



Please complete the sign-in sheet and comment form.
The project team is available to answer your questions and address any concerns.
Your input is valued!



Public Information Centre #1

Portsmouth Pumping Station Flow Direction

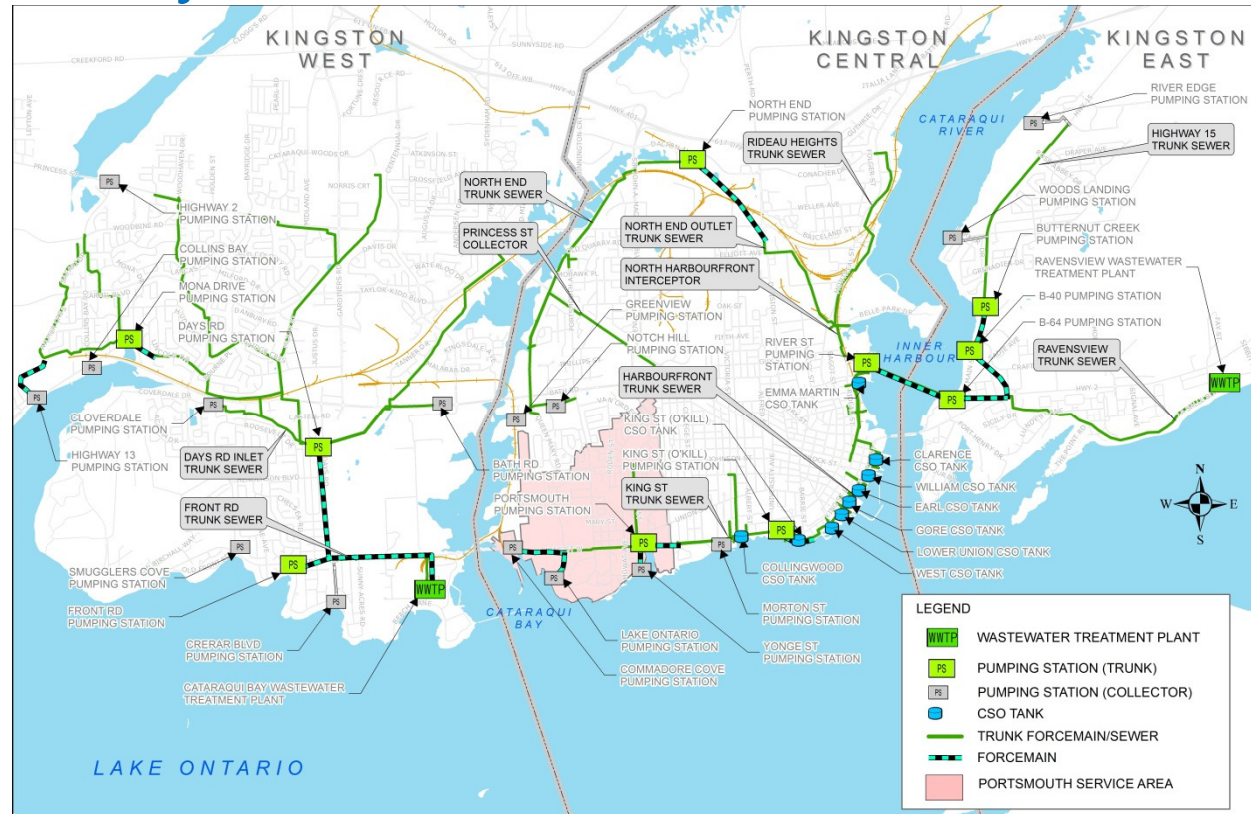
Schedule 'B' Municipal Class EA

Slide No. 1



Purpose of the Study

- Utilities Kingston (UK) has initiated a Schedule B Class Environmental Assessment (EA) to select the sewage flow direction from the Portsmouth area in the City of Kingston.



The City's existing sewer network is currently laid out such that wastewater flows generated in the central and east areas of the City are conveyed to the Ravensview Wastewater Treatment Plant (WWT) and wastewater flows generated in the west area of the City are conveyed to the Cataraqui Bay WWT.

Introduction



Portsmouth Pumping Station Flow Direction

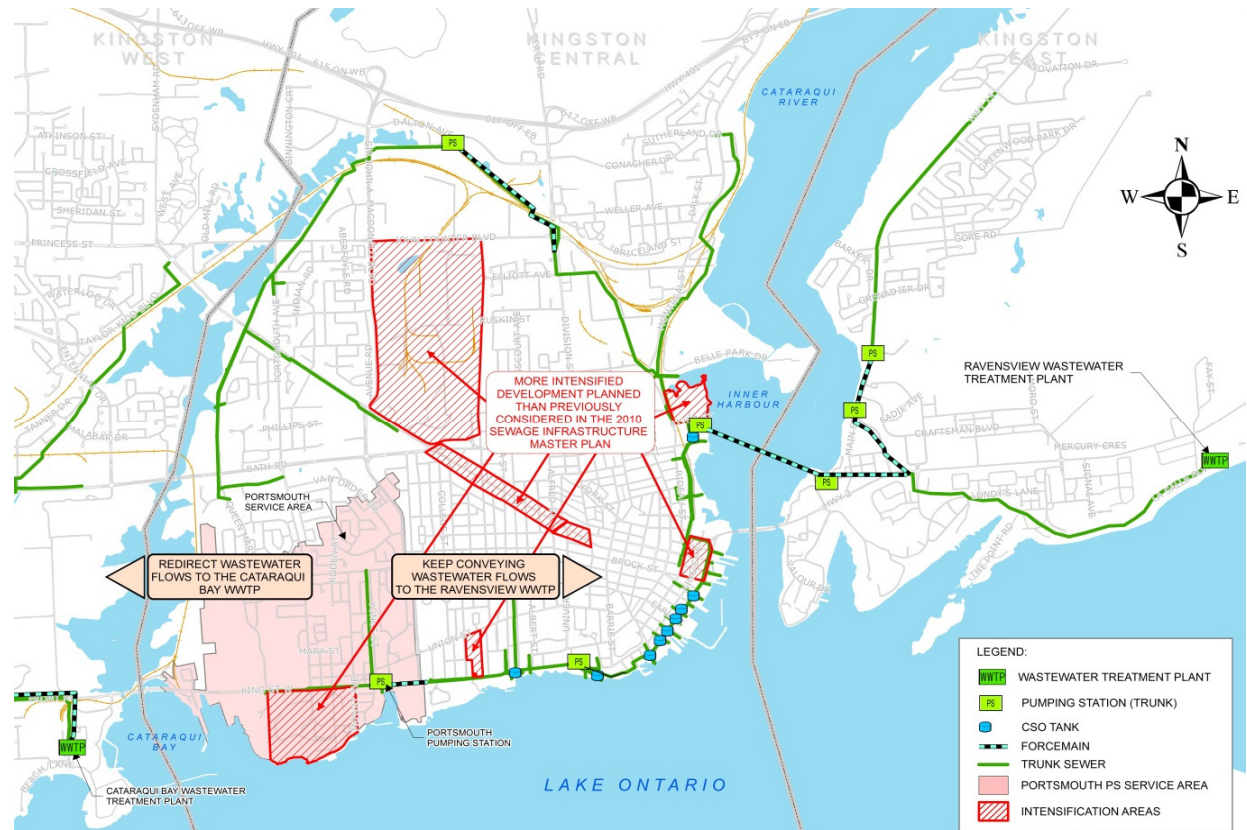
Schedule 'B' Municipal Class EA

Slide No. 2



Background

- The *Sewage Master Plan for the City of Kingston Urban Area* (finalized in 2010) previously recommended continuing directing wastewater flows from the Portsmouth Pumping Station towards the Ravensview Wastewater Treatment Plant (WWTP).
- Due to recent development intensification plans for the central part of the City, which is to include more development in the central area than was accounted for in the Sewage Infrastructure Master Plan, the flow direction for the Portsmouth Pumping Station is now being reconsidered.
- The options for flow direction include directing wastewater flows from the Pumping Station east to Ravensview WWTP or west to the Cataraqui Bay WWTP.

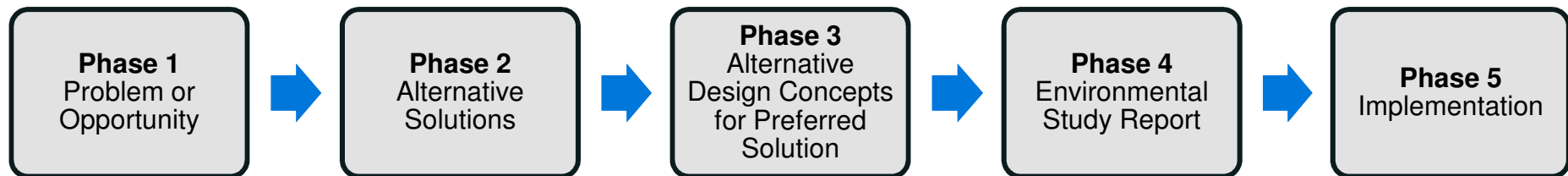


Study Background



Class EA Planning Process

The Ontario Environmental Assessment Act, R.S.O., 1990 (the EA Act) requires that projects corresponding to a given class of undertakings (e.g. municipal road, transit, water and wastewater projects) follow an approved Class Environmental Assessment (Class EA) process. The Class EA planning process as documented in the MEA Municipal Class EA document (October 2000, amended in 2007 and 2011) includes the following five phases:



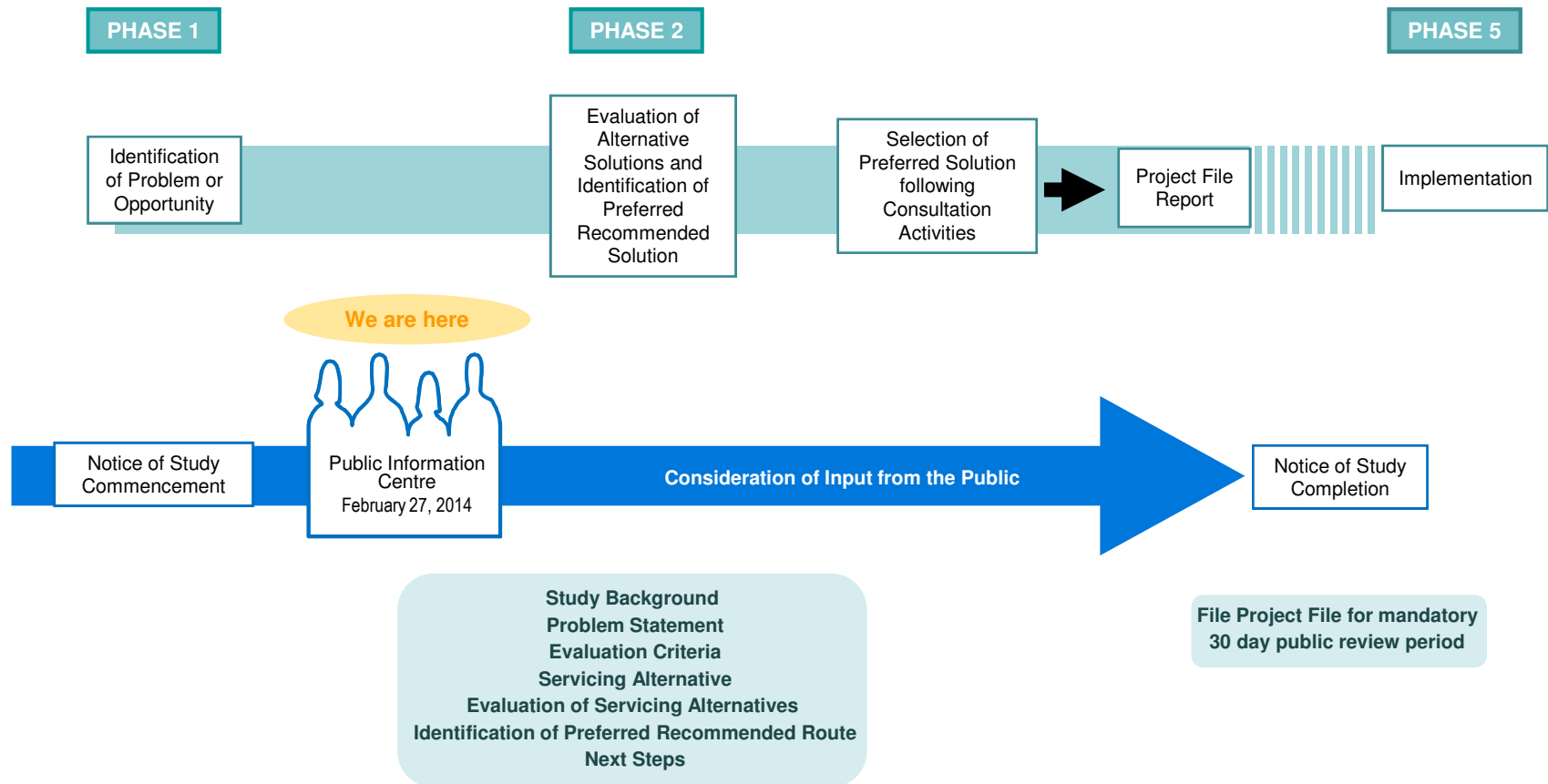
Selected Class EA Schedule

This Class EA will follow the process for completing a Schedule B Class EA, under the MEA Class EA requirements. This includes the completion of Phases 1 and 2 of the Class EA, including the completion of a Project File report that will be made available to the public for a 30 day review period.

Portsmouth Pumping Station Flow Direction

Schedule 'B' Municipal Class EA

Slide No. 4



Class Environment Assessment Process Diagram



Portsmouth Pumping Station Flow Direction

Schedule 'B' Municipal Class EA

Slide No. 5



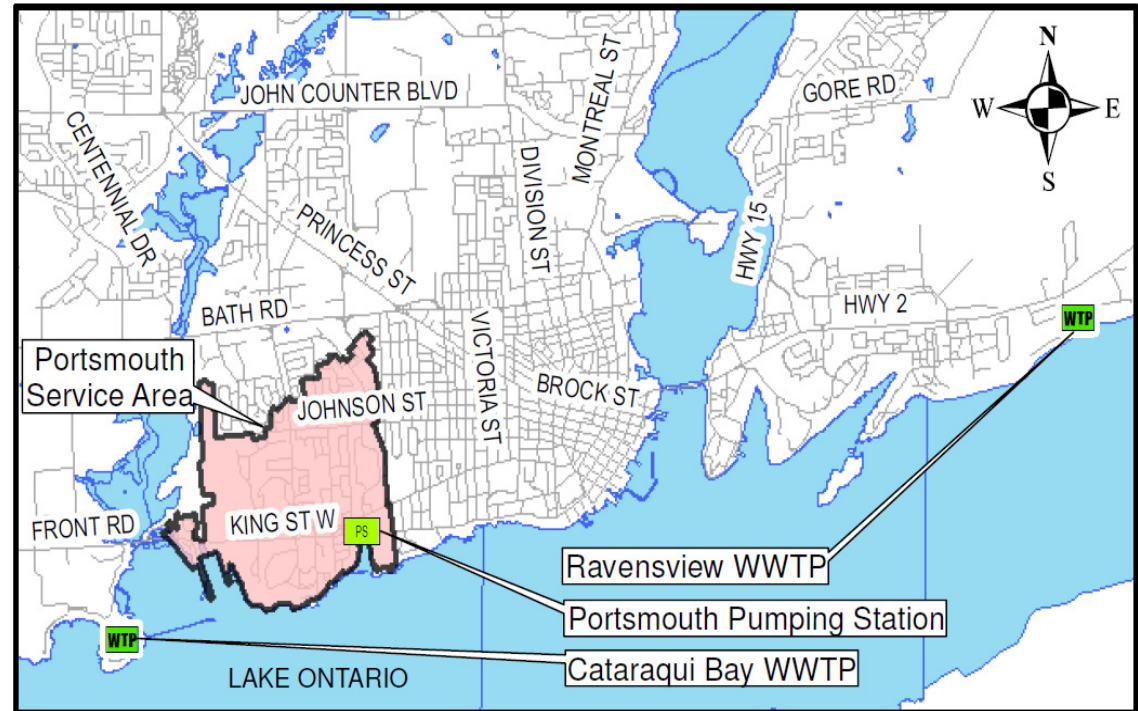
Problem Statement for the Study

The Problem Statement for the Portsmouth Pumping Station Flow Direction Class EA is defined as follows:

To identify how best to support further intensification development in the City of Kingston through sustainable servicing. This will be done by evaluating the option of redirecting the flow at the Portsmouth Pumping Station from the Ravensview WWTP to the Cataraqui Bay WWTP.

Study Area

The Study Area is the overall boundary that contains the area to be serviced by the Portsmouth Pumping Station as well as the alternatives infrastructure upgrades being considered for conveying wastewater flows from the Pumping Station to either wastewater treatment plant.



Portsmouth Pumping Station Flow Direction Class EA Study Area

Portsmouth Pumping Station Flow Direction

Schedule 'B' Municipal Class EA

Slide No. 6



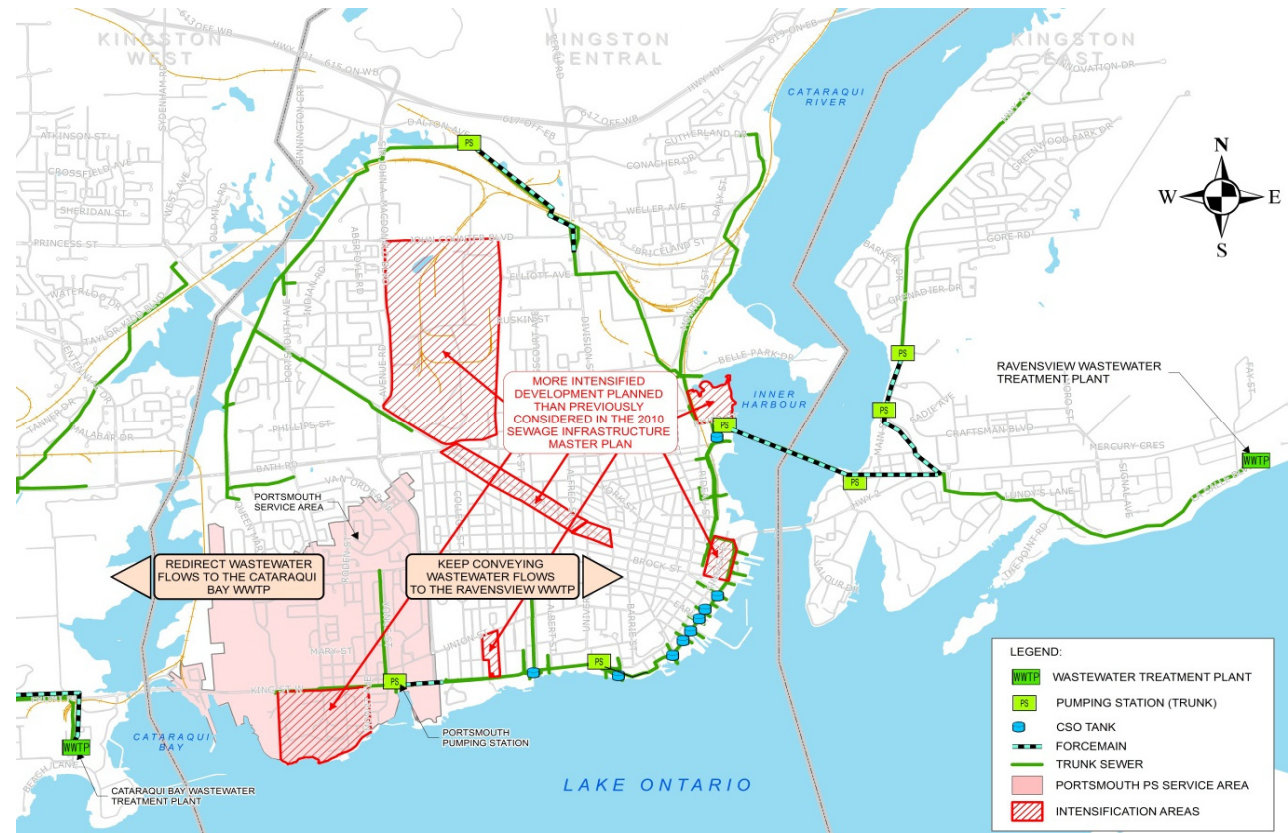
Additional Intensification of Kingston Central

Areas Considered in Study

- Alcan Property
- Novelis
- Former Davis Tannery
- Williamsville
- I/O Psychological Hospital
- St. Mary's Hospital
- North Block

General Growth Criteria

- City of Kingston Official Plan Guidelines
- 2.1 person per unit
- 37.5 units per hectare (large scale developments)
- 2% per year average growth up to 2030



Population Intensification



Portsmouth Pumping Station Flow Direction

Schedule 'B' Municipal Class EA

Slide No. 7



Evaluation Criteria

Natural and Physical Environment

- Impacts to Animals and Vegetative features along which new infrastructure is to be implemented
- Impacts to water course in or along which new infrastructure is to be implemented.
- Watercourse Crossings
- Vulnerable / Threatened / Endangered (VTE) Species
- Environmentally Sensitive Areas (ESA)
- Areas of Natural Scientific Interest (ANSI)
- Proximity to Valleylands and Floodplains
- Impacts to Groundwater (from potential dewatering)

Financial Impacts

- Operational Cost
- Land Acquisition Requirements
- Capital Costs (including constructability risks)

Technical Suitability

- Capacity at respective wastewater treatment plants
- Capacity of linear infrastructure
- Approximate amount and ease of construction of new required infrastructure
- Ability to Connect with Existing Infrastructure
- Ease of Construction
- Hydraulic Considerations
- Future Planning Initiatives

Social and Cultural Environment

- Number of people disrupted in the community
- Recent Disruptions to communities by new linear infrastructure works
- Traffic Disruption
- Social Disruption
- Cultural Environment
- Impacts to Local Businesses/Heritage

Answering Two Questions...

As the current Study's Problem Statement and preliminary Servicing Alternatives were being developed, it was determined that the Class Environmental Assessments involves answering two overlying questions:

1. Whether the wastewater flows collected at the Portsmouth Pumping Station should continue to be conveyed **eastward**, to the Ravensview Wastewater Treatment Plant, or whether they should be redirected **westward**, to the Cataraqui Bay Wastewater Treatment Plant.
2. What the **required infrastructure upgrades will look like** once it has been determined whether the wastewater flows are to be directed eastward or westward.

...Requires Two Levels of Evaluation

We have therefore included two evaluation levels (two steps) within our Study:

1. **A High Level Evaluation**, to deal with the question of directing wastewater flows east or west
2. **Detailed Evaluation**, to deal with the evaluation of required infrastructure upgrades

Portsmouth Pumping Station Flow Direction

Schedule 'B' Municipal Class EA

Slide No. 9



The High Level Alternatives for the Study include:

1. Continuing to Convey Wastewater Flows east to the Ravensview WWTP
2. Redirect Flows west to the Cataraqui Bay WWTP



High Level Alternatives



Portsmouth Pumping Station Flow Direction

Schedule 'B' Municipal Class EA

Slide No. 10



Option 1 –Convey Wastewater Flows East to the Ravensview WWTP



Constraints

- Upgrades to Existing Infrastructure Required (e.g. King St PS, River St PS, Additional Sewer & CSO)
- Upgrades in Densely Populated Areas
- Some Upgrades in Environmentally Sensitive Areas
- Numerous CSO (Combined Sewer Overflow) Chambers Along Path.

Opportunities

- Ravensview WWTP has Sufficient Capacity.
- Upgrades Could Potential Alignment with other City Infrastructure Projects
- No Upgrades to Portsmouth PS Required

High Level - Option 1



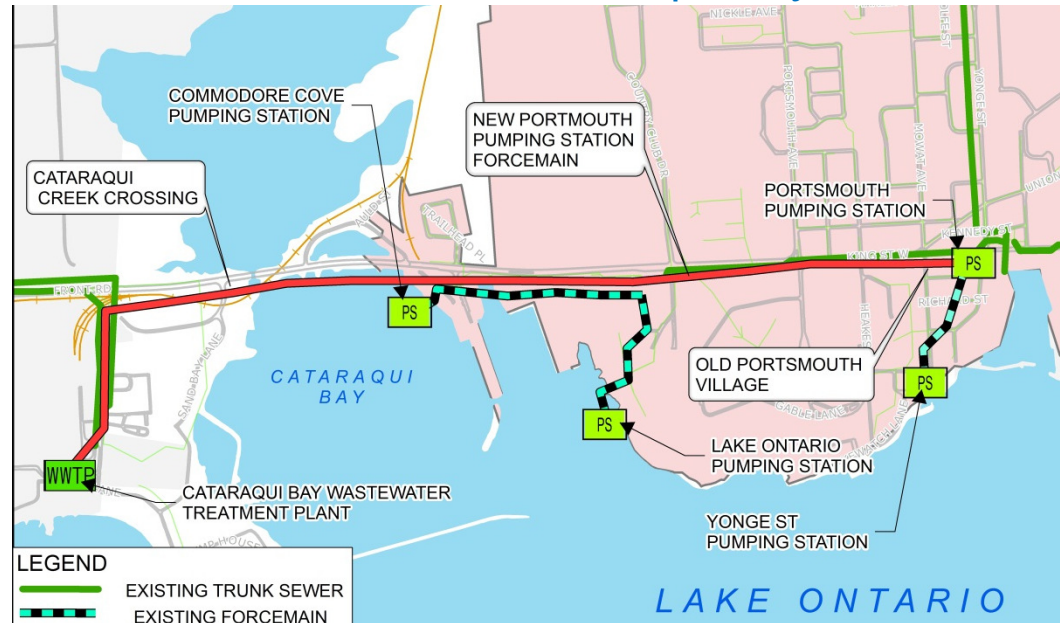
Portsmouth Pumping Station Flow Direction

Schedule 'B' Municipal Class EA

Slide No. 11



Option 2 – Redirect Flows west to the Cataraqui Bay WWTP



Constraints

- Installation of Infrastructure through Old Portsmouth Village Area
- Environmentally Sensitive Areas Near Little Cataraqui Creek
- High Volume Traffic Roadway

Opportunities

- Installation of Large Diameter Watermain Along Same Route.
- Cataraqui Bay WWTP Slated for Upgrades before 2020
- Shorter Distance to Treatment Plant (≈3.5km vs. 12.0km)
- Flow Discharges Directly to Treatment Plant. No CSO (Combined Sewer Overflow) Chambers Along Path.
- Energy Use Reduction (Pump Once vs. Three Times)

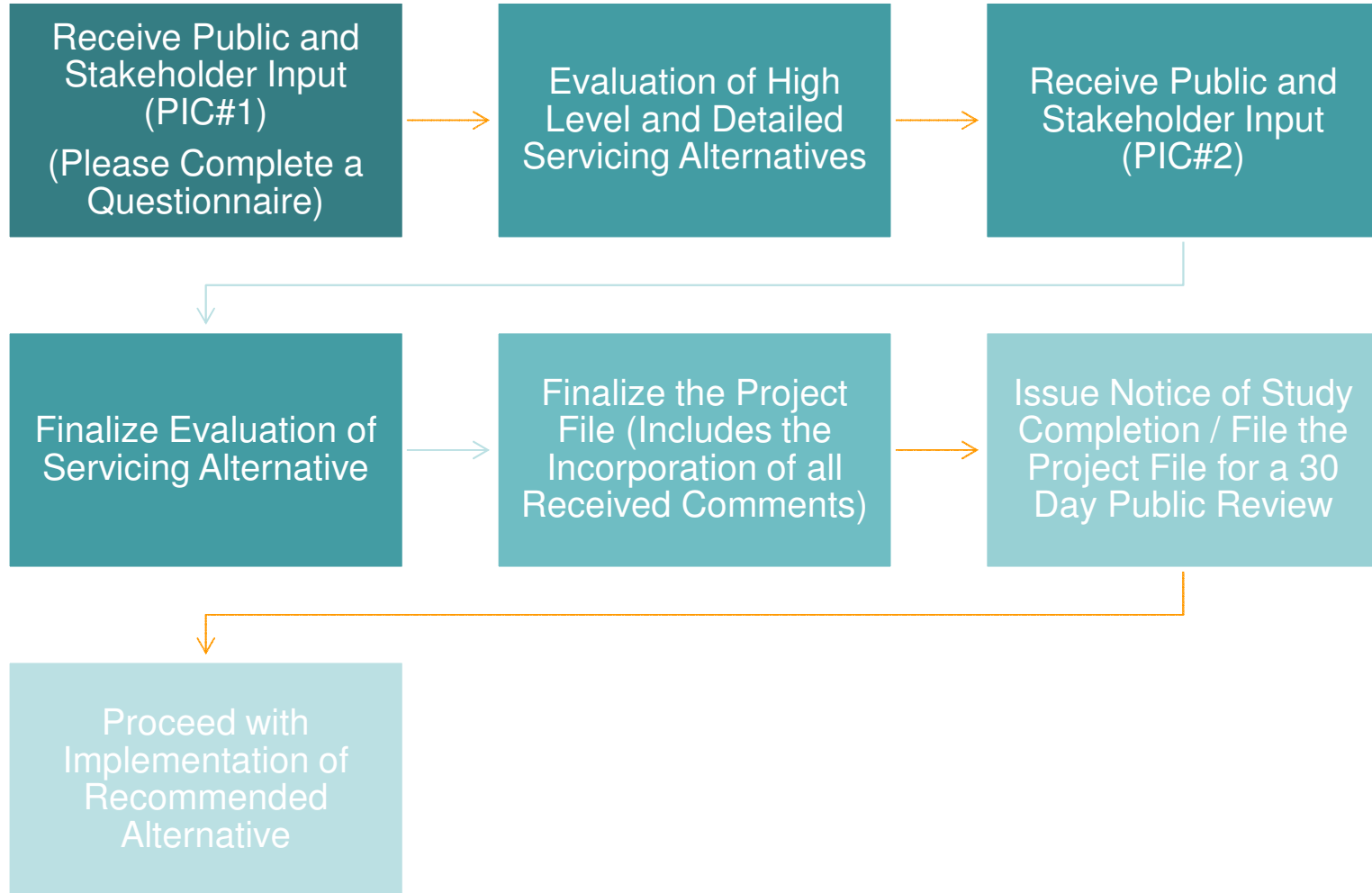
High Level - Option 2



Portsmouth Pumping Station Flow Direction

Schedule 'B' Municipal Class EA

Slide No. 12



Next Steps



Portsmouth Pumping Station Flow Direction

Schedule 'B' Municipal Class EA

Slide No. 13

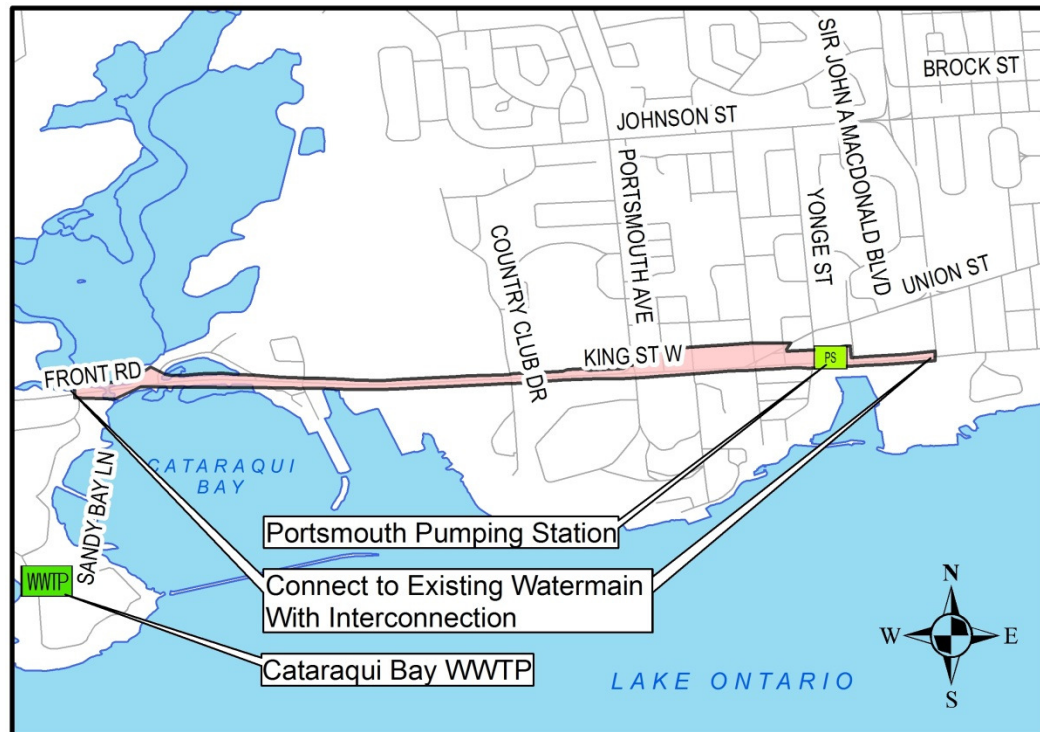


Front Street Watermain Interconnection

Background

The Master Plan for Water Supply for the City of Kingston Urban Area and Class Environmental Assessment identified the need for this watermain to meet the long-term study year 2026 water demands.

The purpose of this project is to complete the installation of the 1050mm trunk watermain for the discharge locations at the Kingston West WTP on Front Road to the discharge locations at the Kingston Central WPP on Kingston Street West. This project will connect the Kingston Central system at the intersection of Sir John A MacDonald and King Street West to the Kingston West system at the intersection of Front Road and Sandy Bay Lane.



The Front Road/ King Street Watermain project is being carried out as a Schedule A+ undertaking. A Schedule A+ undertaking is pre-approved under the Class EA by the Ministry of the Environment and the project can be implemented upon public notification of the project.

Watermain Interconnection



Portsmouth Pumping Station Flow Direction

Schedule 'B' Municipal Class EA

Slide No. 14



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Project Team Contact Information





Please complete the sign-in sheet and comment form.
The project team is available to answer your questions and address any concerns.
Your input is valued!



Portsmouth Pumping Station Flow Direction

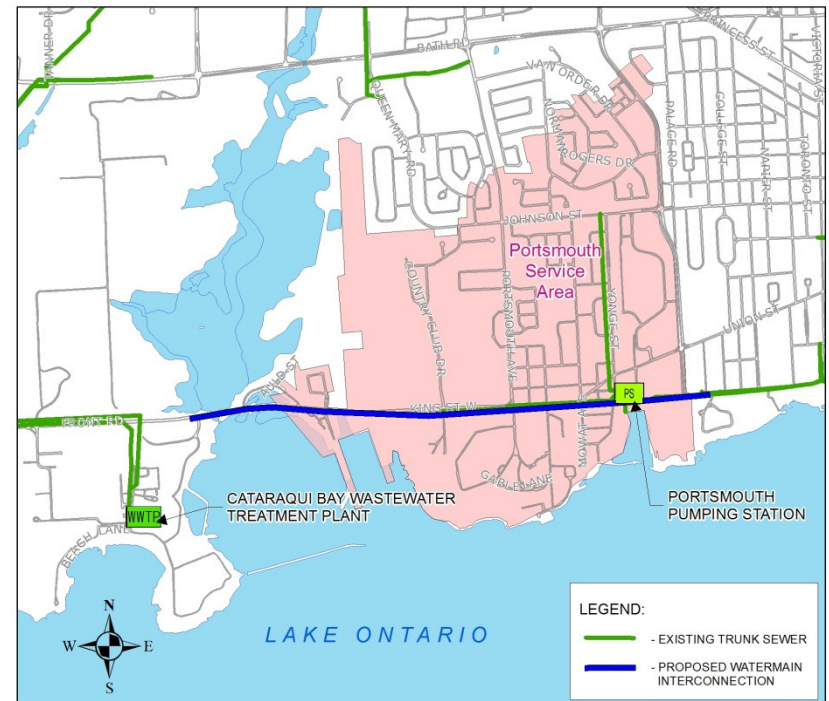
Schedule 'B' Municipal Class EA

Slide No. 1



Background

- The *Sewage Master Plan for the City of Kingston Urban Area* (finalized in 2010) previously recommended continuing directing wastewater flows from the Portsmouth Pumping Station towards the Ravensview Wastewater Treatment Plant (WWTP) rather than redirecting as it was not cost-effective given development plans and assumptions made for City Central at the time.
- The *Sewage Master Plan for the City of Kingston Urban Area* (finalized in 2010) recommended to upgrade the facility and expand the treatment capacity at the Cataraqui Bay Wastewater Treatment Plant (WWTP) in order to ensure continued reliable service. An Environmental Assessment has been completed for the upgrades and the project has moved into the design stage.
- City Council recently adopted a report regarding the Urban Growth Boundary Update indicating *THAT the City of Kingston not amend the Official Plan to move the location of the urban boundary and not initiate a comprehensive analysis of the future growth areas; and THAT the City promote intensification and infill within the urban boundary*
- The Master Plan for Water Supply for *the City of Kingston Urban Area* (finalized in 2007) recommended that in order to provide additional interconnection between the central and western water distributions systems to improve redundancy / looping, water supply and pressure, a 1050mm watermain be installed between the discharge points of the west and central WTP/WPP. Currently the installation of this watermain has been completed to Sand Bay Lane. The extension of the watermain to Sir John A McDonald Blvd is proceeding; however it is to be coordinated with the Portsmouth redirection EA and if the outcome is to redirect to the west the installation of the watermain and forcemain are to be completed concurrently.



Portsmouth Pumping Station Flow Direction

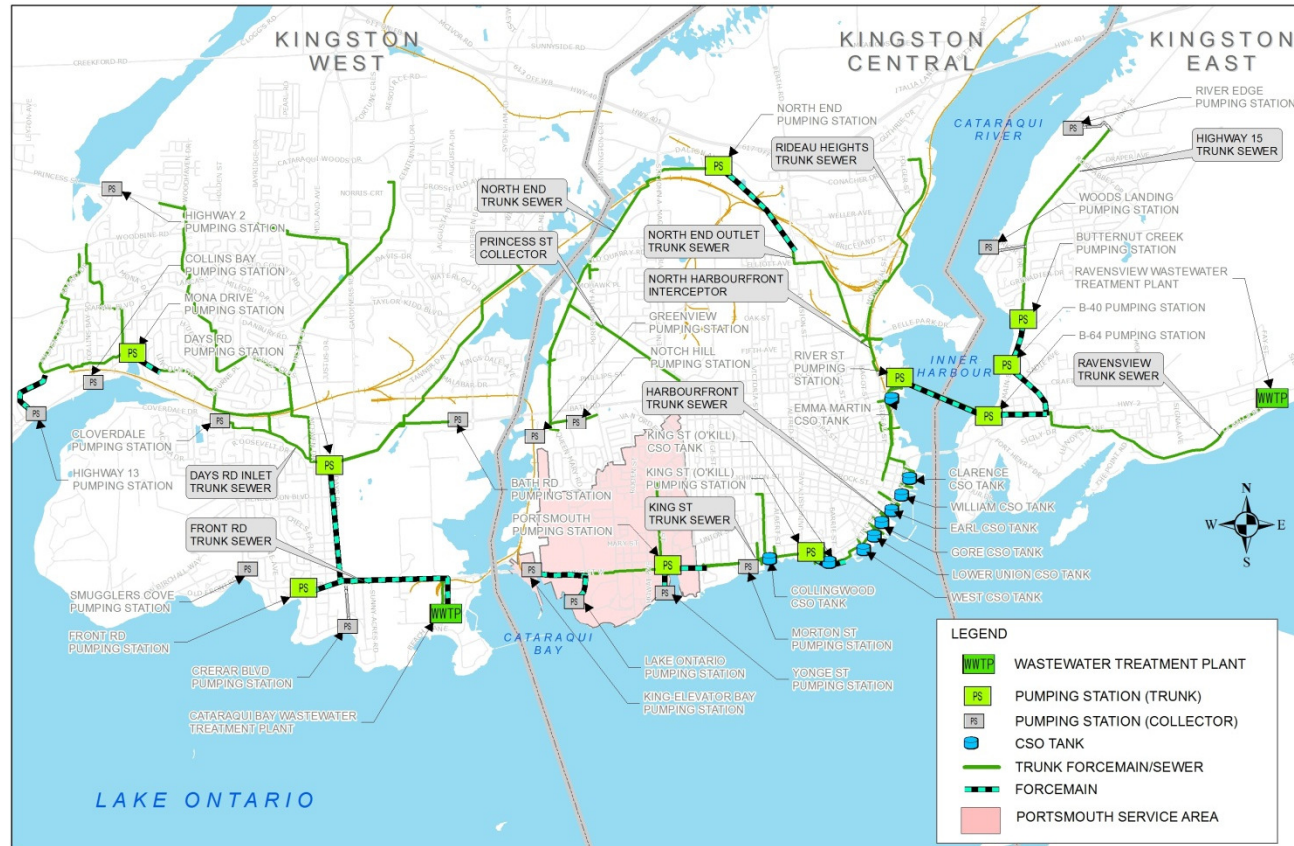
Schedule 'B' Municipal Class EA

Slide No. 2



Purpose of the Study

- Due to recent development intensification plans for the central part of the City, which is to include more development in the central area than was accounted for in the Sewage Infrastructure Master Plan, the flow direction for the Portsmouth Pumping Station is now being reconsidered
- Utilities Kingston (UK) has initiated a Environmental Assessment (EA) to select the sewage flow direction from the Portsmouth area in the City of Kingston.



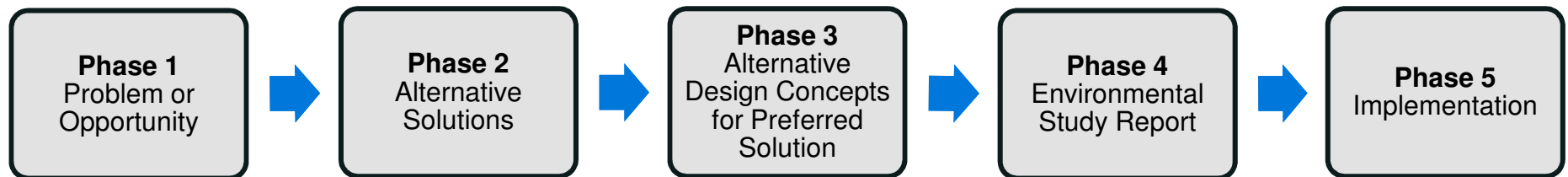
The City's existing sewer network is currently laid out such that wastewater flows generated in the central and east areas of the City are conveyed to the Ravensview Wastewater Treatment Plant (WWTP) and wastewater flows generated in the west area of the City are conveyed to the Cataraqui Bay WWTP.

Purpose of Study



Class EA Planning Process

The Ontario Environmental Assessment Act, R.S.O., 1990 (the EA Act) requires that projects corresponding to a given class of undertakings (e.g. municipal road, transit, water and wastewater projects) follow an approved Class Environmental Assessment (Class EA) process. The Class EA planning process as documented in the MEA Municipal Class EA document (October 2000, amended in 2007 and 2011) includes the following five phases:



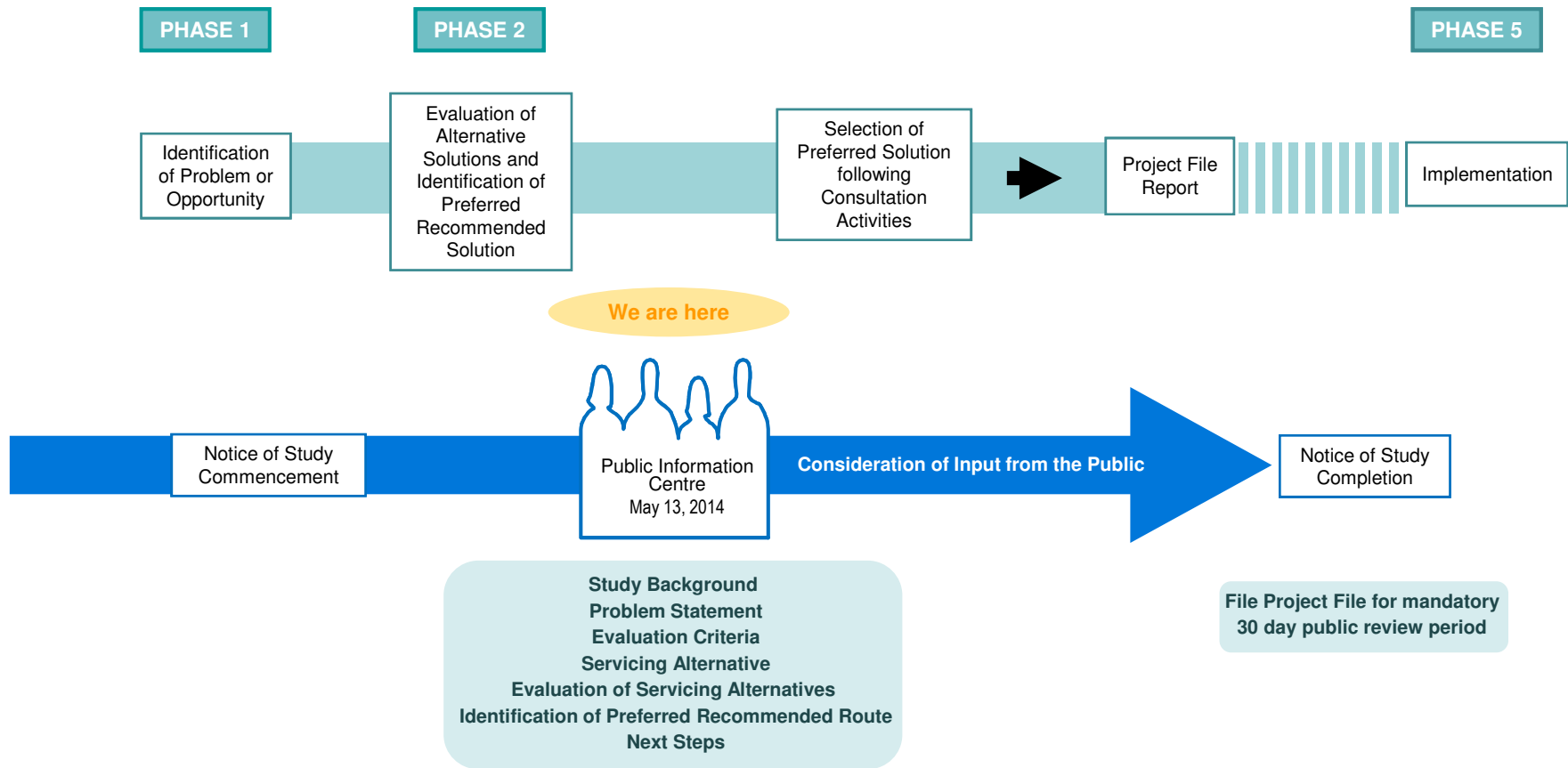
Selected Class EA Schedule

This Class EA will follow the process for completing a Schedule B Class EA, under the MEA Class EA requirements. This includes the completion of Phases 1 and 2 of the Class EA, including the completion of a Project File report that will be made available to the public for a 30 day review period.

Portsmouth Pumping Station Flow Direction

Schedule 'B' Municipal Class EA

Slide No. 4



Class Environment Assessment Process Diagram



Portsmouth Pumping Station Flow Direction

Schedule 'B' Municipal Class EA

Slide No. 5



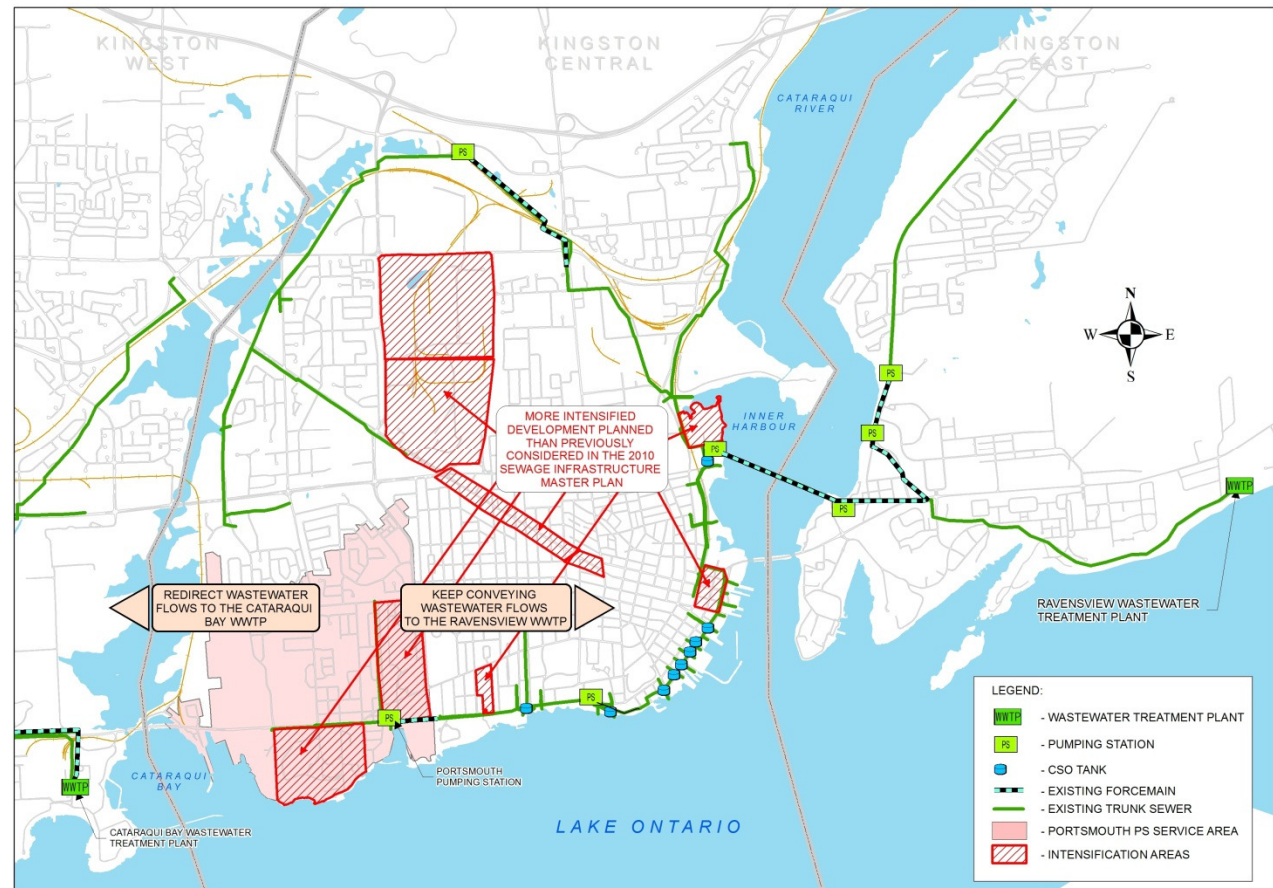
Additional Intensification of Kingston Central

Areas Considered in Study

- Alcan Property
- Novelis
- Former Davis Tannery
- Williamsville
- I/O Psychological Hospital
- St. Mary's Hospital
- North Block

General Growth Criteria

- City of Kingston Official Plan Guidelines
- 2.1 person per unit
- 37.5 units per hectare (large scale developments)
- 2% per year average growth up to 2030



Population Intensification



Portsmouth Pumping Station Flow Direction

Schedule 'B' Municipal Class EA

Slide No. 6

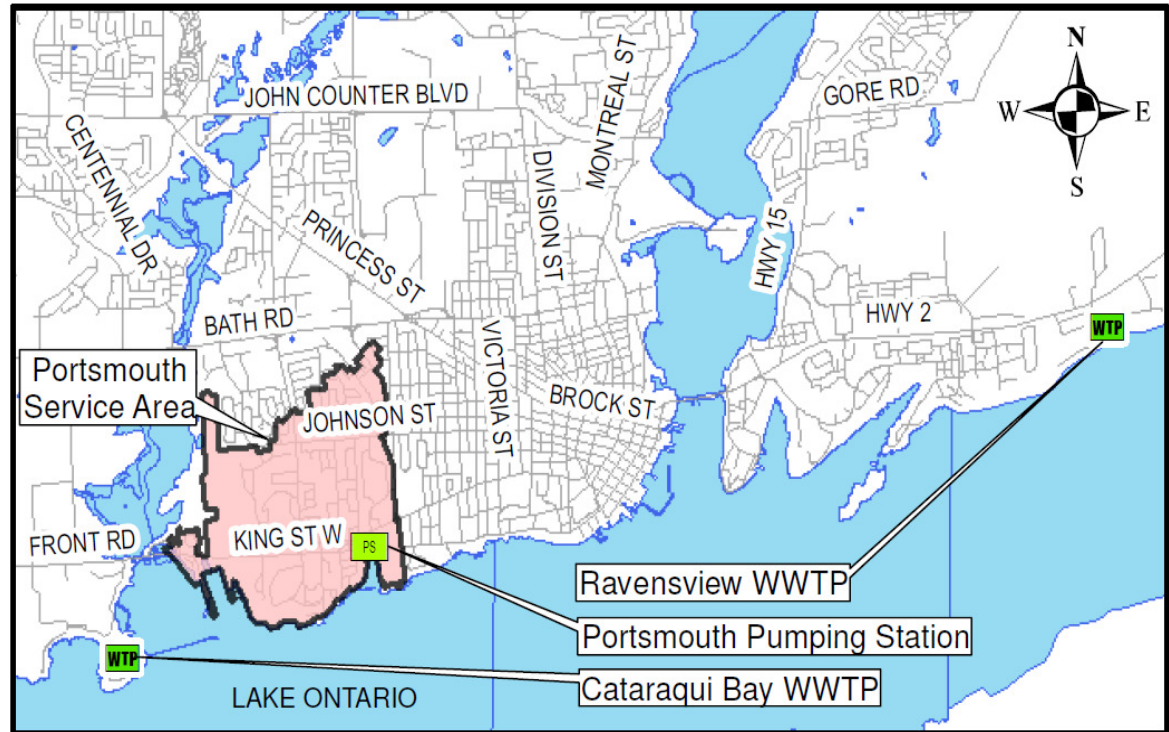


Problem Statement for the Study

The Problem Statement for the Portsmouth Pumping Station Flow Direction Class EA is defined as follows:

To identify how best to support further intensification development in the City of Kingston through sustainable servicing. This will be done by evaluating the option of redirecting the flow at the Portsmouth Pumping Station from the Ravensview Wastewater Treatment Plan (WWTP) to the Cataraqui Bay WWTP.

There is also the opportunity to potentially reduce combined sewer overflows (CSO) within the system.



Study Area

The Study Area is the overall boundary that contains the area to be serviced by the Portsmouth Pumping Station as well as the alternatives infrastructure upgrades being considered for conveying wastewater flows from the Pumping Station to either wastewater treatment plant.

Problem Definition & Study Area



Portsmouth Pumping Station Flow Direction

Schedule 'B' Municipal Class EA

Slide No. 7



Answering Two Questions...

As the current Study's Problem Statement and preliminary Servicing Alternatives were being developed, it was determined that the Class Environmental Assessments involves answering two overlying questions:

1. Whether the wastewater flows collected at the Portsmouth Pumping Station should continue to be conveyed **eastward**, to the Ravensview Wastewater Treatment Plant, or whether they should be redirected **westward**, to the Cataraqui Bay Wastewater Treatment Plant.
2. What the **required infrastructure upgrades will look like** once it has been determined whether the wastewater flows are to be directed eastward or westward.

...Requires Two Levels of Evaluation

We have therefore included two evaluation levels (two steps) within our Study:

1. **A High Level Evaluation**, to deal with the question of directing wastewater flows east or west
2. **Detailed Evaluation**, to deal with the evaluation of required infrastructure upgrades

Evaluation Approach



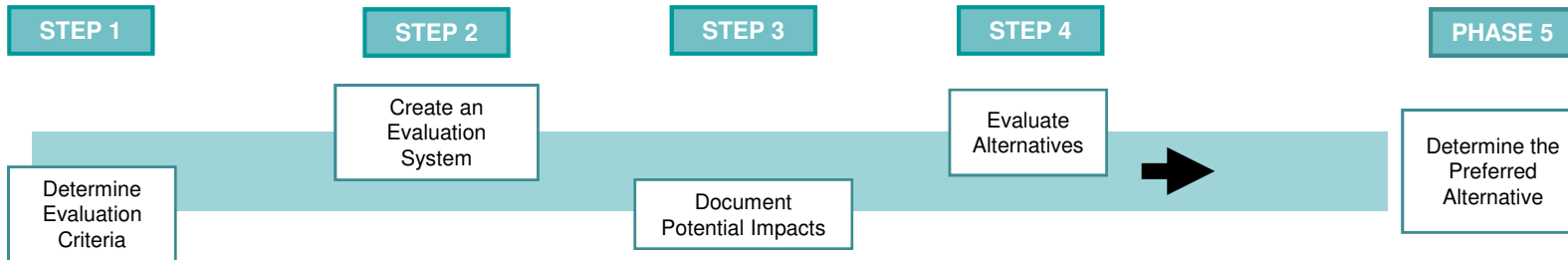
Portsmouth Pumping Station Flow Direction

Schedule 'B' Municipal Class EA

Slide No. 8



Study Approach



Evaluation Criteria

High Level Evaluation

Technical Suitability & Financial Considerations

- Capacity at respective wastewater treatment plants
- Capacity of linear infrastructure
- Approximate amount and ease of construction of new required infrastructure
- Relative Cost of Infrastructure

Social and Cultural Environment

- Number of people disrupted in the community
- Recent Disruptions to communities by new linear infrastructure works
- Traffic Disruption
- Social Disruption

Natural and Physical Environment

- Impacts to Wildlife and Vegetative features along which new infrastructure is to be implemented
- Impacts to water course(s) in or along which new infrastructure is to be implemented.

Portsmouth Pumping Station Flow Direction

Schedule 'B' Municipal Class EA

Slide No. 9



Evaluation Criteria

Detailed Evaluation

Technical Suitability

- Ability to Connect with Existing Infrastructure
- Ease of Construction
- Hydraulic Considerations
- Future Planning Initiatives

Social and Cultural Environment

- Social Disruption
- Cultural Environment
- Traffic Disruption
- Impacts to Local Businesses/Heritage

Financial Impacts

- Operational Cost
- Land Acquisition Requirements
- Capital Costs (including constructability risks)

Natural and Physical Environment

- Watercourse Crossings
- Vulnerable / Threatened / Endangered (VTE) Species
- Environmentally Sensitive Areas (ESA)
- Areas of Natural Scientific Interest (ANSI)
- Proximity to Valleylands and Floodplains
- Impacts to Groundwater (from potential dewatering)

Detailed Evaluation Criteria



Portsmouth Pumping Station Flow Direction

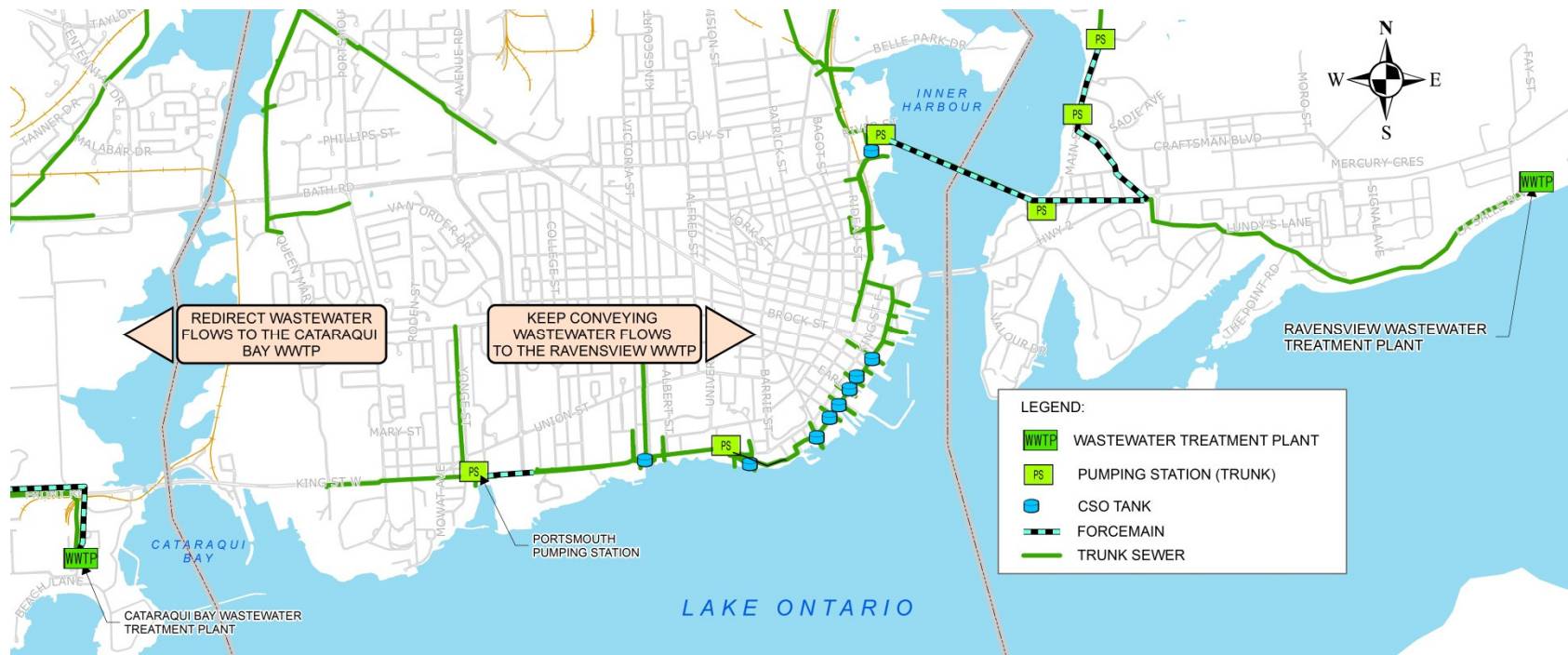
Schedule 'B' Municipal Class EA

Slide No. 10



The High Level Alternatives for the Study include:

1. Continuing to Convey Wastewater Flows east to the Ravensview WWTP
2. Redirect Flows west to the Cataraqui Bay WWTP



High Level Alternatives



Portsmouth Pumping Station Flow Direction

Schedule 'B' Municipal Class EA

Slide No. 11



Alternative 1 – Convey Wastewater Flows East to the Ravensview WWTP



Constraints

- Upgrades required to existing infrastructure including ~2.8km of Trunk Sewer (North Harbourfront Interceptor, King St, Harbourfront & Ravensview), River St Pumping Station, and 8 CSO tanks to maintain current level of service targets (Estimated Cost = 20.1M)
- Upgrades in densely populated downtown areas
- Upgrades have recently occurred in areas that would need further upgrades
- Multiple traffic congestion periods due to numerous upgrades required throughout downtown core
- Upgrades would significantly impact tourism within the downtown core area
- Some Upgrades are adjacent or within Environmentally Sensitive Areas (i.e. PSW, Riparian Habitat, Significant Woodland)

Opportunities

- Ravensview WWTP has sufficient capacity.

High Level – Alternative 1



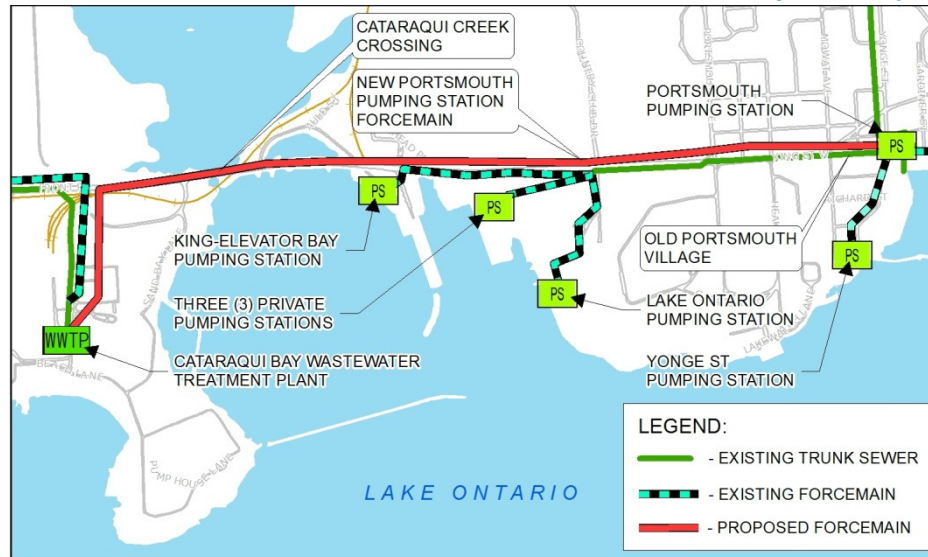
Portsmouth Pumping Station Flow Direction

Schedule 'B' Municipal Class EA

Slide No. 12



Alternative 2 – Redirect Flows west to the Cataraqui Bay WWTP



Constraints

- Cataraqui Bay WWTP does not have sufficient capacity,
- Construction of a new ~3.5km forcemain to Cataraqui Bay WWTP will be required (Estimated Cost = 7.3M),
- Upgrades required at Portsmouth PS (Estimated Cost = 1.9M)
- Installation of forcemain in Old Portsmouth Village Area
- Installation of forcemain across Little Cataraqui Creek and CN spur Line
- Environmentally Sensitive Areas Near Little Cataraqui Creek Crossing (PSW, Riparian Habitat, Valleylands, Significant Woodlands and Unevaluated Wetlands)
- Forcemain installation would have disruption to commuter traffic
- Forcemain installation would impact to Portsmouth Village Tourism

Opportunities

- Installation of large diameter watermain along same route.
- Cataraqui Bay WWTP slated for upgrades before 2020 (additional flow allowance has been provided for Portsmouth area)
- Shorter Distance to Treatment Plant (~3.5km vs. 12.0km) and therefore reduced energy & O&M costs
- Flow Discharges Directly to Treatment Plant. No CSO Chambers Along Path.
- Reduce CSO volumes below originally anticipated overflow volumes (Sewer Master Plan)
- Provide better Level of Service at North Harbourfront Interceptor, King Street, Harbour Front and Ravensview Trunk Sewer than originally anticipated (Sewer Master Plan)
- Minor infrastructure reconstruction occurred recently with few people impacted.
- Potential Upgrade would affect small number of people in the Portsmouth Area

High Level – Alternative 2



Portsmouth Pumping Station Flow Direction

Schedule 'B' Municipal Class EA

Slide No. 13



High Level Evaluation Matrix:

High Level Alternatives	Natural Environmental Considerations		Social and Cultural Environmental Considerations				Technical Suitability Considerations			
	Impacts to Wildlife & Vegetative Features	Impacts to Water Course	Number of People Disrupted in Community	Recent Disruptions to Communities by New Infrastructure	Traffic Disruption	Social Disruption	Capacity at Respective Wastewater Treatment Plants	Capacity of Linear Infrastructure	Approximate Amount and Ease of Construction of New Required Infrastructure	Relative Cost of Infrastructure
Alternative 1: Portsmouth Flows to the East	Less Preferred	Less Preferred	Least Preferred	Less Preferred	Least Preferred	Least Preferred	Most Preferred	Least Preferred	Least Preferred	Less Preferred
Alternative 2: Portsmouth Flows to the West	Less Preferred	Less Preferred	Most Preferred	Most Preferred	Less Preferred	Less Preferred	Less Preferred	Most Preferred	Most Preferred	Most Preferred

Overall Rating	
Alternative 1	2 – Less Preferred
Alternative 2	1 – Most Preferred

Evaluation of High Level Alternatives



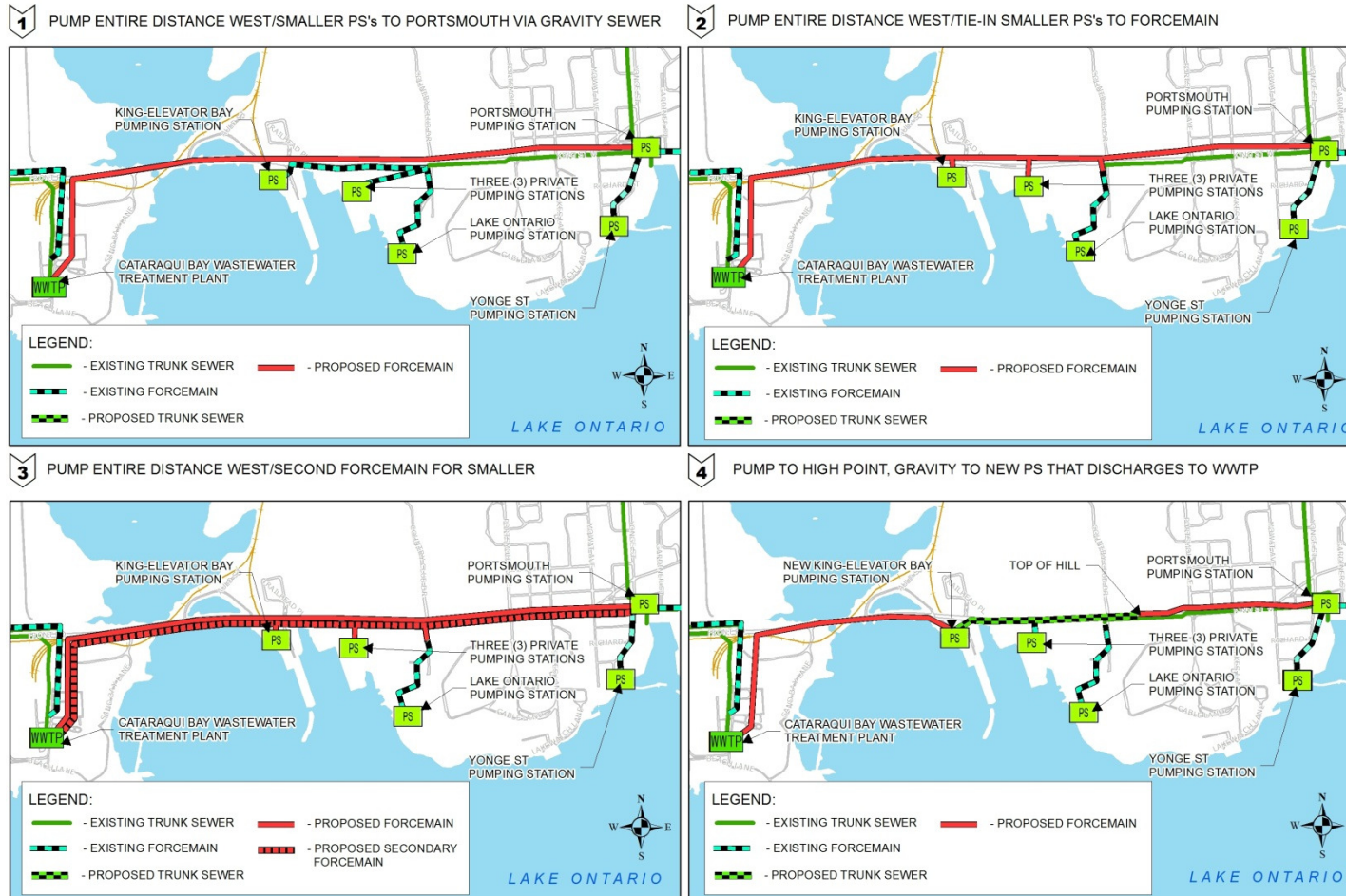
Portsmouth Pumping Station Flow Direction

Schedule 'B' Municipal Class EA

Slide No. 14



Detailed Evaluation – Pumping Options



Pumping Options



Portsmouth Pumping Station Flow Direction

Schedule 'B' Municipal Class EA

Slide No. 15

Option 1 – Pump Entire Distance/Smaller PS to Portsmouth via Gravity



Constraints

- Installation of forcemain will extend through Environmentally Sensitive Areas (i.e. PSW, Significant Forest, Fish Habitat & Significant Valleylands)
- Forcemain installation would have disruption to commuter traffic
- Minor Impacts to local businesses
- More limited available capacity in local sewers to accommodate future planning initiatives
- Sewage flows from smaller pumping station are pumped twice (i.e. increased energy costs)
- Estimated Cost = 9.3M

Opportunities

- No anticipated alteration to the existing pumping stations would be required
- Easier to construct and connect to existing infrastructure (i.e. no connections to smaller PS)
- Reduce sewage back-up risk at other pumping stations
- Simpler forcemain hydraulics
- No land acquisition requirements
- Carriers lower constructability risks than other options

Pumping Option 1

Portsmouth Pumping Station Flow Direction

Schedule 'B' Municipal Class EA

Slide No. 16



Option 2 – Pump Entire Distance West/Tie-In Smaller PS's to Forcemain



Constraints

- Installation of forcemain will extend through Environmentally Sensitive Areas (i.e. PSW, Significant Forest, Fish Habitat & Significant Valleylands)
- Forcemain installation would have disruption to commuter traffic
- Minor Impacts to local businesses
- Potential alteration required at smaller pumping stations
- Potential sewage back-up at smaller pumping stations including the private ones, that would pump into forcemain
- Constructability staging challenges to maintain smaller pumping station functions during construction
- More complex forcemain hydraulics
- Estimated Cost = 9.5M

Opportunity

- Increased capacity of local gravity sewer
- Increased available capacity in local sewers to accommodate future planning initiatives
- Sewage flows from smaller pumping station are pumped once (i.e. less energy)
- No land acquisition requirements

Pumping Option 2



Portsmouth Pumping Station Flow Direction

Schedule 'B' Municipal Class EA

Slide No. 17



Option 3 – Pump Entire Distance West/Second Forcemain for Smaller PS



Constraints

- Installation of forcemain will extend through Environmentally Sensitive Areas (i.e. PSW, Significant Forest, Fish Habitat & Significant Valleylands)
- Forcemain installation would have disruption to commuter traffic
- Minor Impacts to local businesses
- Potential alteration required at smaller pumping stations
- Potential sewage back-up at smaller pumping stations including the private ones, that would pump into forcemain
- Constructability staging challenges to maintain smaller pumping station functions during construction
- More complex forcemain hydraulics; interconnection of second forcemain
- Installation of second forcemain increases constructability difficulty
- Estimated Cost = 12.3M

Opportunities

- Increased capacity of local gravity sewer
- Increased available capacity in local sewers to accommodate future planning initiatives
- Sewage flows from smaller pumping station are pumped once (i.e. less energy)
- Increased reliability and redundancy
- No land acquisition requirements

Pumping Option 3



Portsmouth Pumping Station Flow Direction

Schedule 'B' Municipal Class EA

Slide No. 18



Option 4 – Pump to High Point, Gravity to New PS that Discharges to WWTP



Constraints

- Installation of forcemain will extend through Environmentally Sensitive Areas (i.e. PSW, Significant Forest, Fish Habitat & Significant Valleylands)
- Forcemain / Sewer installation would have disruption to commuter traffic
- Minor Impacts to local businesses
- Commodore Cove pumping station would be completely replaced by a new larger station
- Limited property in area for new larger Commodore Cove pumping station; Land Acquisition may be required
- Sewage flows from smaller pumping station are pumped twice (i.e. increased energy costs)
- Significant additional operational cost for new pumping station
- Estimated Cost = 12.1M with highest constructability risks than other options

Opportunities

- No anticipated alteration to the existing pumping stations would be required
- Easier to construct and connect to existing infrastructure (i.e. no connections to smaller PS)
- Reduce sewage back-up risk at other pumping stations
- Simpler forcemain hydraulics
- Potential to redirect additional central drainage area from the east to the west
- No land acquisition requirements

Pumping Option 4



Portsmouth Pumping Station Flow Direction

Schedule 'B' Municipal Class EA

Slide No. 19



Detailed Evaluation – Pumping Options Evaluation Matrix:

Options	Natural Environmental Considerations	Social and Cultural Environmental Considerations	Technical Suitability Considerations	Financial Considerations	Overall Rating
Option 1: Smaller PS's to Portsmouth via Gravity	Less Preferred	Less Preferred	Most Preferred	Most Preferred	Most Preferred
Option 2: Tie-in Smaller PS's to Forcemain	Less Preferred	Less Preferred	Less Preferred	Less Preferred	Less Preferred
Option 3: Second Forcemain for Smaller PS	Less Preferred	Less Preferred	Less Preferred	Less Preferred	Less Preferred
Option 4: Pump to High Point, Gravity to New PS that Discharge to WWTP	Least Preferred	Less Preferred	Least Preferred	Least Preferred	Least Preferred

Evaluation of Routing Alternatives



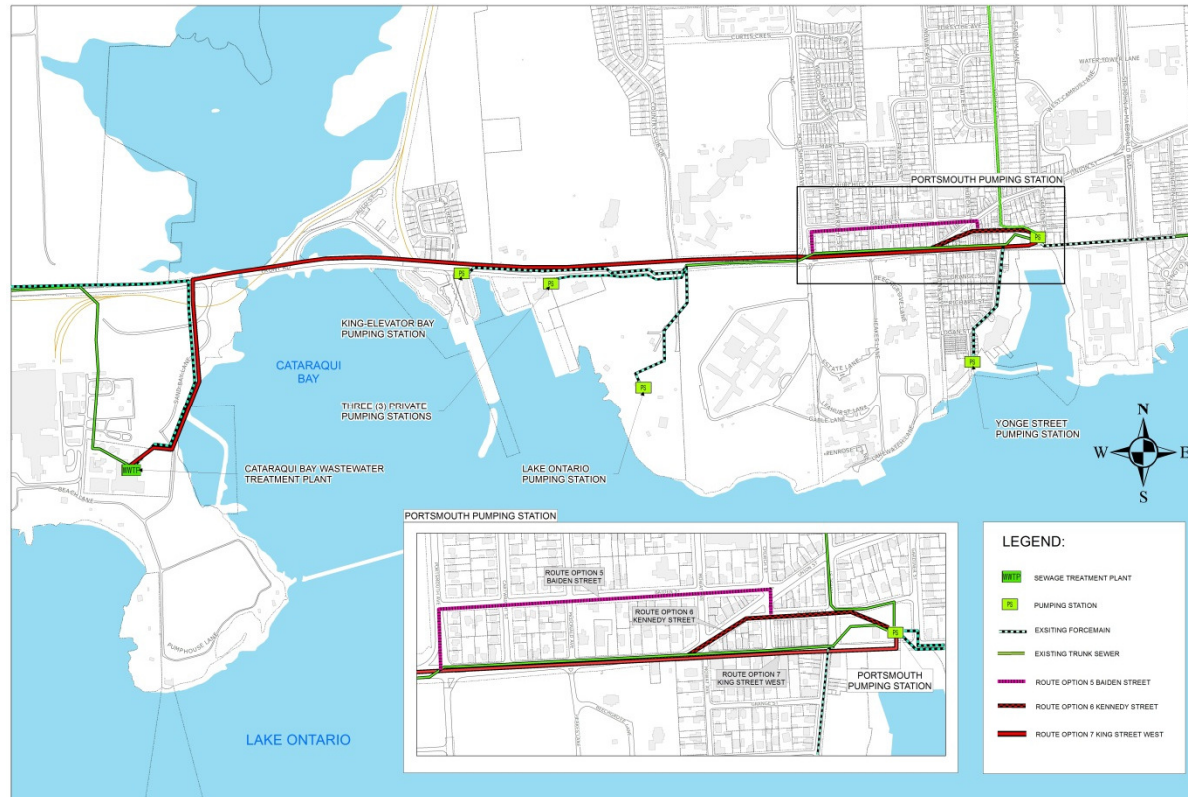
Portsmouth Pumping Station Flow Direction

Schedule 'B' Municipal Class EA

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Detailed Evaluation - Route Options



During the evaluation of the potential options for routing it was determined that there are minimal variations to the route for the infrastructure west of Portsmouth Ave. Therefore it was concluded that the infrastructure west of Portsmouth Ave would follow King St W/Front Rd until approximately Sand Bay Lane at which point it would turn south and connect to Cataraqui Bay WWTP.

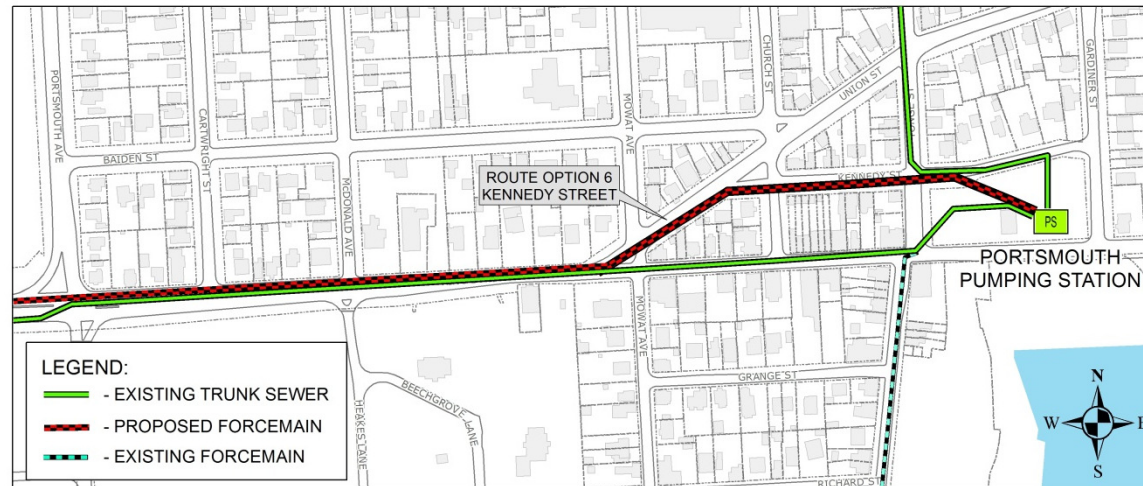
Portsmouth Pumping Station Flow Direction

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Option 6 – Kennedy, Union, King St. Route



Constraints

- Moderate impacts during construction on Kennedy St and Union St due to mix of local and commuter traffic
- More complicated coordination with installation of watermain

Opportunities

- Minimal anticipated impacts to Natural, Social and Cultural Environment
- Minimal risk of damage to building during construction due to the wider Right of Way (ROW)
- Minor existing underground utilities that may be impacted during construction
- Moderate coordination with City of Kingston Transportation Initiatives
- Replacement of outdated local infrastructure on Union and Kennedy.

Route Option 2



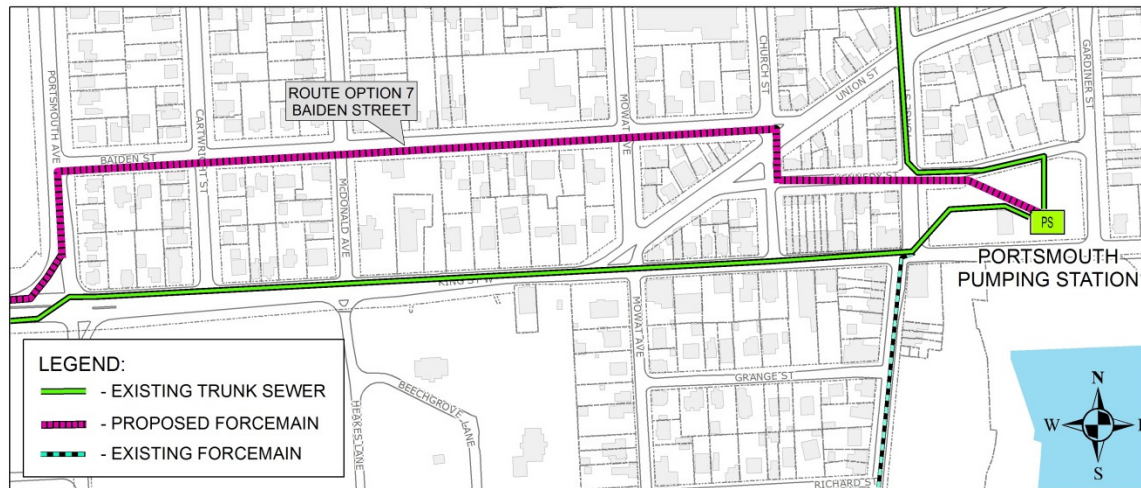
Portsmouth Pumping Station Flow Direction

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Option 7 – Kennedy, Baiden, King St Route



Constraints

- Disruption to Baiden St residence as recently reconstructed (i.e. ≤ 5 yrs)
- Requires replacement of newly installed infrastructure along Baiden St (i.e. asphalt, curbs etc.).
- Least coordination with City of Kingston Transportation Initiatives
- More complicated coordination with installation of watermain
- Highest operational cost due to longest length with the most bends
- Premature replacement of very new infrastructure (<5 yrs old) on Baiden St from MacDonald to Mowat

Opportunities

- Minimal anticipated impacts to Natural, Social and Cultural Environment
- Minimal risk of damage to building during construction due to the wider Right of Way (ROW)
- Minor existing underground utilities that may be impacted during construction
- Minor traffic impacts during construction since Baiden St is less used (more local traffic use)
- Minimal impacts to local businesses during construction; limited anticipated road closures
- Minimal existing underground utilities that may be impacted during construction
- Lowest capital cost with lowest constructability risk

Route Option 3



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Detailed Evaluation – Route Options Evaluation Matrix:

Option	Natural Environmental Considerations	Social and Cultural Environmental Considerations	Technical Suitability Considerations	Financial Considerations	Overall Rating
Option 5: King St	Most Preferred	Least Preferred	Most Preferred	Least Preferred	Least Preferred
Option 6: Kennedy St / Union Ave / King St	Most Preferred	Less Preferred	Less Preferred	Most Preferred	Most Preferred
Option 7: Kennedy St / Baiden St / King St	Most Preferred	Most Preferred	Least Preferred	Less Preferred	Less Preferred

Evaluation of Routing Alternatives



Portsmouth Pumping Station Flow Direction

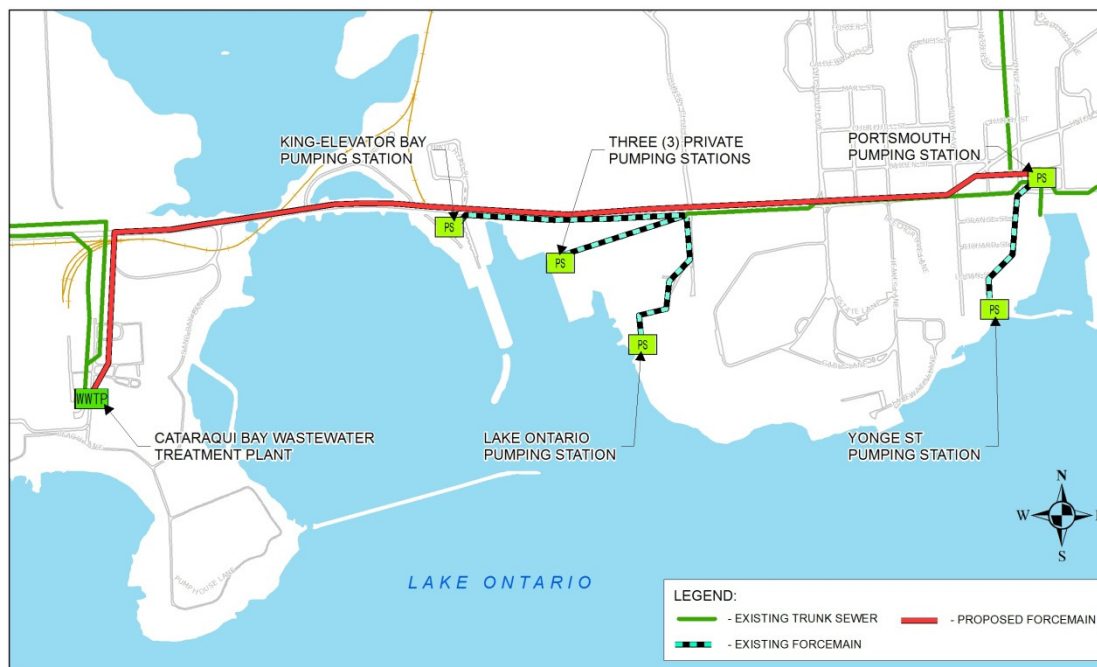
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Preferred Alternative and Options

- The preferred recommended solution based on the high level screening was determined to be Alternative 2 – to redirect wastewater flows from the Portsmouth Pumping Station westward to the Cataraqui Bay.
- The preferred pumping option is Option 1, which pumps sewage from Portsmouth Pumping Station the entire distance to Cataraqui Bay WWTP while the smaller pumping station within the Portsmouth drainage area continue to pump to gravity sewers that outlet to the Portsmouth Pumping Station.
- The preferred route option is Option 6 that would install the forcemain, north through the park, west along Kennedy Street to Union, along Union to King St and then extending to the Cataraqui Bay WWTP via King St / Front Rd



Preferred Solutions



Portsmouth Pumping Station Flow Direction

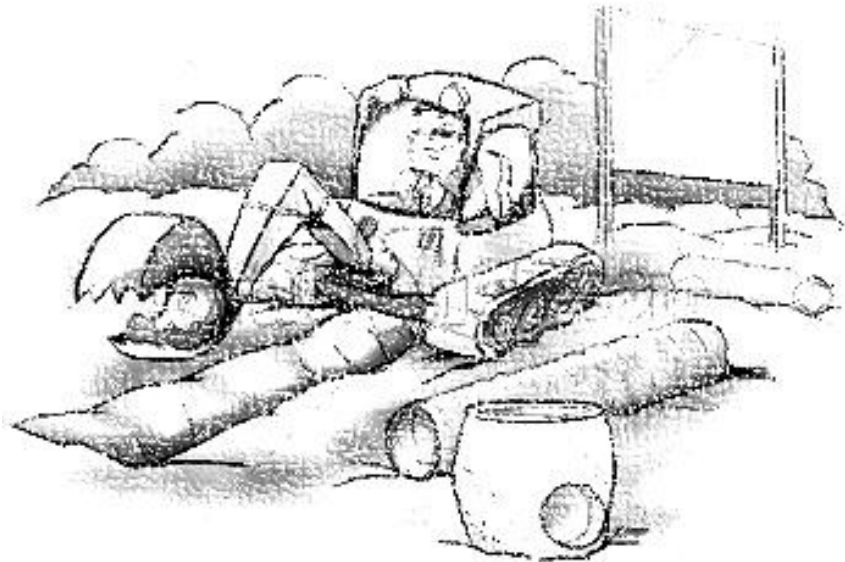
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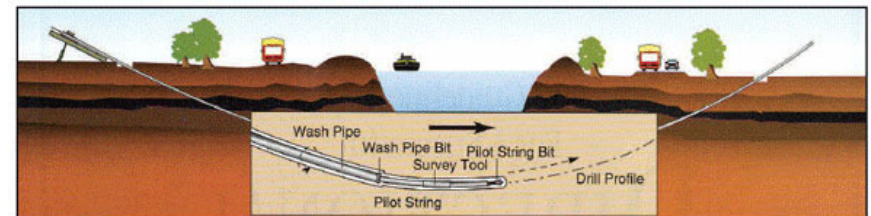
Open Cut Construction

Pipe installation by open-cut construction is a common construction technique that involves the excavation of a trench from the surface utilizing excavators. As the depth of the trench increases, the excavation is either sloped back (i.e. 1H:1V) to ensure slope stability or is temporarily supported using a trench boxes or sheeting to prevent collapse of the trench walls. This method will be used for the majority of the project

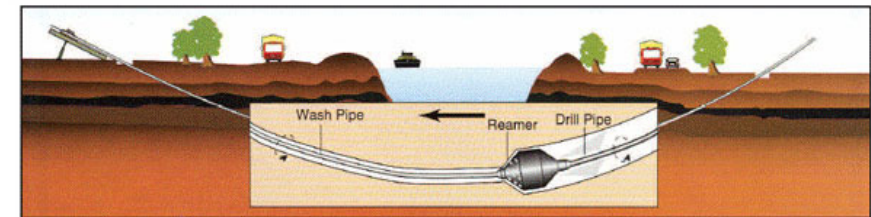


Trenchless Construction

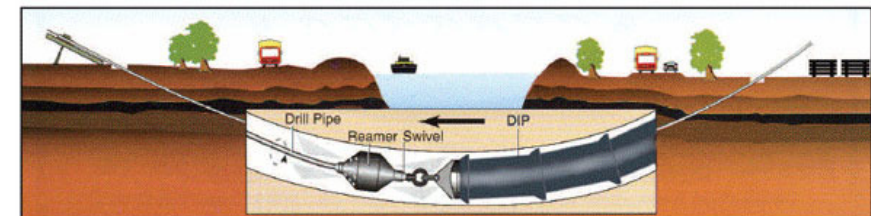
Due to the sensitive environmental areas and technical issues in and around the Little Cataraqui Creek and requirements from CN, trenchless methods for installation the pipe through this section will need to be employed. Based on these findings it is likely that the forcemain would be installed by rock Horizontal Directional Drilling (HDD).



PILOT HOLE



PRE-REAMING



PULL-BACK

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Potential Activity	Potential Effect/Impact	Mitigation Measure or Avoidance Alternative	Residual Effect
Vegetation Clearing/Grubbing Removal of ground cover vegetation and trees may be necessary.	<ul style="list-style-type: none"> Reduced bank stability Increased erosion/runoff entering watercourse, waterbody and wetland. Alteration to existing aquatic and terrestrial habitats 	<ul style="list-style-type: none"> Secure work area with erosion control fencing prior to vegetation removal. Fencing should be inspected regularly. Re-vegetate disturbed area with native planting, during appropriate periods. Erosion control fencing should remain in-place until plantings are established. 	<ul style="list-style-type: none"> Areas cleared of vegetation can be restored to pre-disturbance condition. No negative residual impact is anticipated.
In-water Infrastructure Placement of infrastructure in water may be necessary.	<ul style="list-style-type: none"> Alteration to flow Changes in water temperature and chemistry Barrier to fish passage Mortality of contained fish 	<ul style="list-style-type: none"> No in-water infrastructure or construction is anticipated with the use of trenchless technology proposed. 	<ul style="list-style-type: none"> No residual impact should occur, when the trenchless technology is used for tunneling below the bed of the waterbody/watercourse.
Construction Timing Construction work may occur during one or more consecutive seasons.	<ul style="list-style-type: none"> Impact to nesting birds Impact to migration stopover site Impact to Species at Risk (e.g. Barn Swallow) Impact to spawning fish Impact to nesting or overwintering turtles Impacts to affect use of migration corridors or linkage areas 	<ul style="list-style-type: none"> In-water work should adhere to the warm water timing window, whereby work is not permitted between April 1st and June 30th of any year. No vegetation removal (e.g. ground cover, shrubs or trees) between May 1st and July 31st of any year. Where vegetation removal is necessary within this period, a qualified biologist must first confirm vegetation is free of nesting birds / eggs. Pre-construction inspection for turtles and snakes should be carried out. Construction activities should not occur during the turtle nesting season (i.e. May 15 to June 30). No in-water works should occur between October 15th and April 15th of any given year. 	<ul style="list-style-type: none"> Adherence to the construction timing windows will limit potential impact to species during critical life stages. No negative residual impact is anticipated.

Mitigation Measures



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Potential Activity	Potential Effect/Impact	Mitigation Measure or Avoidance Alternative	Residual Effect
Species at Risk Species at Risk may be encountered during construction activities.	<ul style="list-style-type: none"> Disturb or kill Species at Risk 	<ul style="list-style-type: none"> Where a Species at Risk is encountered on site, activities should stop immediately. The individual(s) must not be handled. The Ministry of Natural Resources should be contacted for further direction. Pre-construction inspection for nesting fauna and eggs should be carried out prior to construction. Where a Barn Swallow nest is observed, all construction activities should be restricted to April 15 to August 15 of any given year. Where construction in or surrounding a nest is necessary, structures (e.g. bridges) should be blocked with screen or tarps prior to April 15. Exclusionary fencing should be placed along both sides of the Front Road causeway no later than the September prior to construction. The fencing should prevent turtles from accessing the area for overwintering or nesting. 	<ul style="list-style-type: none"> Application of mitigation measures will result in no change to the form and function of the aquatic and terrestrial environments. No negative residual impact is anticipated.
Traffic	<ul style="list-style-type: none"> Reduced of lanes during construction Detours for Lane Closures during Construction Heavier Traffic Flow on Alternate Routes 	<ul style="list-style-type: none"> Placement of Construction Signage outside construction zone to notify motorist of construction and allow alternate routes to be taken. Coordinate construction to ensure alternate route are free from restrictions. Develop Traffic management plans with the City of Kingston Traffic Department. Plans may involve one (two-way) lane staying open at all times and being controlled by temporary traffic signals and/or flagmen control over the length of the work area 	<ul style="list-style-type: none"> No negative residual impact is anticipated.
Archaeology and Heritage Features	<ul style="list-style-type: none"> Destruction or Alteration of archaeological features Destruction or Alteration of Heritage Buildings 	<ul style="list-style-type: none"> Prior to construction, contractor should become familiar with the locations of all heritage buildings and properties adjacent to the area of the undertaking and, as outlined herein, take reasonable precautions and steps to prevent any impact to those heritage resources. During construction and after the completion of construction activities, City of Kingston heritage planning staff should inspect the property to confirm that there are no unanticipated adverse impacts on the built heritage or cultural heritage landscapes. A building monitoring program will be implemented for buildings in close proximity to construction activities to assess effects from exposure. Heavy equipment will be restricted to remain with the existing roadways R.O.W 	<ul style="list-style-type: none"> No residual impact should occur, when the trenchless technology is used for tunneling below the bed of the waterbody/watercourse.

Mitigation Measures



Portsmouth Pumping Station Flow Direction

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Receive Public and Stakeholder Input
(Please Complete a Questionnaire)



Finalize Evaluation of Servicing Alternatives with
Consideration of Public and Stakeholder Input



Finalize the Project File (Includes the
Incorporation of all Received Comments)



Issue Notice of Study Completion / File the
Project File for a 30 Day Public Review



Proceed with Implementation of Recommended
Alternative

Next Steps



Portsmouth Pumping Station Flow Direction

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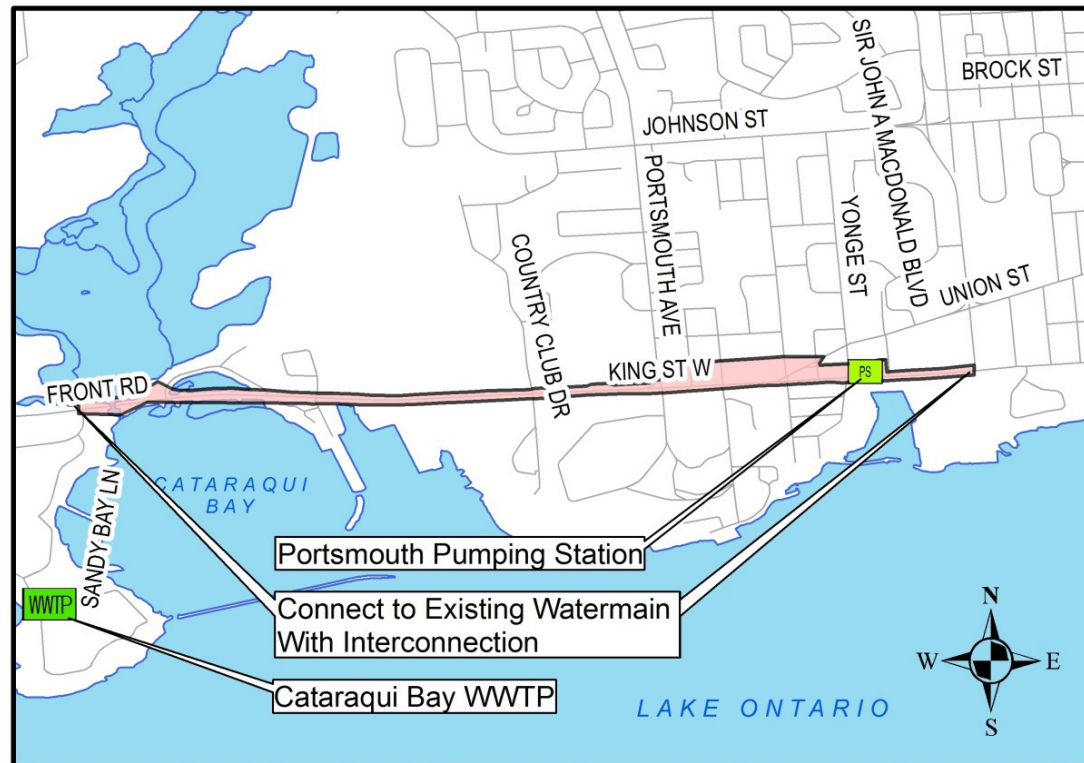


Front Street Watermain Interconnection

Background

The Master Plan for Water Supply for the City of Kingston Urban Area and Class Environmental Assessment identified the need for this watermain to meet the long-term study year 2026 water demands.

The purpose of this project is to complete the installation of the 1050mm trunk watermain for the discharge locations at the Kingston West WTP on Front Road to the discharge locations at the Kingston Central WPP on Kingston Street West. This project will connect the Kingston Central system at the intersection of Sir John A MacDonal and King Street West to the Kingston West system at the intersection of Front Road and Sand Bay Lane.



The Front Road/ King Street Watermain project is being carried out as a Schedule A+ undertaking. A Schedule A+ undertaking is pre-approved under the Class EA by the Ministry of the Environment and the project can be implemented upon public notification of the project.

Watermain Interconnection



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