construction along the preferred route and identify mitigation measures.

- Traffic Impact Assessment completed.
- **Result: Impacts include lane closures and sidewalk and multi-use trail relocations. Appropriate detours and safety measures will be implemented during construction to accommodate both vehicle and pedestrian traffic.**

## Preliminary Preferred Design Concept

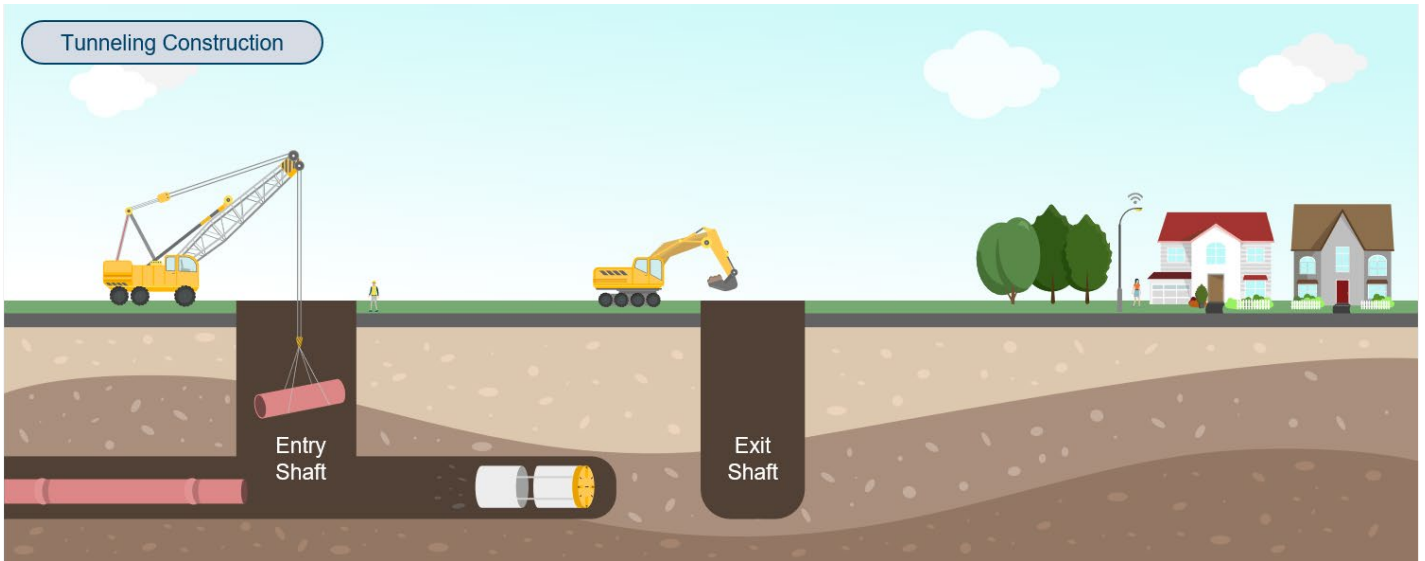
Through a comprehensive evaluation process, the preliminary preferred sewer route and shaft locations were selected along Burnhamthorpe Road, Cawthra Road, Queensway East and Etobicoke Creek Valley.



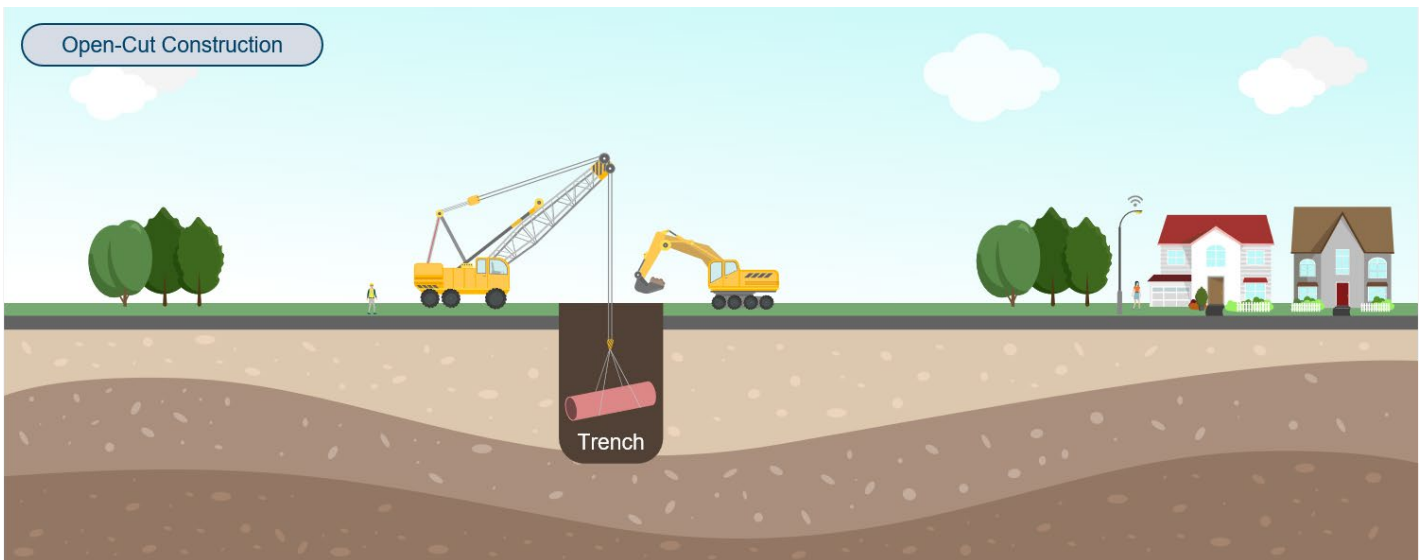
See Detailed Evaluation Process

## Construction Methodology

Due to the depth of the proposed sewer, the majority of the trunk sewers will be tunnelled underground. Connections to local sewers at Cliff Road, Hensall Street and Tedlo Street as well as the Etobicoke Creek crossing are shallower and will use open-cut construction.



**Tunnelling** involves the process of digging shafts and using special equipment to tunnel underground between the shafts. It is less intrusive than open cutting. The only surface works for tunnelled construction are the entry and exit shafts located between tunnel drive lengths (between 0.2 km and 2.1 km apart).

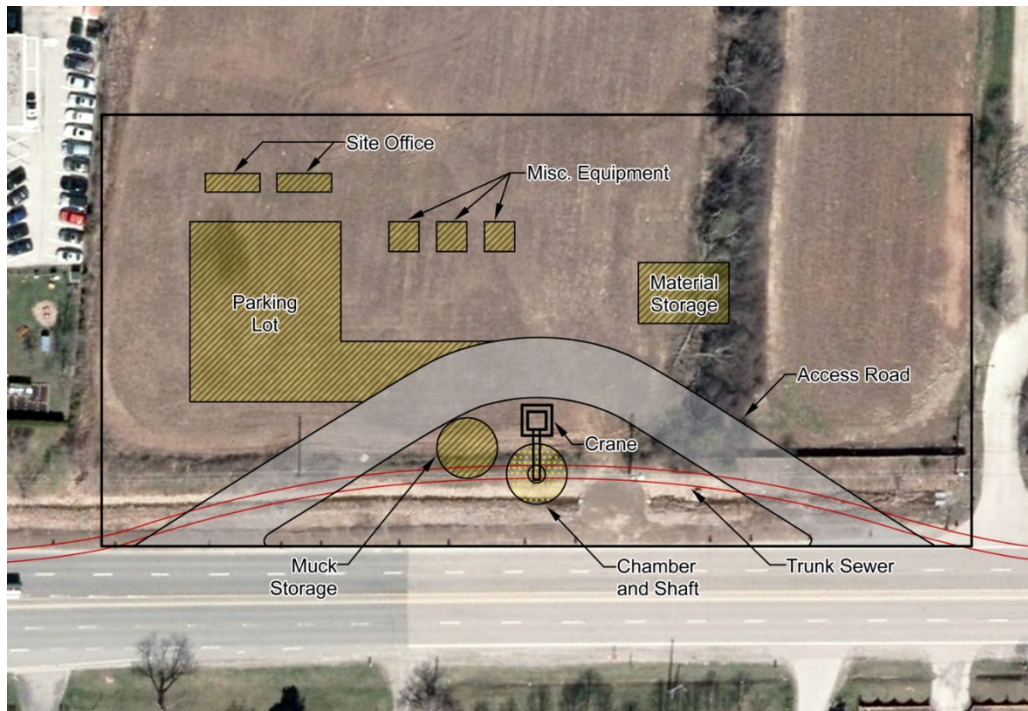


**Open-Cutting** involves the process of digging a trench to install infrastructure. Because construction occurs on the surface over a stretch of time, open cut construction has the potential to increase local disruption.

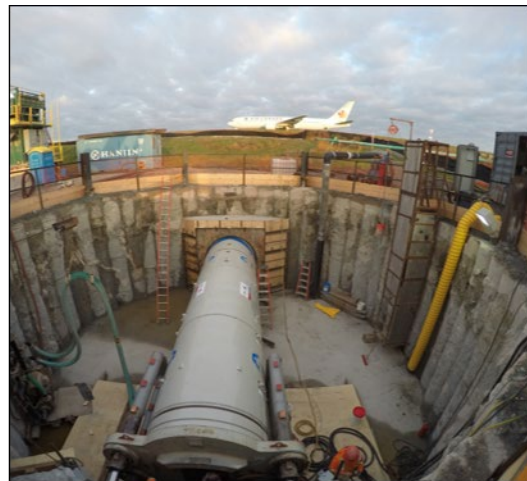
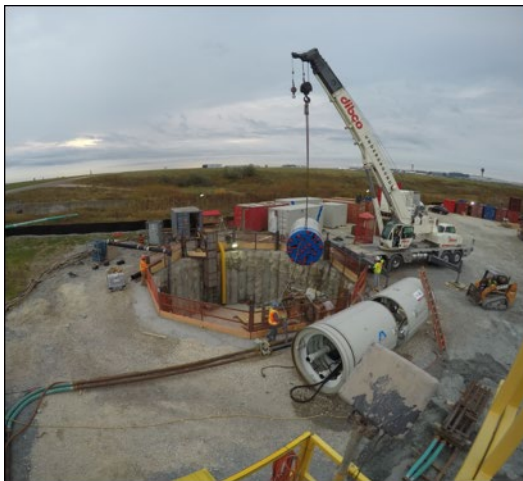


## Construction Set-Up

Each access shaft will require a staging area where construction equipment can be stored, and excavated material can be brought to the surface and hauled from the site in trucks. Staging areas will measure approximately 50m by 50m and will be fenced off. Size and shape of the staging areas will differ from site to site depending on the availability of land. Once tunneling is completed the staging area will be restored to its previous or improved condition. Locations with open spaces, vacant lots, greenspace and connection to trunk sewers were preferred for the proposed shaft sites.



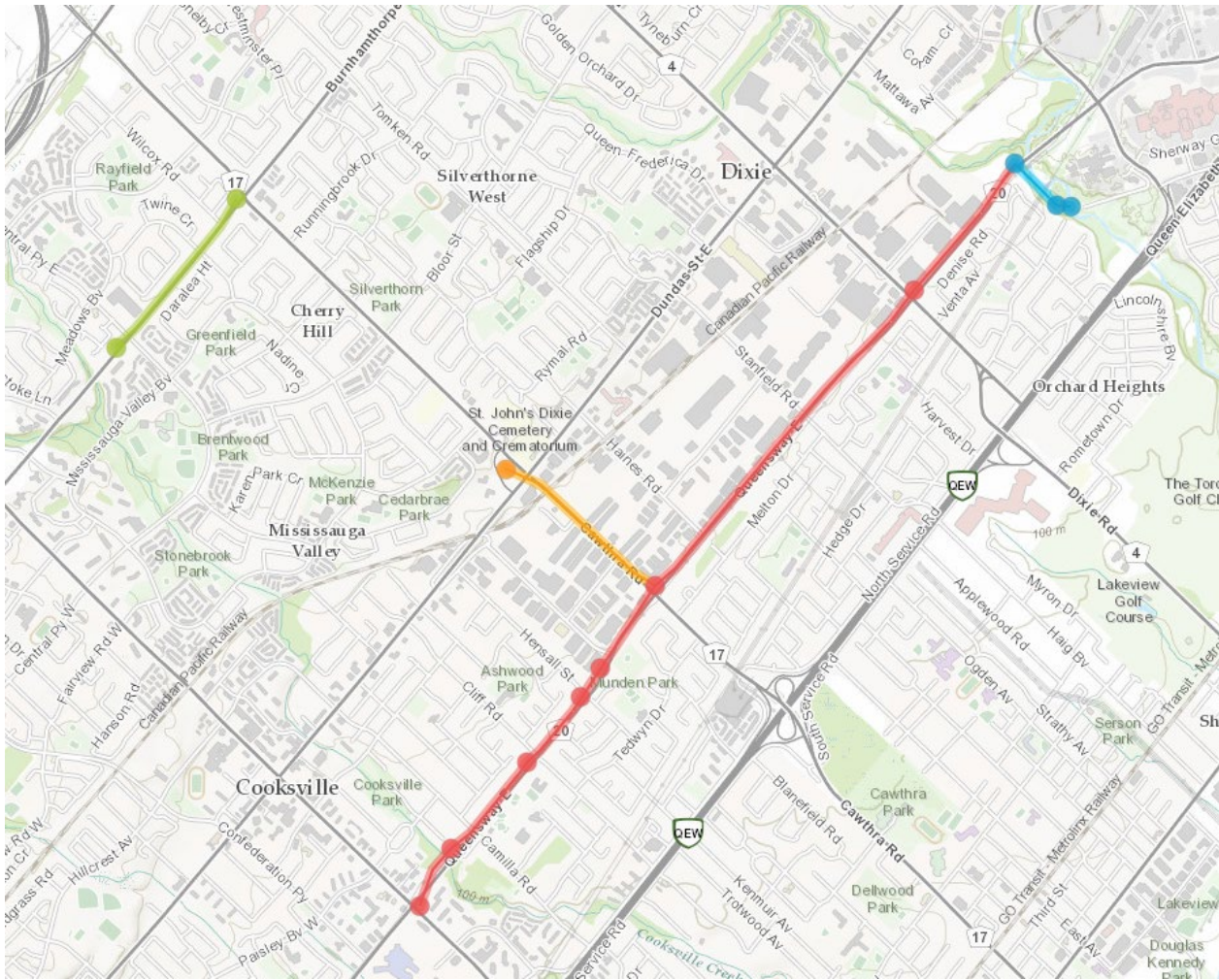
The selection of preferred shaft sites considered proximity to existing infrastructure (water, storm, sewer, utilities) heritage areas, environmental features and existing land use. The construction layout will be further refined through detailed design.



What does a typical shaft compound look like? The above is an example from the twinning of the Etobicoke Creek Sanitary Trunk Sewer under at Runway 23, Lester B. Pearson International Airport (Photo Credit: Region of Peel)

## Recommended Tunnel Shaft Locations

There are four alignments proposed, with different recommended shaft locations at each alignment.

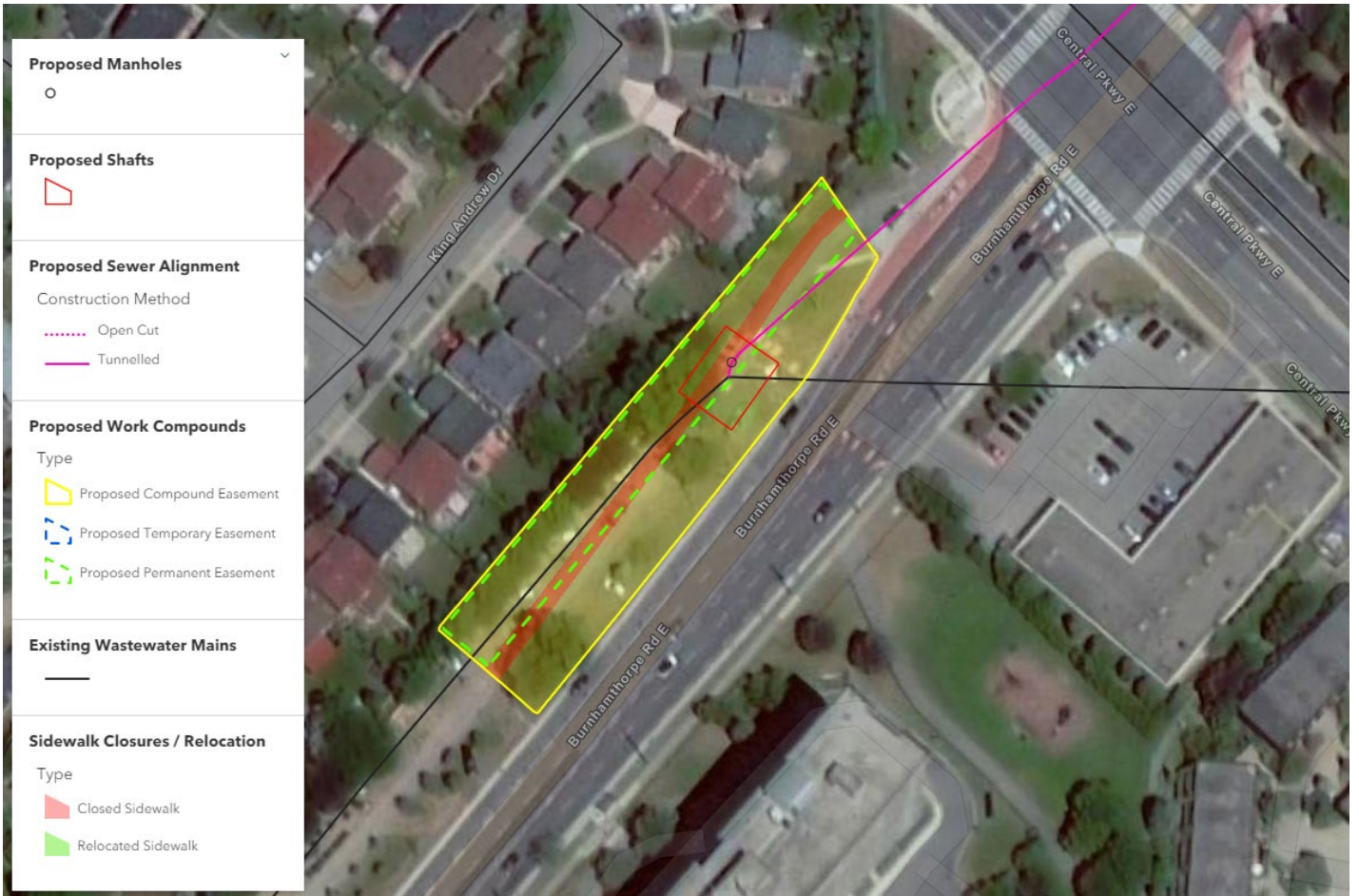




## Burnhamthorpe Road Alignment

The following shafts are recommended along the Burnhamthorpe Road alignment.

### Central Parkway Shaft Compound



### Key Factors for Selection

- It supports the tunnelled construction of the Burnhamthorpe sewer alignment on the northside of the road
- It provides the best connection point to the Central Parkway trunk sewer
- It allows for a north side sewer alignment, avoiding road crossings
- It minimizes impacts to trees

### Key Community Impacts and Mitigation Measures

- Easements required
- Temporary closure of multi-use trail during construction

## Cawthra Road Shaft Compound



### Key Factors for Selection

- It supports the tunnelled construction of the Burnhamthorpe sewer alignment on the northside of the road
- It is the current compound for the in-construction Cawthra trunk sewer which is a key connection point
- It allows for a north side sewer alignment, avoiding road crossings
- It minimizes impacts to trees

### Key Community Impacts and Mitigation Measures

- Easements required



## Cawthra Road Alignment

The following shafts are recommended along Cawthra Road alignment.

### Dundas Street Shaft Compound



### Key Factors for Selection

- It supports the tunnelled construction of the Cawthra sewer
- It is the current compound for the in-construction Cawthra Trunk sewer which is a key connection point
- It provides a good buffer between commercial and industrial areas
- It avoids potential lane closures along Dundas Street

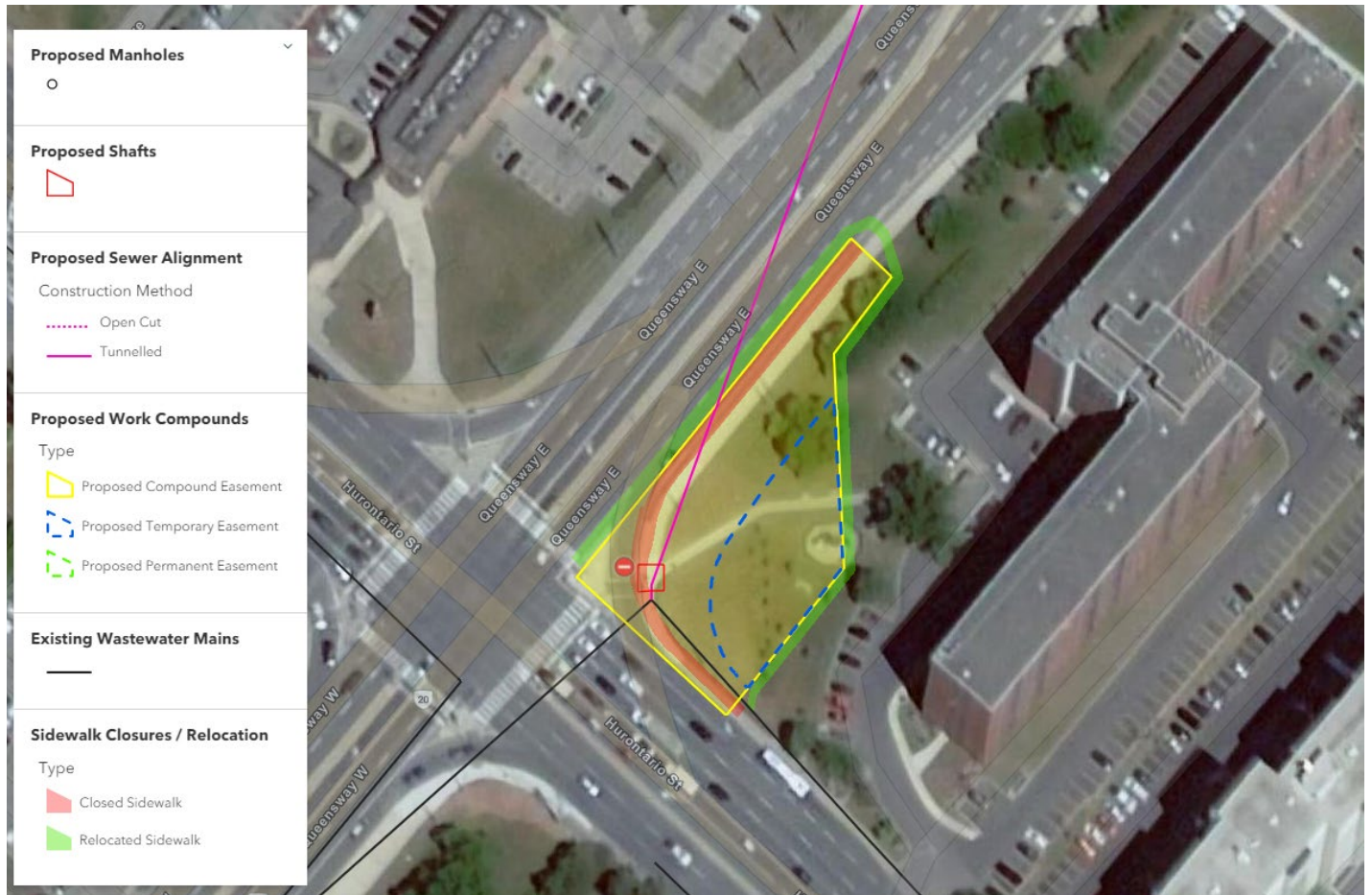
### Key Community Impacts and Mitigation Measures

- No easement required
- No lane or sidewalk closures

## Queensway East Alignment

The following shafts are recommended along Queensway East alignment.

### Hurontario Street Shaft Compound



### Key Factors for Selection

- It supports the tunnelled construction of the Queensway sewer
- It provides the best connection point to the Queensway trunk sewer
- It avoids conflicts with planned infrastructure
- It avoids conflicts with utilities

### Key Community Impacts and Mitigation Measures

- Easements required
- Temporary right lane closures on Hurontario and Queensway during construction
- Temporary relocation of sidewalk during construction



## Cooksville Creek Shaft Compound

A Hazard Assessment is currently underway at the Cooksville Creek shaft compound location to support the selection of the construction methodology.



### Key Factors for Selection

- It supports the tunnelled construction of the Queensway sewer alignment on the northside of the road
- It provides a connection point to the Cooksville Creek trunk sewer
- It allows for a north side sewer alignment, avoiding road crossings
- It provides best availability in land
- It minimizes impacts to trees
- It is outside of City park lands

### Key Community Impacts and Mitigation Measures

- Easements required
- Temporary relocation of multi-use trail during construction

## Cliff Road Shaft Compound



### Key Factors for Selection

- It supports the tunnelled construction of the Queensway sewer alignment on the northside of the road
- It supports the open cut construction required to connect to the local sewer at Cliff
- It allows for a north side sewer alignment, avoiding road crossings
- It provides good accessibility
- It increases the buffer between the school (south side)

### Key Community Impacts and Mitigation Measures

- Easements required
- Temporary relocation of multi-use trail during construction



## Hensall Street Shaft Compound



### Key Factors for Selection

- It supports the tunnelled construction of the Queensway sewer alignment on the northside of the road
- It supports the open cut construction required to connect to the local sewers at Hensall and Hensall West
- It allows for a north side sewer alignment, avoiding road crossings

### Key Community Impacts and Mitigation Measures

- Easements required
- Temporary relocation of multi-use trail during construction

## Tedlo Street Shaft Compound



### Key Factors for Selection

- It supports the tunnelled construction of the Queensway sewer alignment on the northside of the road
- It supports the open cut construction required to connect to the local sewer at Tedlo
- It allows for a north side sewer alignment, avoiding road crossings
- It avoids conflicts with existing utilities

### Key Community Impacts and Mitigation Measures

- Easements required
- Temporary relocation of multi-use trail during construction



## Cawthra Road Shaft Compound



### Key Factors for Selection

- It supports the tunnelled construction of the Queensway and Cawthra sewer alignments
- It allows for a north side sewer alignment, avoiding road crossings
- It avoids conflicts with existing utilities
- It provides a good buffer between residential properties

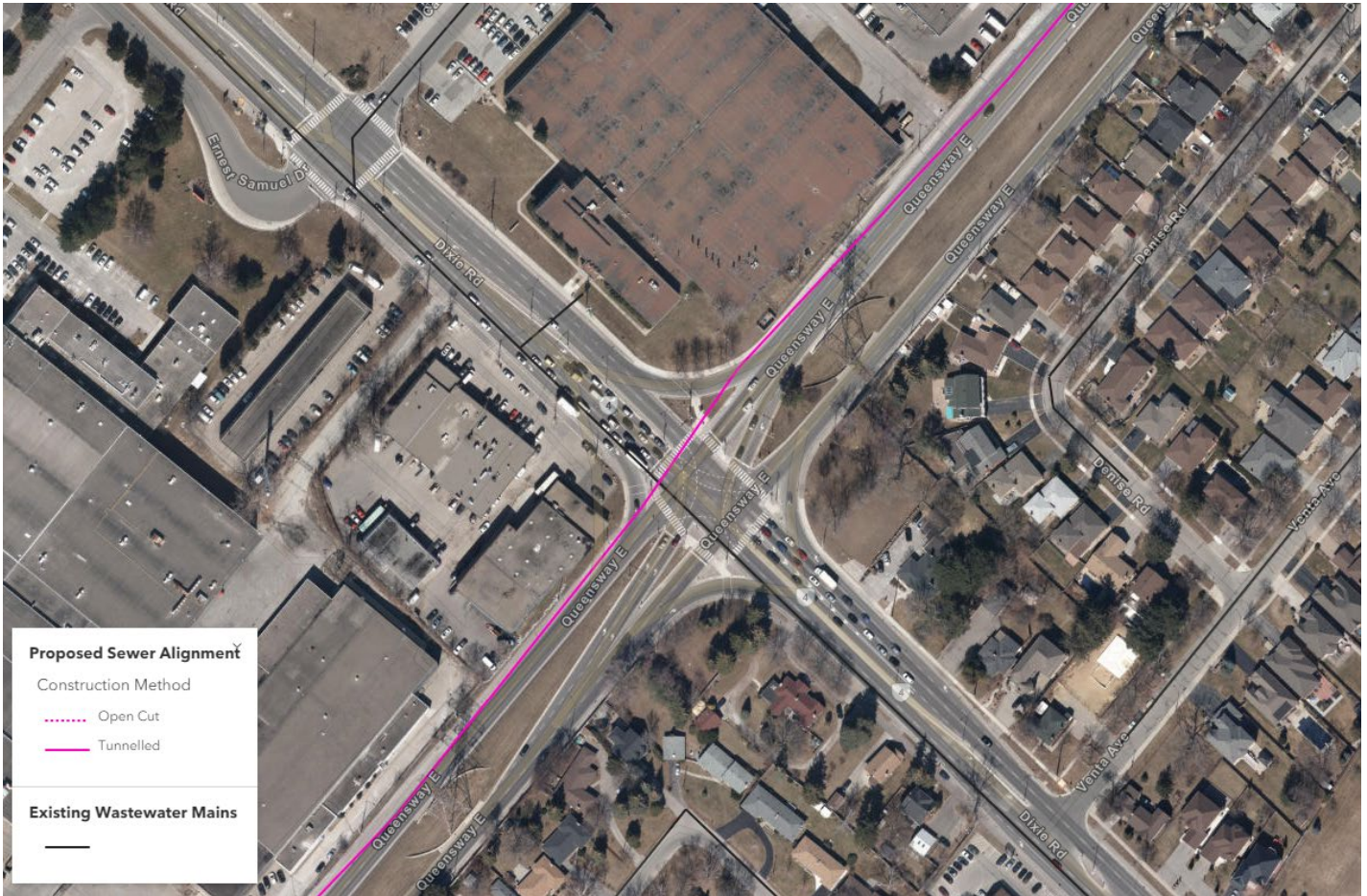
### Key Community Impacts and Mitigation Measure

- Easements required
- Temporary lane closures on Queensway during construction
- Temporary relocation of sidewalk during construction

## Dixie Road

This shaft location is required to support constructability of the tunnelled alignment along Queensway East as well as to connect into the existing trunk sewer on Dixie Road. This connection is required to support the overall strategy for diverting flows and increasing capacity within the system.

Further investigations are required at this location to evaluate and select the preferred shaft alternative.





## Etobicoke Creek Alignment

The following shafts are recommended along Etobicoke Creek alignment.

## Etobicoke Creek Shaft Compound



### Key Factors for Selection

- It supports the tunnelled construction of the Queensway sewer alignment on the northside of the road
- It supports the tunnelled construction of the sewer alignment from Queensway to existing sewer in the Etobicoke Creek Valley
- It provides a good buffer between residential properties
- It avoids conflicts with hydro corridor on the southside of the road
- It provides best accessibility

### Key Community Impacts and Mitigation Measures

- Easements required

## Sherway Drive Shaft Compound



### Key Factors for Selection

- It enables tunnelled sewer construction to Queensway from the West side of the creek minimizing potential impact to the natural environment in the valley
- It supports the open cut construction required to connect to the Etobicoke Creek trunk sewer
- It provides an open accessible connection point to the East Trunk sewer which runs parallel to the creek
- It provides an opportunity to mitigate and remediate the existing and future sewer against erosion
- It reduces construction risk to creek due to minimized new sewer length in the valley
- It has an existing access route for construction, maintenance and operation on the east side of creek
- It enables restoration to natural area on the west side of Creek

### Key Community Impacts and Mitigation Measures

- Easements required
- Temporary relocation of multi-use trail during construction (access to Middle bridge will remain open).
- Located within 100 m of Middle Bridge (heritage property). As per the Cultural Heritage Existing Conditions and Preliminary Impact Assessment (CHECPA) recommendations, potential impacts can be fully mitigated through vibration monitoring and fencing.



## **Future Considerations**

### **Working Nearby / In Water**

- Mitigation measures will be implemented for scour protection and fluvial hazards such as bank, stream bed and/or floodplain trench armouring, and will be determined through detailed design
- Sediment and erosion measures will be implemented to minimize bank erosion and downstream siltation
- Construction activities to occur outside of fish breeding periods
- Mitigation measures will be implemented when working within the floodplain

### **Temporary Removal of Vegetation**

- Tree and vegetation removal will be minimized, where possible
- Standard tree protection measures will be implemented where required
- Disturbed areas will be restored to previous or improved conditions

### **Resident and Community Safety**

- Construction access will be fenced off and shaft areas enclosed with solid wood hoarding
- Construction operations will occur during day shift and in accordance with municipal noise by-laws
- Vibration monitoring pre-construction and during construction to ensure structural integrity of neighboring buildings and structures
- Relocation of pedestrian sidewalks and multi-use trails, where required

### **Groundwater and Soil Contamination**

- Groundwater dewatering may be required and will be carried out in accordance with the hydrogeological assessment, and conforming to the Ministry of Environment, Conservation and Parks (e.g., Permit to Take Water) and Conservation Authority (e.g., TRCA, CVC) requirements
- Soil contamination will be avoided by proper handling and maintenance of construction equipment
- Contingency plan will be prepared and will include the control, cleanup and disposal of a spill or contaminated soil

### **Traffic**

- Access to tunnel shaft areas will be controlled and gravity sewer will be constructed by tunneling within the existing road right of way
- Comprehensive Traffic Management Plan will be prepared
- Impact to public transit will be minimized through temporary relocation of bus stops
- Access disruption to businesses, institutions, residences will be minimized, and advanced notification will be provided

## Project Timeline

### Spring 2019 - Completed

A [Notice of Study Commencement](#) was first issued on May 30, 2019.

### Winter 2020 - Completed

A [Notice of Public Information Centre No. 1](#) was issued on February 27, 2020.

### Spring 2020 - Completed

[Public Information Centre No. 1](#) was held on March 10, 2020.

### Early Summer 2021 - We are here!

Complete preferred solution inventory and identify/evaluate alternative design concepts. Due to the current public gathering restrictions regarding Covid-19, the second public information centre is being held via a virtual platform. **This is currently where the project is, with this virtual PIC as a key component.**

### Late Summer 2021

Complete the Environmental Study Report (ESR). This will be accompanied with a Notice of Completion and a 30-day public review period.

### Late Summer 2021

An implementation plan for the preferred solution will be developed.



## Next Steps

Following this virtual Public Information Centre (PIC), the project team will review and consider your input received, confirm and refine the Preliminary Preferred Solution, and move forward with the Environmental Study Report (ESR) which will be available for a 30-day Public Review Period.

We encourage you to get involved by [filling out the comment sheet](#) by July 6, 2021 to provide any feedback on the study and/or if you would like to receive project information updates. Responses to all comments received will be posted on July 20, 2021.

**Please contact the Project Manager, Justin Lee, P.Eng, at any point during the study if you have any questions or comments.**

10 Peel Centre Drive, Brampton, ON, L6T 4B9 | 905-791-7800 | [send an e-mail](#)

Visit the Project  
Website

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## Privacy and Accessibility

The Region of Peel is committed to ensuring that persons of all abilities are able to access our programs and services without encountering barriers. Tell us how we are doing on accessibility at the Region of Peel by [providing your feedback on accessible customer service here](#).

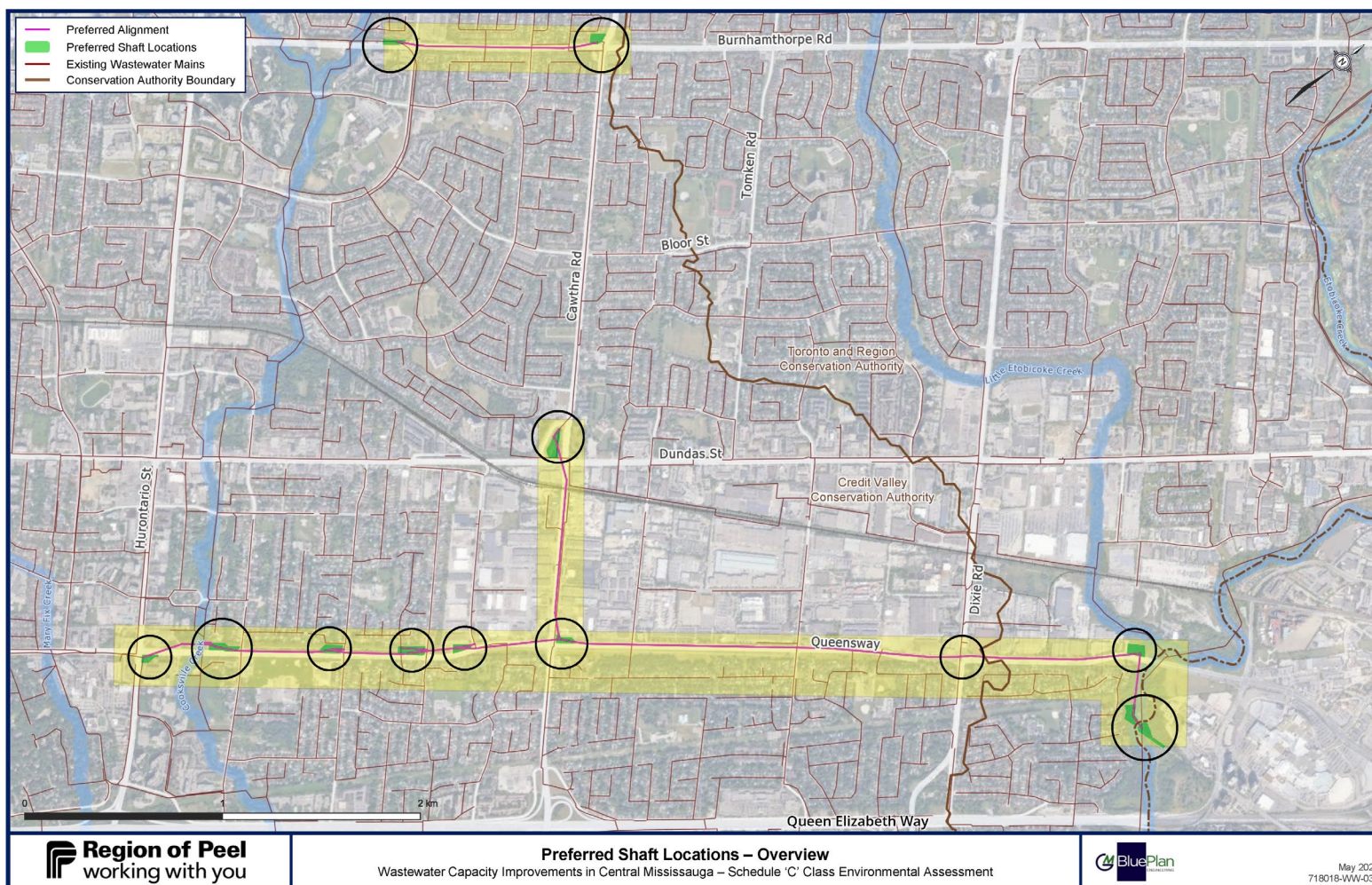
Please note that information related to this study will be collected in accordance with the *Freedom of Information and Protection of Privacy Act*. All comments related will become part of the public record and may be included in the study documentation prepared for public review.

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# Evaluation Process

Through completion of Phase 2 of the Study, the sewer alignments for Burnhamthorpe Road, Cawthra Road, Queensway East and Etobicoke Creek and the general sewer connecting points and shaft locations were selected. Having selected the preferred sewer routes and tunneled construction methodology, Phase 3 of the Class EA process focused on generating, evaluating and selecting design alternatives for the strategy.

- ✓ Evaluation of the shaft site alternatives – shafts provide entrance and exit sites to accommodate the tunneled underground construction and connections to the existing sewers.
- ✓ Evaluation of sewer route alternatives – sewer routes were driven by the preferred shaft sites. Not all sewer alignments had available alternative routes.



The alternatives were evaluated on the following criteria categories: Technical Constructability and Flexibility, Environmental Impacts, Social & Cultural Impacts, Financial and Legal/Jurisdictional Considerations. Each criteria category is comprised of a number of specific evaluation criteria.

<p><b>TECHNICAL CONSTRUCTABILITY</b></p> <ul style="list-style-type: none"> <li>✓ Ease of construction</li> <li>✓ Compatibility with existing / planned infrastructure</li> <li>✓ Minimize environmental and infrastructure crossings</li> <li>✓ Minimize conflicts with existing utilities</li> </ul>	<p><b>TECHNICAL FLEXIBILITY</b></p> <ul style="list-style-type: none"> <li>✓ Technical viability through ability to meet existing / future servicing needs</li> <li>✓ Ease of access to maintain</li> <li>✓ Flexibility of system operations and operational security</li> <li>✓ Maximize flow flexibility</li> </ul>	<p><b>ENVIRONMENTAL</b></p> <ul style="list-style-type: none"> <li>✓ Environmental crossing consideration</li> <li>✓ Proximity to environmental features, protected areas, and species at risk</li> <li>✓ Potential impacts to water features/resources, air quality, natural features and trees</li> <li>✓ Geology, hydrogeology, contamination considerations</li> </ul>
<p><b>SOCIO-ECONOMIC AND CULTURAL</b></p> <ul style="list-style-type: none"> <li>✓ Community and traffic considerations</li> <li>✓ Noise, vibration, dust and odour considerations</li> <li>✓ Cultural heritage resources</li> <li>✓ Archaeological resources</li> </ul>	<p><b>FINANCIAL</b></p> <ul style="list-style-type: none"> <li>✓ Capital costs</li> <li>✓ Operation and maintenance costs</li> <li>✓ Lifecycle cost consideration</li> <li>✓ Consideration of potential financial risk during construction</li> </ul>	<p><b>LEGAL / JURISDICTIONAL</b></p> <ul style="list-style-type: none"> <li>✓ Land use, land size, availability, and location</li> <li>✓ Permit requirements</li> <li>✓ Ownership, legal and jurisdictional considerations</li> <li>✓ Compliance with applicable planning and special land use policies</li> </ul>

A rating system was used to evaluate each alternative solution based on the criteria to identify the preliminary preferred design concept. The preliminary preferred concept was then further refined. The Rating System used to evaluate the alternatives is as follows:

Screening Description	Symbol
Most Preferred / Lower Impact	✓
Less Preferred / Higher impact	✗



# Shaft Alternatives: Etobicoke Creek and Sherway Drive

## Shaft Site Alternative Locations

**Shaft 1** is required to connect the new sewer into the existing trunk sewer located adjacent to Etobicoke Creek. This connection is required to support the overall strategy for diverting flows and increasing capacity within the system. Three alternatives were selected for evaluation:

- Site 1B requires open cut construction to cross the creek and connect to the existing trunk sewer located on the east side. Two shaft compounds are required to support the open cut construction segment, however long-term access will not be required on the west side.
- Site 1D does not require a creek crossing but does require a permanent bridge structure for future access to the site for maintenance and operations.
- Site 1E does not require a creek crossing but does require long-term access through residential property.



## Shaft Site Alternative Evaluation Matrix

Factor	Evaluation Criteria	Shaft 1B	Shaft 1D	Site 1E
<b>Technical Constructability &amp; Flexibility</b>	Accessibility	✓	✗	✗
	Compatibility with existing/planned infrastructure	✓	✓	✓
	Impacts to existing utilities	✓	✓	✓
	Ease of construction	✓	✗	✗
	Flexibility of system operations and operational security	✓	✗	✗
<b>Environmental</b>	Impacts on water features / resources	✗	✓	✓
	Impact on trees	✓	✗	✓
	Impacts to Species at Risk	✓	✗	✓
<b>Socio-economic &amp; Cultural</b>	Impacts on traffic/ transit conditions	✓	✓	✗
	Cultural heritage / archaeological considerations	✓	✓	✓
	Potential impacts on community (noise, vibration, dust and odour)	✓	✓	✗
<b>Financial</b>	Capital costs	✓	✓	✓
	Operation and maintenance costs	✓	✓	✓
	Lifecycle costs	✓	✓	✓
<b>Legal &amp; Jurisdictional</b>	Property acquisition	✓	✓	✗
	Permitting and approval requirements	✓	✓	✓
<b>Overall Score</b>		<b>Most Preferred</b>	<b>Less Preferred</b>	<b>Less Preferred</b>

**Shaft 1B was selected because:**

- It enables tunnelled sewer construction to Queensway from the West side of the creek minimizing potential impact to the natural environment in the valley
- It supports the open cut construction required to connect to the Etobicoke Creek trunk sewer
- It provides an open accessible connection point to the East Trunk sewer which runs parallel to the creek
- It provides an opportunity to mitigate and remediate the existing and future sewer against erosion
- It reduces construction risk to creek due to minimized new sewer length in the valley
- It has an existing access route for construction, maintenance and operation on the east side of creek
- It enables restoration to natural area on the west side of Creek



# Shaft Alternatives: Queensway East and Etobicoke Creek

## Shaft Site Alternative Locations

Shaft 2 is required to support constructability of the tunnelled alignment along Queensway East and south to connect to the existing sewer in Etobicoke Creek valley. Two alternatives were selected for evaluation.



## Shaft Site Alternative Evaluation Matrix

Factor	Evaluation Criteria	Shaft 2A	Shaft 2B
<b>Technical Constructability &amp; Flexibility</b>	Accessibility	✓	✗
	Compatibility with existing/planned infrastructure	✓	✓
	Impacts to existing utilities	✓	✗
	Ease of construction	✓	✗
	Flexibility of system operations and operational security	✓	✗
<b>Environmental</b>	Impacts on water features / resources	✓	✓
	Impact on trees	✓	✓
	Impacts to Species at Risk	✓	✓
<b>Socio-economic &amp; Cultural</b>	Impacts on traffic/ transit conditions	✓	✓
	Cultural heritage / archaeological considerations	✓	✓
	Potential impacts on community (noise, vibration, dust and odour)	✓	✗
<b>Financial</b>	Capital costs	✓	✗
	Operation and maintenance costs	✓	✗
	Lifecycle costs	✓	✗
<b>Legal &amp; Jurisdictional</b>	Property acquisition	✓	✗
	Permitting and approval requirements	✓	✗
<b>Overall Score</b>		<b>Most Preferred</b>	<b>Less Preferred</b>

**Shaft 2A was selected because:**

- It supports the tunnelled construction of the Queensway sewer alignment on the northside of the road
- It supports the tunnelled construction of the sewer alignment from Queensway to existing sewer in the Etobicoke Creek Valley
- It provides a good buffer between residential properties
- It avoids conflicts with hydro corridor on the southside of the road
- It provides best accessibility



# Shaft Alternatives: Queensway East and Dixie Road

## Shaft Site Alternative Locations

**Shaft 3** is required to support constructability of the tunnelled alignment along Queensway East as well as to connect into the existing trunk sewer on Dixie Road. This connection is required to support the overall strategy for diverting flows and increasing capacity within the system.

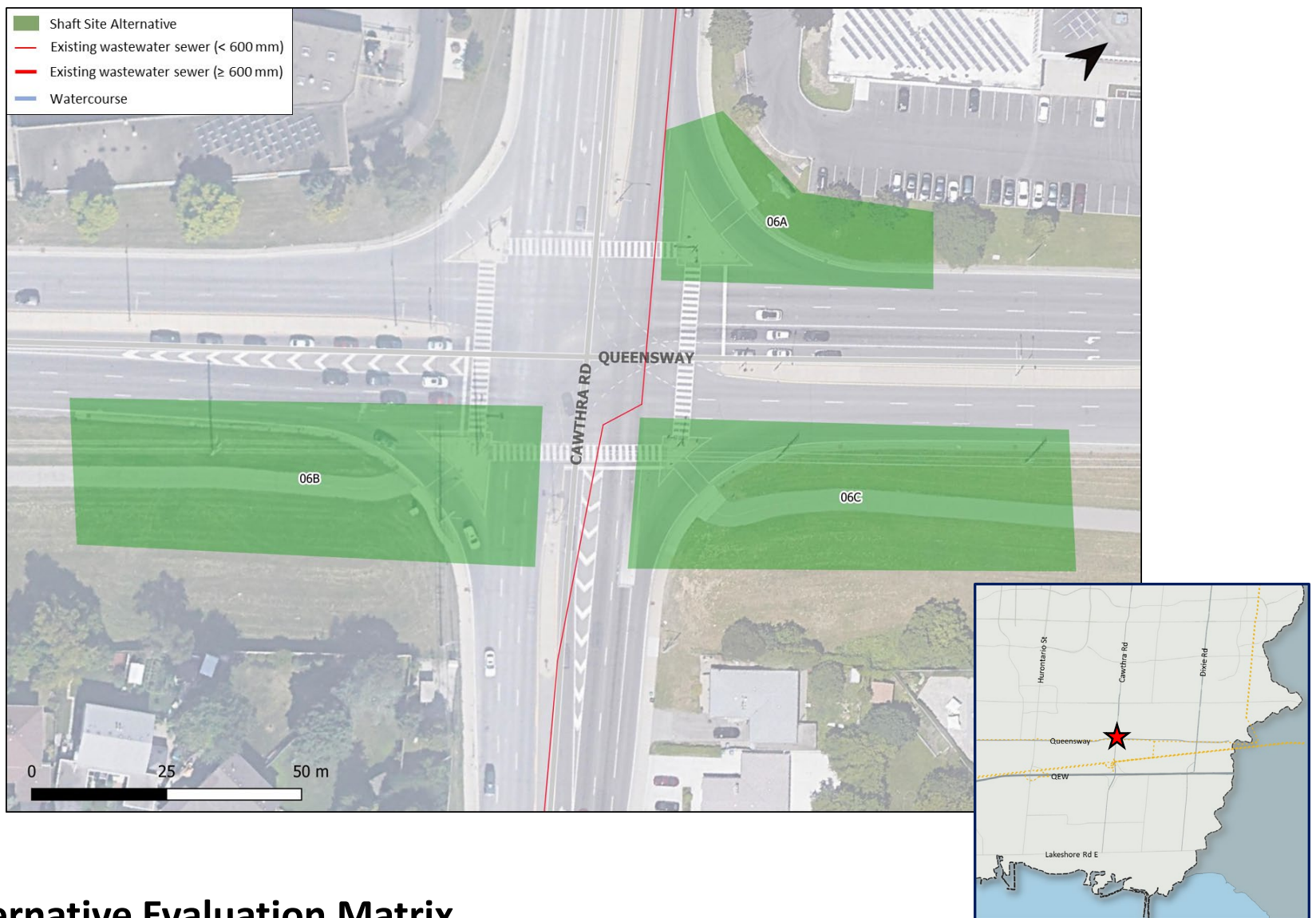
Four alternatives were selected for evaluation. **Further investigations are required at this location to evaluate and select the preferred shaft alternative.**



# Shaft Alternatives: Queensway East and Cawthra Road

## Shaft Site Alternative Locations

Shaft 6 is required to support constructability of the tunnelled alignment along Queensway East and Cawthra Road as well as to connect into the proposed trunk sewer along Cawthra Road. This connection is required to support the overall strategy for diverting flows and increasing capacity within the system. Three alternatives were selected for evaluation.



## Shaft Site Alternative Evaluation Matrix

Factor	Evaluation Criteria	Shaft 6A	Shaft 6B	Shaft 6C
Technical Constructability & Flexibility	Accessibility	✓	✗	✗
	Compatibility with existing/planned infrastructure	✓	✓	✓
	Impacts to existing utilities	✓	✗	✗
	Ease of construction	✓	✗	✗
	Flexibility of system operations and operational security	✓	✗	✗
Environmental	Impacts on water features / resources	✓	✓	✓
	Impact on trees	✓	✓	✓
	Impacts to Species at Risk	✓	✓	✓
Socio-economic & Cultural	Impacts on traffic/ transit conditions	✗	✓	✓
	Cultural heritage / archaeological considerations	✓	✓	✓
	Potential impacts on community (noise, vibration, dust and odour)	✓	✗	✗
Financial	Capital costs	✓	✓	✓
	Operation and maintenance costs	✓	✓	✓
	Lifecycle costs	✓	✓	✓
Legal & Jurisdictional	Property acquisition	✓	✗	✗
	Permitting and approval requirements	✓	✗	✗
<b>Overall Score</b>		<b>Most Preferred</b>	<b>Less Preferred</b>	<b>Less Preferred</b>

**Shaft 6A was selected because:**

- It supports the tunnelled construction of the Queensway and Cawthra sewer alignments
- It allows for a north side sewer alignment along Queensway, avoiding road crossings
- It avoids conflicts with existing utilities
- It provides a good buffer between residential properties



# Shaft Alternatives: Queensway East and Tedlo Street

## Shaft Site Alternative Locations

Shaft 7 is required to support constructability of the tunnelled alignment along Queensway East as well as to connect into the existing local sewer along Tedlo. This connection is required to support the overall strategy for diverting flows, increasing capacity within the system and reducing wet weather issues downstream. The connection to the local sewer will require open cut construction to accommodate the shallow depth of the existing pipe. Two alternatives were selected for evaluation.



## Shaft Site Alternative Evaluation Matrix

Factor	Evaluation Criteria	Shaft 7A	Shaft 7B
<b>Technical Constructability &amp; Flexibility</b>	Accessibility	✓	✓
	Compatibility with existing/planned infrastructure	✓	✗
	Impacts to existing utilities	✓	✗
	Ease of construction	✓	✗
	Flexibility of system operations and operational security	✓	✓
<b>Environmental</b>	Impacts on water features / resources	✓	✓
	Impact on trees	✓	✓
	Impacts to Species at Risk	✓	✓
<b>Socio-economic &amp; Cultural</b>	Impacts on traffic/ transit conditions	✓	✓
	Cultural heritage / archaeological considerations	✓	✓
	Potential impacts on community (noise, vibration, dust and odour)	✓	✗
<b>Financial</b>	Capital costs	✓	✓
	Operation and maintenance costs	✓	✓
	Lifecycle costs	✓	✓
<b>Legal &amp; Jurisdictional</b>	Property acquisition	✓	✓
	Permitting and approval requirements	✓	✓
<b>Overall Score</b>		<b>Most Preferred</b>	<b>Less Preferred</b>

**Site 7A was selected because:**

- It supports the tunnelled construction of the Queensway sewer alignment on the northside of the road
- It supports the open cut construction required to connect to the local sewer at Tedlo
- It allows for a north side sewer alignment, avoiding road crossings
- It avoids conflicts with existing utilities



# Shaft Alternatives: Queensway East and Hensall Street

## Shaft Site Alternative Locations

**Shaft 8** is required to support constructability of the tunnelled alignment along Queensway as well as to connect into the existing local sewer along Hensall and the local sewer located to the west of Hensall (Hensall West). This connection is required to support the overall strategy for diverting flows, increasing capacity within the system and reducing wet weather issues downstream. The connection to the local sewer will require open cut construction to accommodate the shallow depth of the existing pipe. Two alternatives were selected for evaluation.



## Shaft Site Alternative Evaluation Matrix

Factor	Evaluation Criteria	Shaft 8A	Shaft 8B
<b>Technical Constructability &amp; Flexibility</b>	Accessibility	✓	✓
	Compatibility with existing/planned infrastructure	✗	✓
	Impacts to existing utilities	✓	✓
	Ease of construction	✗	✓
	Flexibility of system operations and operational security	✗	✓
<b>Environmental</b>	Impacts on water features / resources	✓	✓
	Impact on trees	✗	✗
	Impacts to Species at Risk	✓	✓
<b>Socio-economic &amp; Cultural</b>	Impacts on traffic/ transit conditions	✓	✓
	Cultural heritage / archaeological considerations	✓	✓
	Potential impacts on community (noise, vibration, dust and odour)	✗	✗
<b>Financial</b>	Capital costs	✓	✓
	Operation and maintenance costs	✓	✓
	Lifecycle costs	✓	✓
<b>Legal &amp; Jurisdictional</b>	Property acquisition	✗	✗
	Permitting and approval requirements	✓	✓
<b>Overall Score</b>		<b>Less Preferred</b>	<b>Most Preferred</b>

**Site 8B was selected because:**

- It supports the tunnelled construction of the Queensway sewer alignment on the northside of the road
- It supports the open cut construction required to connect to the local sewers at Hensall and Hensall West
- It allows for a north side sewer alignment, avoiding road crossings



# Shaft Alternatives: Queensway East and Cliff Road

## Shaft Site Alternative Locations

**Shaft 9** is required to support constructability of the tunnelled alignment along Queensway East as well as to connect into the existing local sewer along Cliff. This connection is required to support the overall strategy for diverting flows, increasing capacity within the system and reducing wet weather issues downstream. The connection to the local sewer will require open cut construction to accommodate the shallow depth of the existing pipe. Three alternatives were selected for evaluation.



## Shaft Site Alternative Evaluation Matrix

Factor	Evaluation Criteria	Shaft 9A	Shaft 9B	Shaft 9C
<b>Technical Constructability &amp; Flexibility</b>	Accessibility	✓	✗	✓
	Compatibility with existing/planned infrastructure	✗	✓	✓
	Impacts to existing utilities	✗	✓	✗
	Ease of construction	✗	✗	✓
	Flexibility of system operations and operational security	✓	✓	✓
<b>Environmental</b>	Impacts on water features / resources	✓	✓	✓
	Impact on trees	✗	✗	✗
	Impacts to Species at Risk	✓	✓	✓
<b>Socio-economic &amp; Cultural</b>	Impacts on traffic/ transit conditions	✓	✗	✓
	Cultural heritage / archaeological considerations	✓	✓	✓
	Potential impacts on community (noise, vibration, dust and odour)	✓	✗	✓
<b>Financial</b>	Capital costs	✓	✓	✓
	Operation and maintenance costs	✓	✓	✓
	Lifecycle costs	✓	✓	✓
<b>Legal &amp; Jurisdictional</b>	Property acquisition	✓	✗	✓
	Permitting and approval requirements	✓	✗	✓
<b>Overall Score</b>		<b>Less Preferred</b>	<b>Less Preferred</b>	<b>Most Preferred</b>

**Site 9C was selected because:**

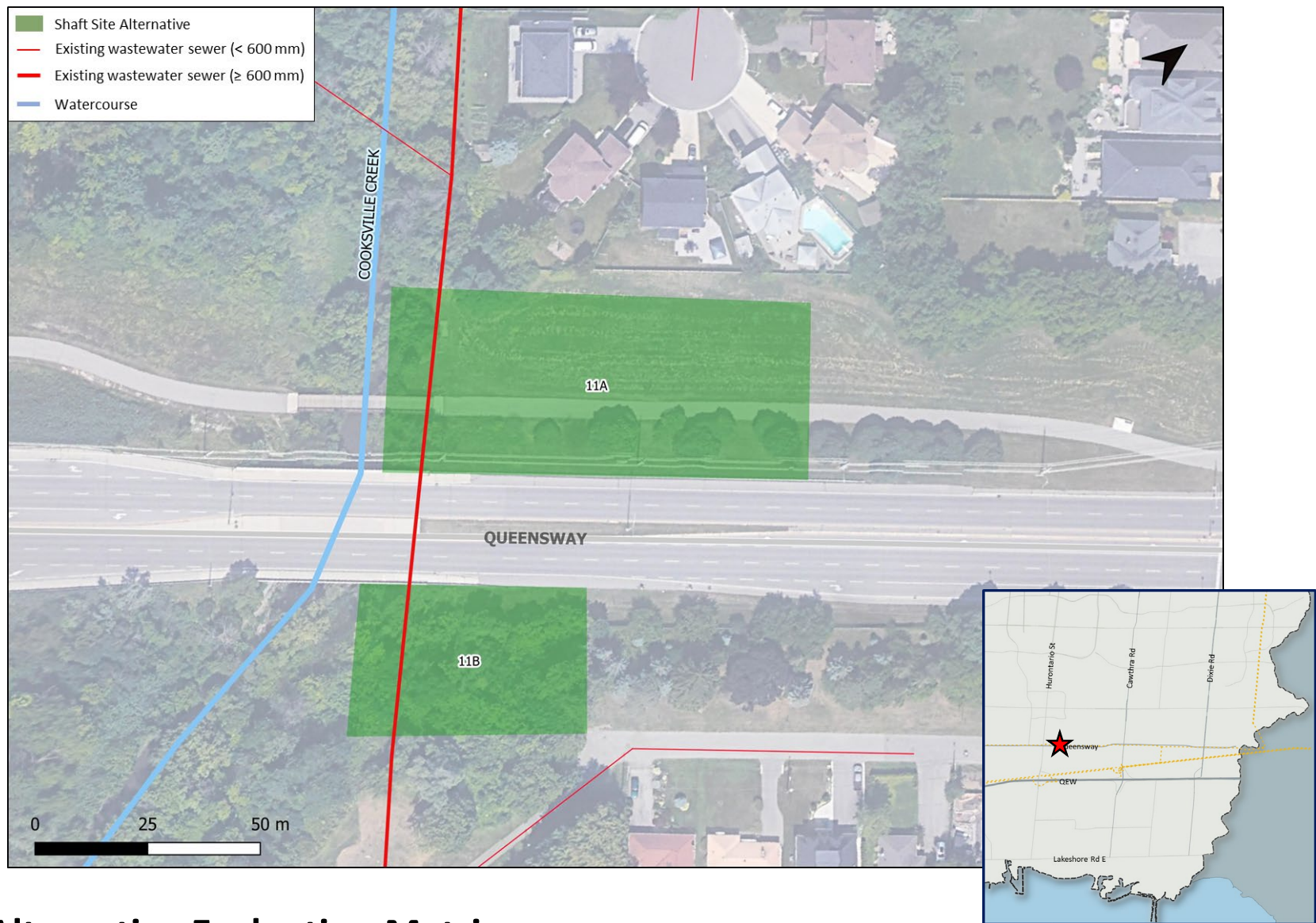
- It supports the tunnelled construction of the Queensway sewer alignment on the northside of the road
- It supports the open cut construction required to connect to the local sewer at Cliff
- It allows for a north side sewer alignment, avoiding road crossings
- It provides good accessibility
- It increases the buffer between the school (south side)



# Shaft Alternatives: Queensway East and Cooksville Creek

## Shaft Site Alternative Locations

**Shaft 11** is required to support constructability of the tunnelled alignment along Queensway East as well as to connect into the existing Cooksville Creek trunk sewer. This connection is required to support the overall strategy for diverting flows and increasing capacity within the system. A Hazard Assessment is currently underway at this location to support the construction methodology for the creek crossing and connection to the Cooksville Creek trunk sewer. Two alternatives were selected for evaluation.



## Shaft Site Alternative Evaluation Matrix

Factor	Evaluation Criteria	Shaft 11A	Shaft 11B
<b>Technical Constructability &amp; Flexibility</b>	Accessibility	✓	✗
	Compatibility with existing/planned infrastructure	✓	✓
	Impacts to existing utilities	✓	✗
	Ease of construction	✓	✗
	Flexibility of system operations and operational security	✓	✓
<b>Environmental</b>	Impacts on water features / resources	✓	✓
	Impact on trees	✓	✗
	Impacts to Species at Risk	✓	✗
<b>Socio-economic &amp; Cultural</b>	Impacts on traffic/ transit conditions	✓	✓
	Cultural heritage / archaeological considerations	✓	✓
	Potential impacts on community (noise, vibration, dust and odour)	✓	✗
<b>Financial</b>	Capital costs	✓	✓
	Operation and maintenance costs	✓	✓
	Lifecycle costs	✓	✓
<b>Legal &amp; Jurisdictional</b>	Property acquisition	✓	✗
	Permitting and approval requirements	✓	✗
<b>Overall Score</b>		<b>Most Preferred</b>	<b>Less Preferred</b>

**Site 11A was selected because:**

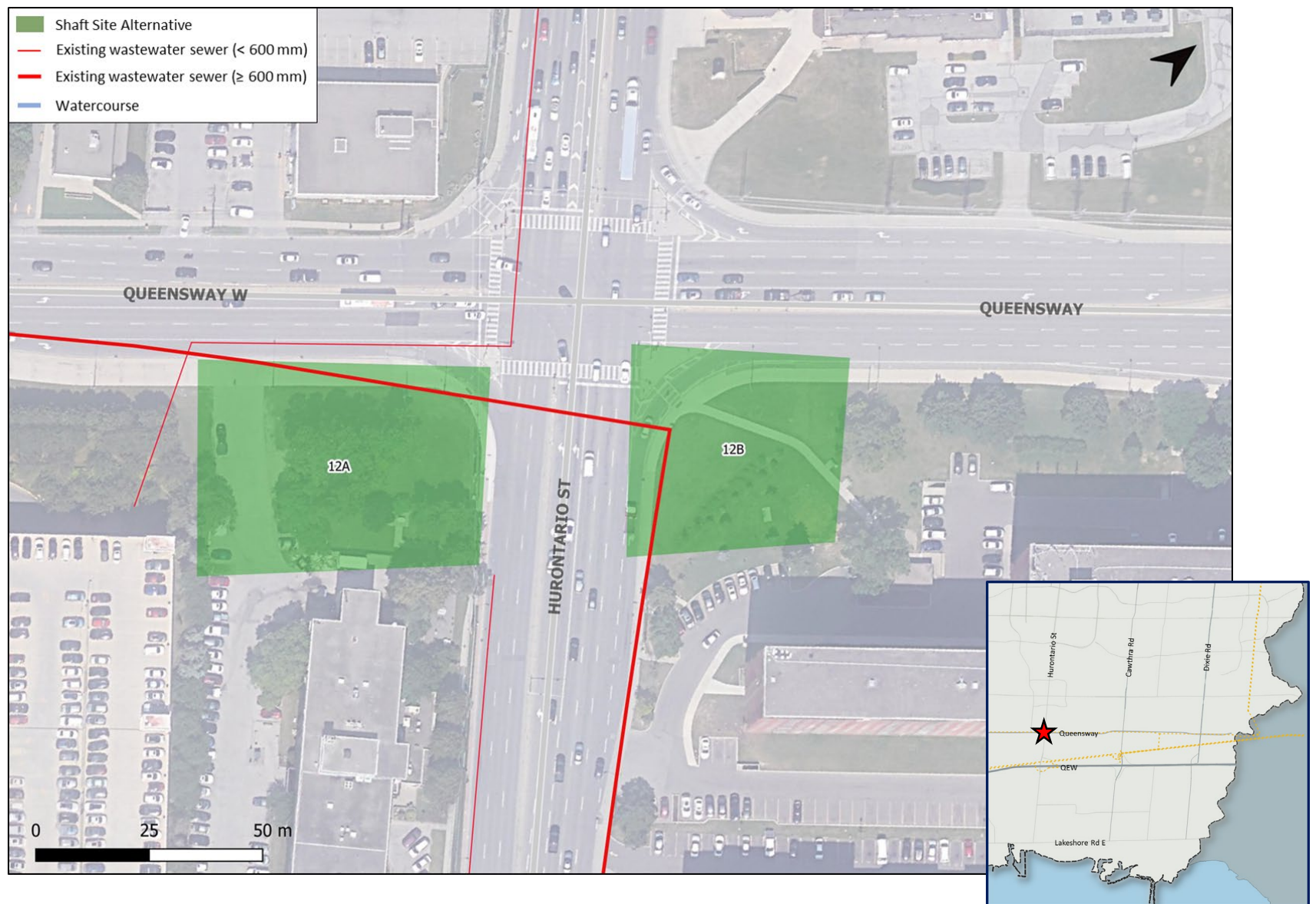
- It supports the tunnelled construction of the Queensway sewer alignment on the northside of the road
- It provides a connection point to the Cooksville Creek trunk sewer
- It allows for a north side sewer alignment, avoiding road crossings
- It provides best availability in land
- It minimizes impacts to trees
- It is outside of City park lands



# Shaft Alternatives: Queensway East and Hurontario Street

## Shaft Site Alternative Locations

Shaft 12 is required to support constructability of the tunnelled alignment along Queensway East as well as to connect into the existing trunk sewer along Queensway. This connection is required to support the overall strategy for diverting flows and increasing capacity within the system. Two alternatives were selected for evaluation.



## Shaft Site Alternative Evaluation Matrix

Factor	Evaluation Criteria	Shaft 12A	Shaft 12B
Technical Constructability & Flexibility	Accessibility	✗	✓
	Compatibility with existing/planned infrastructure	✗	✓
	Impacts to existing utilities	✗	✓
	Ease of construction	✗	✓
	Flexibility of system operations and operational security	✗	✓
Environmental	Impacts on water features / resources	✓	✓
	Impact on trees	✓	✓
	Impacts to Species at Risk	✓	✓
Socio-economic & Cultural	Impacts on traffic/ transit conditions	✗	✗
	Cultural heritage / archaeological considerations	✓	✓
	Potential impacts on community (noise, vibration, dust and odour)	✓	✓
Financial	Capital costs	✗	✓
	Operation and maintenance costs	✓	✓
	Lifecycle costs	✗	✓
Legal & Jurisdictional	Property acquisition	✗	✓
	Permitting and approval requirements	✓	✓
Overall Score		Less Preferred	Most Preferred

**Site 12B was selected because:**

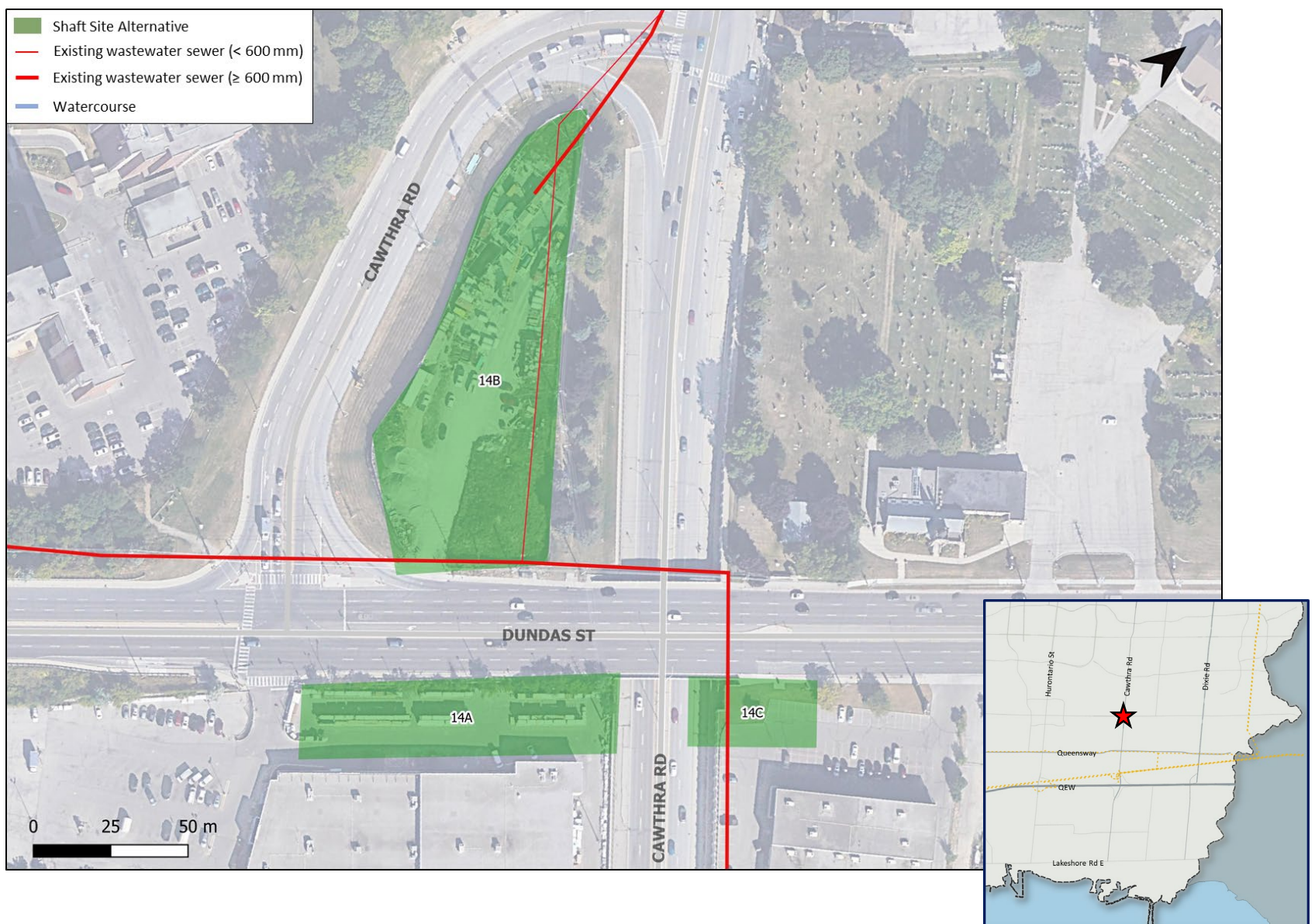
- It supports the tunnelled construction of the Queensway sewer
- It provides the best connection point to the Queensway trunk sewer
- It avoids conflicts with planned infrastructure
- It avoids conflicts with utilities



# Shaft Alternatives: Cawthra Road and Dundas Street

## Shaft Site Alternative Locations

Shaft 14 is required to support constructability of the tunnelled alignment along Cawthra Road as well as connect into the in-construction trunk sewer along Cawthra Road. This connection is required to support the overall strategy for diverting flows and increasing capacity within the system. Three alternatives were selected for evaluation.



## Shaft Site Alternative Evaluation Matrix

Factor	Evaluation Criteria	Shaft 14A	Shaft 14B	Shaft 14C
Technical Constructability & Flexibility	Accessibility	x	✓	x
	Compatibility with existing/planned infrastructure	x	✓	x
	Impacts to existing utilities	✓	✓	✓
	Ease of construction	x	✓	x
	Flexibility of system operations and operational security	x	✓	x
Environmental	Impacts on water features / resources	✓	✓	✓
	Impact on trees	✓	✓	✓
	Impacts to Species at Risk	✓	✓	✓
Socio-economic & Cultural	Impacts on traffic/ transit conditions	x	✓	x
	Cultural heritage / archaeological considerations	✓	✓	✓
	Potential impacts on community (noise, vibration, dust and odour)	x	✓	x
Financial	Capital costs	x	✓	x
	Operation and maintenance costs	✓	✓	✓
	Lifecycle costs	x	✓	x
Legal & Jurisdictional	Property acquisition	x	✓	x
	Permitting and approval requirements	✓	✓	✓
Overall Score		Less Preferred	Most Preferred	Less Preferred

**Site 14B was selected because:**

- It supports the tunnelled construction of the Cawthra sewer
- It is the current compound for the in-construction Cawthra Trunk sewer which is a key connection point
- It provides a good buffer between commercial and industrial areas
- It avoids potential lane closures along Dundas Street



# Shaft Alternatives: Burnhamthorpe Road and Cawthra Road

## Shaft Site Alternative Locations

Shaft 15 is required to support constructability of the tunnelled alignment along Cawthra Road and Burnhamthorpe Road as well as to connect into the in-construction trunk sewer along Cawthra Road and Burnhamthorpe Road. This connection is required to support the overall strategy for diverting flows and increasing capacity within the system. Three alternatives were selected for evaluation.



## Shaft Site Alternative Evaluation Matrix

Factor	Evaluation Criteria	Shaft 15A	Shaft 15B	Shaft 15C
<b>Technical Constructability &amp; Flexibility</b>	Accessibility	x	x	✓
	Compatibility with existing/planned infrastructure	x	x	✓
	Impacts to existing utilities	✓	✓	✓
	Ease of construction	x	x	✓
	Flexibility of system operations and operational security	x	x	✓
<b>Environmental</b>	Impacts on water features / resources	✓	✓	✓
	Impact on trees	✓	✓	✓
	Impacts to Species at Risk	✓	✓	✓
<b>Socio-economic &amp; Cultural</b>	Impacts on traffic/ transit conditions	✓	✓	✓
	Cultural heritage / archaeological considerations	✓	✓	✓
	Potential impacts on community (noise, vibration, dust and odour)	x	x	x
<b>Financial</b>	Capital costs	✓	✓	✓
	Operation and maintenance costs	✓	✓	✓
	Lifecycle costs	✓	✓	✓
<b>Legal &amp; Jurisdictional</b>	Property acquisition	x	x	✓
	Permitting and approval requirements	✓	✓	✓
<b>Overall Score</b>		<b>Less Preferred</b>	<b>Less Preferred</b>	<b>Most Preferred</b>

**Site 15C was selected because:**

- It supports the tunnelled construction of the Burnhamthorpe sewer alignment on the northside of the road
- It is the current compound for the in-construction Cawthra trunk sewer which is a key connection point
- It allows for a north side sewer alignment, avoiding road crossings
- It minimizes impacts to trees



# Shaft Alternatives: Burnhamthorpe Road and Central Parkway

## Shaft Site Alternative Locations

Shaft 17 is required to support constructability of the tunnelled alignment along Burnhamthorpe Road as well as connect into the trunk sewer along Burnhamthorpe Road. This connection is required to support the overall strategy for diverting flows and increasing capacity within the system. Four alternatives were selected for evaluation.



## Shaft Site Alternative Evaluation Matrix

Factor	Evaluation Criteria	Shaft 17A	Shaft 17B	Shaft 17C	Shaft 17D
<b>Technical Constructability &amp; Flexibility</b>	Accessibility	x	✓	✓	x
	Compatibility with existing/planned infrastructure	x	✓	✓	x
	Impacts to existing utilities	✓	✓	✓	✓
	Ease of construction	x	✓	✓	x
	Flexibility of system operations and operational security	x	✓	✓	x
<b>Environmental</b>	Impacts on water features / resources	✓	✓	✓	✓
	Impact on trees	✓	✓	✓	x
	Impacts to Species at Risk	✓	✓	✓	✓
<b>Socio-economic &amp; Cultural</b>	Impacts on traffic/ transit conditions	✓	x	✓	x
	Cultural heritage / archaeological considerations	✓	✓	✓	✓
	Potential impacts on community (noise, vibration, dust and odour)	✓	✓	x	x
<b>Financial</b>	Capital costs	✓	✓	✓	✓
	Operation and maintenance costs	✓	✓	✓	✓
	Lifecycle costs	✓	✓	✓	✓
<b>Legal &amp; Jurisdictional</b>	Property acquisition	x	x	✓	x
	Permitting and approval requirements	✓	✓	✓	✓
<b>Overall Score</b>		<b>Less Preferred</b>	<b>Less Preferred</b>	<b>Most Preferred</b>	<b>Less Preferred</b>

**Site 17C was selected because:**

- It supports the tunnelled construction of the Burnhamthorpe sewer alignment on the northside of the road
- It provides the best connection point to the Central Parkway trunk sewer
- It allows for a north side sewer alignment, avoiding road crossings
- It minimizes impacts to trees

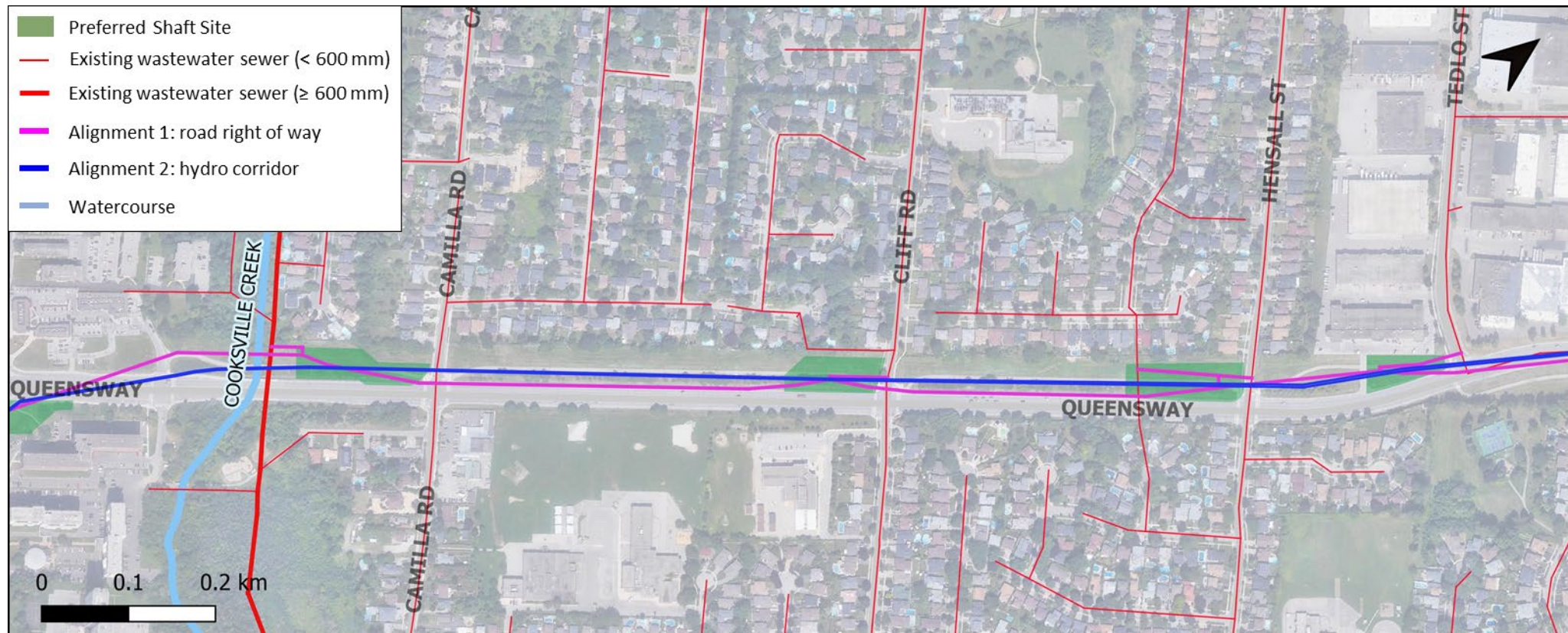


# Sewer Route Alternatives: Queensway East

## Sewer Route Alternative Locations

The Queensway East sewer route runs between Hurontario Street and Etobicoke Creek. This alignment supports flow flexibility and capacity increases within the system by connecting to key existing sewers including at Hurontario, Cooksville Creek, Cliff, Hensall and Hensall West, Tedlo and Cawthra. There were two sewer route alternatives available between Hurontario Street to Tedlo Street.

- Alignment 1 is within the road right of way
- Alignment 2 is within the hydro corridor



## Sewer Route Alternative Evaluation Matrix

Factor	Evaluation Criteria	Alignment 1 Road right of way	Alignment 2 Hydro corridor
<b>Technical Constructability &amp; Flexibility</b>	Accessibility	✓	✓
	Compatibility with existing/planned infrastructure	✓	✓
	Impacts to existing utilities	✓	✗
	Ease of construction	✗	✓
	Flexibility of system operations and operational security	✓	✓
<b>Environmental</b>	Impacts on water features / resources	✓	✓
	Impact on trees	✓	✓
	Impacts to Species at Risk	✓	✓
<b>Socio-economic &amp; Cultural</b>	Impacts on traffic/ transit conditions	✓	✓
	Cultural heritage / archaeological considerations	✓	✓
	Potential impacts on community (noise, vibration, dust and odour)	✓	✓
<b>Financial</b>	Capital costs	✓	✗
	Operation and maintenance costs	✓	✓
	Lifecycle costs	✓	✗
<b>Legal &amp; Jurisdictional</b>	Property acquisition	✓	✗
	Permitting and approval requirements	✓	✓
<b>Overall Score</b>		<b>Most Preferred</b>	<b>Less Preferred</b>
<b>Alignment 1 was selected because:</b> <ul style="list-style-type: none"> <li>• Less potential for conflicts with existing or future utilities</li> <li>• Construction within previously disturbed area (road ROW)</li> <li>• Lower costs for permanent easements</li> </ul>			



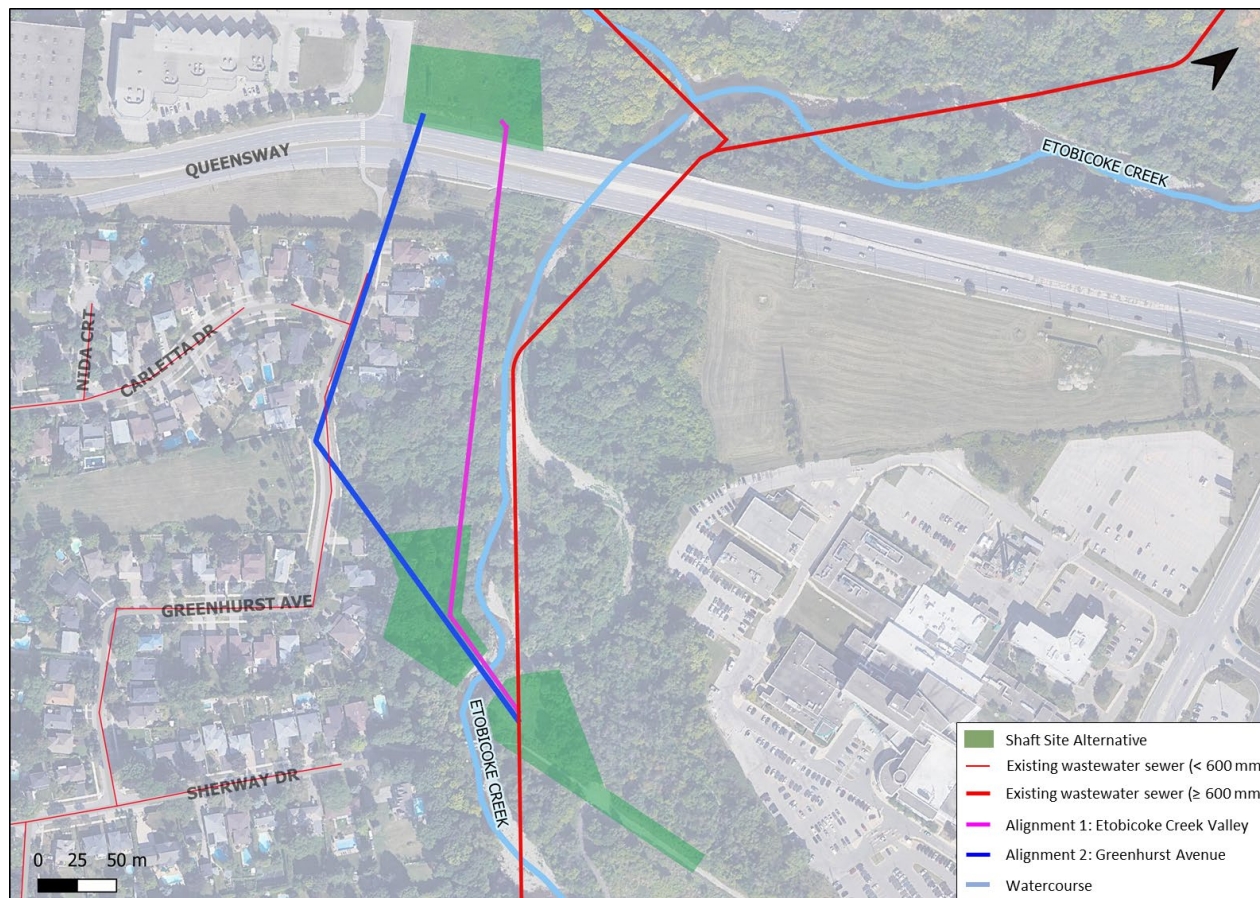
# Sewer Route Alternatives: Etobicoke Creek

## Sewer Route Alternative Locations

The Etobicoke Creek alignment provides the key connection to the downstream point of the alignment. There were two alternative sewer route alignments available along Etobicoke Creek:

- Alignment 1 is within the Etobicoke Creek valley
- Alignment 2 is along Greenhurst Avenue. This alignment requires an additional shaft and manhole located on Greenhurst Avenue

Both alternatives require open cut construction to cross Etobicoke Creek to connect to the east side shaft location at Etobicoke Creek and Sherway Drive to connect to the existing trunk sewer.



## Sewer Route Alternative Evaluation Matrix

Factor	Evaluation Criteria	Alignment 1 Etobicoke Creek Valley	Alignment 2 Greenhurst Avenue
<b>Technical Constructability &amp; Flexibility</b>	Accessibility	✓	✗
	Compatibility with existing/planned infrastructure	✓	✓
	Impacts to existing utilities	✓	✗
	Ease of construction	✓	✗
	Flexibility of system operations and operational security	✓	✓
<b>Environmental</b>	Impacts on water features / resources	✗	✗
	Impact on trees	✗	✗
	Impacts to Species at Risk	✗	✗
<b>Socio-economic &amp; Cultural</b>	Impacts on traffic/ transit conditions	✓	✗
	Cultural heritage / archaeological considerations	✓	✓
	Potential impacts on community (noise, vibration, dust and odour)	✓	✗
<b>Financial</b>	Capital costs	✓	✗
	Operation and maintenance costs	✓	✗
	Lifecycle costs	✓	✗
<b>Legal &amp; Jurisdictional</b>	Property acquisition	✓	✗
	Permitting and approval requirements	✓	✓
<b>Overall Score</b>		<b>Most Preferred</b>	<b>Less Preferred</b>

**Alignment 1 was selected because:**

- Minimizes number of required shaft sites
- Avoids construction within residential neighborhood
- Avoids construction traffic along residential roads
- Avoids conflicts with existing utilities
- Straighter alignment provides improved flow hydraulics