



Town of The Blue Mountains Westside Storage Class EA COW Meeting

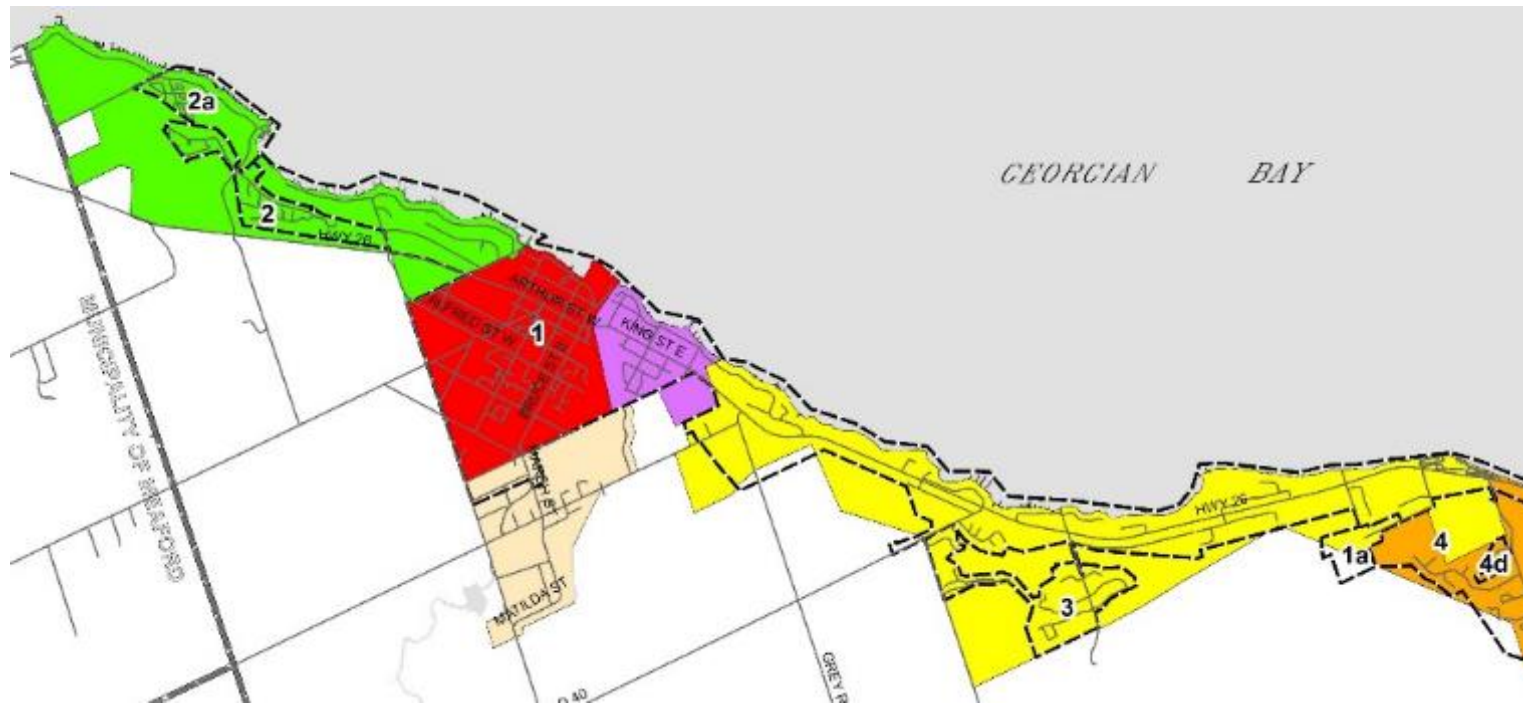
Presented by: J.L. Richards & Associates
Date: November 30, 2021
JLR No.: 29304

Agenda

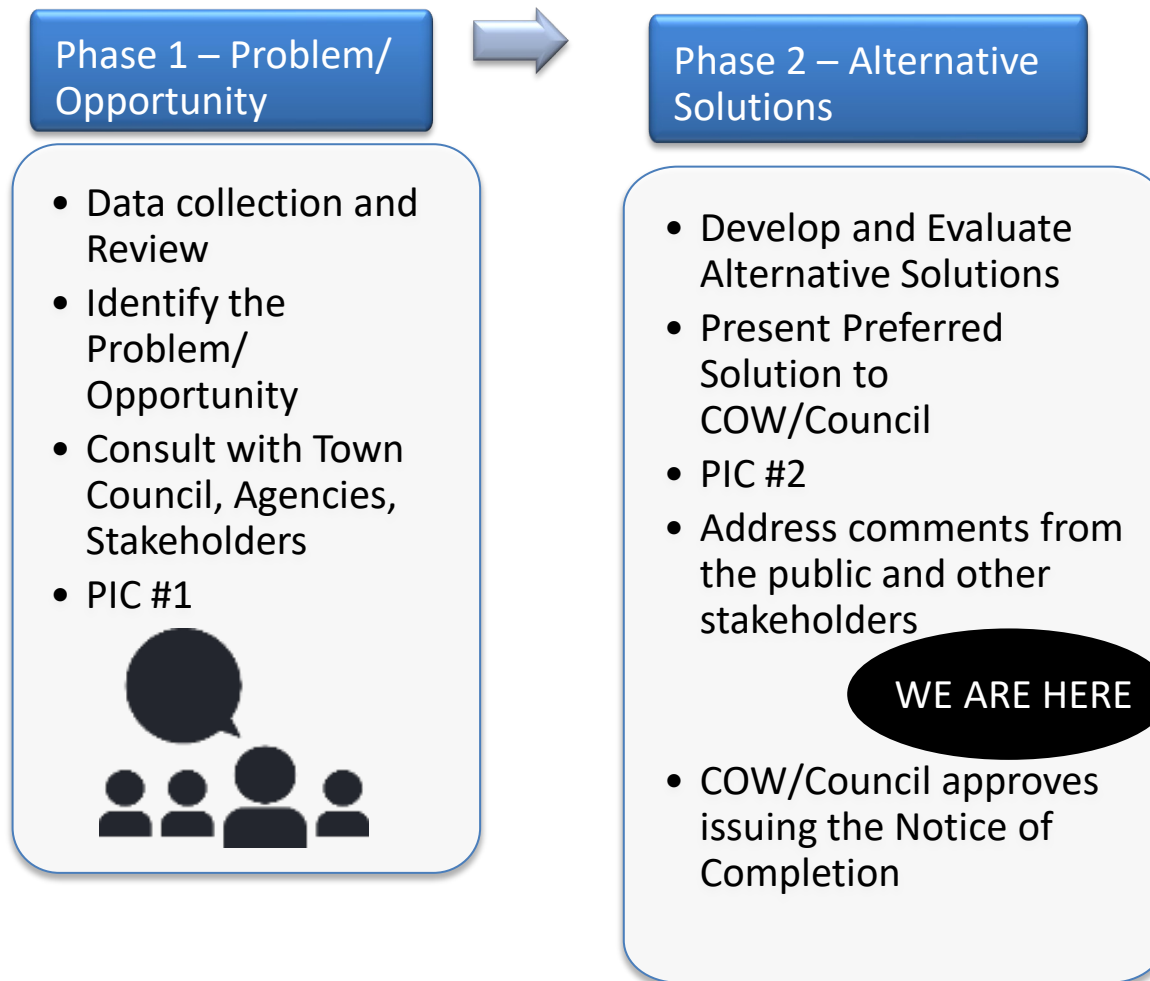
- Project Overview
- Class Environmental Assessment (EA) Process
- Existing Water Supply and Distribution System
- Population Projections
- Problems and Opportunities
- Evaluation Process
- Shortlisted Options
- Preferred Alternative
- Next Steps

Project Overview

The Town of the Blue Mountains has retained J.L.Richards (JLR) to prepare a Municipal Class Environmental Assessment (Class EA) for improving water storage and pumping for the Town's west pressure zones.

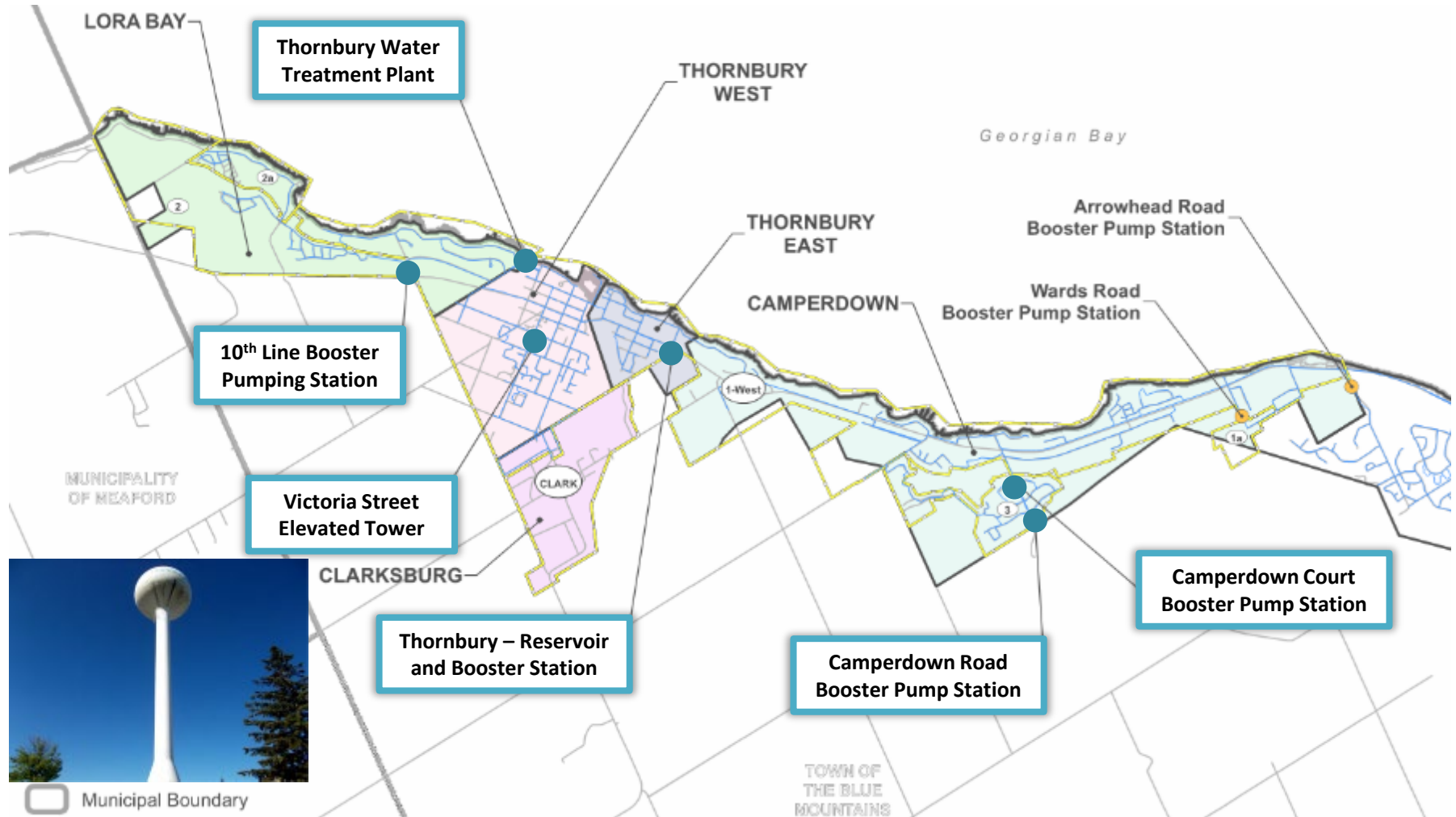


Class EA Process Overview



- Under the Environmental Assessment Act, municipalities must consider potential environmental effects before a potential water and/or wastewater project begins.
- The streamlined MEA Class EA process allows municipalities to consider impacts without having to obtain project-specific approval under the Environmental Assessment Act.

Existing Water Supply and Distribution System



□ Municipal Boundary

Population Projections – Overall Basis

- 20-Year and Build-out Growth Projections were developed as part of the Town's Development Charges (DC) Background Study (Hemson, 2019)
- Within the 2019 DC Background Study, the residential forecast incorporates 2016 Census and historical residential permit data and accounts for seasonal housing development. The non-residential portion of the forecast is largely based upon development applications received, known developer plans, and the availability of servicing.
- Typically, water storage design is based around the 40 – 60+ year service life of the infrastructure. As such, it was recommended that the storage requirements be identified for a minimum of a 40-year design horizon.
- Based on growth rates in the 2019 DC Study, build-out is anticipated to be reached in 20 to 60 years for all the west pressure zone communities. As this is within the typical service life of a storage facility, it was recommended that design be based on build-out growth projections from the 2019 DC Background Study.

Population Projections – Basis in Lora Bay

- Further discussions between the Town and key development stakeholder in the Lora Bay Service Area took place in June 2020.
- During these discussions, the developers identified a desire to plan infrastructure to accommodate an increase in the density of future growth, above what is currently approved by the Town in the Master Development Agreement (MDA).
- Town Staff considered a number of other growth scenarios including hypothetical situations that may include Urban Settlement Boundary expansions, Official Plan Amendment Applications to increase densities at Lora Bay beyond those that are in place through the original Master Development Agreement completed in the early 2000's and others.
- Town Staff mutually agreed that 1,629 Units was an appropriate upper end of estimated growth projections in Lora Bay. This is still subject to significant planning approvals but does identify an appropriate upper end of potential units., as it considers the potential of future developable lands and a consistent density within current Town standards across all future growth parcels.

Population Projections – Secondary Plan Areas

The lands designated Future Secondary Plan Area in the Town Official Plan were not considered as part of this Class EA when the projected/potential future population was assessed by Planning Services. At that time, there was no schedule to develop this or any of the other Secondary Plan Areas identified in the Town's Official Plan.

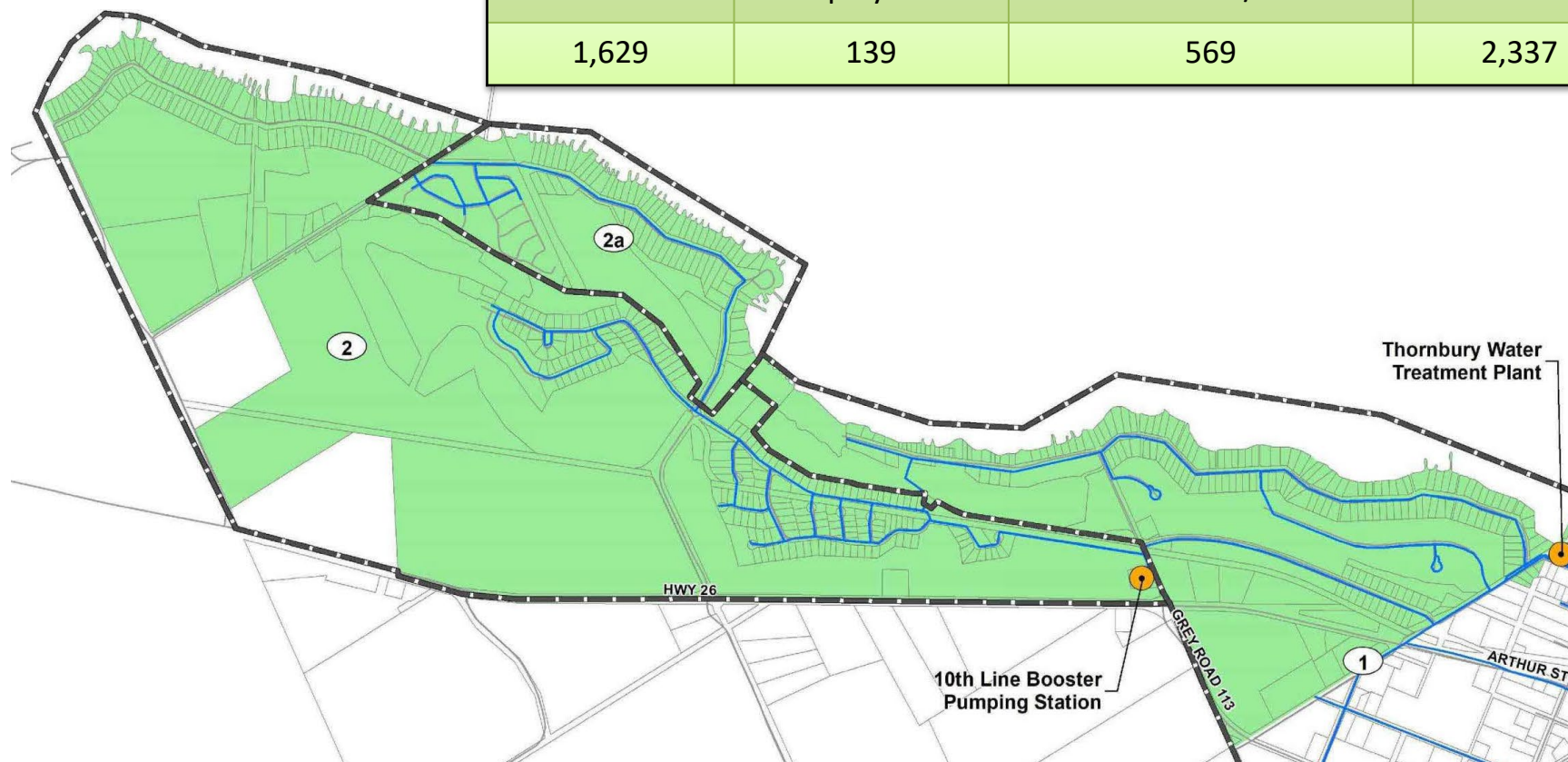
Planning Staff are monitoring our growth patterns and lands available for development very closely. Annual growth rates are currently much higher over the past two years, however using 5 year and 10 year rolling averages of annual growth rates does calm the recent growth spike. At this point, it is premature at this time to estimate when Future Secondary Plan lands need to be developed as we await more detailed growth forecasts from the County of Grey (end of 2021), federal census data (early 2022), and the Town Official Plan growth studies (mid 2022).

When additional lands from the Future Secondary Plan Areas are required to be designated for development, further study will be required in the form of a Secondary Planning exercise that considers all aspects of the area

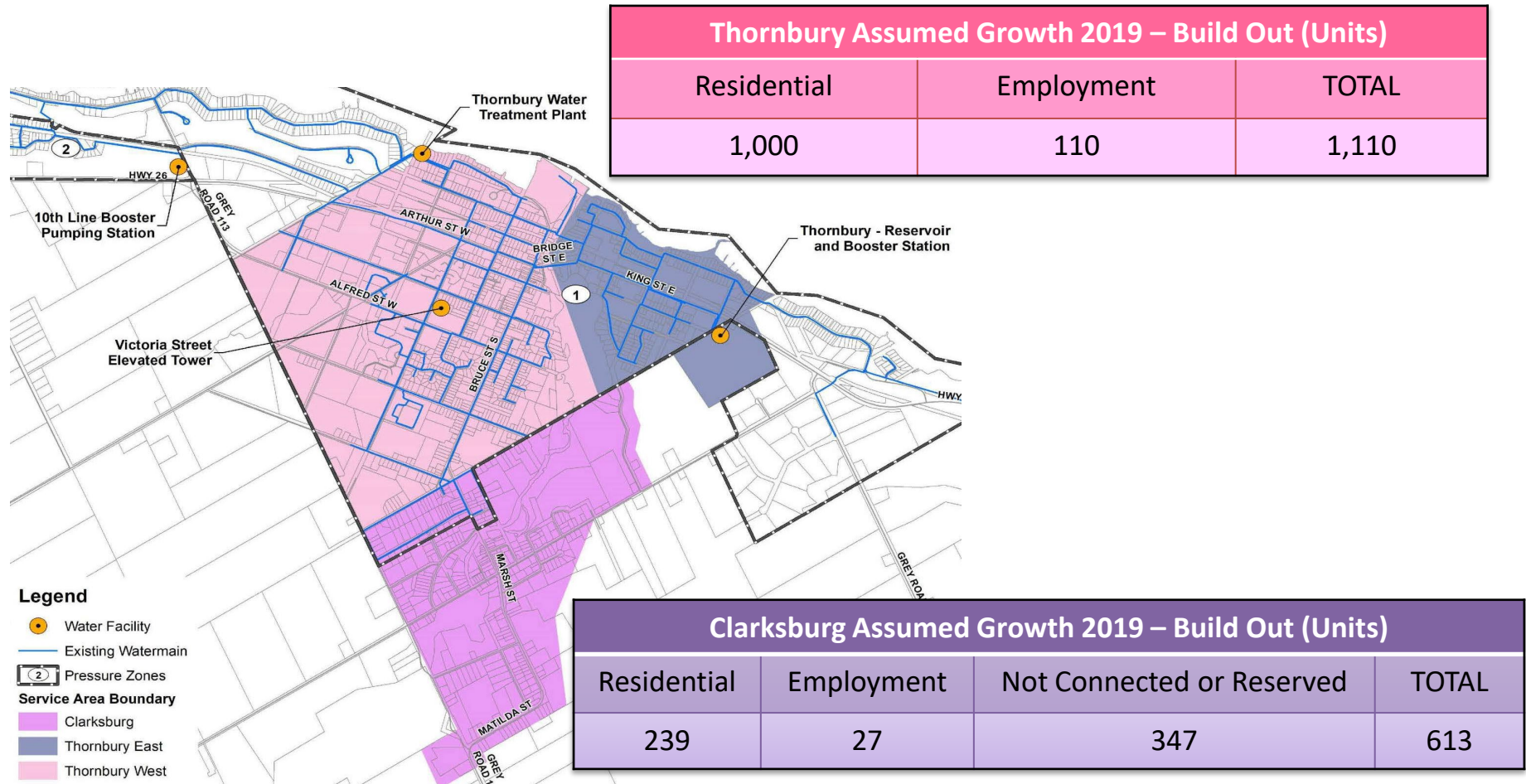
Based on the above, the West Side Water Class EA does not consider servicing of Future Secondary Plan Area lands and that when these lands are activated for development, appropriate studies will be completed at that time on preferred methods of servicing based on a completed basic engineering design for the area completed in accordance with engineering design requirements and other Town needs.

Population Projections – Lora Bay

Lora Bay Assumed Growth 2019 – Build Out (Units)			
Residential	Employment	Not Connected/Reserved	TOTAL
1,629	139	569	2,337

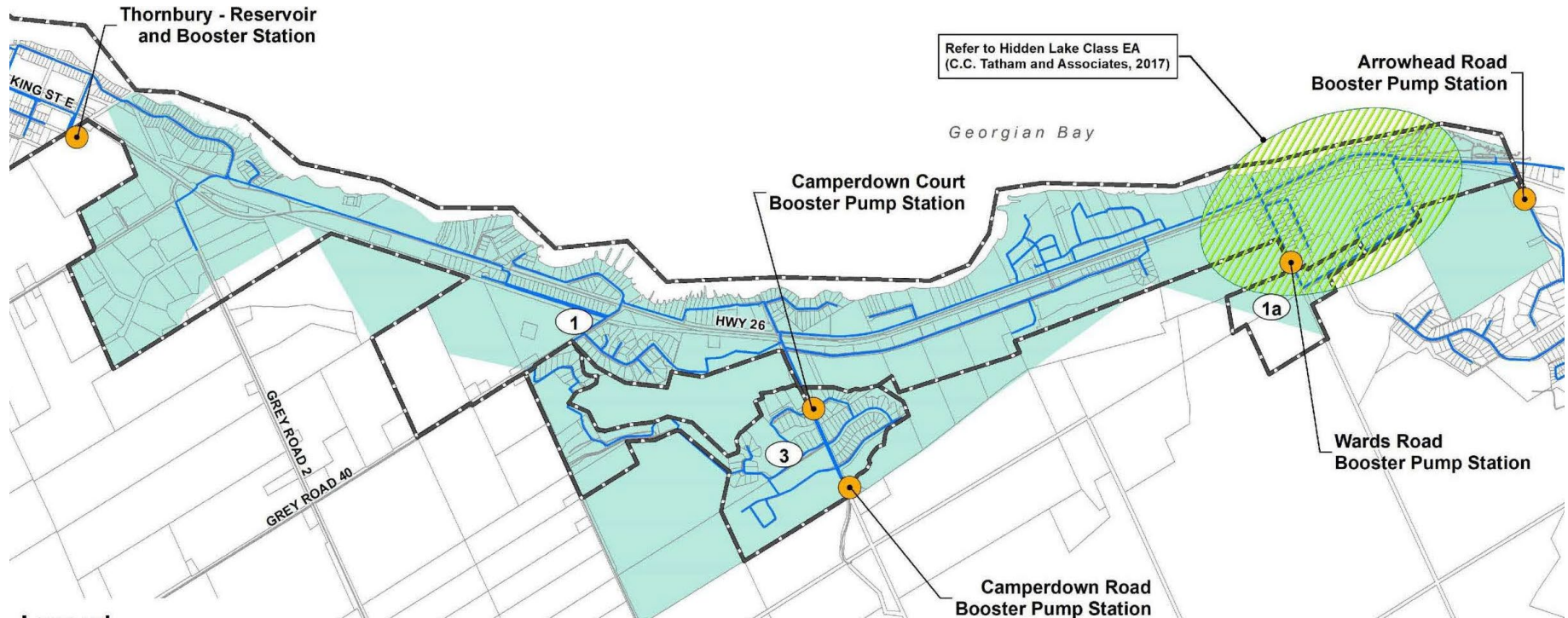


Population Projections – Thornbury and Clarksburg

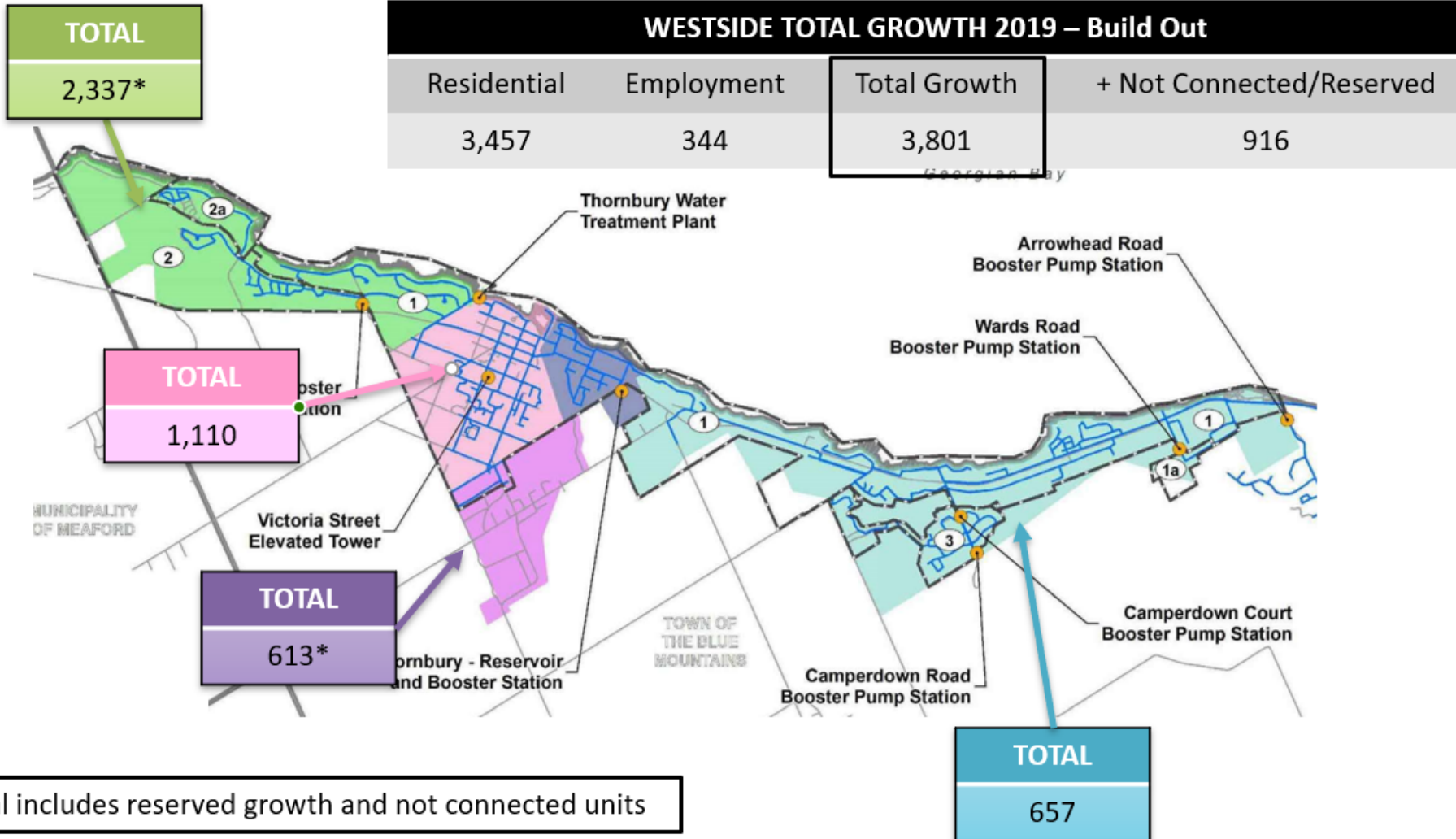


Population Projections - Camperdown

Camperdown Assumed Growth 2019 – Build Out (Units)		
Residential	Employment	TOTAL
589	68	657



Population Projections – Summary (Units)



Key Elements for Water Storage Needs

1 Condition of Facilities

- Facilities due for major rehabilitation
- Conduct a condition assessment

2 Storage Requirements

- Maintain emergency storage volume
- Storage deficit of 800 m³ at build out

3 Pumping Requirement

- Pumping capacity deficiencies in Pressure Zone 2 and 3 (if maximum day plus fire flow demands continue to be provided by pumping)

Evaluation Process



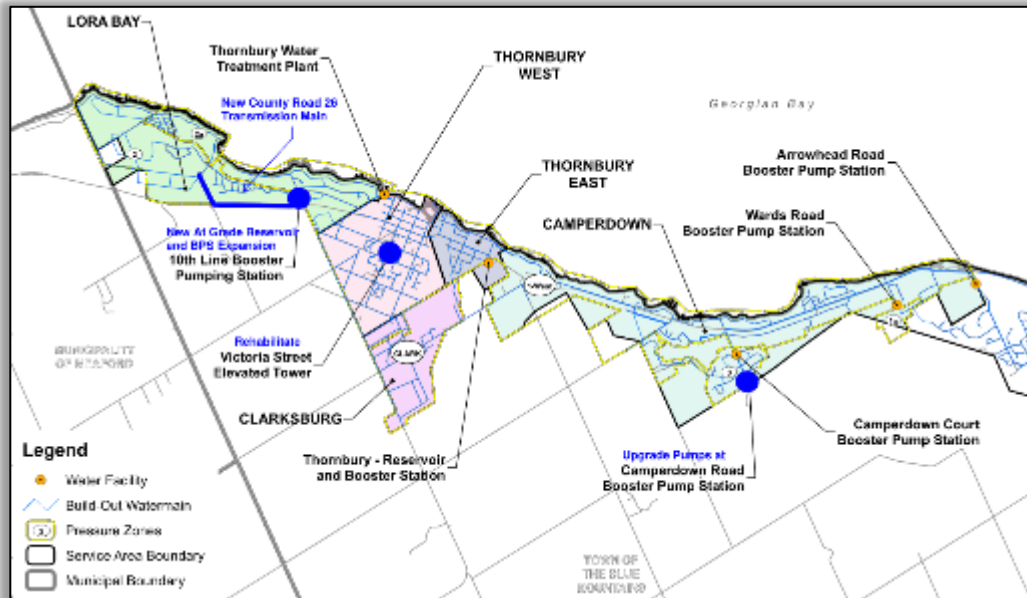
Major Criteria	Minor Criteria	
Natural Environment and Archaeology	Effect on Fish and Aquatic Habitat	
	Effect on Wetlands, Woodlands, Wildlife	
	Effect on Archeological Resources	
Technical Considerations	Opportunities for Phased Implementation	
	Optimized Use of Existing Infrastructure	
	System Redundancy	
Social Environment	Operations and Maintenance Requirements	
	Impacts During Construction	
	Cultural Heritage Impacts	
	Compatibility with Surrounding Land Use	
Economic Considerations	Zoning and Official Plan Designation	
	Capital Costing	
	50- Year Lifecycle Costing	

	High +ve impact
	Low +ve impact
	No impact
	Low -ve impact
	High -ve impact

Detailed Evaluation

OPTION 1

Rehabilitate Victoria St Elevated Tower, Construct Reservoir at 10th Line BPS and Upgrade Pumps



Effect on Fish and Aquatic Habitat	
Effect on Wetlands, Woodlands, Wildlife Habitat	
Effect on Archeological Resources	
Opportunities for Phased Implementation	
Optimized Use of Existing Infrastructure	
System Redundancy	
Operations and Maintenance Requirements	
Impacts During Construction	
Cultural Heritage Impacts	
Compatibility with Surrounding Land Use	
Zoning and Official Plan Designation	



below grade storage has **minimal aesthetic impact**
and **no new land is required**

requires **significant pump upgrades**
and more **complex to operate**



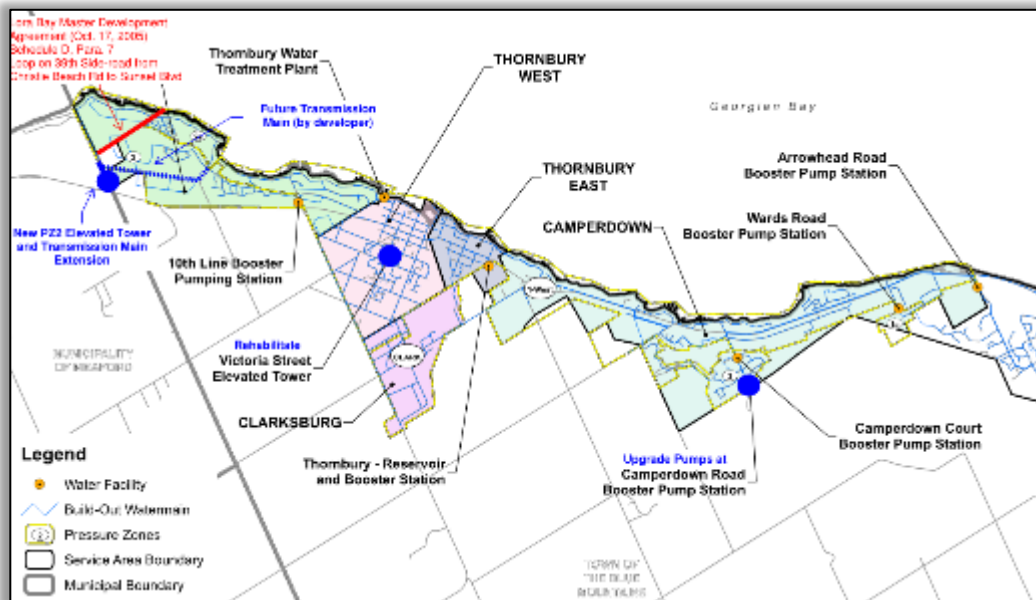
Capital Costing - **\$ 10.3 M**

50-year Lifecycle Costing- **\$ 18.1 M**

Detailed Evaluation

OPTION 3

Rehabilitate Victoria St Elevated Tower and Construct Elevated Tower on East Side of Pressure Zone 2 (Lora Bay)



Effect on Fish and Aquatic Habitat	
Effect on Wetlands, Woodlands, Wildlife Habitat	
Effect on Archeological Resources	
Opportunities for Phased Implementation	
Optimized Use of Existing Infrastructure	
System Redundancy	
Operations and Maintenance Requirements	
Impacts During Construction	
Cultural Heritage Impacts	
Compatibility with Surrounding Land Use	
Zoning and Official Plan Designation	



storage provided **in each Zone**
and is **easily accessible**

Visual impact in Thornbury and Lora Bay



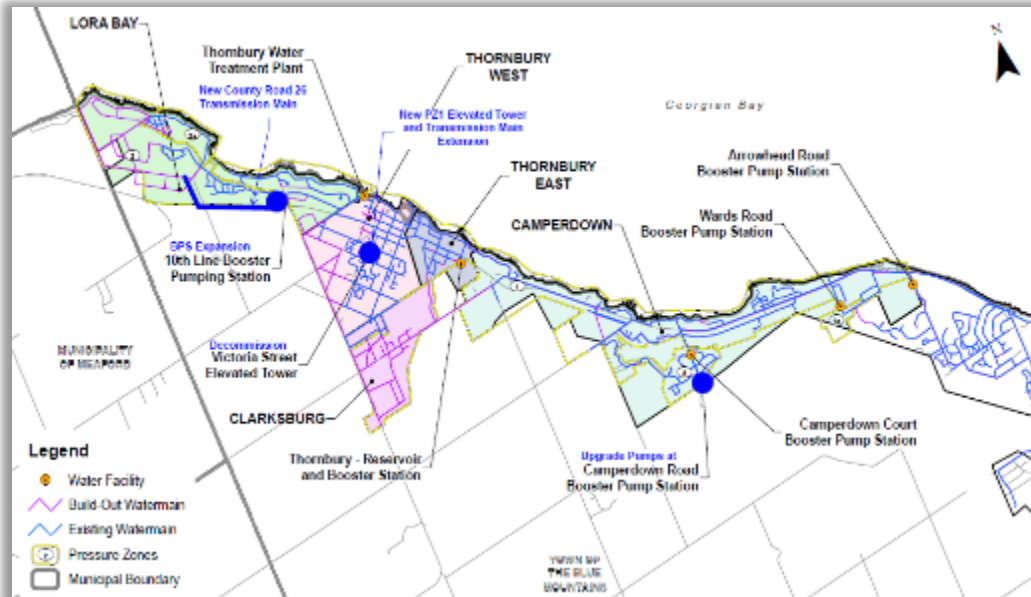
Capital Costing - **\$ 8.7 M**

50-year Lifecycle Costing- **\$ 17 M**

Detailed Evaluation

OPTION 7

New Expanded Victoria Elevated Tower in Pressure Zone 1 and Pump Upgrades at 10th Line BPS



Effect on Fish and Aquatic Habitat	
Effect on Wetlands, Woodlands, Wildlife Habitat	
Effect on Archeological Resources	
Opportunities for Phased Implementation	
Optimized Use of Existing Infrastructure	
System Redundancy	
Operations and Maintenance Requirements	
Impacts During Construction	
Cultural Heritage Impacts	
Compatibility with Surrounding Land Use	
Zoning and Official Plan Designation	



low visual impact and
less infrastructure to maintain

no dedicated storage for Zone 2



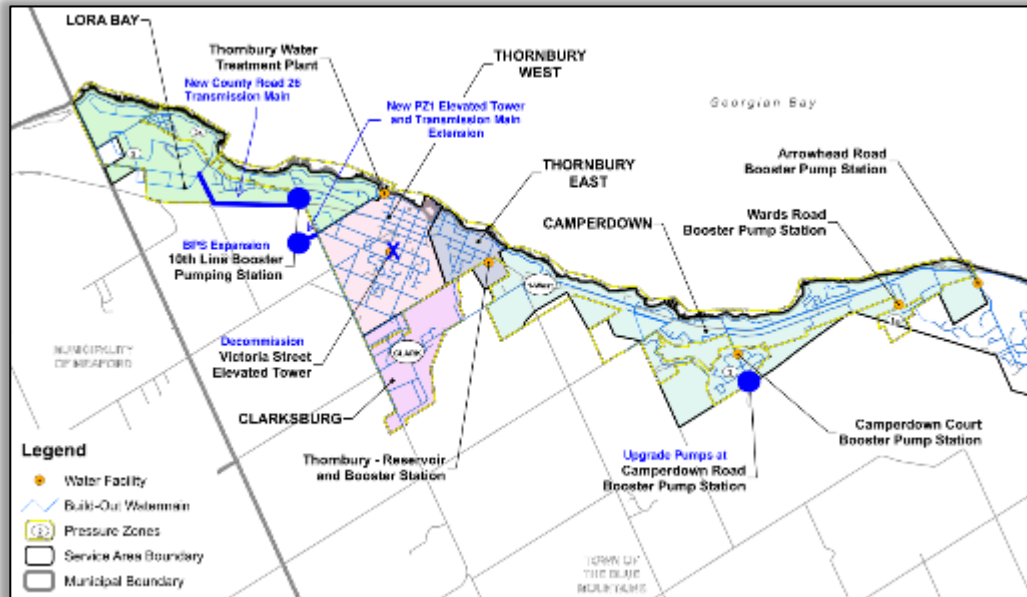
Capital Costing - **\$ 11.9 M**

50-year Lifecycle Costing- **\$ 15 M**

Detailed Evaluation

OPTION 8

New Elevated Tower in Pressure Zone 1 (at new location) and Pump Upgrades at 10th Line BPS



Effect on Fish and Aquatic Habitat	
Effect on Wetlands, Woodlands, Wildlife Habitat	
Effect on Archeological Resources	
Opportunities for Phased Implementation	
Optimized Use of Existing Infrastructure	
System Redundancy	
Operations and Maintenance Requirements	
Impacts During Construction	
Cultural Heritage Impacts	
Compatibility with Surrounding Land Use	
Zoning and Official Plan Designation	



less infrastructure to maintain

no dedicated storage for Zone 2
difficult to rezone & existing tower to be **decommissioned**



Capital Costing - **\$ 11.5 M**

50-year Lifecycle Costing- **\$ 14.5 M**

Detailed Scoring

MINOR CRITERIA	Criteria Weight	OPT 1 REHABILITATE VICTORIA ELEVATED & CONSTRUCT RESERVOIR AT 10TH LINE BPS AND UPGRADE PUMPS	OPT 3 REHABILITATE VICTORIA ELEVATED TOWER AND CONSTRUCT ELEVATED TOWER IN PRESSURE ZONE 2 (LORA BAY)	OPT 7 NEW ELEVATED TOWER IN PRESSURE ZONE 1 (LOCATION A) AND PUMP UPGRADES AT 10TH LINE BPS	OPT 8 NEW ELEVATED TOWER IN PRESSURE ZONE 1 (LOCATION C) AND PUMP UPGRADES AT 10TH LINE BPS
		Weighted	Weighted	Weighted	Weighted
Effect on Fish and Aquatic Habitat	1	0	0	0	0
Effect on Wetlands, Woodlands, Wildlife Habitat	1	0	-1	0	-1
Effect on Archeological or Heritage Resources	1	-1	-1	-1	-1
Opportunities for Phased Implementation	2	0	-4	-4	2
Optimized Use of Existing Infrastructure	1	1	1	-1	-1
System Redundancy	3	3	6	0	3
Maintenance/ Operations Requirements	4	0	8	0	0
Impacts During Construction	1	-1	-1	-2	-1
Cultural Heritage Impacts	1	0	0	-1	-1
Compatibility with Surrounding Land Use	2	0	-2	-2	-2
Zoning and Official Plan Designation	3	6	-3	-3	6
Capital Costing	3	4.8	6	4.2	4.2
50-Year Lifecycle Costs (Adjusted for Residual Value)	5	8	10	7.5	7.5
Overall Score		20.8	19	-2.3	15.7

OPTION 1

Rehabilitate Victoria St Elevated Tower, Construct Reservoir at 10th Line BPS and Upgrade Pumps

Opportunities for Phased Implementation – based on construction sequencing

Opportunities for Phased Implementation

2

0

-4

-4

2

- Option 8 has the highest score with respect to phased implementation/construction sequencing because the new elevated tower could be constructed while the Victoria Street elevated tower remains online
- The next highest scoring options is Option 1. In this option storage at 10th Line could potentially be phased (e.g. in 400 m³ increments), however, the Victoria Street Elevated Tower would need to be taken offline temporarily during rehabilitation.

OPTION 1

Rehabilitate Victoria St Elevated Tower, Construct Reservoir at 10th Line BPS and Upgrade Pumps

System Redundancy

System Redundancy	3	3	6	0	3
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- Option 3 scores the highest in redundancy because dedicated storage for Pressure Zone 2 will be inside the pressure zone.
- This means that in the event an issue supplying Pressure Zone 2 (i.e. extended power disruption, watermain break or pump failures at 10th Line BPS), water will still be available.
- The next highest scoring options are Option 1 and Option 8. In these options storage could be located near the pressure zone, however, pressure zone 2 continues to rely on pumped water for fire protection and supply.

OPTION 1

Rehabilitate Victoria St Elevated Tower, Construct Reservoir at 10th Line BPS and Upgrade Pumps

Compatibility with Surrounding Land Use & Official Plan Designation

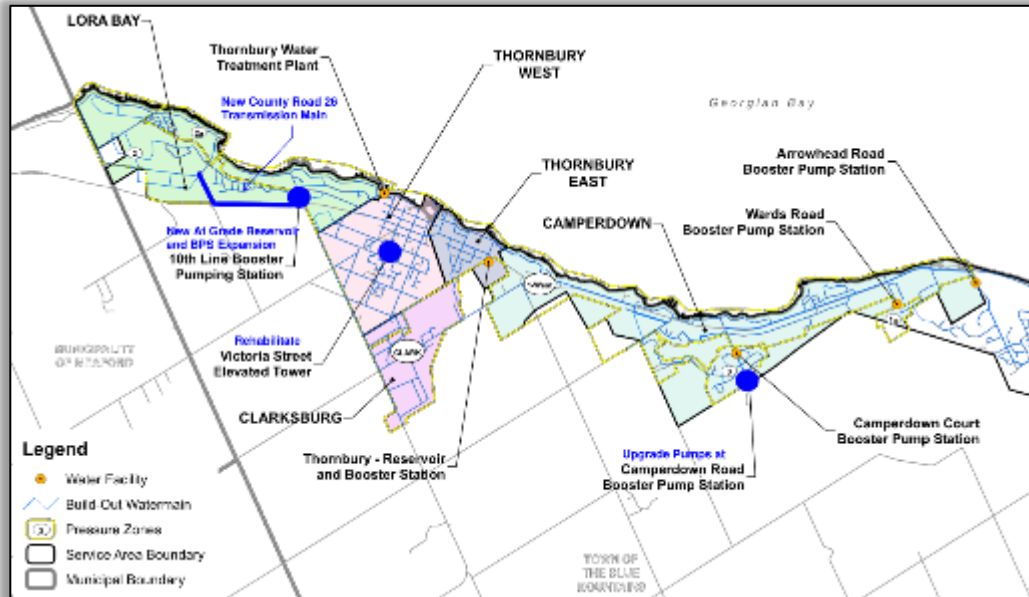
Compatibility with Surrounding Land Use	2	0	-2	-2	-2
Zoning and Official Plan Designation	3	6	-3	-3	6

- Option 1 has the least potential for impacts to the surrounding land use.
- The site at 10th Line is already used for pumping station infrastructure and there will not be any changes to the size or location of the Victoria St. Elevated Tower.
- Option 1 is the only option where land does not need to be acquired or re-zoned.

Preferred Option

OPTION 1

Rehabilitate Victoria St Elevated Tower, Construct Reservoir at 10th Line BPS and Upgrade Pumps



Effect on Fish and Aquatic Habitat	
Effect on Wetlands, Woodlands, Wildlife Habitat	
Effect on Archeological Resources	
Opportunities for Phased Implementation	
Optimized Use of Existing Infrastructure	
System Redundancy	
Operations and Maintenance Requirements	
Impacts During Construction	
Cultural Heritage Impacts	
Compatibility with Surrounding Land Use	
Zoning and Official Plan Designation	



below grade storage has **minimal aesthetic impact**
and **no new land is required**

requires **significant pump upgrades**
and more **complex to operate**



Capital Costing - **\$ 10.3 M**

50-year Lifecycle Costing- **\$ 18.1 M**

OPTION 1

Rehabilitate Victoria St Elevated Tower, Construct Reservoir at 10th Line BPS and Upgrade Pumps

Capital Costing

Alternative 1 - Rehabilitate Victoria St. Tower and In-Ground Storage at 10 th Line BPS	Estimated Capital Cost (1)(2)
Rehabilitate Existing Victoria Elevated Tower ⁽³⁾	\$1,073,100
New 800 m ³ At/Below Grade Reservoir at 10 th Line and BPS Upgrades ⁽⁴⁾	\$2,380,000
New 400 mm Watermain Loop From 10 th Line to Lora Bay Drive	\$2,354,000
Upgrade Pumps at Camperdown Road BPS (common to all options) ⁽⁵⁾	\$400,000
SUB-TOTAL	\$6,207,100
General Contractor O&P (15% of Construction Cost)	\$931,065
Contingency Allowance (25% of Construction Cost)	\$1,551,775
Engineering Design & Assistance for Tendering and Construction 18%	\$1,564,189
TOTAL (ROUNDED)	\$10,260,000

Table Notes:

- (1) Based on Class 'D' costing estimates +/- 30% as outlined in Section 8.3 and are for comparative purposes only.
- (2) All sizing (e.g. treatment capacity, tank size, pump capacity, watermain diameter, etc.), is conceptual in nature and should be confirmed during detailed design.
- (3) Rehabilitation costs from Landmark, 2020
- (4) Upgrade at 10th line based on replacing three (3) existing pumps with new pumps with capacity of 150 L/s each.
- (5) Upgrade of pumps at Camperdown Rd. BPS based on replacing two (2) existing pumps with 150 L/s pumps. Pump size and configuration would need to be confirmed during detailed design.

OPTION 1

Rehabilitate Victoria St Elevated Tower, Construct Reservoir at 10th Line BPS and Upgrade Pumps

Lifecycle Costing

Year	Capital Costs	Annual O&M Cost Average	Present Value Capital Cost	Present Value Average O&M Costs	Cumulative Cost	Comments
0	\$10,260,000	N/A	\$10,260,000	N/A	\$10,260,000	Rehab Victoria Tower and Construct In-Ground Reservoir at 10 th Line and Pump Upgrades
10	\$690,000	\$54,200	\$624,648	\$49,067	\$11,397,993	Elevated Tank Rehabilitation (includes premium due to tank age)
20	\$391,250	\$54,200	\$320,647	\$44,419	\$12,183,364	Pump Station Rehabilitation Elevated Tank Minor Rehabilitation
30	\$690,000	\$54,200	\$511,927	\$40,212	\$13,115,999	Elevated Tank Rehabilitation (includes premium due to tank age)
40	\$6,202,500	\$54,200	\$4,165,929	\$36,404	\$17,662,790	Pump Station Rehabilitation *Replace Elevated Tower
50	\$210,000	\$54,200	\$127,688	\$32,956	\$18,135,268	Elevated Tower Rehabilitation (discount assuming new non-steel tank)

OPTION 1

Rehabilitate Victoria St Elevated Tower, Construct Reservoir at 10th Line BPS and Upgrade Pumps

Project Component	% Costs Allocated to Existing Units	% Costs Allocated to Development Units
Rehabilitate Existing Victoria Street Tower	100%	--
New Reservoir at 10 th Line Booster Pumping Station and Pump Upgrades	To Be Confirmed	To be Confirmed
New Watermain Loop from 1th Line to Lora bay Drive	To Be Confirmed	To be Confirmed
Upgrade Pumps at Camperdown Road Booster Pump Station	To Be Confirmed	To be Confirmed

- Cost allocation will be reviewed in detail as part of the Town's upcoming Development Changes Background Study (planned for 2022)

OPTION 1

Rehabilitate Victoria St Elevated Tower, Construct Reservoir at 10th Line BPS and Upgrade Pumps

- Long-term Phasing Timeline

0 – 5 years

- Rehabilitate Victoria Elevated Tower
- Upgrade 10th Line BPS Pumps
- Construct 10th Line Storage Reservoir

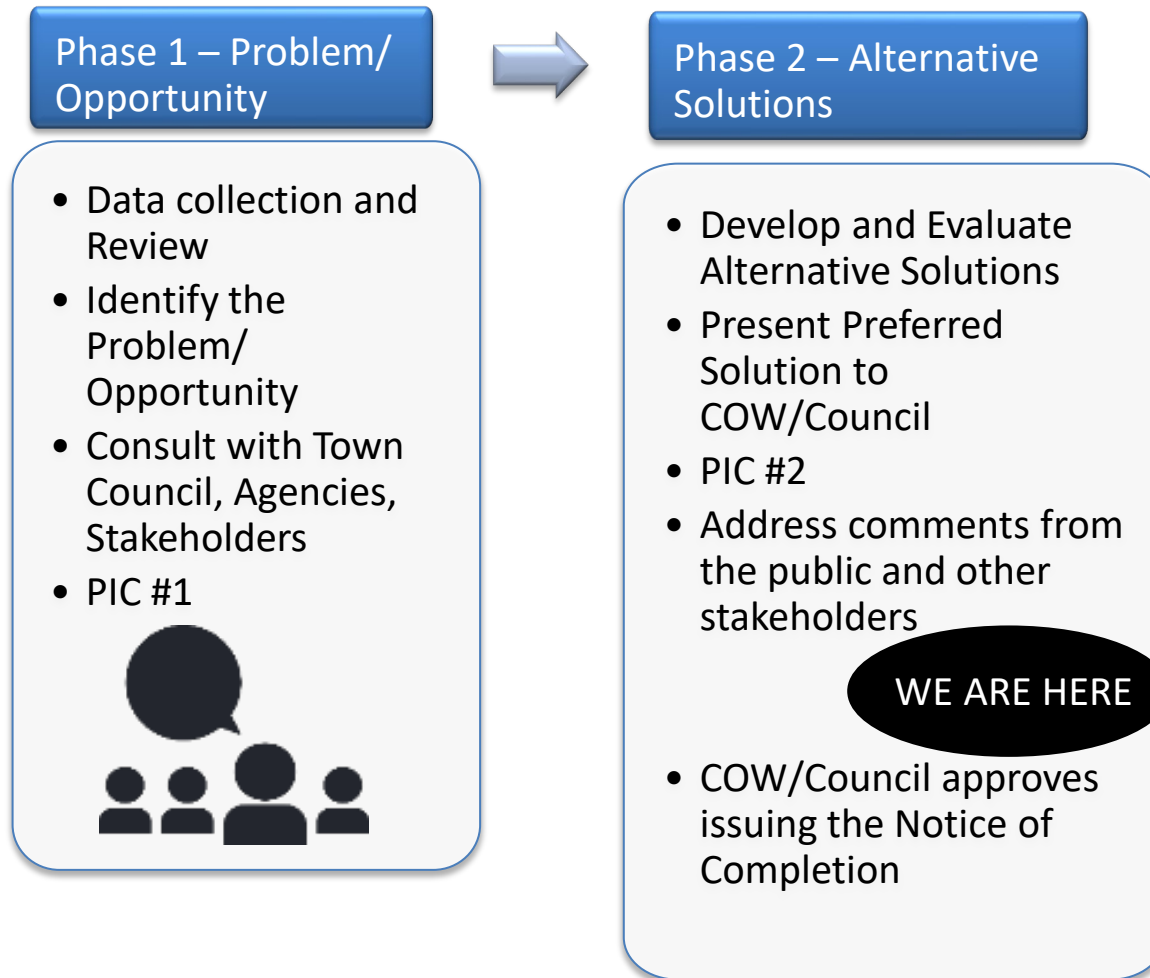
35 – 40 Years

- Replace Victoria Elevated Tower (at same or new location), based on re-evaluated future capacity needs
- If required, 10th Line Storage Reservoir could be expanded

75 – 80 Years

- If new storage required, 10th Line Storage Reservoir could be expanded

Class EA Process Overview



- Under the Environmental Assessment Act, municipalities must consider potential environmental effects before a potential water and/or wastewater project begins.
- The streamlined MEA Class EA process allows municipalities to consider impacts without having to obtain project-specific approval under the Environmental Assessment Act.

Questions?