

Water and Wastewater Servicing Master Plan
Township of Centre Wellington
Public Information Centre #2, April 24, 2025

The Goals of this Public Information Centre:

- Introduce the project and describe the Master Plan process
- Provide information on the existing water and wastewater system and servicing requirements to 2051 (horizon of Master Plan)
- Provide details on the review of options to provide water/wastewater infrastructure to 2051 and a preliminary selection of preferred options
- Answer any questions that you may have

What's Involved In The Water and Wastewater Servicing Master Plan?

- The Township is undertaking a Master Servicing Plan (MSP) study under the Municipal Class Environmental Assessment framework
- The MSP study will follow Approach #1 (high level study) under the Master Planning Framework

The Water and Wastewater Servicing Master Plan will identify capacity constraints and identify and evaluate opportunities to increase system capacity to accommodate for growth to the 2051 planning horizon.

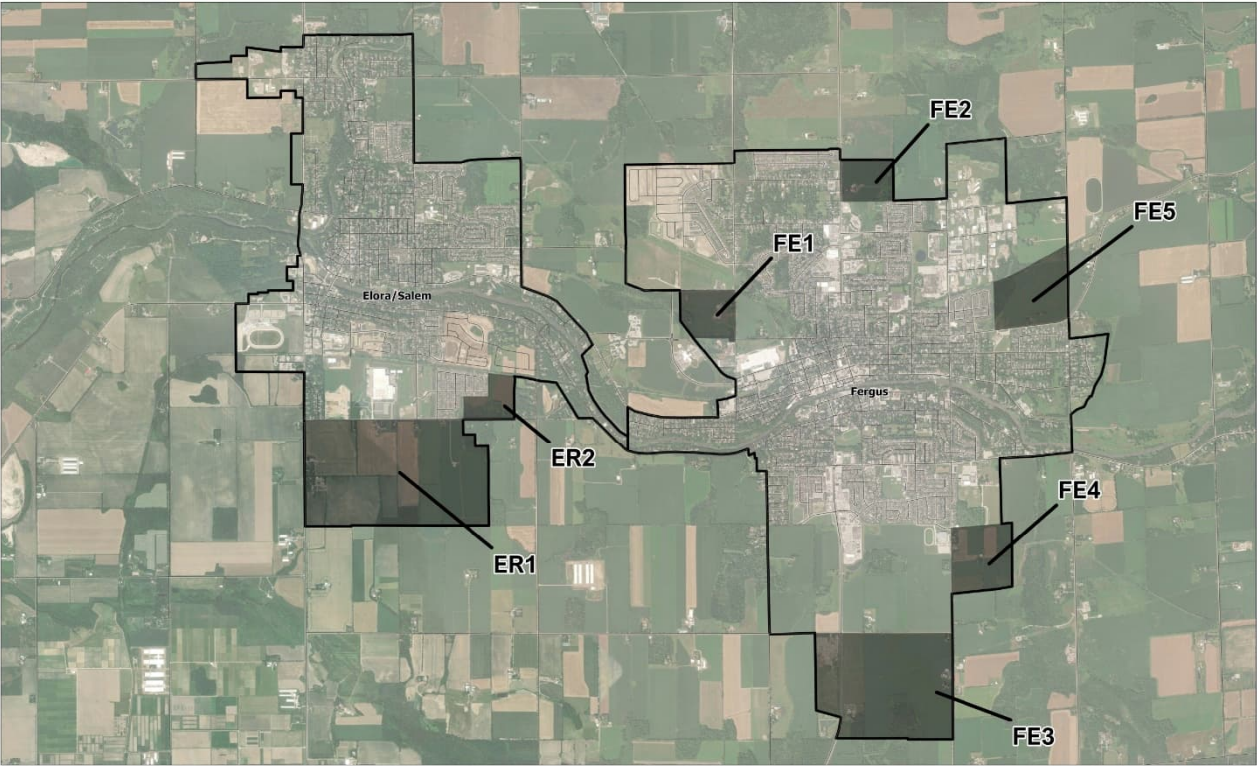
Problem and Opportunity Statement

The Township is attracting many new residents and businesses. To meet the future needs of the community, solutions to grow the water and wastewater servicing infrastructure need to be evaluated.

Master Plan Objectives

The Water and Wastewater Servicing Master Plan will identify capacity constraints and identify and evaluate opportunities to increase system capacity to accommodate for growth to the 2051 planning horizon. Preferred solution(s) will be prioritized and implemented in phases to address short and long-term goals and needs, and are intended to:

- Comply with applicable regulations to provide adequate water and wastewater servicing
- Consider stakeholder comments and concerns
- Aim to build climate change resiliency
- Reduce system complexity and improve ease of operations
- Aim to improve existing levels of servicing
- Consider sequencing of solution implementation
- Consider realistic design criteria
- Be financially viable and reduce lifecycle cost
- Be socially and environmentally responsible



Water and Wastewater Master Servicing Plan Township of Centre Wellington		0 450 900 1,350 1,800 Scale: 1:13,500	Legend Urban Boundary Centre Wellington Boundary Expansion	RVA
Study Area Overview	Date: 4/23/2025 RVA: 237318	Page 1 Draft By: KW		

Urban Centre	2023 ^{a,b}		2051 ^b	
Total Population	Residential	Residential	ELE *	Total
Elora / Salem	9,040	14,100	985	15,085
Fergus	19,500	36,300	985	37,285
Drinking Water System	Residential	Residential	ELE	Total
Elora / Salem Served Population	6,820	11,880	985	12,865
Fergus Served Population	17,174	33,974	985	34,959
Wastewater System	Residential	Residential	ELE	Total
Elora / Salem Served Population	6,785	11,845	985	12,830
Fergus Served Population	16,893	33,693	985	34,678

* Employment-land-employment
a) Municipal Water Meter Data; b) Municipal Comprehensive Review Study, Watson & Associates
Economist LTD. 2022



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Alternative 1 (Do Nothing) would not provide the water or wastewater servicing capacity to the existing and planned growth - *Not considered moving forward*

Alternative 2 (Limit Growth) neither meets the Township’s vision for the growth and nor does it mitigate the water and wastewater servicing risks for the existing serviced population - *Not considered moving forward (Contradicts Township and Wellington County Growth Plans)*

Alternative 3 – the Township has ongoing initiatives

Water Conservation (Water)

Infiltration/Inflow Reduction (Wastewater)

Programs should continue and be expanded

Alternative 4 – Provide services to allow for planned growth:

Water Servicing Concepts ex: new water supply (separate initiative), water storage, water pumping and distribution, etc.

Wastewater System Servicing Concepts ex: new linear infrastructure, pumping, treatment expansions, etc.

The Master Plan will focus on providing servicing solutions that allow for Planned growth per Alternative 4, while continuing and enhancing the existing programs under Alternative 3.

Review of Servicing Options

Rating Scale:

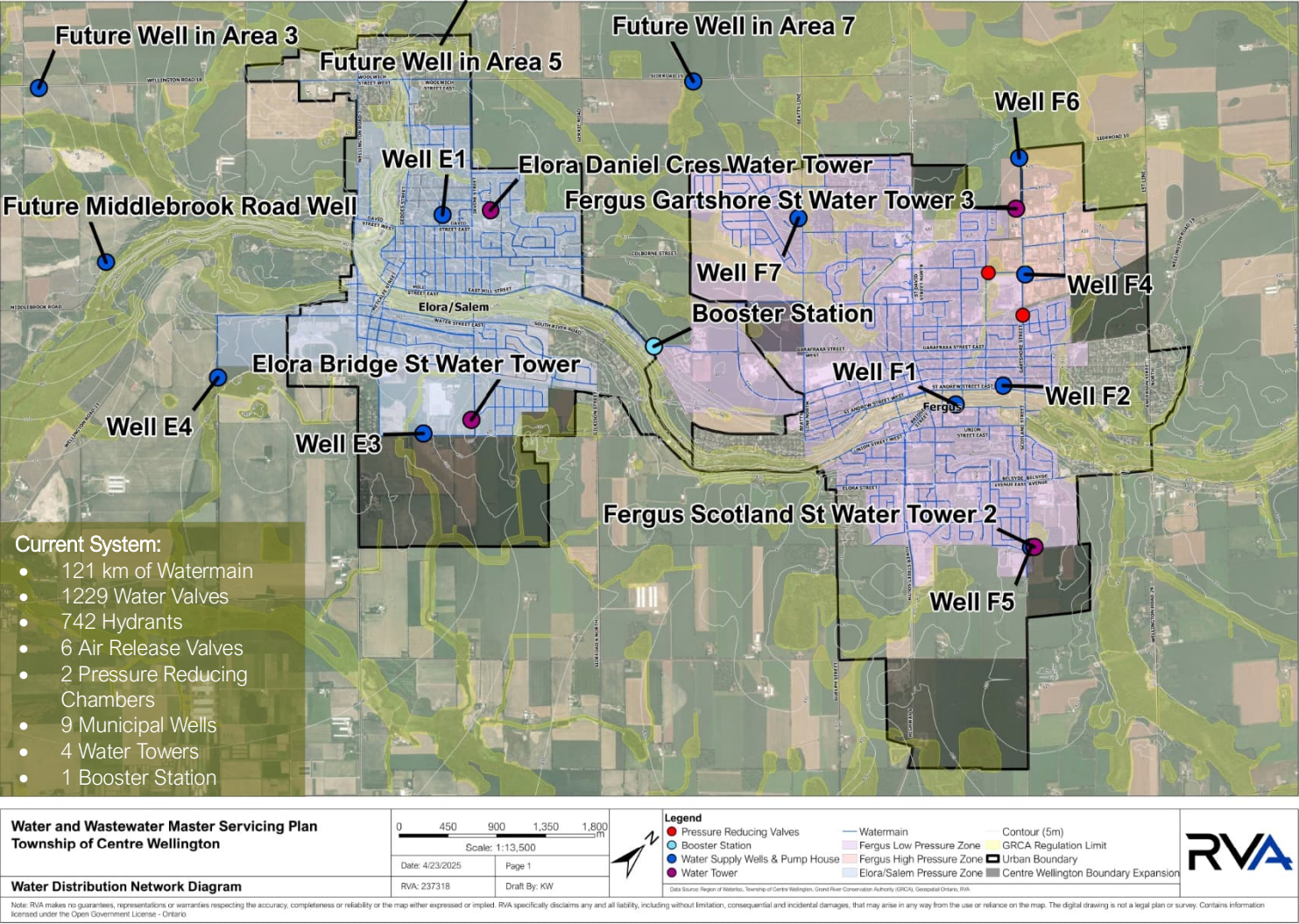


Category	Criteria
Technical	- Constructability - Improvement to operations - Infrastructure required - Approval requirements
Social and Cultural	- Temporary impacts due to construction - Impact to built heritage resources and cultural heritage landscapes - Impact to archaeological resources
Environmental	- Impact to aquatic and terrestrial species and habitat - Impact to surface water quantity and quality - Climate change resiliency
Economic	- Capital costs - Operational and maintenance costs - User Value



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Existing Conditions



Water Supply, Storage and Distribution

Township's 2019 Water Supply Master Plan which anticipates bringing on three additional wells over the next 15 to 20-years to provide water supply to meet Centre Wellington's requirements (Wells 3, 5 and 7). Township has recently purchased Middlebrook Road Well to the west of Elora.



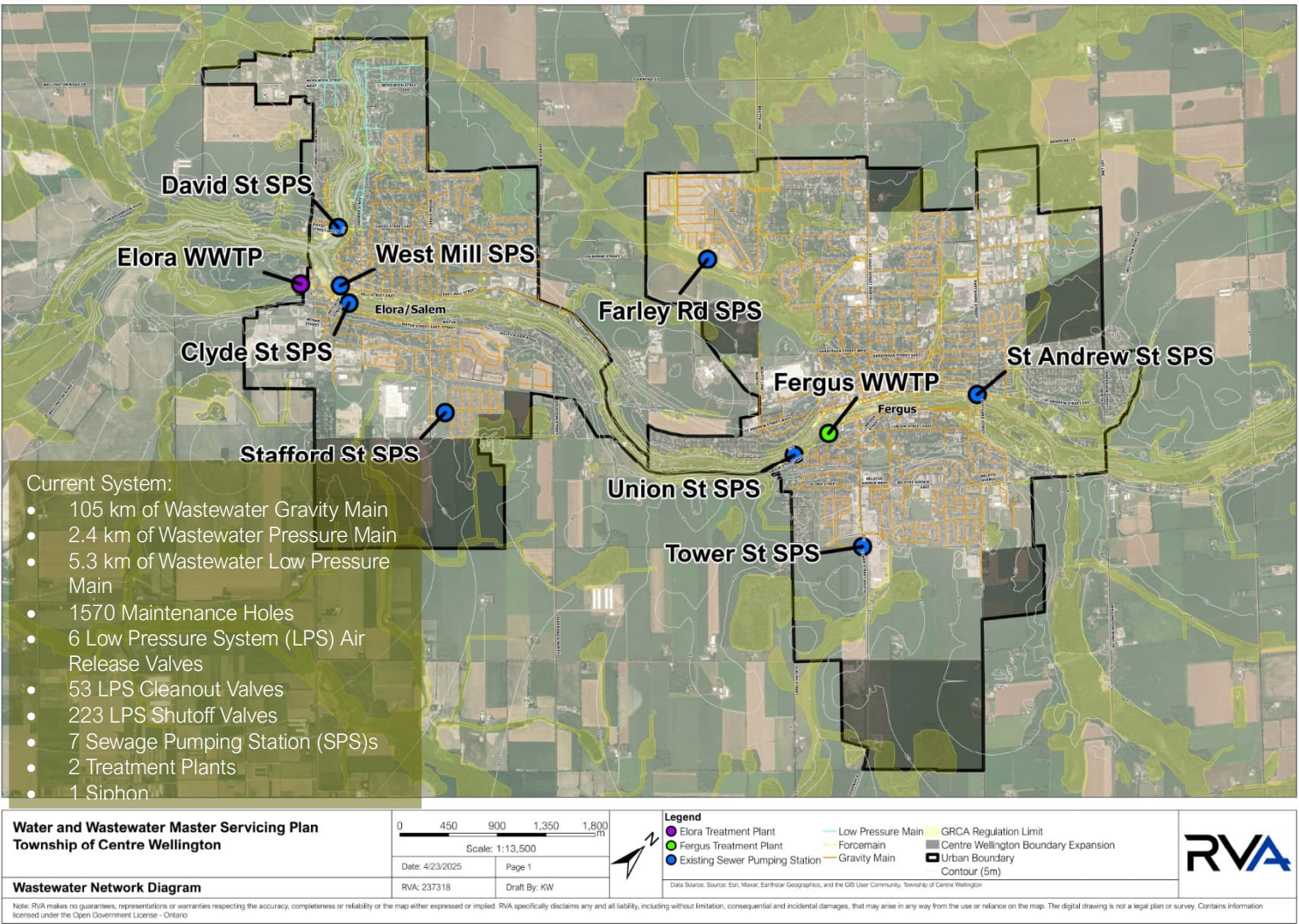
Water Storage:

The current water storage is 11,820 m³ by 2051 17,540 m³ is required. There is a requirement to provide an additional 5,720 m³ of storage.

Water Supply and Distribution:

- 2021 Maximum Day Demand is 8,522 m³/day and the forecasted demand is 21,330 m³/day in 2051
- Additional wells identified to provide the water supply

Hydraulic modeling was used to determine if there will be impacts to the current water distribution system based on the 2051 water demands



Wastewater Collection:

The Wastewater collection system was modelled to determine the following:

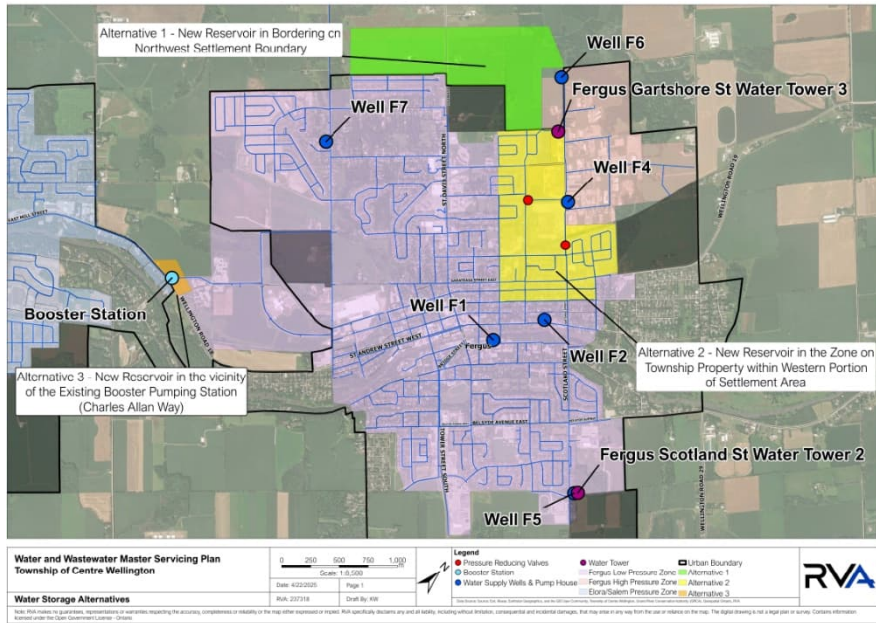
- System constraints in the Elora and Fergus WW Collection Systems
- 2051 Scenario to determine improvements required based on the system constraints
- Major Findings
 - Upgrades to the existing collection system due to growth
 - New sewers (on existing municipal roadways) attributed to boundary growth
 - Minor upgrades to existing collection system due to wet weather issues

Wastewater Treatment:

- For the current sewage catchment areas:
 - The Fergus WWTP's capacity is 8,000 m³/day and will by require 9,400 m³/day of capacity by 2051
 - Elora WWTP's capacity is 5,000 m³/day will be 12% under capacity by 2051



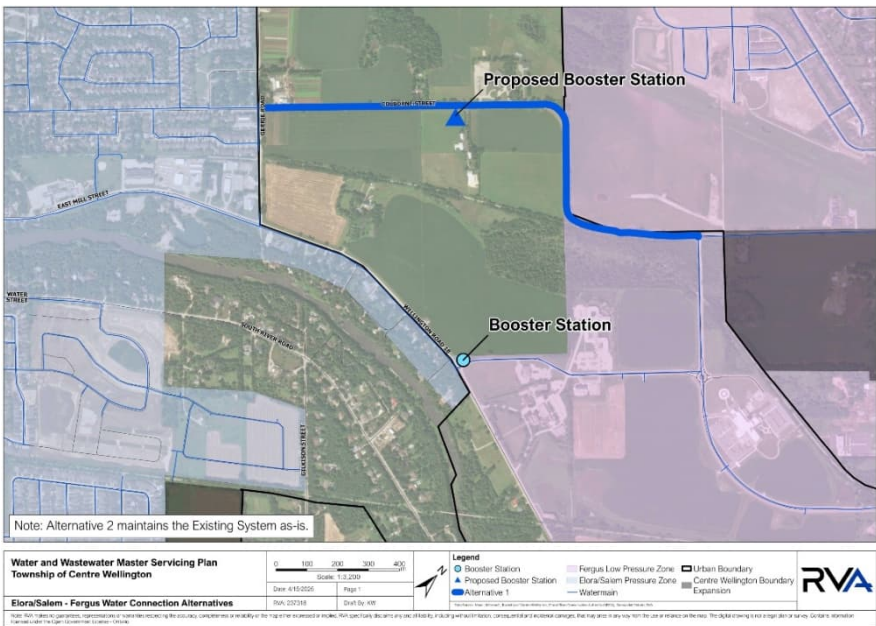
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Water Supply and Distribution – Alternatives



Water Storage – Alternatives

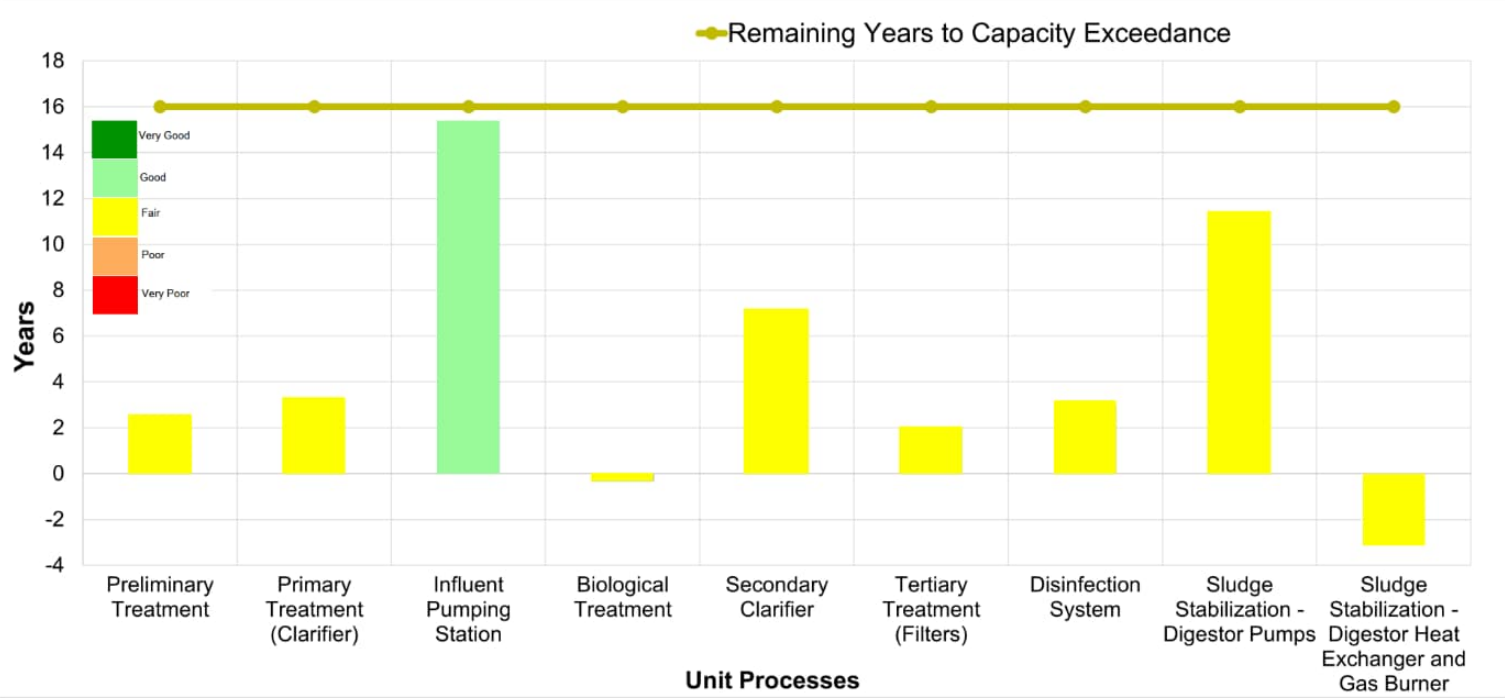
Category	1 - New Reservoir in Bordering on Northwest Settlement Boundary	2- New Reservoir in the Zone on Township Property within Western Portion of Settlement Area	3- New Reservoir in the Vicinity of Existing Booster Pumping Station (Charles Allan Way)
Technical	Proximate to both Fergus High- and Low-pressure zones, so can service all three settlement pressure zones	Proximate to both Fergus High- and Low-pressure zones, so can service all three settlement pressure zones	Not proximate Fergus High pressure zone, so can service only Fergus Low and Elora pressure zones economically
Social and Cultural	Standard archaeological and heritage investigations required for site	High potential to disrupt social environment due to placement in existing urban area	- Low to moderate potential to disrupt social environment due to possible placement in existing County campus area - Standard archaeological and heritage investigations required for site
Environmental	- Any environmental impacts can be mitigated through standard construction and operational practices - Standard natural heritage investigation required for site	Any environmental impacts can be mitigated through standard construction and operational practices	- Any environmental impacts can be mitigated through standard construction and operational practices - Standard natural heritage investigation required for site if not on campus
Economic	\$14.6 million capital cost not including watermain connection costs \$3.0 Million in rehabilitation at 20-years 40-yr LCC of \$515 K	\$14.6 million capital cost not including watermain connection costs \$3.0 Million in rehabilitation at 20-years 40-yr LCC of \$515 K	\$14.6 million capital cost not including watermain connection costs \$3.0 Million in rehabilitation at 20-years 40-yr LCC of \$515 K
Overall	 Preferred Alternative		

Water Distribution Connection Evaluation: Redundant Connection Between Elora and Fergus

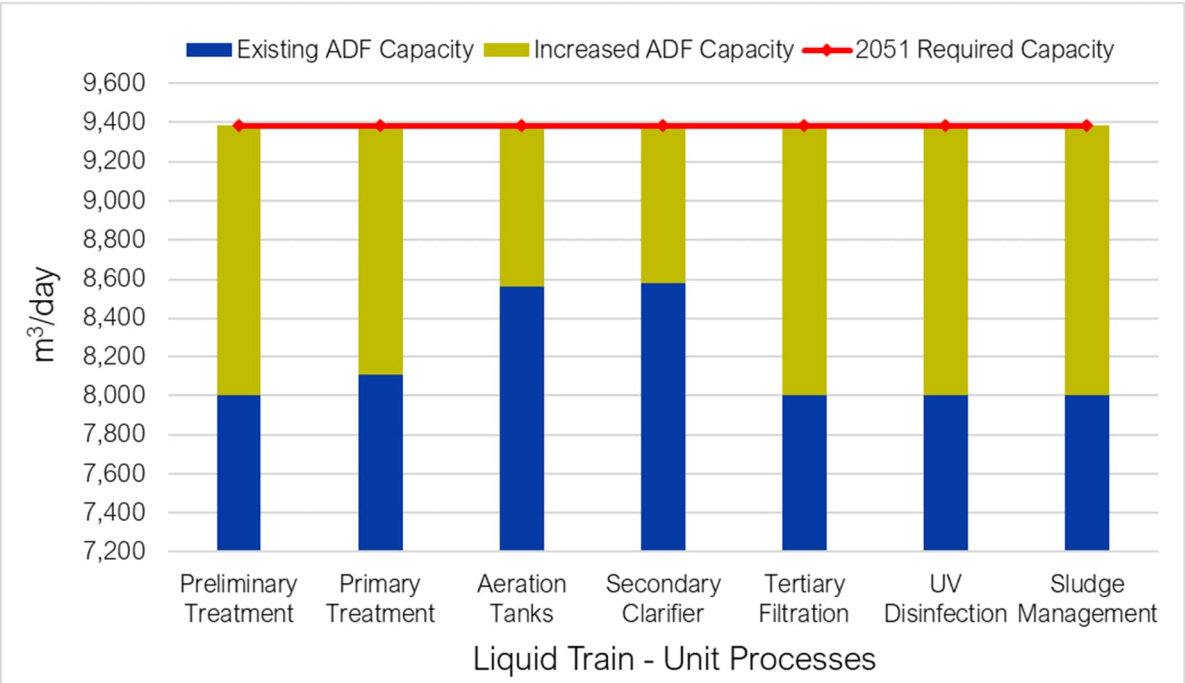


Category	1 – Additional Connection between Elora-Salem and Fergus Systems	2 – Maintain Existing Infrastructure
Technical	- Not required for growth or to maintain service pressure. - Requires a new pumping station. - Property will need to be acquired. - Would provide system redundancy with a second connection between the Elora and Fergus water systems	- Pressures under the 2051 Peak Hour Demand scenario can be met by the existing system as-is. - The potential and severity of the existing watermain breaking is low.
Social and Cultural	- Construction impact to residents and businesses on Colborne St. - Standard archaeological and heritage investigations required for site.	No impact.
Environmental	- Any environmental impacts can be mitigated through standard construction and operational practices - Standard natural heritage investigation required for site	No impact.
Economic	- Around \$5.5 M in Capital Works 40-year LCC estimated at \$1.9 M	No Additional Cost
Overall		 Preferred Alternative

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Fergus WWTP Unit Processes

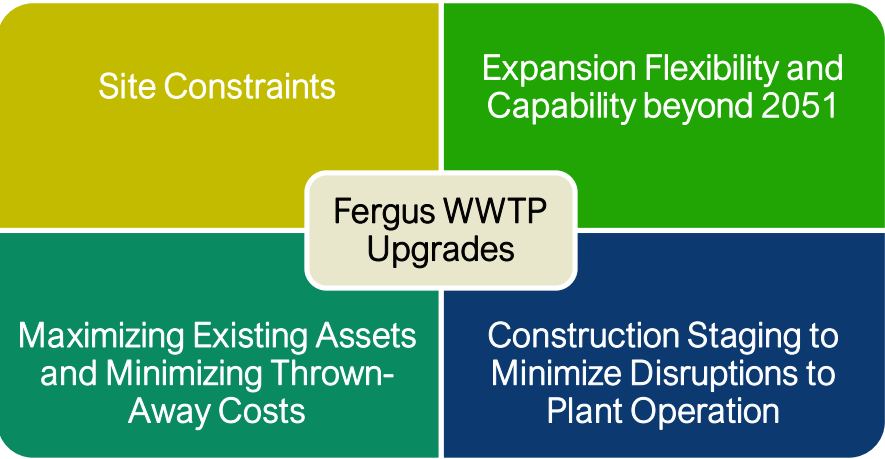


Graph illustrates that almost all unit processes will reach end of typical lifespan and will require replacement within next 5 to 10 years.



- Current unit processes at WWTP are sized for Average Daily Flow (ADF) and Peak Daily Flow (PDF) based on the as-built hydraulic profile drawing
 - Current MECP practice is to size certain processes for Peak Hour (PH) and Peak Instantaneous Flow (PIF)
 - As such, % of expansion to meet 2051 requirements varies for each unit process.
- Unit-processes to be up-sized can be divided into technology-based (preliminary, tertiary and disinfection equipment), and tankage based.

Wastewater Treatment Facility Alternatives



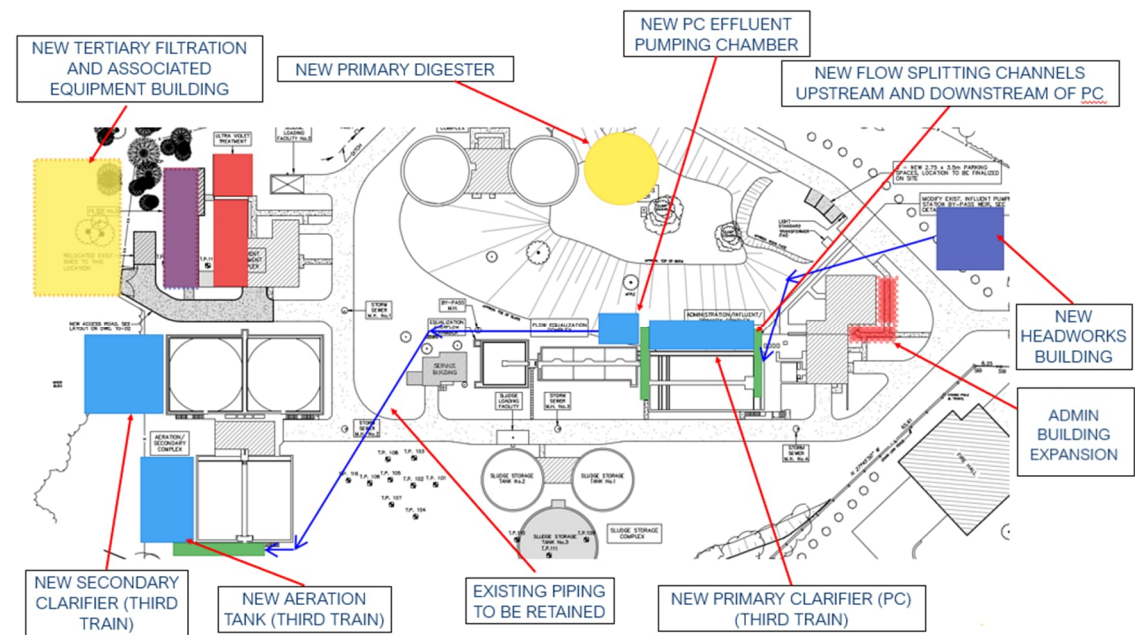
To meet the objectives to the left, the upgrades can be implemented via the following two options:

- Option 1:** Retain Fergus WWTP as a Conventional Activated Sludge (CAS) facility and expand capacity via a new 3rd Liquid Train; or
- Option 2:** Convert Fergus WWTP to a Membrane Bio-Reactor (MBR) facility

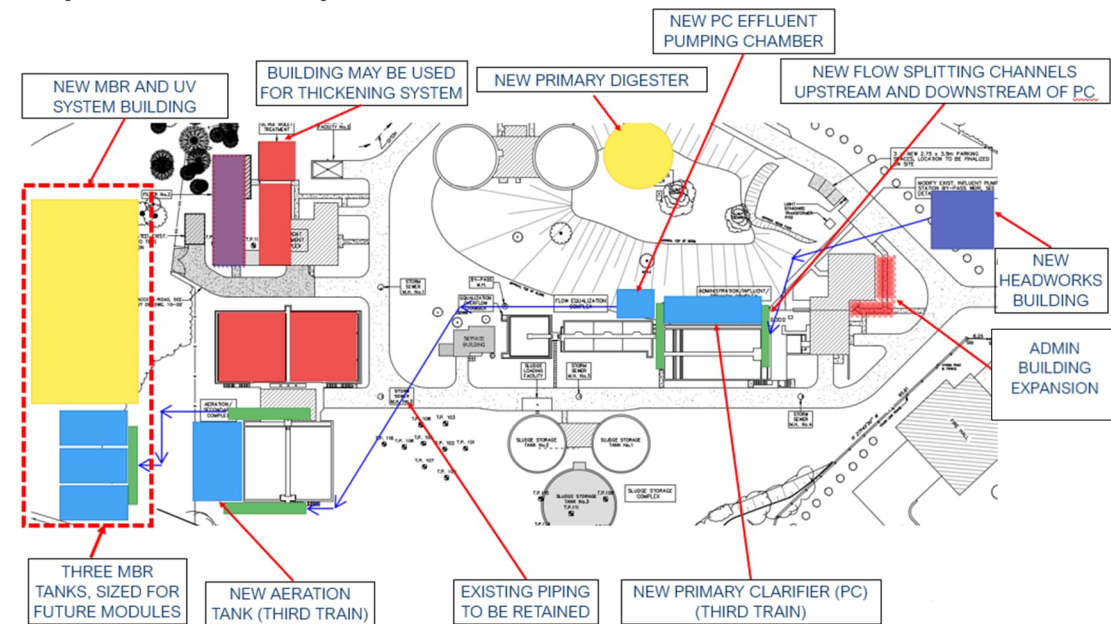


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Layout of CAS Facility



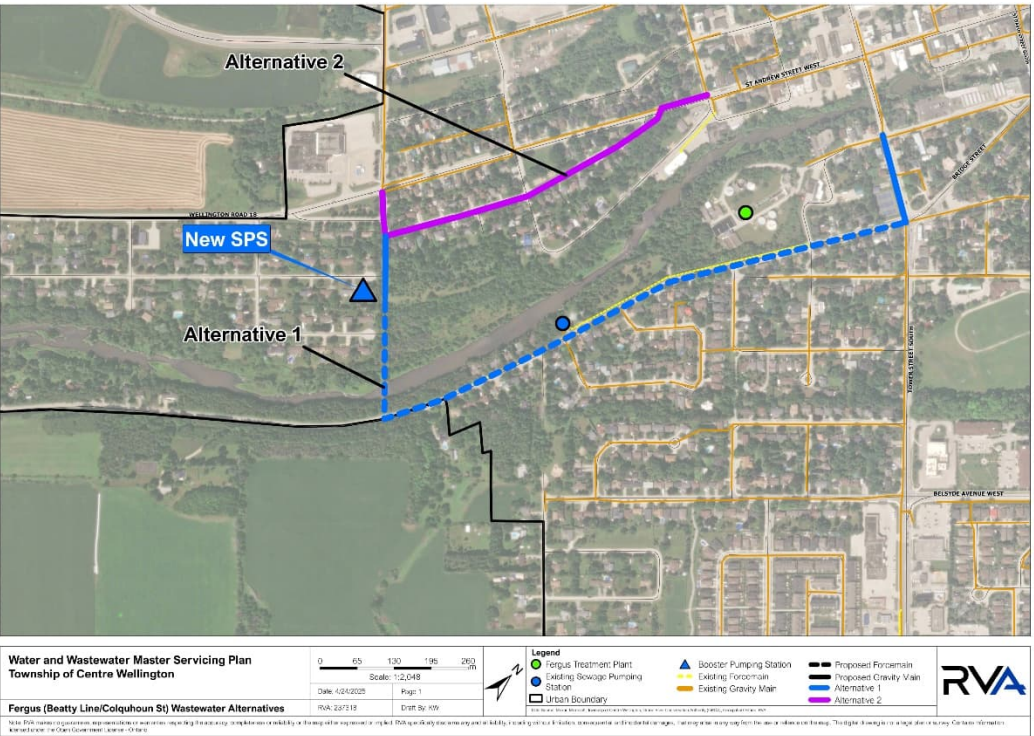
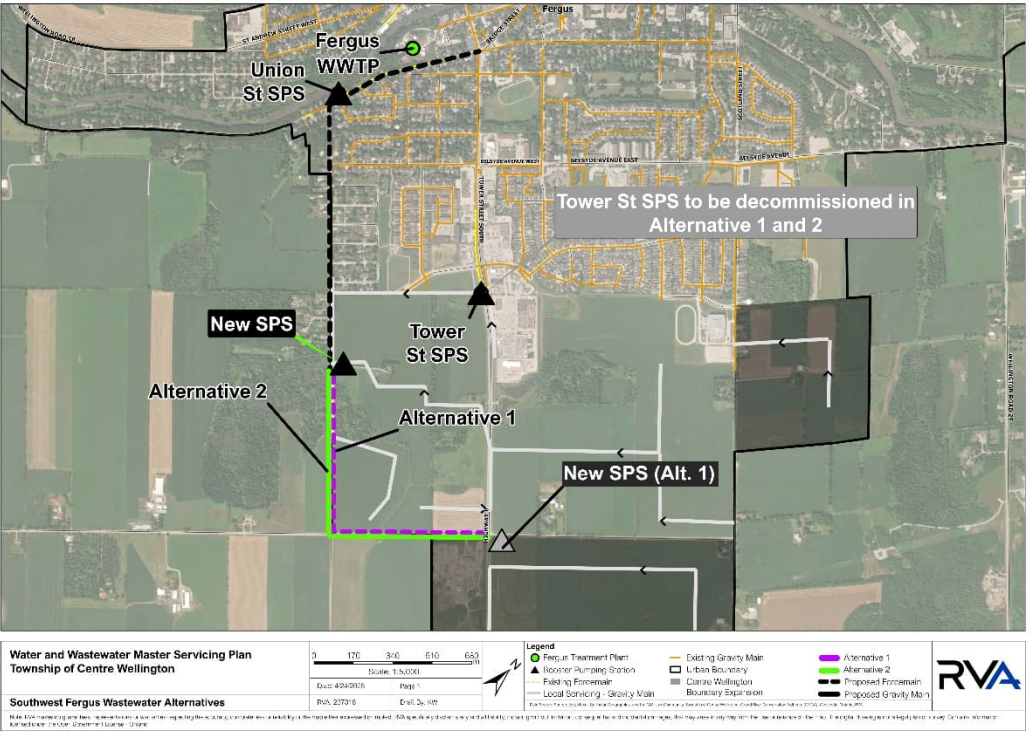
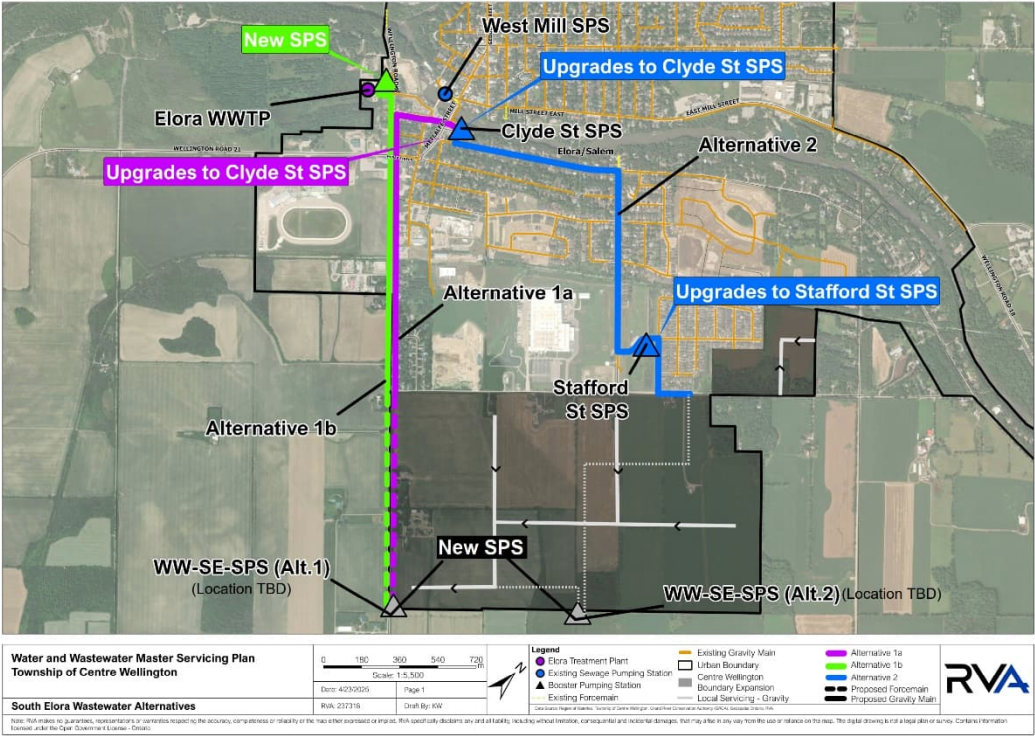
Layout of MBR Facility



Fergus WWTP Upgrades – Upgrades Evaluation
and Preferred Strategy

Evaluation Criteria	1-Retain Fergus as a CAS Facility and Add a New Third Train	2 – Convert Fergus to an MBR Facility
Technical Criteria		
Meets Existing and Future Needs	- Maximizes use of existing tankage while accounting for lifecycle replacements / upgrades due within the next 5 years. - Meets the required treatment capacity projected for 2051. To meet capacity beyond 2051, additional tankage and upgrades required.	- Will facilitate operational and maintenance requirements, as <u>two unit</u> processes will be combined into one. - Meets the required treatment capacity projected for 2051. - To meet capacity beyond 2051, will likely only require additional equipment that can be installed within existing tankage.
Impact on Operations and Maintenance	- Improves operational redundancy by allowing for flow splitting between three trains, instead of two - Current operations staff are experienced with this facility and will require minimal training for the new train.	- All operations staff will require training on the new facility, increasing capital costs - MBRs require much more maintenance activities than CAS plants. - However, staff only has to maintain one unit process as compared to two which saves on maintenance costs and requirements.
Constructability	- Facilitates Construction Sequencing, including requirement of maintaining an operating plant throughout construction duration, as major proposed works do not interfere with existing infrastructure. Some temporary pumping maybe required during shutdown and bypasses. - No foreseeable constructability issues.	- Facilitates Construction Sequencing, including requirement of maintaining an operating plant throughout construction duration, as major proposed works do not interfere with existing infrastructure. Some temporary pumping maybe required during shutdown and bypasses. - No foreseeable constructability issues.
Impact on Existing Infrastructure	No adverse impact on existing infrastructure. Project objective allows for lifecycle improvements and maximizes utilization of existing infrastructure (along with expansion of the plant).	Project will lead to decommissioning of at least two unit processes which are due for life-cycle replacement or improvements within next 5 years. As such, does not maximize use of existing infrastructure.
Aligns with Approval and Permitting Process	- Dependent on the ACS study which is recommended to be undertaken as part of the Schedule C Class EA. - Technology comparisons for Tertiary Filters are provided to account for potentially more stringent effluent requirements	- Dependent on the ACS study which is recommended to be undertaken as part of the Schedule C Class EA. - MBR facilities are capable of meeting very stringent requirements without the use of tertiary filters.
Economic		
Expansion Capability	- Future expansion is limited to either introducing a fourth train or converting to an MBR facility. If the latter is selected, upgrades and new assets added will be decommissioned. - With the proposed design, Fergus WWTP capacity can be expanded to 11,500 m³/d	- MBR system offers substantial future expansion capabilities within the same footprint and with minimal capital costs. - With the proposed design, Fergus WWTP capacity can be expanded to 11,500 m³/d
Capital Costs (per breakdown provided in 2025 – 2042 Capital Plan)	\$71.3 Million	\$73.6 Million
40 – Year Life-Cycle Costs	- Asset Replacement Cost: \$31.8 Million 40- year Operational Cost: \$13.9 Million	- Asset Replacement Cost: \$39.8.8 Million 40- year Operational Cost: \$16.7Million
Overall		

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Wastewater Collection Alternatives



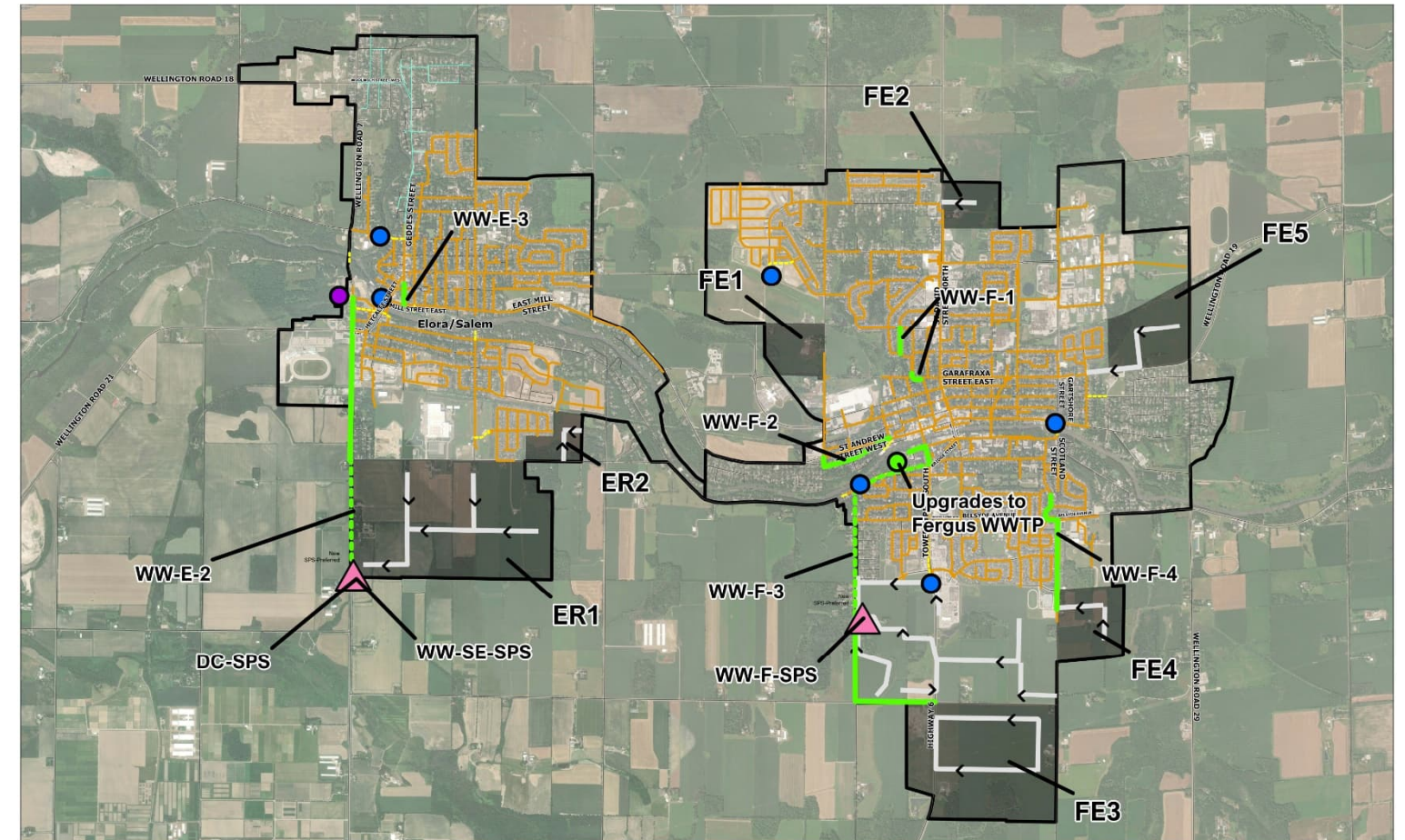
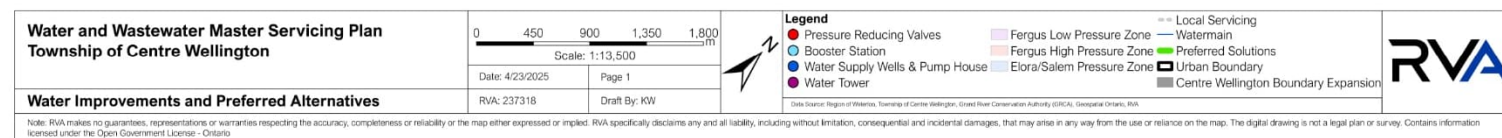
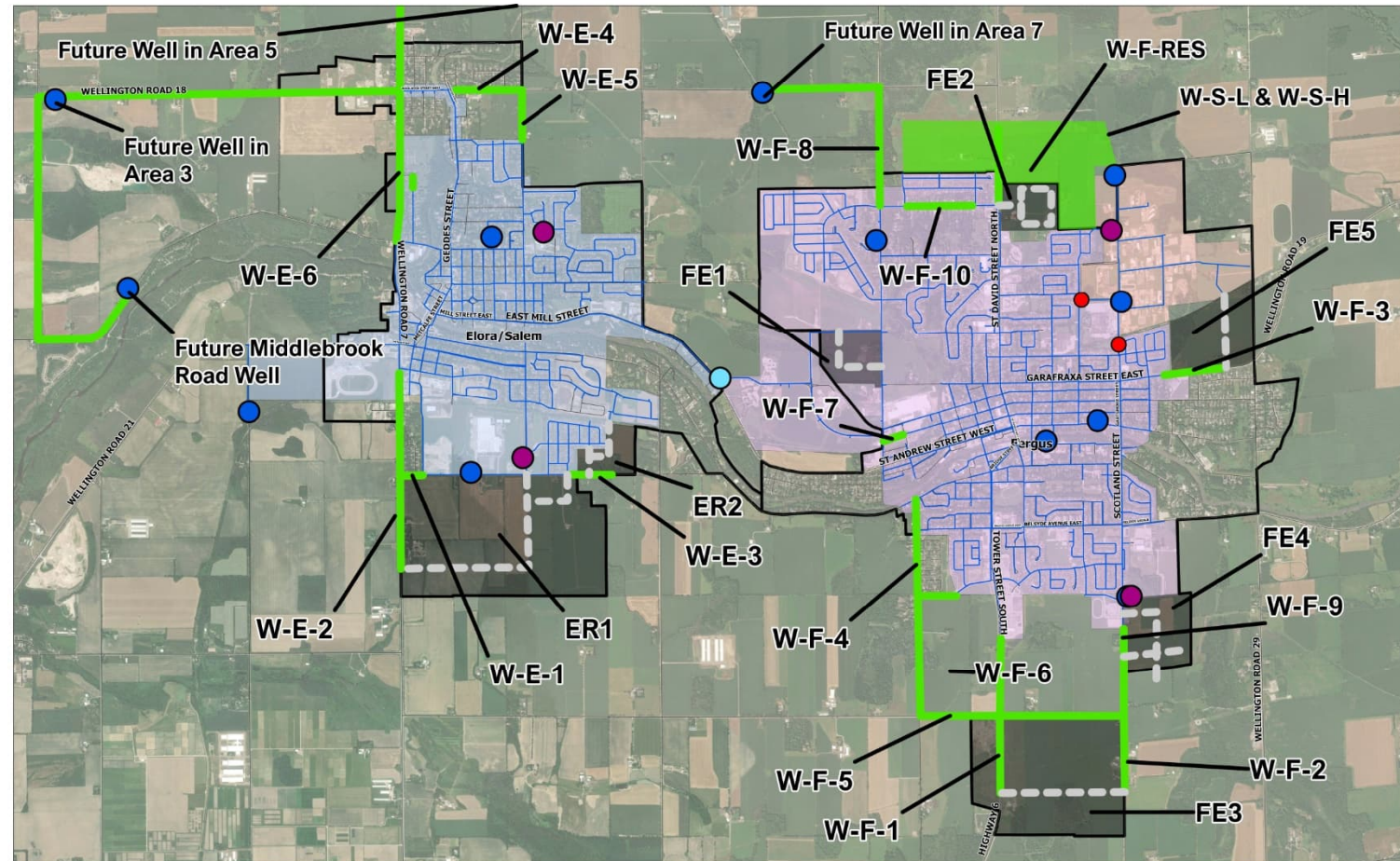
Category	1a-New Foremain/ Gravity Sewers on Wellington Road 7 to Clyde St SPS	1b -New Foremain/ Gravity Sewers on Wellington Road 7 to Elora WWTP	2-Upgrade Existing System
Technical	- Allows for servicing to boundary expansion area in South Elora. Also allows for servicing to potential developments along Wellington Road 7. - Upgrades to Clyde St SPS	- Allows for servicing to boundary expansion area in South Elora. Also allows for servicing to potential developments along Wellington Road 7. - Does not require Clyde SPS upgrades - Requires new SPS	Allows for servicing to boundary expansion area in South Elora.
Social and Cultural	Will have to limit impact to nearby residents. Majority of construction will be done on a country road which limits potential impacts. Some construction on Carlton Pl.	Will have to limit impact to nearby residents. Majority of construction will be done on a country road which limits potential impacts.	Will have to limit impact to nearby residents and businesses.
Environmental	- Any environmental impacts can be mitigated through standard construction and operational practices - Additional GHG emissions	Any environmental impacts can be mitigated through standard construction and operational practices	- Any environmental impacts can be mitigated through standard construction and operational practices - Additional GHG emissions
Economic	- Capital cost estimated at \$17.2 M (including Clyde St SPS upgrade) 40-year Operation Cost in Present Value estimated at \$6.7 M (from new SPS in ER1 area + Clyde St SPS upgrade)	- Capital Cost estimated at \$14.3 M (including new Elora WWTP SPS) - No 40-year Operation Cost in Present Value estimated at \$6.7 M (from new SPS in ER1 area and by Elora WWTP)	- Capital estimated at \$25 M including Clyde St SPS and Stafford St SPS upgrade 40-year Operation Cost in Present Value estimated at \$10.0 M (from new SPS in ER1 area + Clyde St SPS and Stafford SPS upgrades)
Overall		 Preferred Alternative	

Category	1- Foremain to New South Fergus SPS	2 – Gravity Sewer to New South Fergus SPS
Technical	- Allows for servicing of boundary expansion area in Southwest Fergus. Also allows for servicing to potential developments south of Guelph Rd. - Allows for a shallower sewer but requires new SPS	- Allows for servicing of boundary expansion area in Southwest Fergus. Also allows for servicing to potential developments south of Guelph Rd. - A deeper sewer allows flow by gravity to the new SPS
Social and Cultural	Will have limited impact to nearby residents. Majority of construction will be done on a country road which limits potential impacts, except for construction on a segment of Union St, Tower St and Queen St W	Will have limited impact to nearby residents. Majority of construction will be done on a country road which limits potential impacts, except for construction on a segment of Union St, Tower St and Queen St W
Environmental	Additional GHG emissions caused by the requirement to construct 2 new SPS. However, Tower St SPS can be decommissioned.	Additional GHG emissions caused by the requirement to construct one new SPS. However, Tower St SPS can be decommissioned.
Economic	- Total Capital Cost estimated at \$31 M including New Fergus SPS and New SPS to service FE3 40-year Operation Cost in Present Value estimated at \$6.8 M (from new Fergus SPS and New SPS to service FE3)	- Total Capital Cost estimated at \$25 M including New Fergus SPS 40-year Operation Cost in Present Value estimated at \$5.0 M (from new Fergus SPS)
Overall		 Preferred Alternative

Category	1 – Upgrade Existing System	2 – New SPS and Foremain Crossing Grand River
Technical	Does not trigger upgrade to or construction of a new SPS.	Does not trigger replacement of existing sewers but requires a new SPS, foremain and a river crossing
Social and Cultural	Will have some impact to nearby residents on Colquhoun St. on 700 m corridor (local road)	- Special attention to Grand river crossing. - Will have some impact to nearby residents on Union St. on 1100 m corridor
Environmental	Does not promote the emission of green house gasses.	Additional GHG emissions caused by the requirement to construct a new SPS.
Economic	- Capital Costs estimated at \$4.0 M - No associated O&M costs	- Capital Costs estimated at \$13.0 M including new SPS at Beatty Line 40-year Operation Cost in Present Value estimated at \$3.8 M (from new Beatty Line SPS)
Overall	 Preferred Alternative	



Water Supply/Distribution Wastewater Collection – Preferred Solutions



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Next Steps

-  Establish preferred water and wastewater servicing alternatives and capital implementation plan
-  Capital infrastructure funding and risk analysis
-  Water and wastewater servicing master plan report
-  Notice of completion

Questions or Comments?

-  Complete a comment sheet this evening.
-  Submit comments to a project team member.
-  Presentation materials available at: www.connectcw.ca/WWSMP.

Project Team Members

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