

Public information centre no. 1



Class Environmental Assessment for Adelaide
Wastewater Treatment Plant Climate Change Resiliency

Schedule B Municipal Class Environmental Assessment



Contact information

If you would like to provide comment or complete the project questionnaire, please see the Get Involved Page

<https://getinvolved.london.ca/adelaide-climate-change>

If you would like to be included on the project mailing list, please contact:

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or

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Thank you for participating!

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Overview

Agenda

1. Project overview
2. Problem and opportunity statement
3. Existing flood risks
4. Hydraulic analysis
5. Alternative solutions
6. Preliminary impact assessment
7. Next steps
8. Questions

Public information centre no. 1

- Introduce the public to the project.
- Present alternative solutions and evaluation criteria for input.
- Provide opportunity for interested parties to identify any concerns or information that will support the Municipal Class Environmental Assessment process.

Public information centre no. 2 (early 2022)

- Present conceptual designs and a detailed evaluation of the alternative solutions.
- Provide opportunity for interested parties to identify any concerns or information that will support the environmental assessment.



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Project overview



Study area

Adelaide Wastewater Treatment Plant

1157 Adelaide Street North

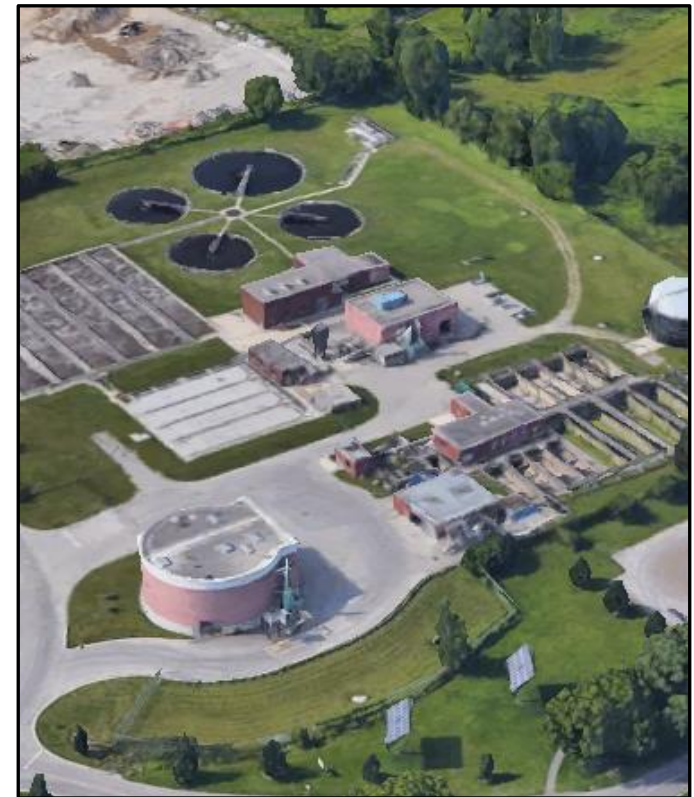


Image Source: Google Earth

Background

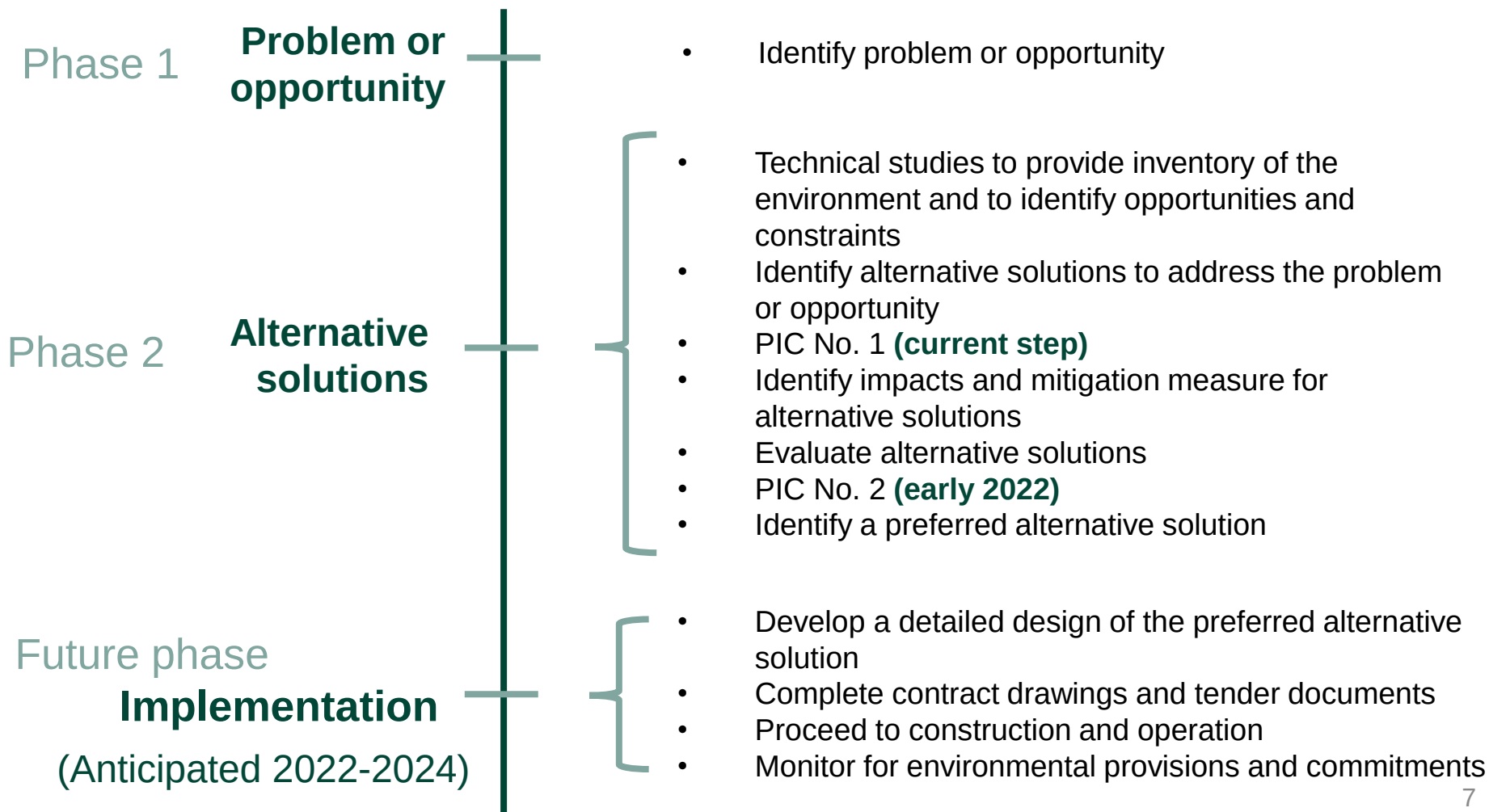
- In April 2019, the City of London declared a climate emergency to deepen its commitment to protecting its economy, ecosystems, and communities from climate change through adaptation and mitigation initiatives.
- The City of London, like other communities, is experiencing more frequent and intense flooding as a result of climate change.
- This environmental assessment will seek to identify a preferred flood protection approach to improve plant asset resilience, enhance treatment capabilities, and improve plant safety.



Image Source: City of London

Municipal class environmental assessment

Schedule B



Problem statement

In April 2019, the City declared a climate emergency to deepen its commitment to protecting its economy, ecosystems, and communities from climate change through adaptation and mitigation initiatives. The Adelaide Wastewater Treatment Plant, located along the Thames River at 1157 Adelaide Street North, is inundated during severe floods (e.g., 1:250-year event). As part of these climate change resiliency initiatives, the City of London has an interest in providing flood protection and climate resiliency at this critical wastewater treatment plant infrastructure and reducing the environmental impacts of flooding.

Opportunity statement

The Schedule B Municipal Class Environmental Assessment will seek to identify a preferred flood protection approach to improve asset resilience, enhance treatment capabilities, and improve plant safety. Potential approaches to protect these critical infrastructure assets and reduce the environmental impacts of flooding approaches will, to the extent possible, minimize impacts to land ownership, land use conditions, and existing infrastructure.

The City secured federal funding through the Disaster Mitigation and Adaptation Fund for this project, as well as for climate change resiliency improvements at the Greenway Wastewater Treatment Plant.

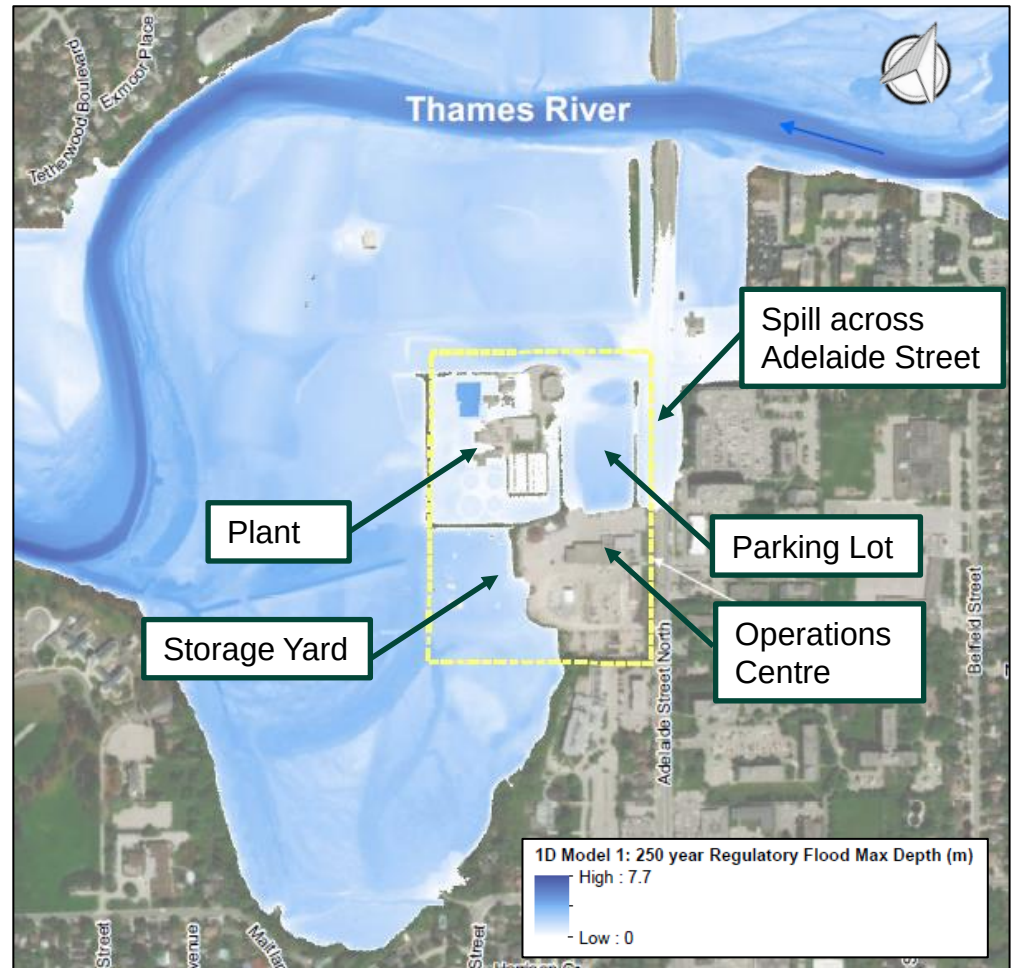
The environmental assessment will be coordinated with the long-term planning underway for the City's wastewater treatment plants. This coordination will ensure that resiliency opportunities identified in the environmental assessment will serve the City well into the future.

Summary statement

The Adelaide Wastewater Treatment Plant is vulnerable to severe flooding. The environmental assessment will seek to identify a preferred flood protection approach to improve asset resilience, enhance treatment capabilities, and improve plant safety. An acceptable flood protection solution will, to the extent possible, minimize impacts to land ownership, land use conditions, and existing infrastructure.

Existing flood risk

- Flooding spills across Adelaide Street
- 1:250-year regulatory event of 1,000 m³/s
- Typical flood depths are between 0.2 m and 0.8 m at the plant



Screening of a long-list of flood mitigation approaches through hydraulic analysis



This screening demonstrates which mitigation approaches are not practical or not feasible to meet project requirements.

The conclusions of the screening form the basis of the alternative solutions being assessed and evaluated in the environmental assessment.

Summary

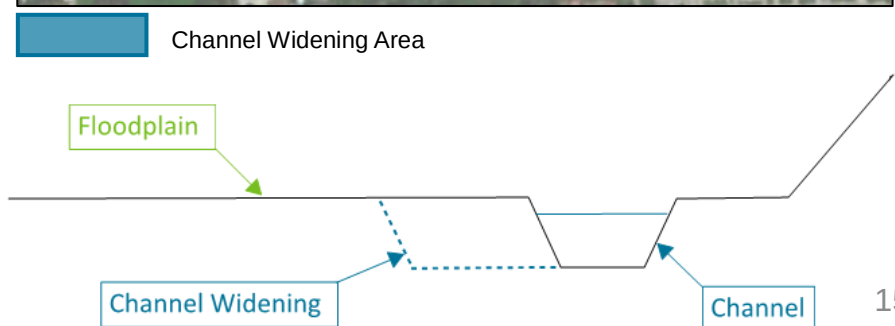
Long-list of flood mitigation approaches	Screening outcome
Channel conveyance	
Channel widening	not recommended
Channel lowering	not recommended
Floodplain improvement	not recommended
Bridge replacement	not recommended
Diversions	
Local flow diversion	not recommended
Storage	
Online storage	not recommended
Operational measures	
Process upgrades and operational modifications	not recommended
Site-level flood protection	
Floodwall/berm/dyke	recommended

Screened-out flood mitigation approaches



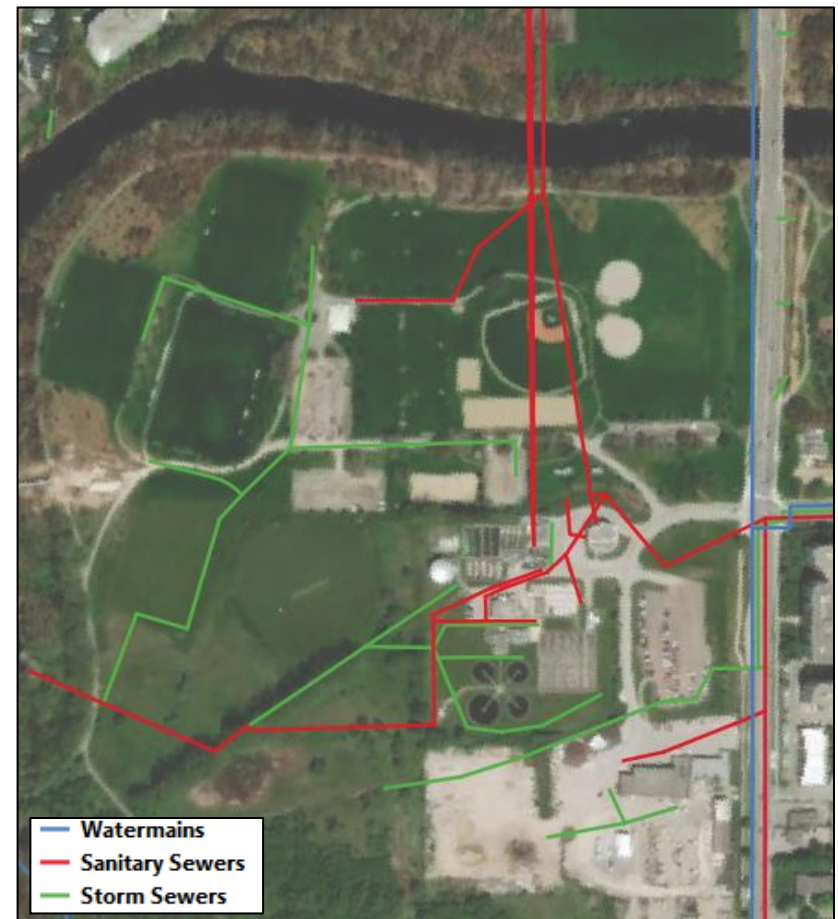
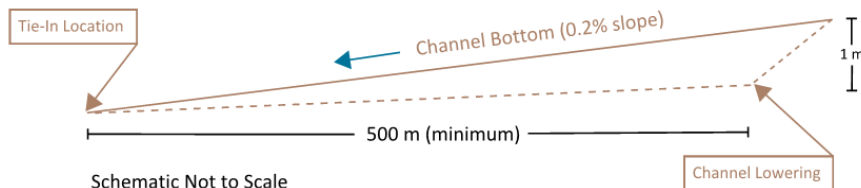
Channel widening and flow diversion

- **Not Recommended**
- Existing channel capacity is 250 m³/s.
- Channel widening would need to provide an additional 500 m³/s of capacity to mitigate flooding at the plant.
- As a result, approximately 100 m of widening is needed requiring significant disturbance.
- Similarly, a flow diversion channel would also need to be approximately 100 m wide to mitigate flooding.



Channel lowering

- **Not Recommended**
- The Thames River has an existing slope of approx. 0.2% at the study area. This shallow slope limits the opportunity for lowering.
- For example, at least 500 m of downstream disturbance is required to lower the channel by 1 m.
- Infrastructure crossing below the Thames River further constrains lowering opportunity.



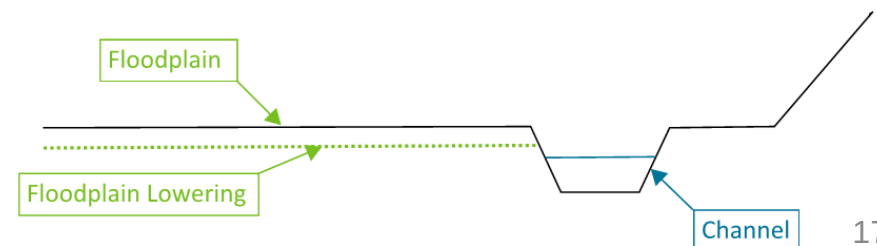
Infrastructure Constraints (data source: City of London)

Floodplain Improvements

- **Not Recommended**
- Evaluated lowering existing floodplain around the plant to improve conveyance.
- Floodplain lowering would need to provide an additional 500 m³/s of capacity to mitigate flooding at the plant.
- Lowing the floodplain 1 m across its typical 250 m width would not provide the required conveyance.



 Flood Lowering Area

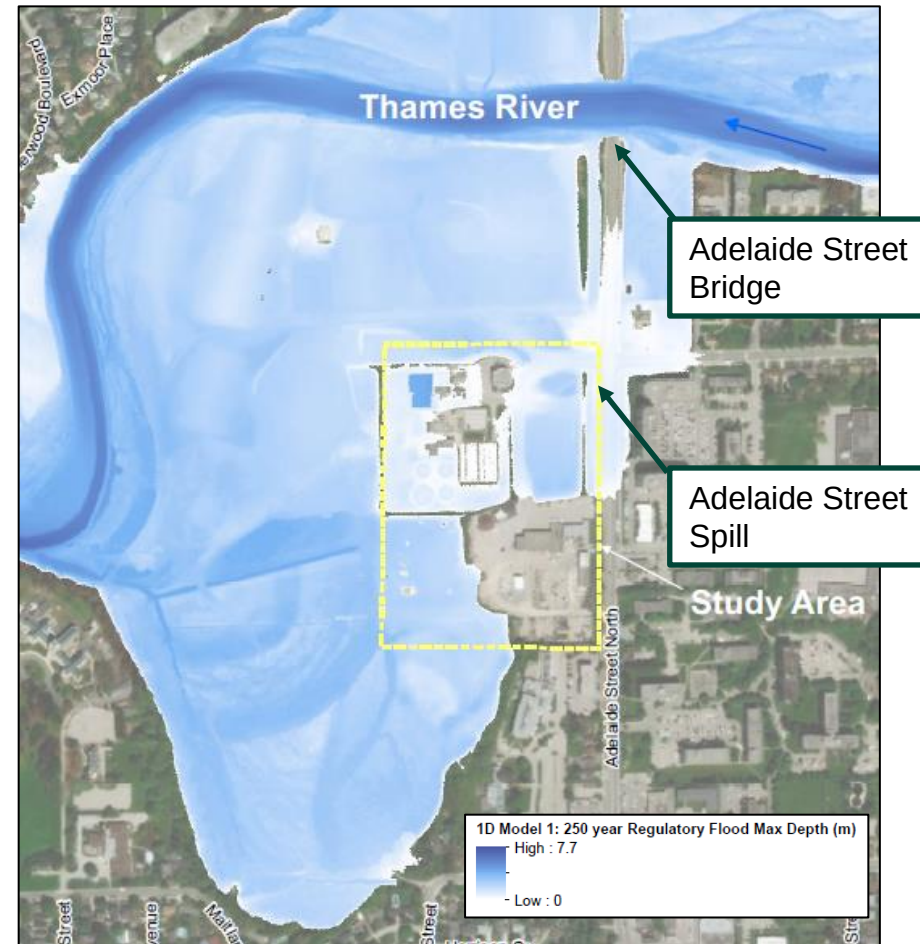


Bridge replacement

- **Not Recommended**
- Assessed whether replacing the bridge to improve hydraulic capacity could help eliminate the spill across Adelaide Street North.
- Analysis demonstrated that only minor upstream water level improvements would result from a bridge replacement, which would not eliminate the spill.



Adelaide Street Bridge (Image Source: Google Earth)



Online flood storage

- **Not Recommended**
- The Fanshawe Dam upstream of the study area regulates Thames River flows.
- Assessed the feasibility of further regulating flows at the plant to mitigate flooding by providing additional storage.
- Significant online storage would be needed to reduce the 1:250-year flow at the study area from 1000 m³/s to 500 m³/s to mitigate flooding at the plant.



Fanshawe Dam (Image Source: London Tourism 2021)



Process upgrades and operational modifications

- **Not Recommended**
- Significant costs
- Long-term timeframe for implementation
- Would not fully achieve objectives of the study





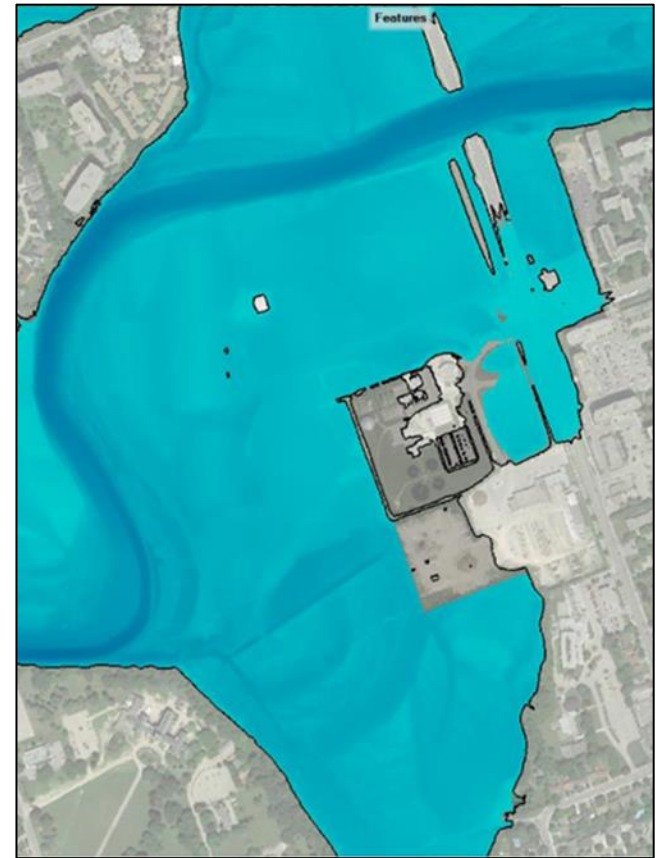
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Recommended approach



Site-level flood protection

- Recommended
- Examples of site-level flood protection include floodwalls and berms.
- Site-level flood protection restricts available floodplain (unlike the other approaches that were screened).
- This restriction introduces the potential for upstream flood impacts (i.e., backwater).
- Hydraulic analysis indicated no or negligible upstream flood impacts resulting from site-level flood protection.

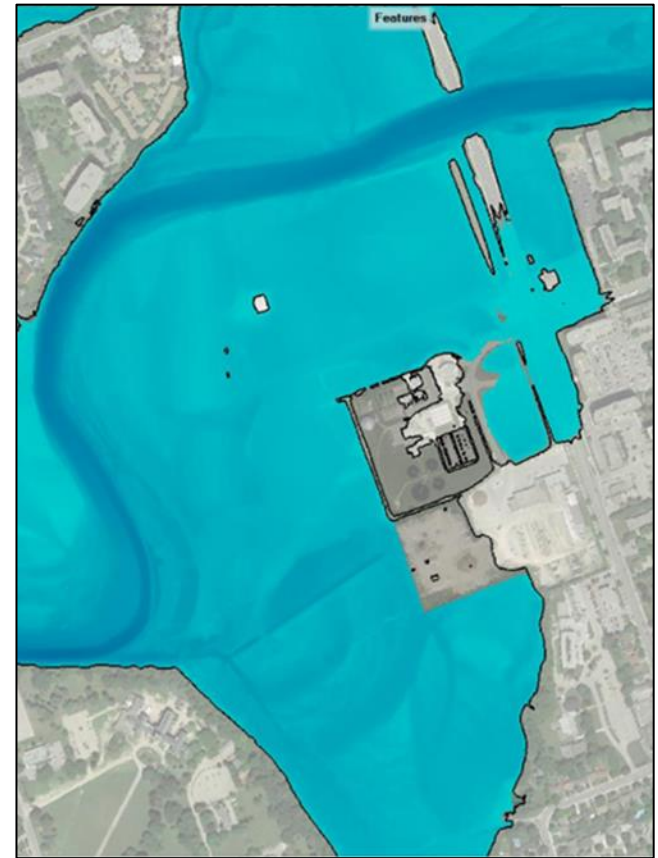


1:250-year flooding with site-level flood protection conceptually represented in hydraulic analysis

Site-level flood protection – continued

Compared to the other flood protection approaches that were screened:

- more readily constructable
- less environmental impacts
- less land-use impacts
- Implementing site-level protection results in minor floodplain storage loss.
- Options for offsetting (i.e., mitigating) floodplain storage loss will be considered in the environmental assessment.



1:250-year flooding with site-level flood protection conceptually represented in hydraulic analysis

Examples of site-level flood protection



Earthen berm/barrier at the Vauxhall Wastewater Treatment Plant (City of London)



Floodwall at the Vauxhall Wastewater Treatment Plant (City of London)

Examples of site-level flood protection



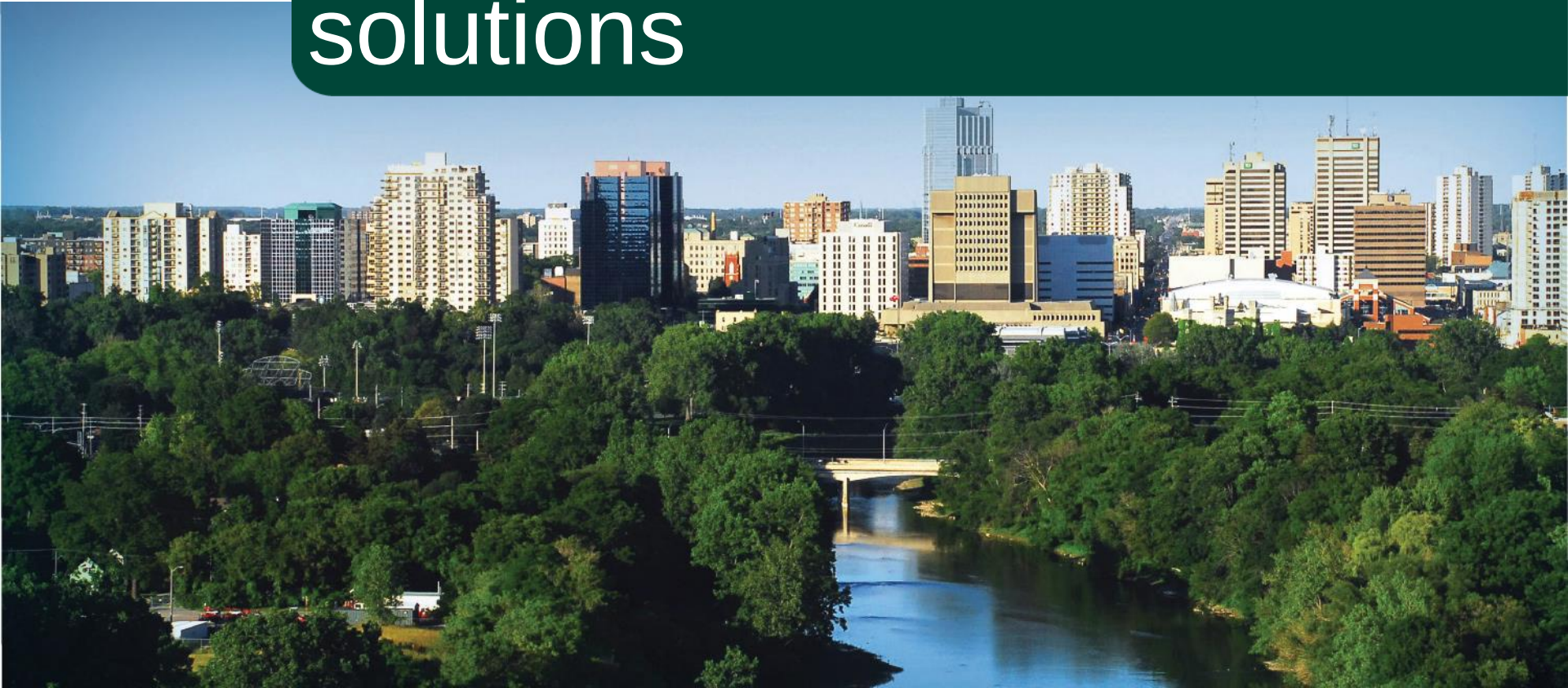
Construction of the West London Dyke (Image source: Upper Thames River Conservation Authority)

Conceptual alternative solutions



Visualization of 1:250-year flood conditions with site-level flood protection provided at the plant.

Conceptual alternative solutions



Conceptual alternative solutions

Option 1 – berm with raised entrance way

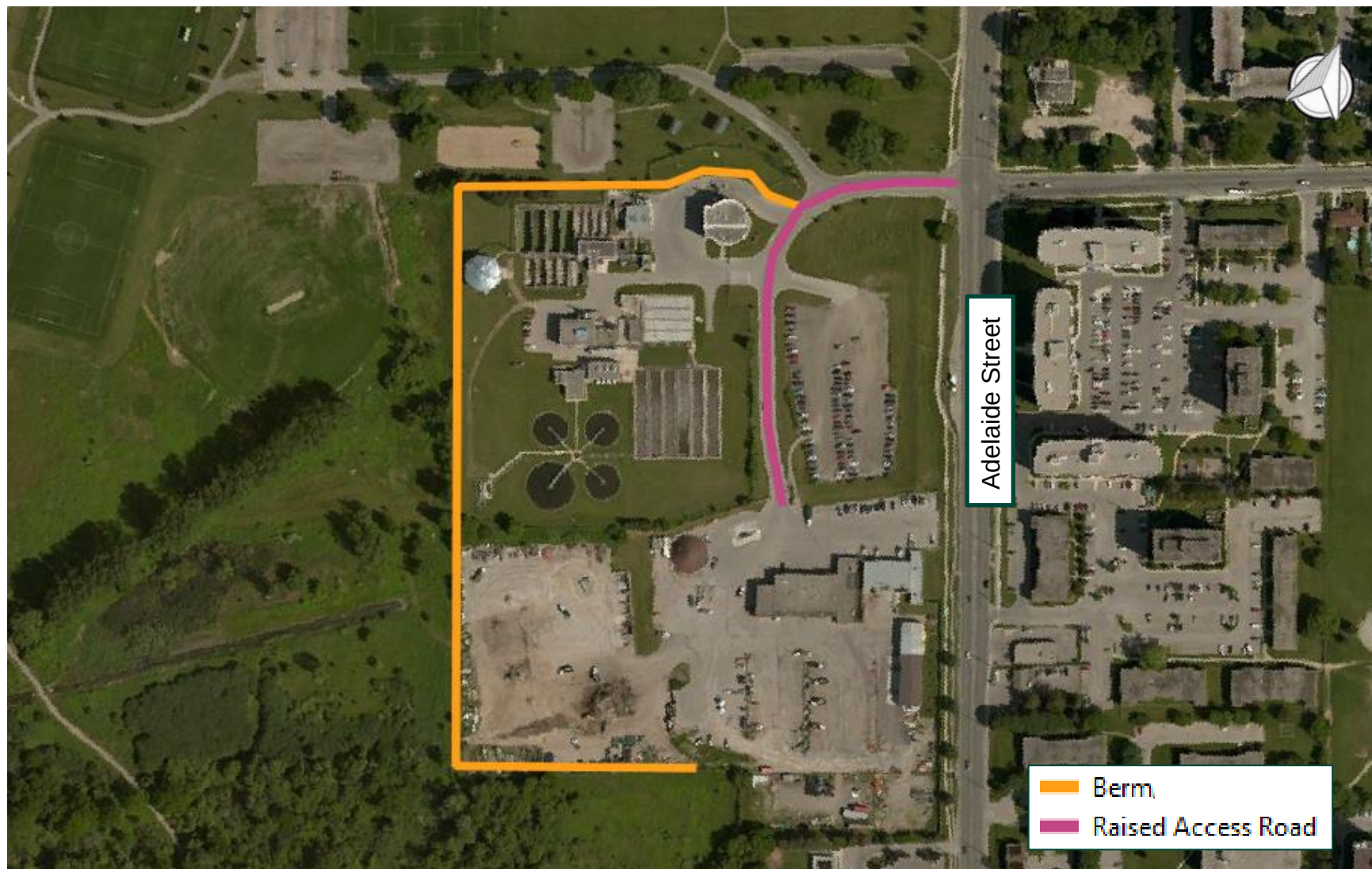
Option 2 – berm with a temporary measure at entrance way in response flood forecasts

Option 3 – berm extended to provide protection at the parking lot

Option 4 – do nothing

A pumping station is anticipated to be incorporated into these conceptual alternative solutions (Options 1 to 3). This pumping station will be designed to allow treated water to be discharged into the Thames River when water levels are too high for gravity drainage. As a result, the plant would be able to fully function during flooding, reducing the environmental impacts of flood events.

Option 1 – berm with raised entrance way



Option 2 – berm with a temporary measure at entrance way in response to flood forecasts



Option 3 – berm with parking lot protection





Preliminary impact assessment



Environmental impact study

- Ecological land classification and botanical inventory
- Breeding bird surveys
- Bat habitat surveys
- Species at risk screening
- Identified areas of constraints, areas of avoidance, and mitigation measures.
- The environmental assessment will identify any requirements for additional studies in future phases of the project (e.g., design).



Image Source: Google Earth

Stage 1 archaeology assessment

- Wastewater treatment plant site identified as having “no archaeological potential” or “previously assessed”.
- Areas surrounding the plant have “archaeological potential”.
- The environmental assessment will identify any requirements for additional studies in future phases of the project if disturbance is required in areas of “archaeological potential”.

(Archaeological Research Associates 2021)



Area of Archaeological Potential near the plant (ARA 2021)

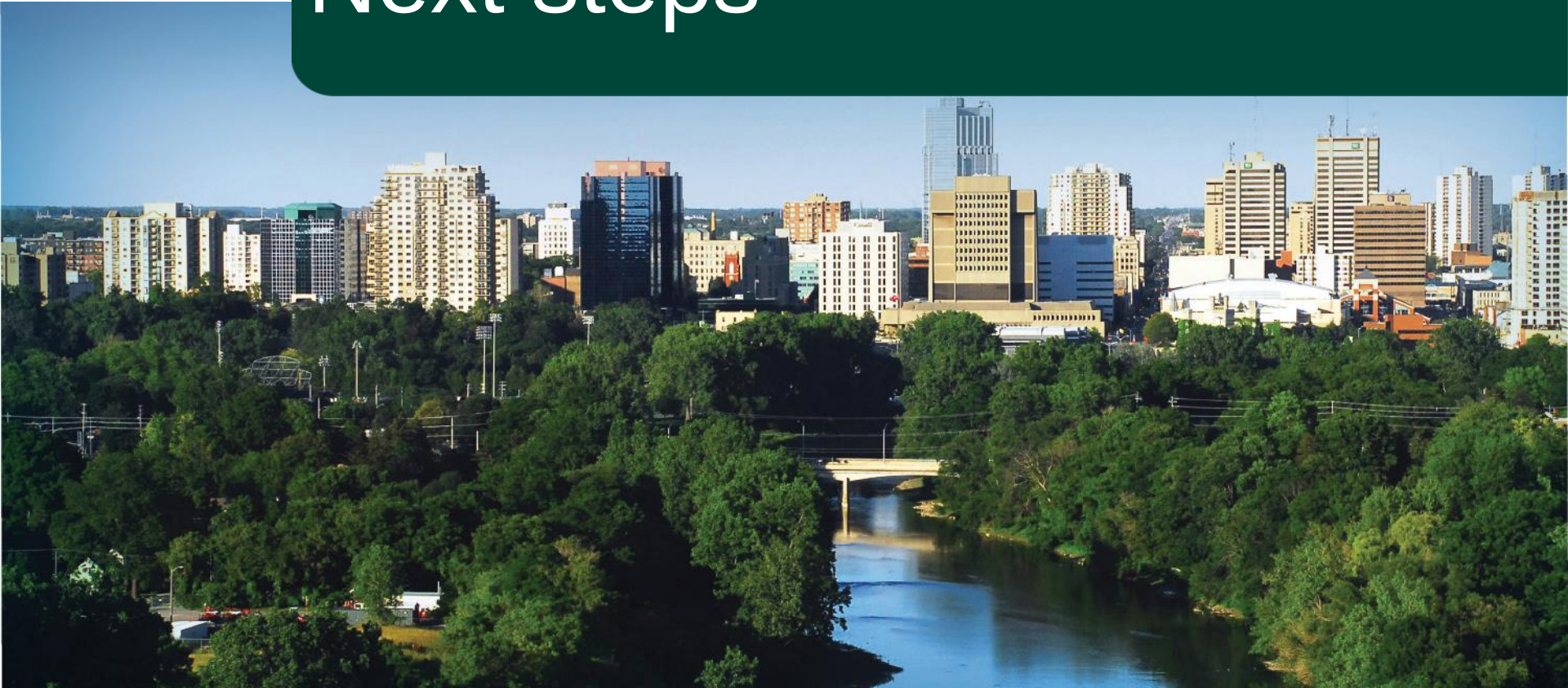
Evaluation criteria

Technical	Economic	Environment	Social
• Level of flood protection • Construction approaches • Climate change resiliency • Wastewater treatment plant operations	• Capital costs • Operational and maintenance costs	• Ecology • Archaeology	• Policy Considerations • Public Input • Public land-use the (e.g., recreational) • Public safety



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Next steps



Next steps

Next Steps in the environmental assessment process include:

1. Incorporate input from the public, First Nation communities, and other project stakeholders
2. Develop conceptual designs for the alternative solutions
3. Assess and evaluate the alternative solutions
4. Public information centre no. 2 (early 2022)
5. Identify a preferred solution

Reminder

- Visit the City's Get Involved page for project updates.

<https://getinvolved.london.ca/adelaide-climate-change>

- To sign up for the mailing list and/or to provide comments, please complete the project comment form from the website above and email mmckillop@london.ca or sbraun@matrix-solutions.com
- If possible, please provide input before **October 15, 2021**