

# Water and Wastewater Master Plan

Town of Arnprior

Public Information Centre

February 28, 2024

6:00 PM to 8:00 PM

Nick Smith Center

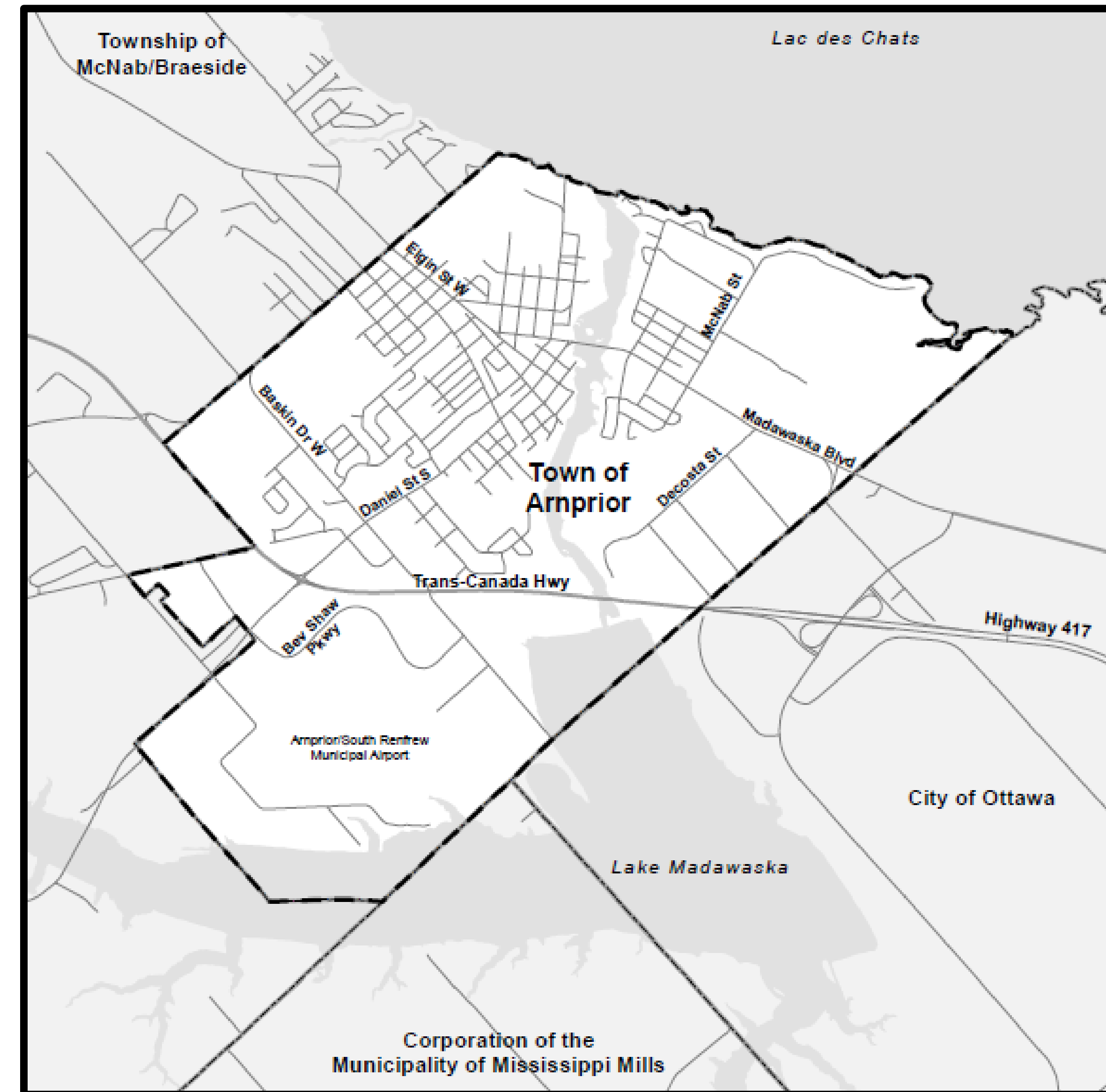
77 James Street, Arnprior



# Study Area

The study area reflects the boundaries of the Town of Arnprior, in which the new Water and Wastewater Master Plan (W&WW MP) will service.

A Municipal Class Environmental Assessment (Class EA) is being prepared for the expansion of water and wastewater infrastructure to accommodate the Town's population growth.



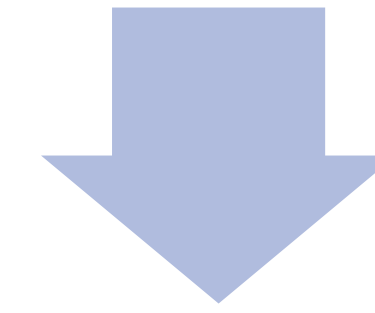
# What is the Purpose of this PIC?

**While updating the W&WW MP, we aim to present and gather your feedback on the:**

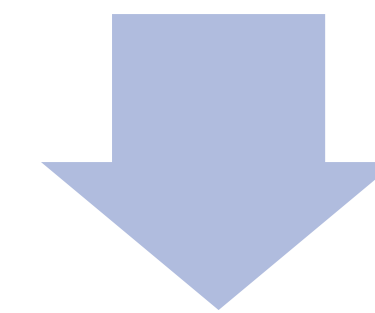
- Study background and purpose
- Master Planning process
- Existing and future water servicing
- Problem and opportunities
- Existing environmental conditions
- Evaluation of Alternative Solutions
- Recommended solution
- Potential impacts to the environment and proposed mitigation measures
- Next Steps in the process

## DEVELOPING THE MASTER PLAN

Review and assess the sanitary sewer collection and potable water distribution systems



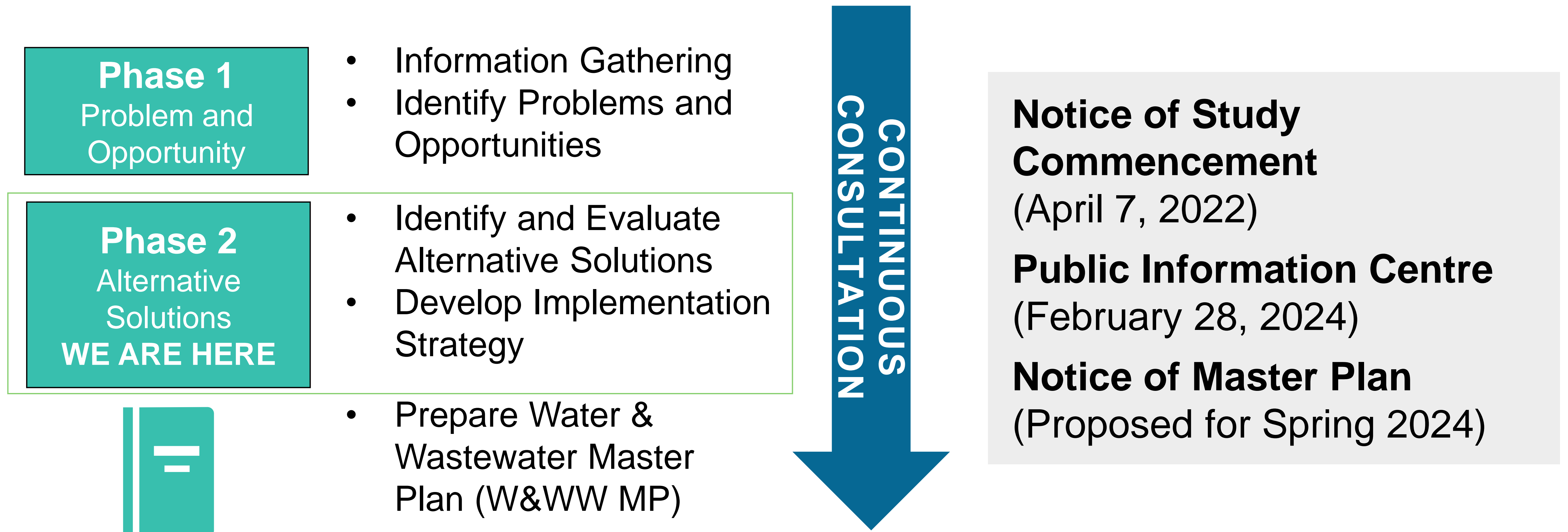
Review the existing municipal drinking water and wastewater treatment facilities



Develop a timeline that identifies future expansion requirements to meet anticipated growth over a 5-year (2027), 10-year (2032) and 20-year (2042) planning horizon

# Master Planning Process

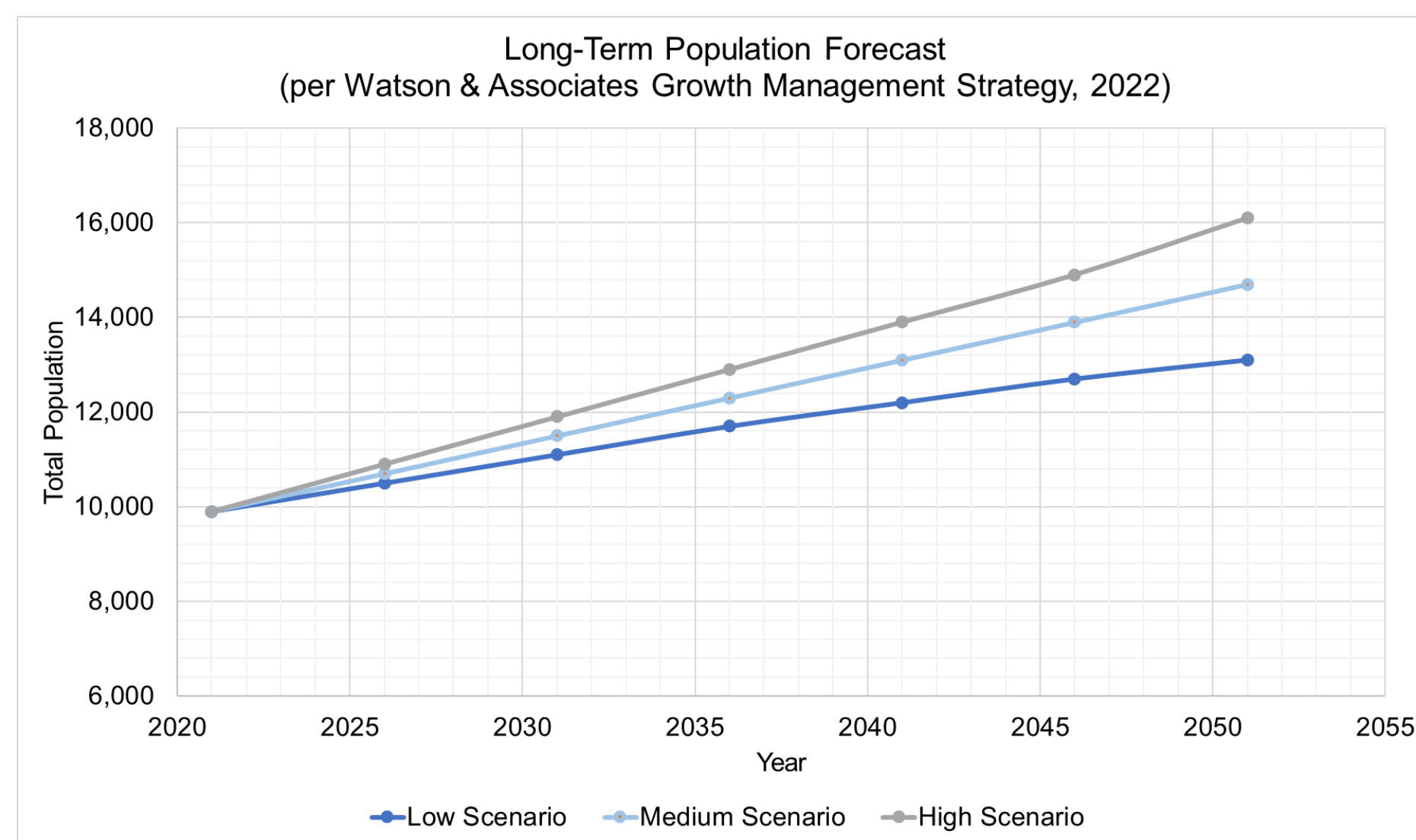
## Municipal Class Environmental Assessment



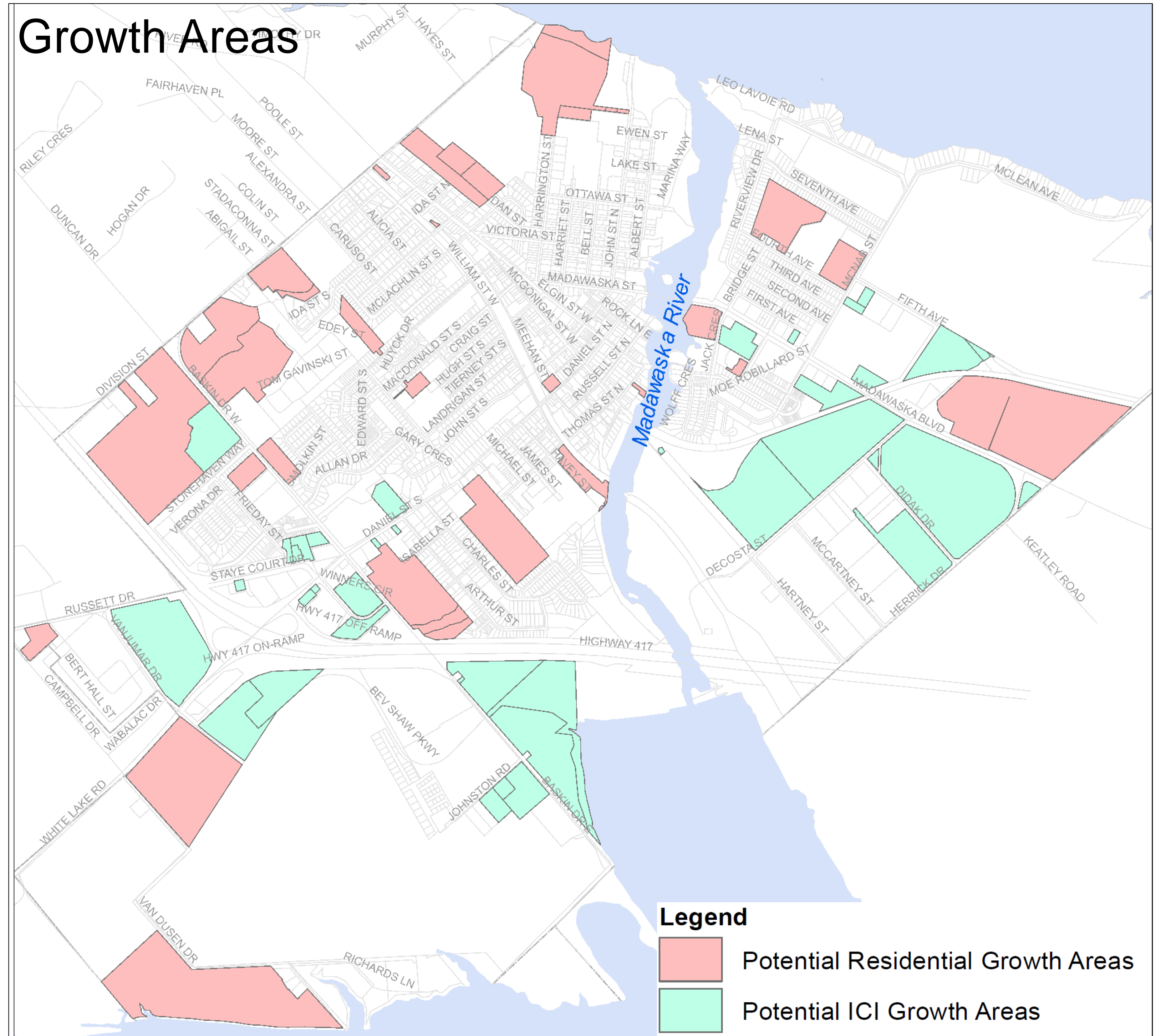
This study is being undertaken in accordance with Approach #1 of the Master Planning Process, as outlined in Section A.2.7. of the Municipal Class Environmental Assessment (MCEA) document (2023). As such, the W&WW MP will address Phases 1 and 2 of the MCEA process to become the basis for, and be used in support of, future investigations for the specific Schedule B and C projects identified within it.

# Growth Projections

- Developed growth projections to assess the wastewater collection and potable water distribution systems' capacities, and to identify growth areas' servicing needs
- Identified distribution and phasing of growth across the Town
- Population is projected to increase from 10,000 in 2022 to 13,900 by 2042 (high scenario).



## Growth Areas



# Master Plan Recommendations

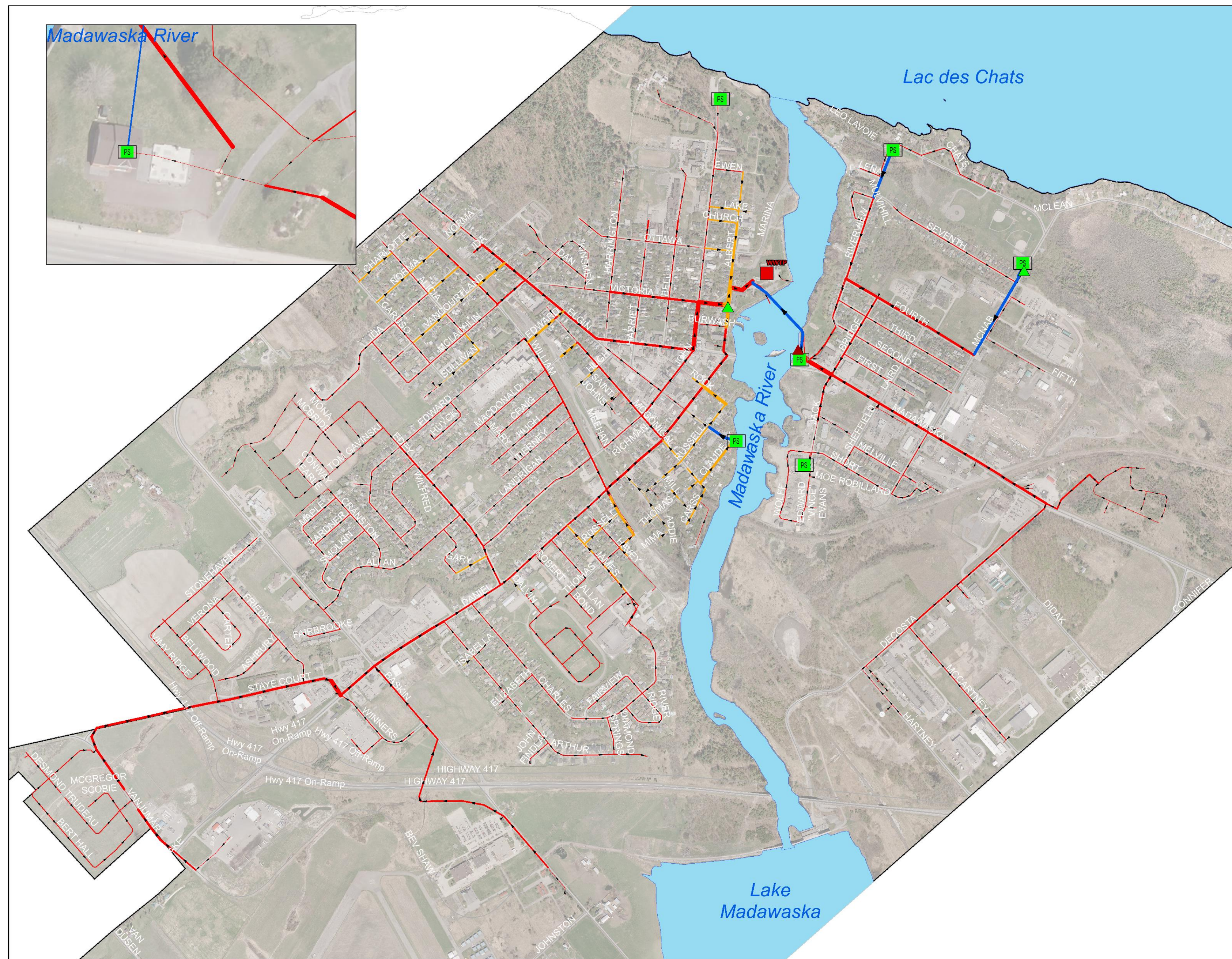
## 2013 Water & Wastewater Master Plan

- New sanitary sewers and sewage pumping stations were identified to service growth areas by 2031
- Existing watermain upgrades were identified to accommodate growth by 2031
- Water filtration plant (WFP) treatment upgrades needed by 2026

## Current Master Plan (2022-2024)

- Will consider service needs over the short (5-year), medium (10-year) and long-term (20-year) planning horizon
- Existing sewer and sewage pumping station upgrades needed to accommodate existing peak wet weather flows
- WFP treatment, storage and pumping expansions needed to accommodate population growth
- New servicing areas will require new wastewater collection and potable water distribution infrastructure

# Existing Infrastructure: Wastewater Collection System



## Existing Wastewater Collection System

- Approximately 60 km of sewers
- Sewage pumping stations
- Water Pollution Control Centre (WPCCC) on Albert St. The last WPCCC expansion was completed in 2011.
- Under extreme events, sanitary flows can overflow to the stormwater collection system or to the Madawaska River.

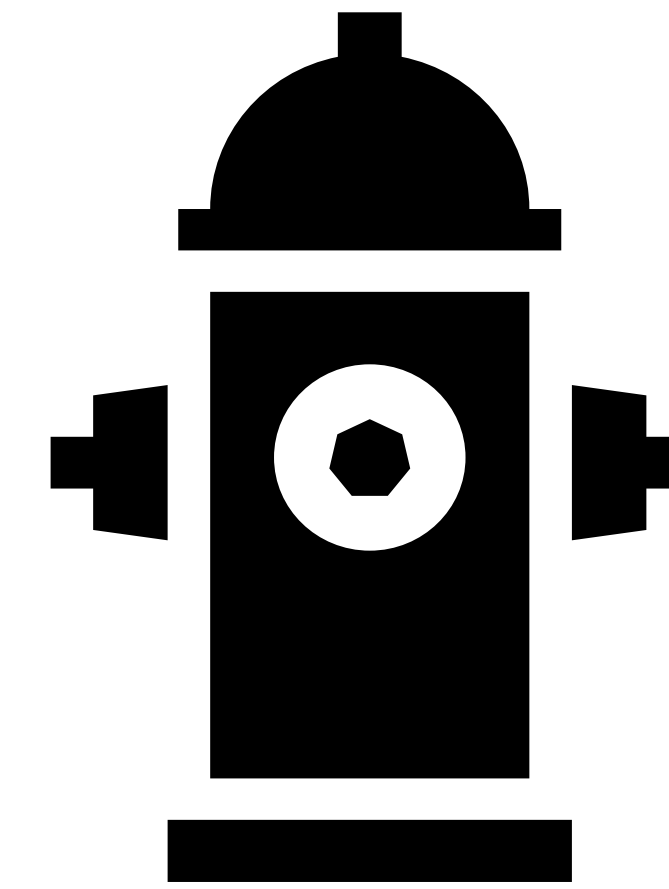
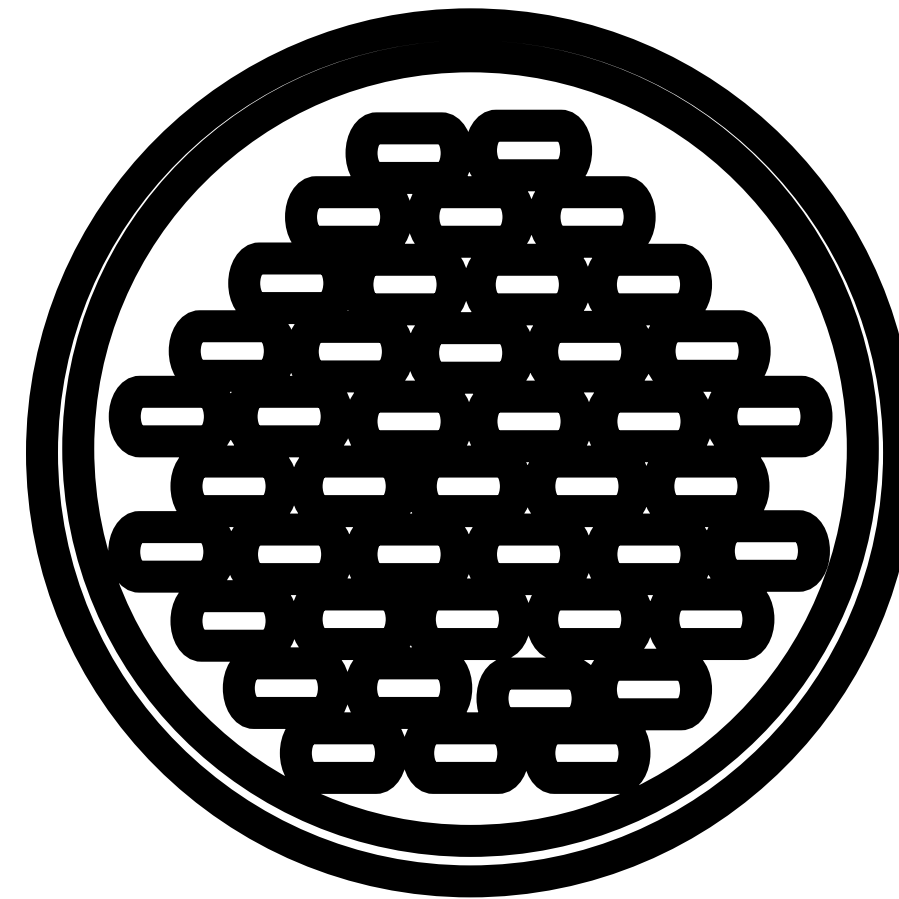
# Existing Infrastructure: Potable Water Distribution System



## Existing Potable Water Distribution System

- A Water Filtration Plant (WFP), taking raw water from the Madawaska River. The WFP was last upgraded in 2010.
- The WFP provides storage in its clearwells, and pumping from high-lift pumps (HLPs).
- An elevated storage tank (EST) on Hartney St, constructed in 1993.
- Approximately 65 km of watermains and 315 hydrants.

# Problems and Opportunities



Long-term operational and capital improvements to the Town's Wastewater Collection System and Potable Water Distribution System are required to meet current regulations and growth up to 2042.

## Wastewater Collection System

- Existing peak wet weather flows create constraints in the sewer system and at the sewage pump stations
- The sewer system and sewage pump stations will need to accommodate higher flows from new developments

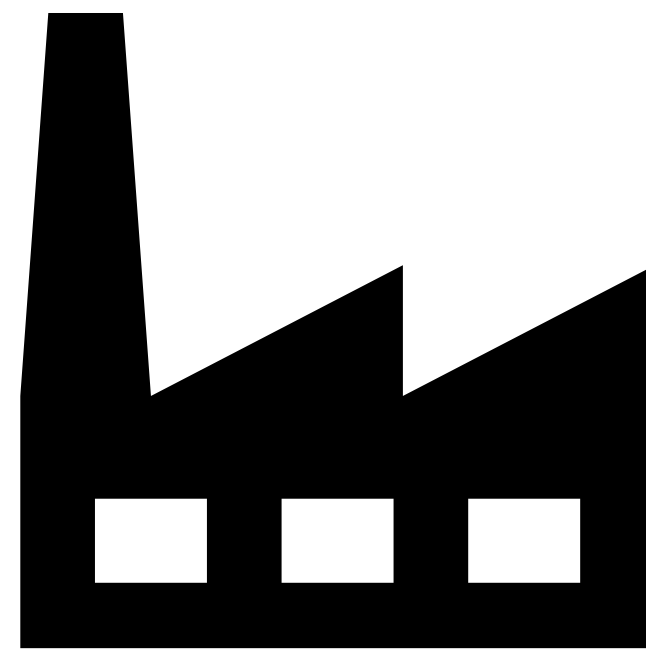
## Potable Water Distribution System

- 2042 growth demands will exceed the system's treatment, storage and pumping capacity and require an increase in capacity
- The potable water distribution system will benefit from improved reliability in the event of watermain breaks

- Additional capacity required to meet future demand
- Impacts of climate change (increase and decrease of precipitation, temperature, significant weather events)
- Opportunities to adapt to climate change, mitigate climate change & generate energy savings

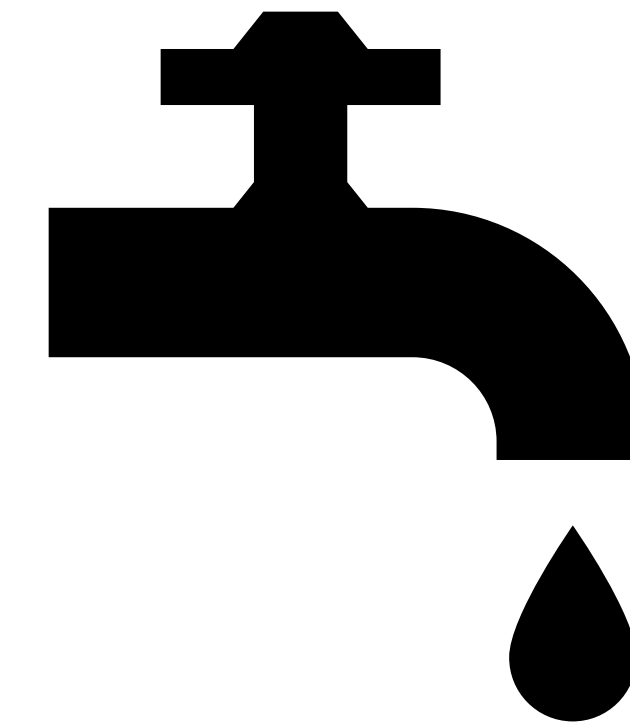
# Problems and Opportunities

Long-term operational and capital improvements to the Town's Water Pollution Control Centre (WPCC) and Water Filtration Plant (WFP) are required to meet current regulations and growth up to 2042.



## Water Pollution Control Centre (WPCC)

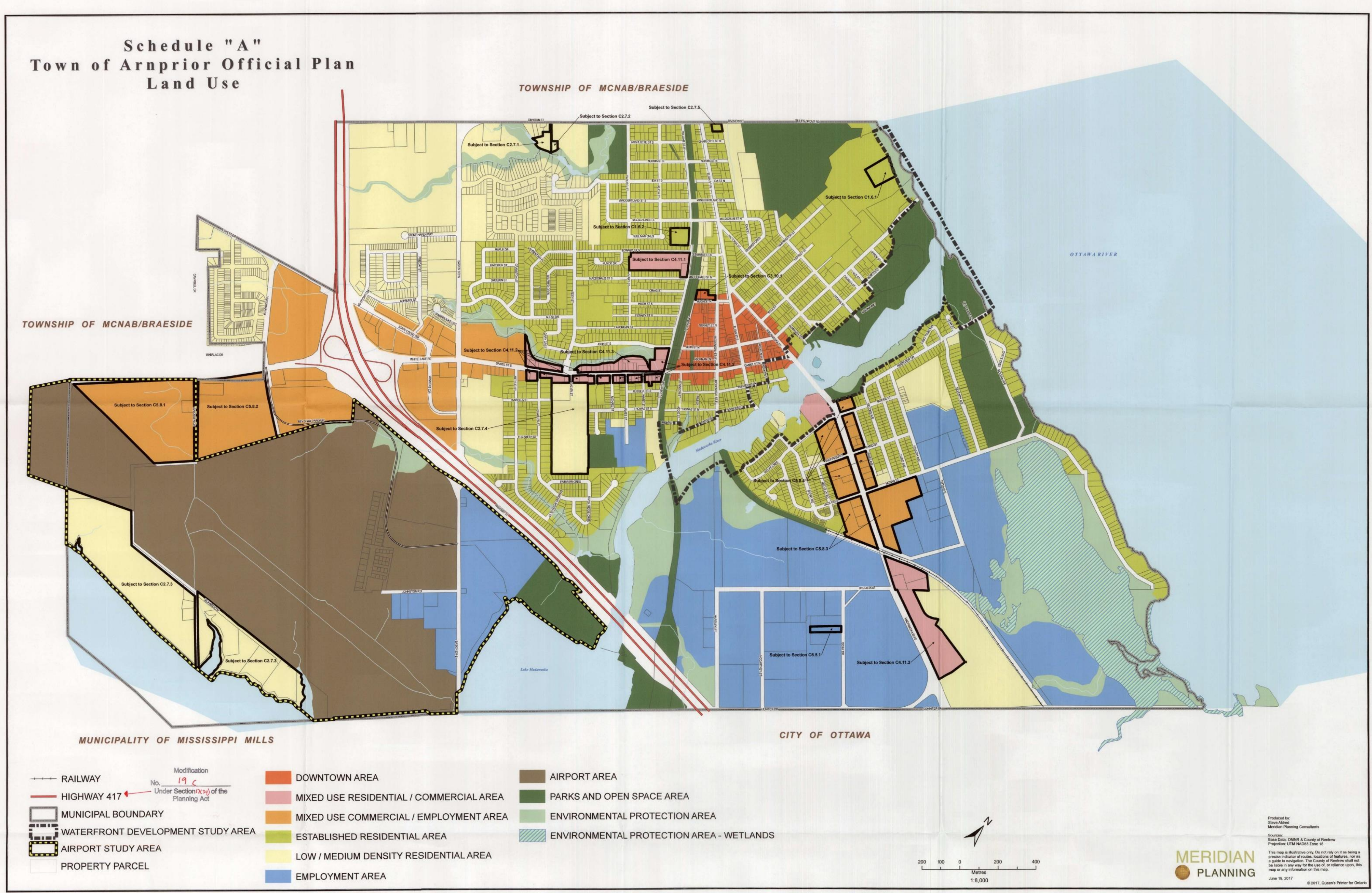
- The WPCC's capacity can accommodate the projected growth to 2042. The WPCC does not require an expansion by 2042.
- Internal process improvements and studies are recommended to enhance treatment steps.



## Water Filtration Plant (WFP)

- The WFP will require the following upgrades to accommodate growth to 2042:
  - 6% increase in treatment capacity.
  - 25% increase in clearwell storage.
  - 18% increase in pumping capacity.

# Existing Conditions: Land Use & Environmental Protection



# Existing Conditions: Heritage

## Cultural Heritage

- The 2017 Town of Arnprior OP outlines objectives for the conservation of cultural heritage resources.
- As part of project-specific detailed investigations, cultural heritage resources that retain heritage attributes should be identified and avoided where possible.
- Where avoidance is not possible, potential effects to these attributes should be identified and minimized.



Source: Town of Arnprior

## Archaeology

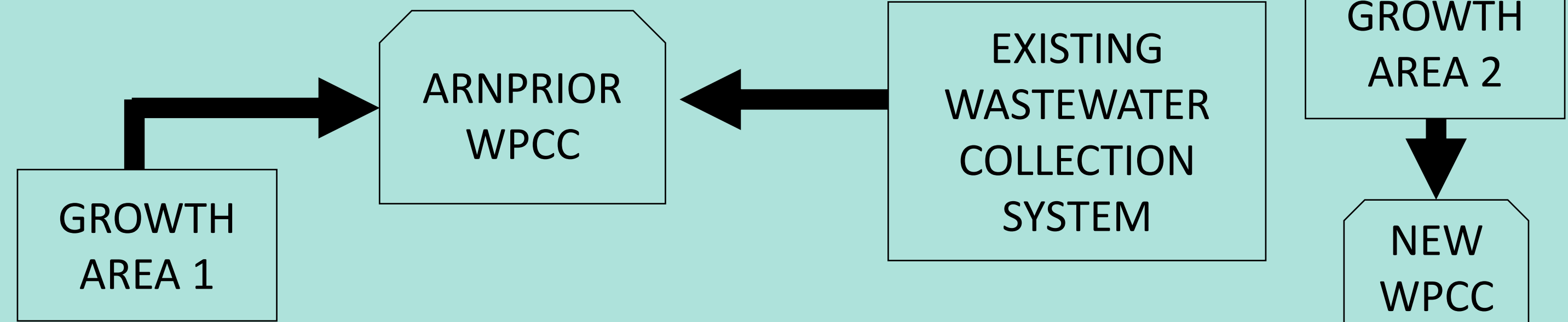
- Study area is located within the Ottawa Valley, which has the potential for the recovery of pre- and post-contact Indigenous and Euro-Canadian archaeological resources.
- Appropriate archaeological investigations are required for certain infrastructure projects in accordance with the MCEA process.
- Any projects identified as a Schedule B or C project will require an archaeological assessment to be completed.

# Alternative Solutions: Wastewater Collection System

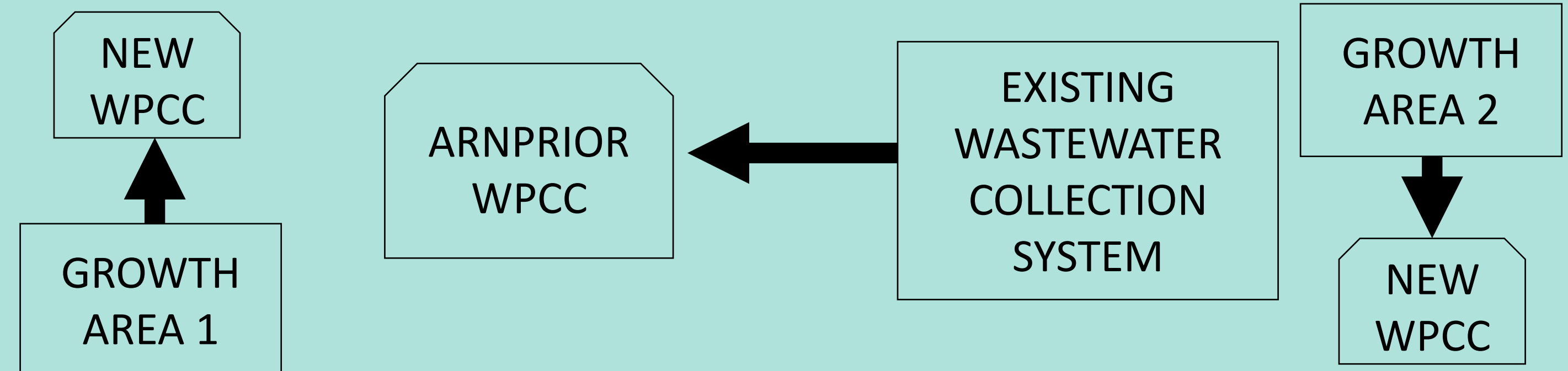
**Alternative 1**  
Do Nothing

**Alternative 2**  
Inflow & Infiltration Reduction and Re-Use Alternatives

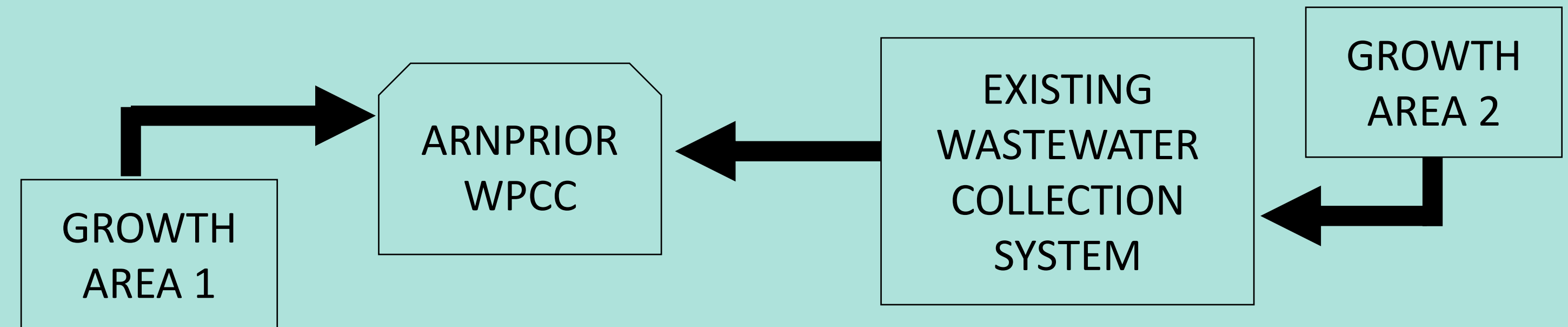
**Alternative 3**  
Partial Private/Communal &  
Municipal Wastewater Servicing



**Alternative 4**  
Communal Wastewater  
Collection System



**Alternative 5**  
Improvement & Expansion of the  
Municipal Wastewater Collection  
System

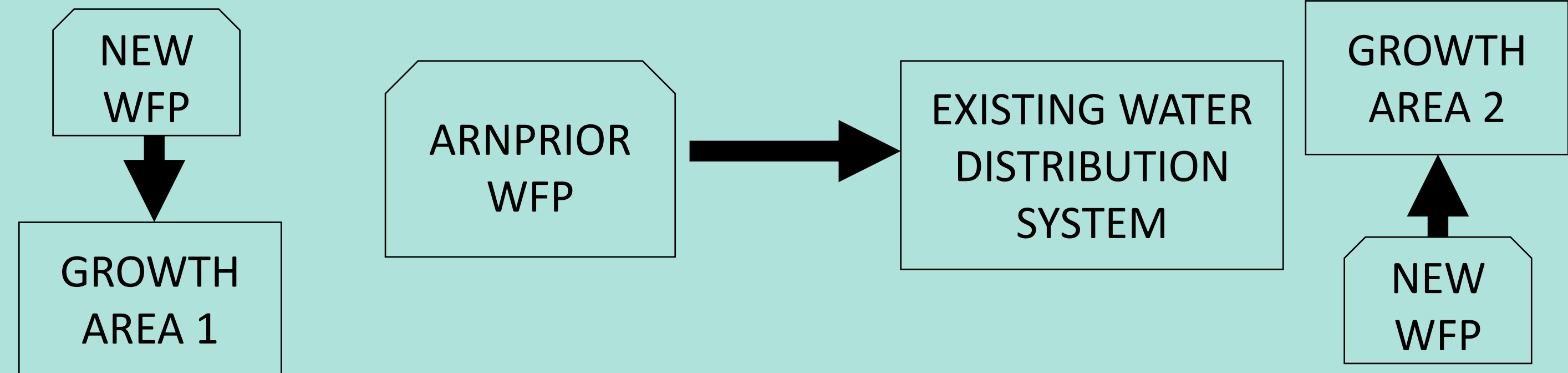


# Alternative Solutions: Potable Water Distribution System

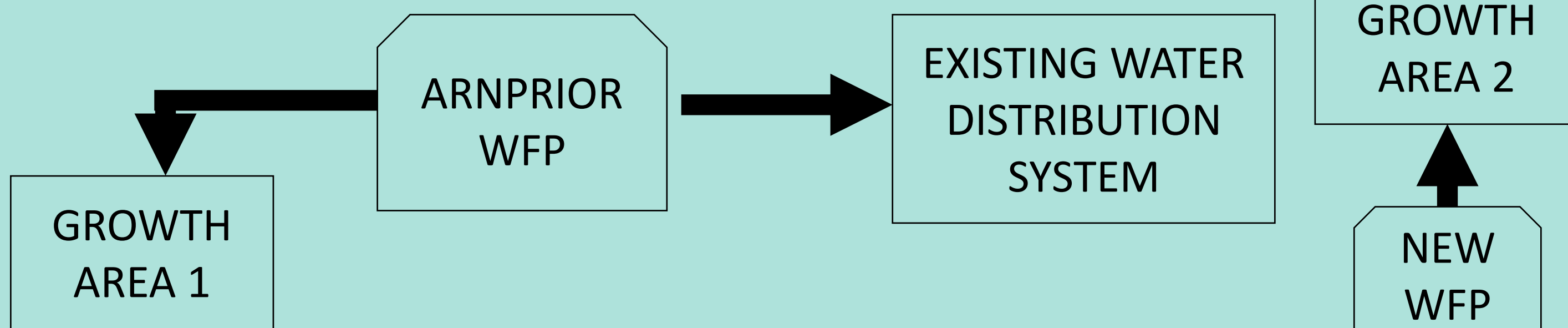
**Alternative 1**  
Do Nothing

**Alternative 2**  
Water Conservation and Re-Use

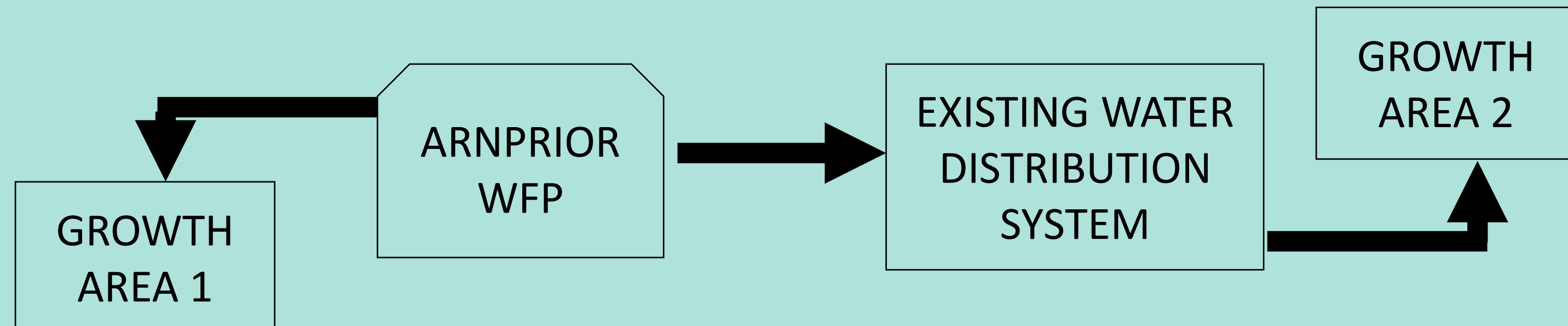
**Alternative 3**  
Communal Potable Water System



**Alternative 4**  
Partial Private/Communal & Municipal Potable Water Servicing



**Alternative 5**  
Improvement & Expansion of the Municipal Potable Water Distribution System



# Evaluation Criteria

## 1. Environmental

- Protects Environmental Features
- Protects Groundwater, Streams and Rivers
- Minimizes Impact on Climate Change

## 2. Social/Cultural

- Minimizes Long-Term Impacts to the Community Related to Noise, Odour, Traffic and Aesthetics
- Minimizes Impacts to Businesses and Major Transportation Corridors
- Manages and Minimizes Short-Term Construction Impacts
- Protects Health and Safety
- Protects Cultural Heritage Resources

## 3. Economic

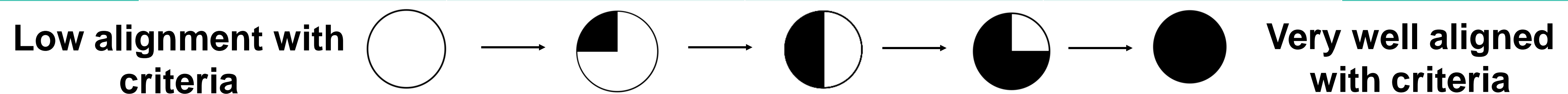
- Provides Low Lifecycle Costs

## 4. Technical

- Meets Existing and Future Needs
- Provides Ease of Maintenance
- Aligns with Existing and Planned Infrastructure
- Aligns with Existing and Future Land Use
- Aligns with Efficient Approval and Permitting Process
- Manages and Minimizes Construction Risks
- Ability to Adapt to Climate Change

# Evaluation of Alternative Solutions: Wastewater Collection System

	Alternative 1 "Do Nothing"	Alternative 2 I/I Reduction and Re-Use Alternatives	Alternative 3 Partial Private/Communal & Municipal Wastewater Servicing	Alternative 4 Communal Wastewater Collection System	Alternative 5 Improvement & Expansion of the Municipal Wastewater Collection System
Environmental					
Social/Cultural					
Economic					
Technical					
CONCLUSION	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Recommended Solution



# Recommended Solution: Wastewater Collection System

**Alternative 5: Improvement & Expansion of the Municipal Wastewater Collection System** is the recommended solution based on the following:

- Capacity to support future population needs to the 2042 horizon.
- Potential to impact the environment can be mitigated during design, construction and operation.
- Potential to impact private property and health and safety of Town residents during construction can be mitigated.
- Implementation costs can be subject to cost-sharing.

The recommended solution includes:

- Sewer upgrades on Riverview Dr, Daniel St, and Edward St
- Sewage pumping station upgrades (PS#1, PS#2, PS#3)
- Supporting studies



### Legend

- PS Sanitary Pump Station (PS)
- ▲ Overflow
- STP Wastewater Treatment Plant (WWTP)
- Sanitary Trunk Sewer (Modelled; No Upgrades)
- Sanitary Sewer (Not Modelled)
- Forcemains

### Servicing Solutions

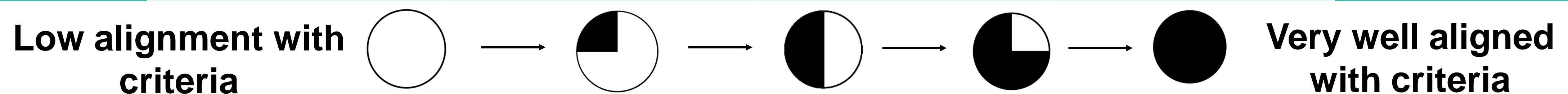
- Problem Areas (Growth-Related)
- Pipe Upgrades (for Growth)
- Problem Areas (Growth, with Climate Change Considerations)
- Pipe Upgrades (for Growth, with Climate Change Considerations)
- New Gravity Sewer
- New PS (Growth Area Servicing)
- New Forcemain

### Growth Areas Servicing Approach

- Direct Servicing from Adjacent Local (Non-Modelled) Sewers
- Direct Servicing from Adjacent Trunk Sewer
- Direct Servicing by Extending Local (Non-Modelled) Sewers
- Servicing from New Trunk Sewer Infrastructure

# Evaluation of Alternative Solutions: Potable Water Distribution System

	Alternative 1 "Do Nothing"	Alternative 2 Water Conservation and Re-Use	Alternative 3 Communal Potable Water System	Alternative 4 Partial Private/Communal & Municipal Potable Water Servicing	Alternative 5 Improvement & Expansion of the Municipal Potable Water Distribution System
Environmental					
Social/Cultural					
Economic					
Technical					
CONCLUSION	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Recommended Solution



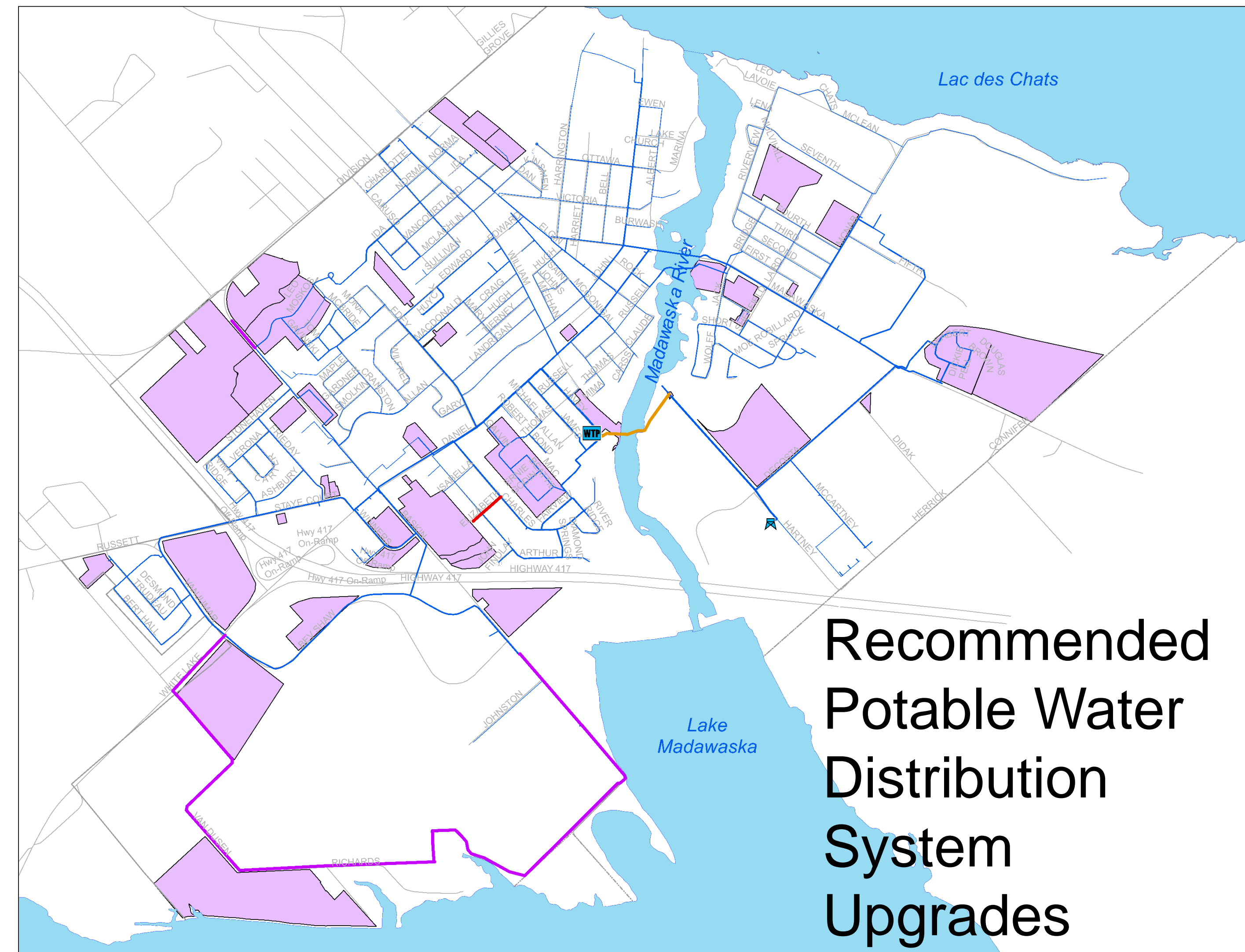
# Recommended Solution: Potable Water Distribution System

**Alternative 5: Improvement & Expansion of the Municipal Potable Water Distribution System** is the recommended solution based on the following:

- Capacity to support future population needs to the 2042 horizon.
- Potential to impact the environment can be mitigated during design, construction and operation.
- Potential to impact private property and health and safety of Town residents during construction can be mitigated.
- Implementation costs can be subject to cost-sharing.

The recommended solution includes:

- Watermain upgrades
- WFP treatment, storage and pumping upgrades
- Supporting studies



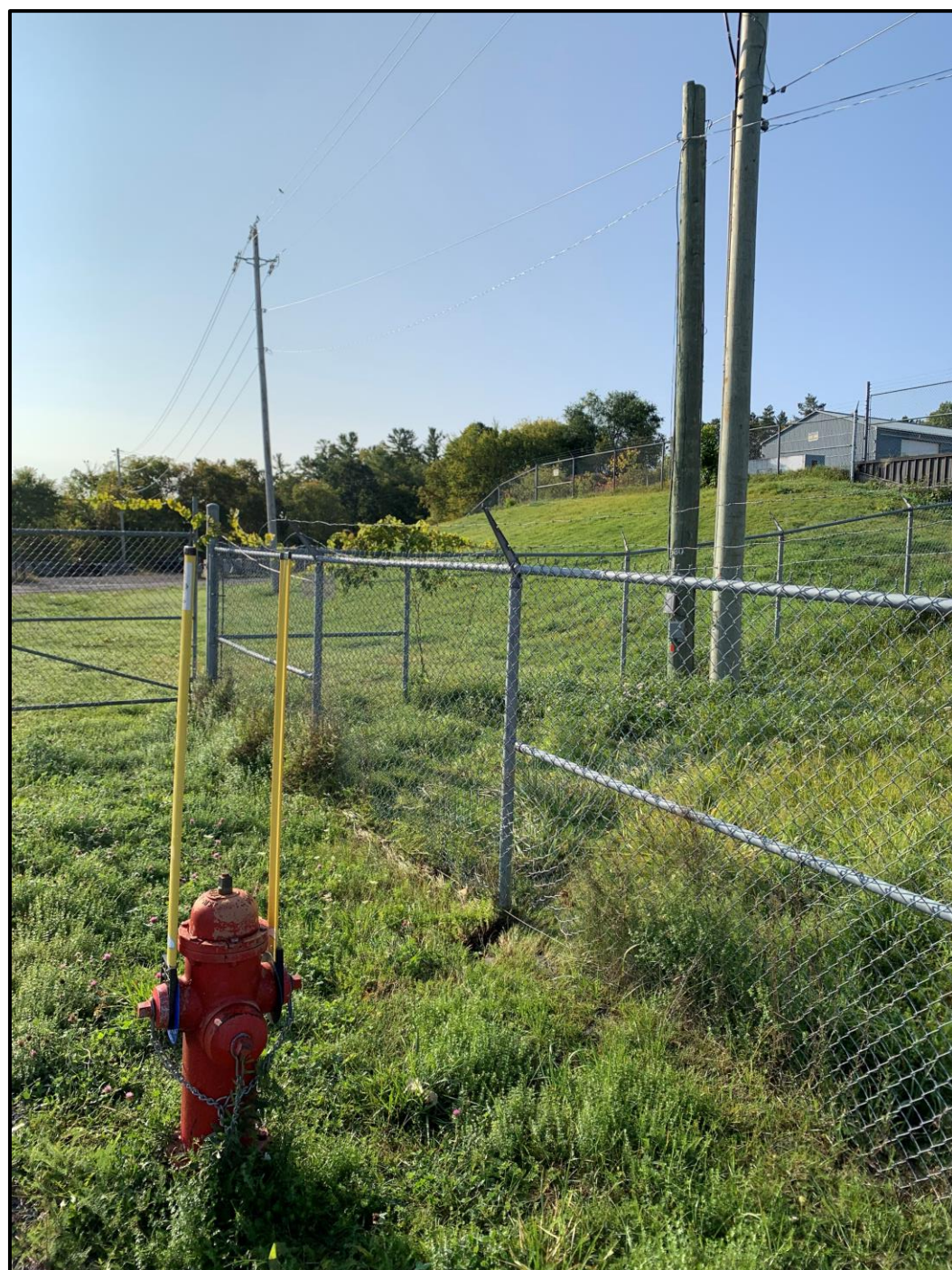
Legend	
<span style="color: red;">—</span>	Proposed Upgrade of Existing Watermain
<span style="color: magenta;">—</span>	Proposed New Watermain / Watermain Upgrade (Developer-Driven)
<span style="color: orange;">—</span>	Critical Watermain where a Secondary Feed is Recommended
<span style="background-color: #e6e6fa; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span>	Growth Areas with Future Water Demands
<span style="color: blue;">—</span>	Existing Watermains - Diameter (mm)
<span style="color: blue;">—</span> (thin)	< 75 mm
<span style="color: blue;">—</span> (medium)	75 mm - 150 mm
<span style="color: blue;">—</span> (thick)	150 mm - 225 mm
<span style="color: blue;">—</span> (very thick)	225 mm - 350 mm
<span style="color: blue;">—</span> (thick)	350 mm - 600 mm
<span style="background-color: #000080; color: white; padding: 2px;">WTP</span>	Water Treatment Plant (WTP)
<span style="color: blue;">▲</span>	Elevated Storage Tank (EST)
<span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span>	Municipal Boundary

# Climate Change Considerations



## Wastewater Collection System

- Stress-test of system using climate projections
- Additional resilience measures identified (pipe upsizing; additional pumping station capacity)



## Potable Water Distribution System

- Stress-test of system using increased water demands
- Upgrades needed earlier
- Additional resilience measures identified (additional treatment, storage and pumping capacity)

# Thank You For Participating!



## NEXT STEPS

- Review and consider feedback received
- Confirm preferred water and wastewater solutions
- Prepare Master Plan Report
- Issue Notice of Master Plan



We would appreciate receiving any comments and/or questions that you may have by **March 13, 2024**.



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