

UNION-WUC WATER SYSTEM INTERCONNECTION

Municipal Class Environmental Assessment Study

Public Information Centre 2



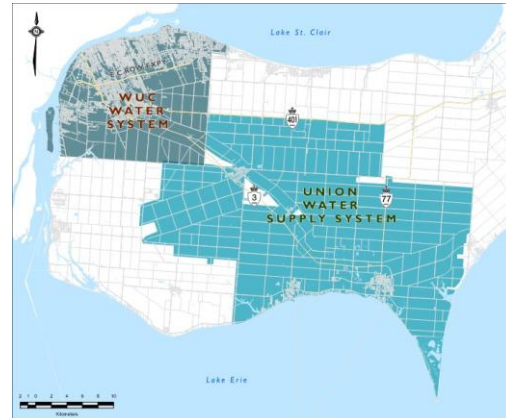
Union-WUC Water System Interconnection



The **Union Water Supply System (UWSS)** supplies the Town of Kingsville, Town of Essex, Municipality of Leamington, and Municipality of Lakeshore. The **Windsor Utilities Commission (WUC)** supplies the City of Windsor, the Town of LaSalle, and the Town of Tecumseh.

The UWSS and WUC have identified an opportunity to **improve the supply resilience** of their respective water systems by creating an interconnection.

The two utilities are undertaking a **Municipal Class Environmental Assessment (EA)** to identify and assess the impacts of various strategy alternatives.



Map of Union Water Supply System and WUC Water System, ON.

Objectives of the EA Study

The main objectives for this Schedule B Environmental Assessment are to:



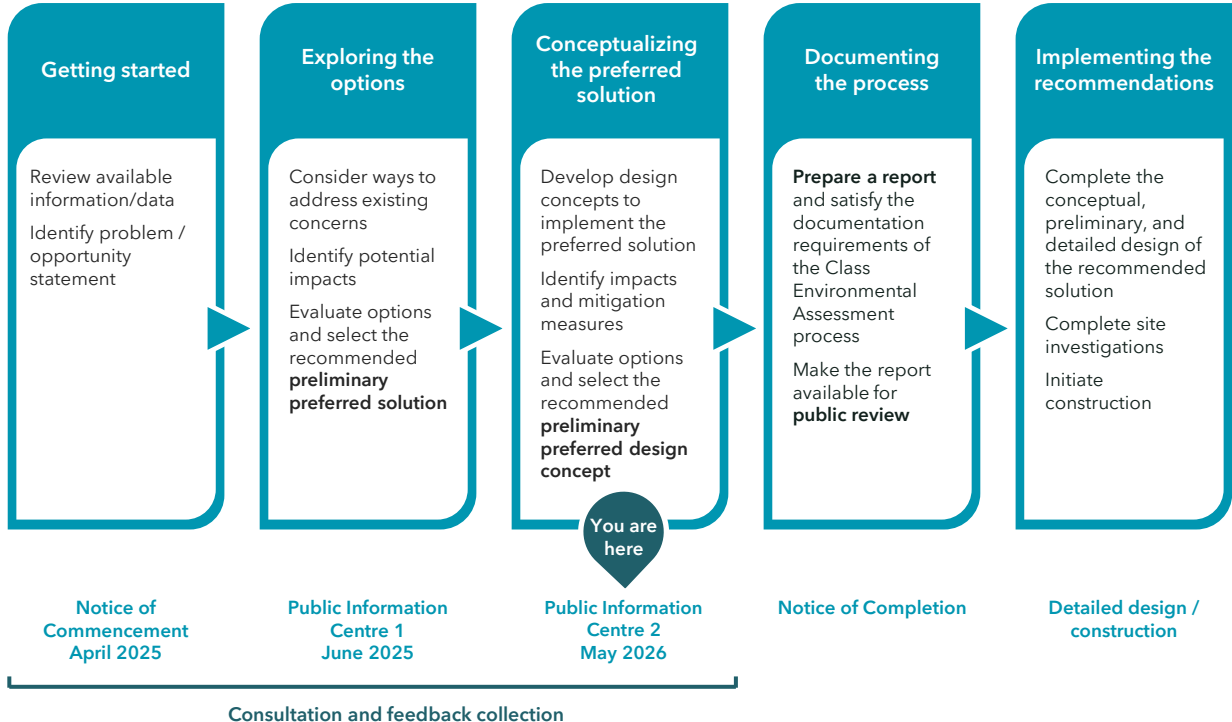
1. Carry out meaningful consultation with the public and other interested parties, then apply feedback in project planning and design
2. Evaluate the impacts of various water system interconnection strategies
3. Identify the preferred alternative for water system interconnection (including location, watermain routing, hydraulic system configuration)

This is the second of two Public Information Centres (PICs) for this project. This PIC is intended to present the following:

1. Alternative solutions identified in this EA study
2. Evaluation of alternative solutions
3. Preliminary preferred solution



Municipal Class EA Process



Central Facility Concept

Facility design concepts were compared in Public Information Centre #1. The preliminary preferred design concept is illustrated below.

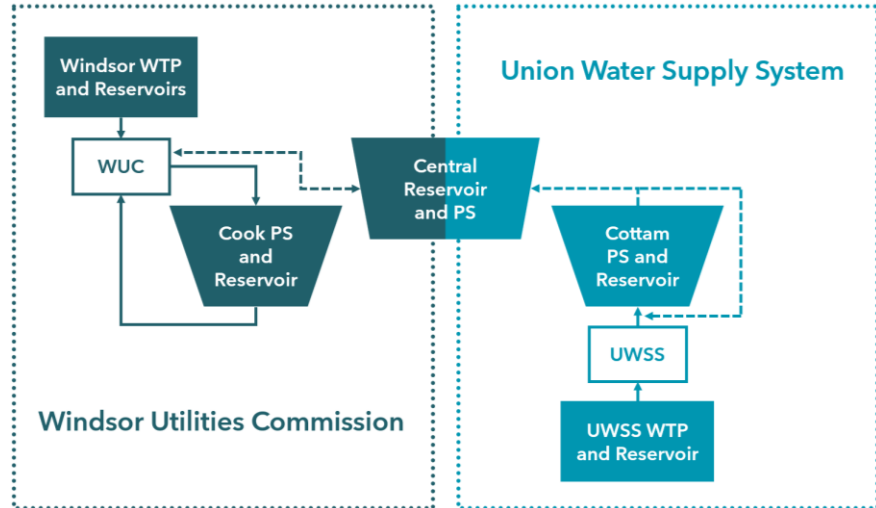
- Central Reservoir is split into 2 cells, one for each system
- Cells are isolated under normal operation
- Cells can be connected under emergency conditions to create an integrated reservoir able to supply both systems

Benefits over other Design Concepts

- Allows continuous use of the reservoirs under normal operations
- Presents opportunities to improve water service to nearby neighbourhoods

Challenges

- Relatively high energy usage
- Differences in system water treatment and conditioning between the two systems



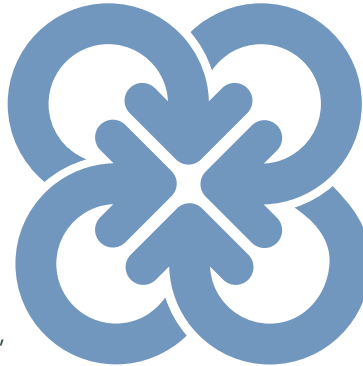
WTP = Water Treatment Plant

Preliminary preferred design concept for new Central Reservoir and Pumping Station (PS)

What is the Evaluation Process?

Solution alternatives are assessed with the following steps:

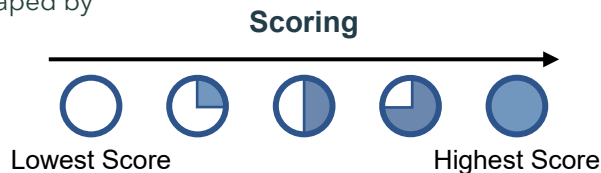
- 1 Hydraulic modelling**
Hydraulic model of Union-WUC system was used to simulate solution alternatives under current and future demand conditions and various operational scenarios
- 2 Comparative assessment**
Evaluation of solution alternatives (including location, routing, and system configuration options) was completed using a list of evaluation criteria shaped by public feedback



- 3 Select preferred alternative**
Selected the highest scoring alternative as preliminary preferred solution

- 4 Confirm preferred alternative**
Complete costing and additional analysis, present results at Public Information Centre #2

- 5 Further environmental analysis**
Additional environmental studies will be completed at proposed site



Facility Location & Watermain Route Alternatives

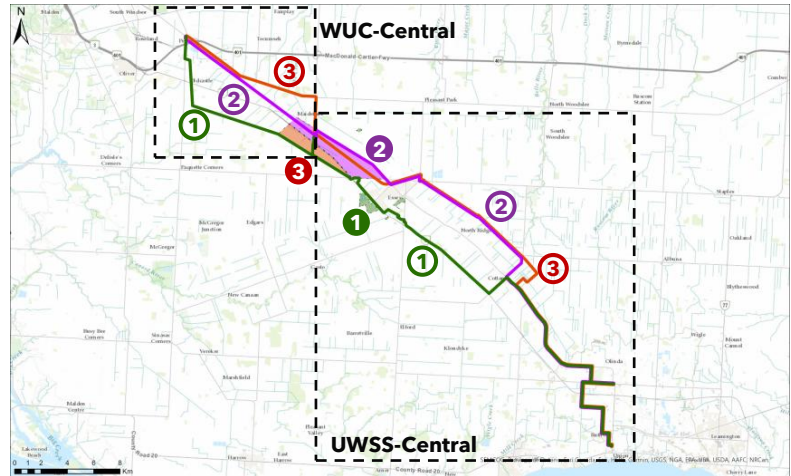
All location alternatives are corridors encompassing multiple properties that could be selected.

Facility Location

- 1** Location 1: Municipally-Owned Sites
- 2** Location 2: Talbot Road Corridor
- 3** Location 3: Highway 3 Corridor

WUC-to-Central Watermain

- 1** Route 1: 12.4 km route avoiding Highway 3 but crossing Highway 401.
- 2** Route 2: 9.3 km route using an abandoned railway corridor.
- 3** Route 3: 10.4 km route avoiding Highway 3, crossing Highway 401, and following mostly rural roads.



Map showing Facility Location and Watermain Route Alternatives

UWSS-to-Central Watermain

- 1** Route 1: 31.5 km route, following County Rd 34 and South Talbot Rd parallel to Highway 3.
- 2** Route 2: 32.2 km route following County Rd 34, diverting around Essex via North Talbot Rd.
- 3** Route 3: 32.2 km route like Route 2, incorporating an existing watermain corridor and railway alignment.

Evaluation Criteria - Location

Criteria to assess **facility location**:

Land area requirements

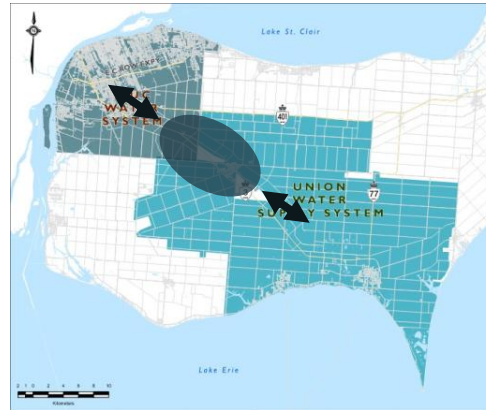
Sufficient land area for the new infrastructure is needed


Proximity to existing watermain network

Closer proximity reduces length of connecting mains

Operational and maintenance ease

Accessibility of the proposed site improves ease of operating and maintaining the new facility



 Approximate area under consideration for reservoir

 Possible Flow Direction

Land value

Lower land value reduces cost

Impacts on surrounding areas

During both construction and operation

Environmental impacts

During both construction and operation

Heritage impacts

On any known built cultural heritage

Evaluation Criteria - Watermain

Criteria to assess **watermain routing**:

Route length

Affects water age, cost and maintenance

Route alignment

Obstacles and bends present construction and operational challenges

Utilities density along the route

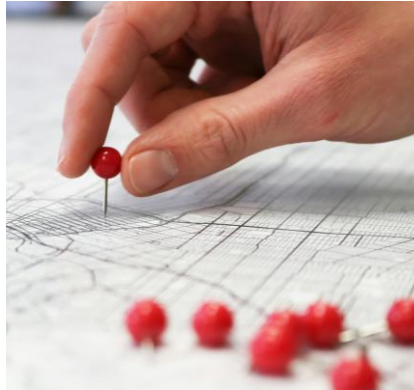
Fewer utilities reduces construction complexity

Proximity to existing watermain network

Closer proximity reduces length of connecting mains

Procurement of property

Land ownership affects ease of procurement



Operational and maintenance ease

Important for short- to long-term system performance and supply

Cost effectiveness

Capital and operational cost vs. value provided

Heritage impacts

On any known built cultural heritage

Impacts on surrounding areas

During both construction and operation

Environmental impacts

During both construction and operation

Archaeological Stage I Assessment

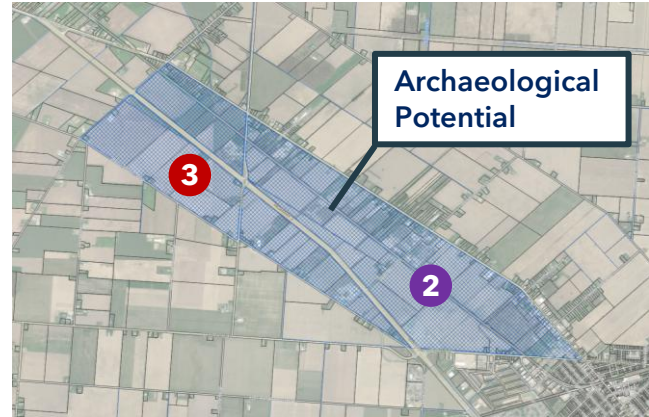
The study area (~1,650 ha) comprises parts of several municipal road rights-of-way, residential properties, lawns, agricultural lands, wooded lots, and existing infrastructure.

Study

- Archaeological potential criteria developed by the Ministry of Citizenship and Multiculturalism were applied, including
 - Proximity to known archaeological sites
 - Distance to water sources
 - Topography
 - Soil texture and drainage

Findings and Recommendations

- Portions of the study area located outside of rail and road rights-of-way retain archeological potential
- Archaeological potential is fairly consistent across all facility location and watermain route alternatives
- Stage 2 archeological assessment will be required at the new facility location and parts of UWSS-to-Central Watermain, regardless of the selected alternatives



Map showing archaeological potential on all properties within Facility Location Alternatives 2 and 3

Cultural Heritage Screening

Screening Study

Desktop study covering 50 m buffer around potential infrastructure

Historical Context

Long settlement history and Indigenous occupation (Three Fires Confederacy), historic roads, railways, drainage, and agriculture.

Project intersects Treaty 2 (McKee Purchase), with a small portion in Treaty 35.

Identified Resources

All alternatives contain listed, designated, and potential heritage resources, reflecting historic rural settlement, agricultural landscapes, and transportation corridors.

Potential built heritage resources (**BHRs**) and cultural heritage landscapes (**CHLs**) were identified within the study area.

Alternative	Potential BHRs	Potential CHLs	Listed & Designated Properties
Facility Location 1 1	Not evaluated	Not evaluated	Not evaluated
Facility Location 2 2	59	N/A	N/A
Facility Location 3 3	21	N/A	N/A
WM Route 1 1	179	4	21
WM Route 2 2	259	2	25
WM Route 3 3	177	3	17

*Facility Location 1 removed from evaluation - designated for other uses

Next Steps

For the selected alternatives:

- Field program to identify BHRs and CHLs on site
- Cultural Heritage Report to document findings

Natural Environment Screening

1 Location

Project lies within Ecoregion 7E-1, in Essex County, ON.

2 Species at Risk (SAR)

61 known or potential species within 5 km (birds, bats, reptiles, fish, plants, insects, molluscs).

The study area is large, meaning many of the SAR are unlikely to be present on the selected site.

No Aquatic SAR habitat in study area

3 Natural Heritage and Habitat

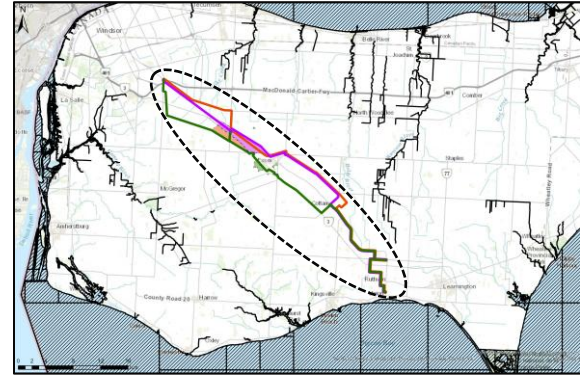
The Site follows a narrow corridor that extends east from the woodland habitats.

The catchment area of Lake Erie and St. Clair are present on site.

Aquatic habitats on Site are mainly managed agricultural drains.

4 Recommendations

- Aquatic Habitat Assessments.
- Ecological Land Classification/Ontario Wetland Evaluation System.
- Breeding Bird/ Amphibian/ Snake Surveys.
- Ministry of Environment, Conservation and Parks to be contacted early for additional SAR information.



























-- General Study Area ▨ Aquatic SAR Habitat

**Map of project alternatives
showing no aquatic SAR habitat
present in the study area**

Scoring of Facility Location Alternatives



Preliminary Preferred Alternative

Criterion		*Location 1	Location 2	Location 3
Land	Land area requirements			
	Land value			
Environment	Environmental impacts			
Socio-Economic	Impacts on surrounding areas			
	Heritage impacts			
Technical	Proximity to existing watermain network			
	Site access			
	Summary score			

*Facility Location Alternative 1 removed from evaluation - parcels designated for a different use.

WUC



Scoring of WUC Watermain Route Alternatives



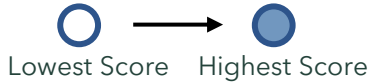
Preliminary Preferred Alternative

Criterion		Route 1	Route 2	Route 3
Land	Property procurement	○	○	●
	Environmental impacts	○	○	○
Socio-Economic	Construction costs	○	●	○
	Impacts on surrounding areas	○	●	○
	Heritage impacts	○	○	○
Technical	Route length	○	●	○
	Route alignment	○	●	○
	Utility density	○	○	○
	Proximity to existing watermain network	○	●	●
	Site access	○	●	○
Summary Score		○	●	○

UWSS



Scoring of UWSS Watermain Route Alternatives



Preliminary Preferred Alternative

Criterion		Route 1	Route 2	Route 3
Land	Property procurement	●	◐	◐
	Environment	Environmental impacts	◐	◐
Socio-Economic		Construction costs	◐	◐
	Impacts on surrounding areas	◐	◐	●
	Heritage impacts	◐	◐	◐
Technical	Route length	◐	◐	◐
	Route alignment	◐	◐	●
	Utility density	◐	◐	●
	Proximity to existing watermain network	◐	●	●
	Site access	◐	◐	◐
Summary Score		◐	◐	●

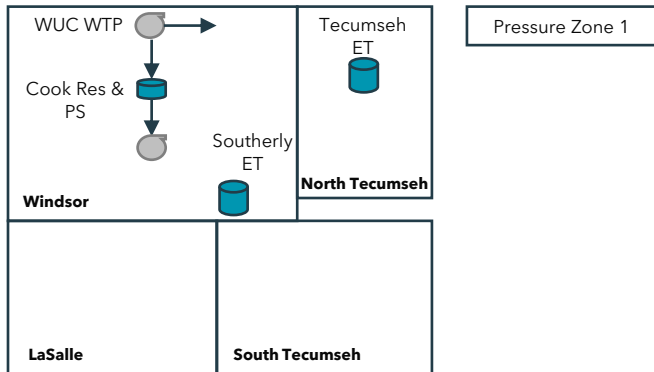
Evaluation Criteria - System Configuration

Criteria to assess **hydraulic system configuration alternatives**:

- Property procurement
- Environmental impacts
- Impacts on surrounding areas
- Heritage impacts
- Construction costs
- Ease of operations under normal conditions
- Ability to meet/optimize water service under normal conditions
- Storage redundancy and protection against system failure
- Ability to optimize conveyance to low pressure areas in WUC or UWSS

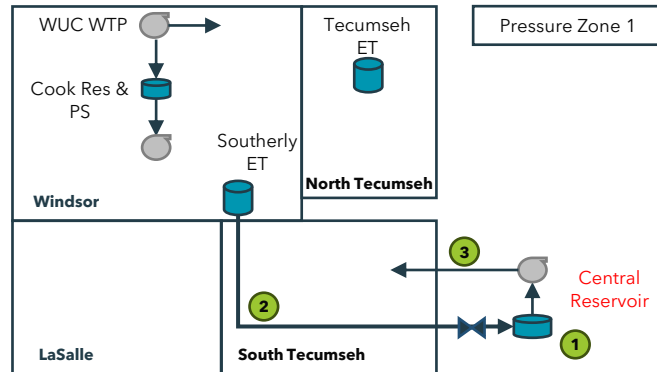


WUC Alternative 0: Do nothing



Removed from consideration - cannot meet system needs under emergency supply shutdown conditions

WUC Alternative 1: Central Reservoir & PS

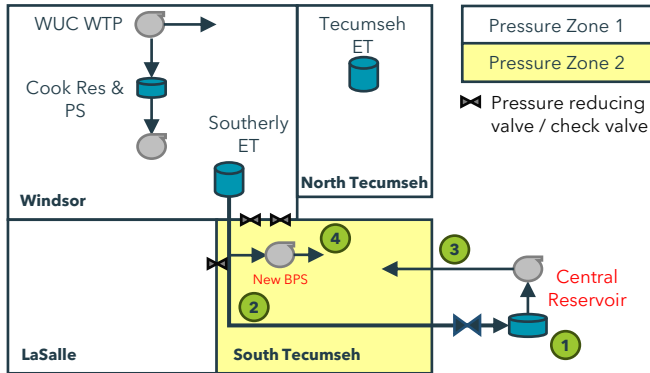


Key Infrastructure:

1. Central Reservoir and Pump Station
2. Feedermain from Southerly ET to Central Reservoir
3. Watermain from Central Reservoir to South Tecumseh

WUC System Configuration Alternatives 2 & 3

WUC Alternative 2: Central Reservoir & PS, South Tecumseh Pressure Zone and New South Tecumseh Booster Pump Station (BPS)



Key Infrastructure:

1. Central Reservoir and Pump Station
2. Feedermain from Southerly ET to Central Reservoir
3. Watermain from Central Reservoir to South Tecumseh
4. New Booster Pump Station (BPS) and feedermain from Windsor to South Tecumseh¹

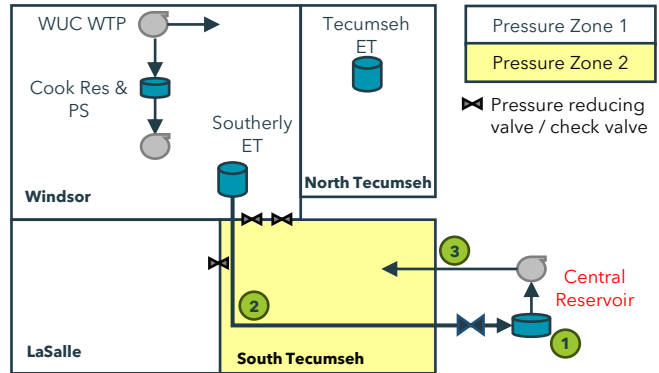
Note 1: New BPS and feedermain are planned regardless of Central Reservoir

PS = Pump Station

ET = Elevated Tank

WTP = Water Treatment Plant

WUC Alternative 3: Central Reservoir & PS and South Tecumseh Pressure Zone

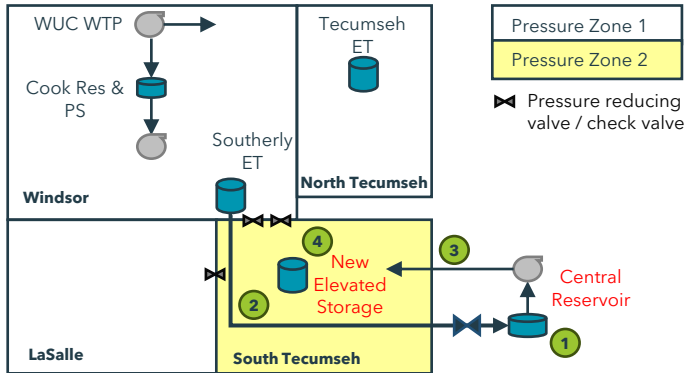


Key Infrastructure:

1. Central Reservoir and Pump Station
2. Feedermain from Southerly ET to Central Reservoir
3. Watermain from Central Reservoir to South Tecumseh

WUC System Configuration Alternative 4

WUC Alternative 4: Central Reservoir & PS, South Tecumseh Pressure Zone and New South Tecumseh ET



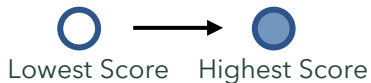
Key Infrastructure:

1. Central Reservoir and Pump Station
2. Feedermain from Southerly ET to Central Reservoir
3. Watermain from Central Reservoir to South Tecumseh
4. New elevated storage in South Tecumseh (may be constructed at a later time)

WUC



Scoring of WUC Configuration Alternatives



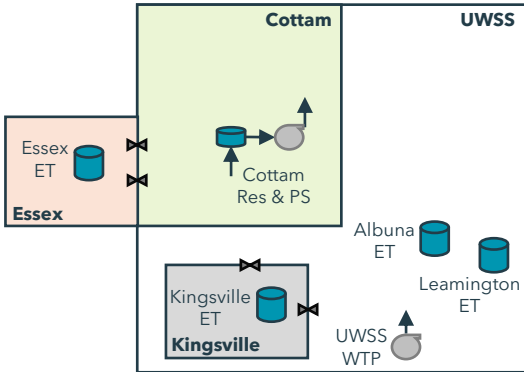
Preliminary Preferred
Alternative

		Criterion	Alt 1	Alt 2	Alt 3	Alt 4
Land	}	Property procurement	●	●	●	●
		Environment	}	Environmental impacts	●	◐
Socio-Economic	}	Impacts on surrounding areas		●	●	●
		Heritage impacts	●	●	●	●
		Construction costs	◐	◐	◐	◐
Technical	}	Meet/optimize water service under normal conditions	◐	●	●	●
		Ease of operations under normal conditions	◐	○	◐	●
		Storage redundancy and protection against system failure	◐	○	◐	●
		Optimize conveyance to low pressure areas	◐	◐	●	●
		Summary Score	◐	◐	●	●

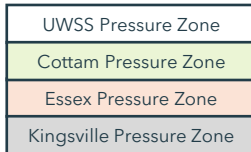
UWSS

System Configuration Alternatives 0 & 1 - UWSS

UWSS Alternative 0: Do nothing

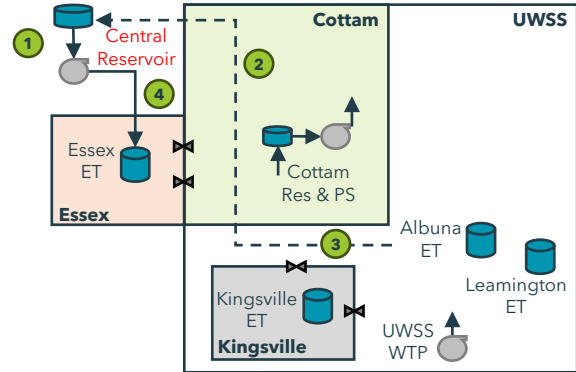


Removed from consideration - cannot meet system needs under emergency supply shutdown conditions



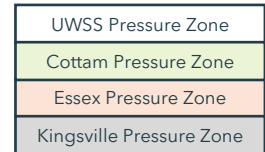
➤ Pressure reducing valve / check valve

UWSS Alternative 1: Central Reservoir & PS



Key Infrastructure:

1. Central Reservoir and Pump Station
2. Feedermain from Cottam to Central Reservoir
3. Feedermain from UWSS WTP to Cottam
4. Watermain from Central Reservoir to Essex

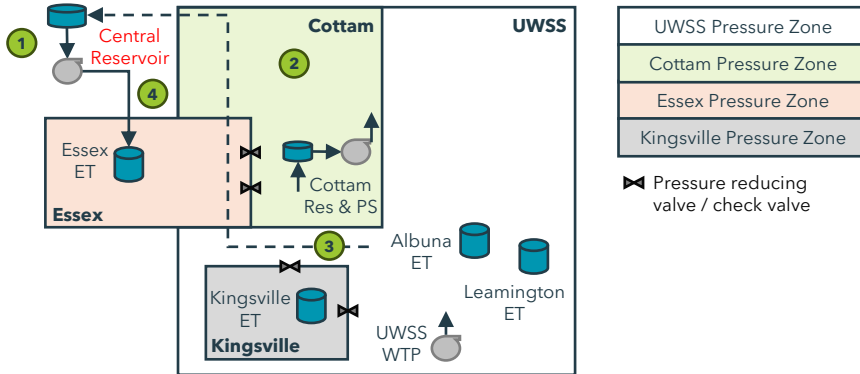


➤ Pressure reducing valve / check valve

UWSS

System Configuration Alternative 2 - UWSS

UWSS Alternative 2: Expand Essex Pressure Zone



Key Infrastructure:

1. Central Reservoir and Pump Station
2. Feedermain from Cottam to Central Reservoir
3. Feedermain from UWSS WTP to Cottam
4. Watermain from Central Reservoir to Essex

UWSS

Scoring of UWSS Configuration Alternatives



Preliminary Preferred Alternative

		Criterion	Alternative 1	Alternative 2
Land	}	Property procurement	●	●
		Environment	}	Environmental impacts
Socio-Economic	}	Impacts on surrounding areas		●
		Heritage impacts	●	●
		Construction costs	○	○
Technical	}	Meet/optimize servicing criteria under normal conditions	◐	◑
		Ease of operations under normal conditions	◑	◑
		Storage redundancy and protection against system failure	◒	◐
		Optimize conveyance to low pressure areas	◑	●
		Summary Score	◑	●

Capital Cost Estimates

Project component	Preliminary Preferred Alternative	Description	Total Estimated Cost (-15% to +30%)
Facility Location (Land Parcel)	Location Alternative 2	Land parcel within corridor situated on the north side of Highway 3, between Essex and Maidstone	<i>To be determined after site selection</i>
WUC-Central Watermain	Route Alternative 2	9.3 km route using an abandoned railway corridor	\$27.0M
UWSS-Central Watermain	Route Alternative 3	32.2 km alignment incorporating an existing watermain corridor and railway alignment	\$129.1M
WUC Hydraulic System Configuration	Configuration Alternative 4	Central Reservoir & PS, South Tecumseh Pressure Zone and New South Tecumseh ET	\$45.8M (includes WUC Central Reservoir & PS Cost)
UWSS Hydraulic System Configuration	Configuration Alternative 2	Central Reservoir & PS and Expanded Essex Pressure Zone	\$27.3M (includes UWSS Central Reservoir & PS Cost)
		TOTAL	\$229.2M

Summary & Project Planning Outlook

Further Impact Assessments Recommended During Planning Phase

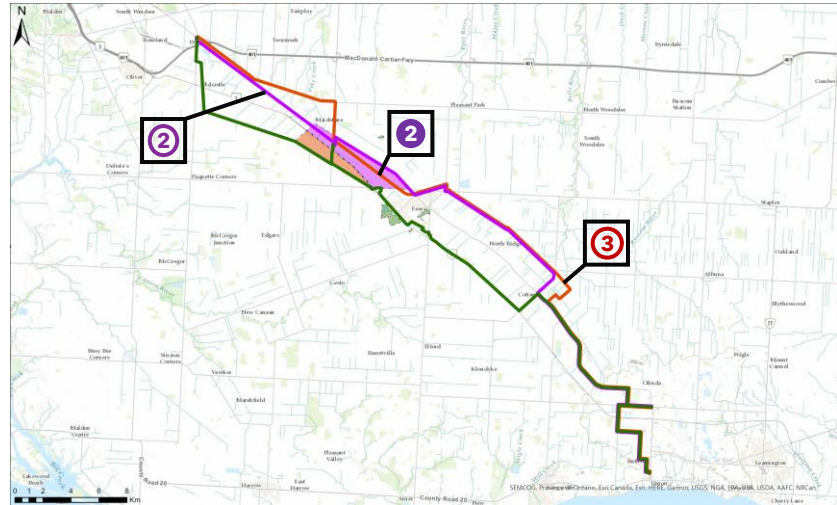


- Field environmental programs to document natural and cultural features on selected site and watermain route
- Detailed cultural heritage report (CHR)
- Stage 2 archaeological study at selected site and UWSS-to-Central Watermain

Planning & Design



- Refine hydraulic analysis based on preferred alternatives
- Identification of preferred site, and consultation with ERCA on site selection
- Geotechnical investigation of final selected location and route
- Initiation of conceptual design



Preliminary Preferred Alternatives

Thank you!

We want to hear your feedback:



PIC comment form
Provided Today



Online
<https://cima.planlocal.ca/union-windsor-water-connection/>



Email us
See Below

After the PIC, the project team will:

1. Review and consider input received
2. Confirm preferred solution alternatives
3. Document EA process in a report

Should you have any questions or comments at any time during the project, please contact:

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