CAYUGA MASTER SERVICING PLAN

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Welcome to this Public Open House for the **Cayuga Master Servicing Plan (MSP).**

We want to hear from you.

Please fill out the comment sheet provided at today's Public Information Centre and leave it in one of the boxes provided.

Additional information is available on the project website at www.haldimandcounty.ca

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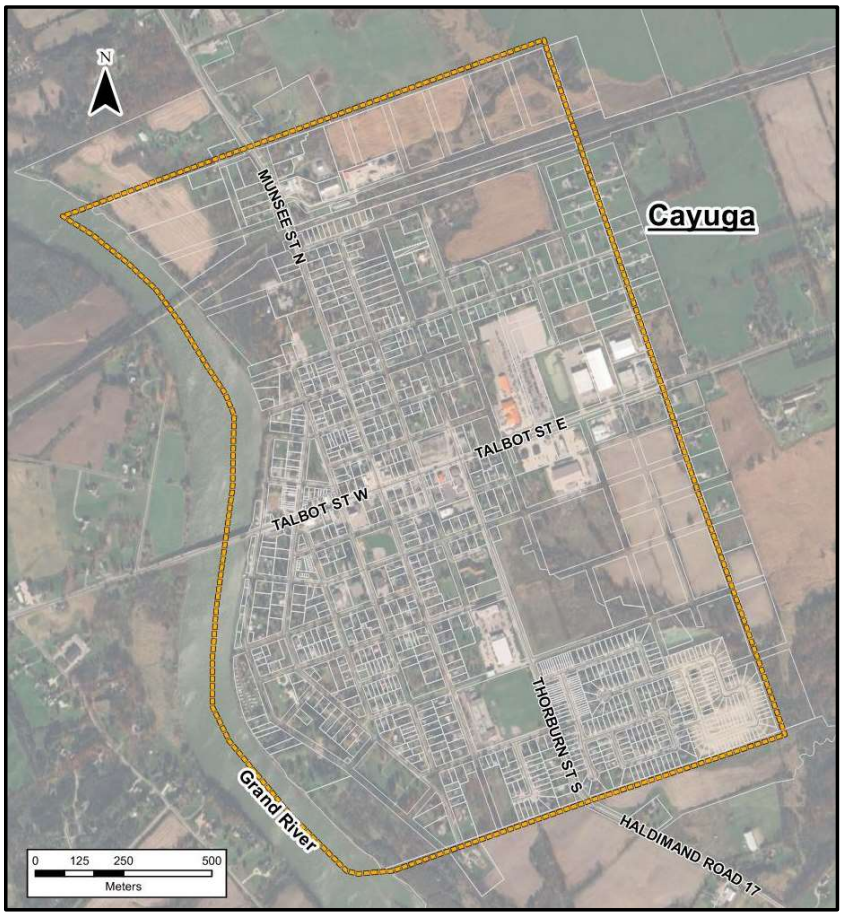
Problem / Opportunity Statement

The purpose of this Master Servicing Plan Update is to evaluate Cayuga's long-term infrastructure needs to match the growth in Cayuga over the near-term (10 year) and long-term (25 year) future. Four servicing components will be evaluated through this Master Servicing Plan Update:

WATER	**WASTEWATER**
STORMWATER	**TRANSPORTATION**

Through consultation with participating stakeholders and rightsholders, the Municipal Class Environmental Assessment (MCEA) framework will enable the consideration of options and identify preferred infrastructure solutions that are environmentally, socially, and financially responsible and sustainable.



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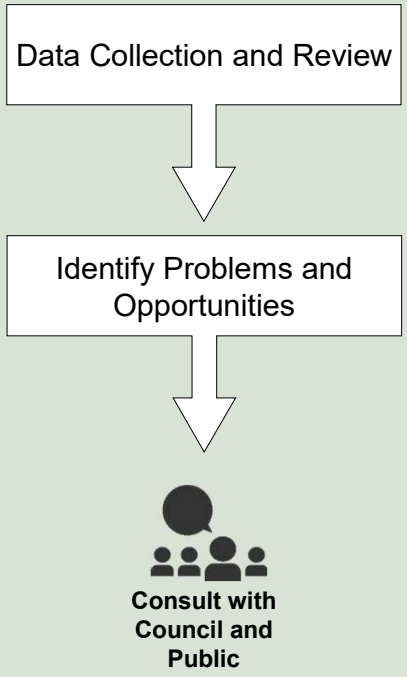
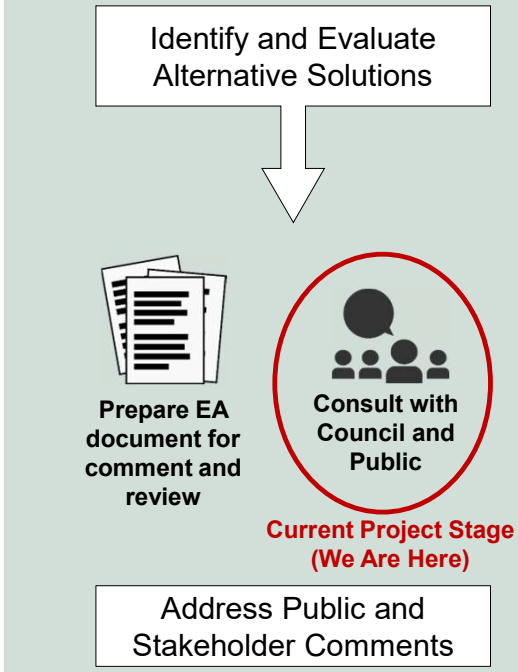
Municipal Class Environmental Assessment (MCEA) Process

Phase 1
Problem and/or Opportunity



Phase 2
Alternative Solutions



Overview

- Under the Environmental Assessment Act, municipalities must consider potential environmental effects before a potential project begins
- The streamlined MCEA process allows municipalities to consider impacts without having to obtain project specific approval under the Environmental Assessment Act

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Future Development

Existing and Future Growth in Cayuga:

Existing (2024)

2,333

Equivalent Units

Residential Growth

491

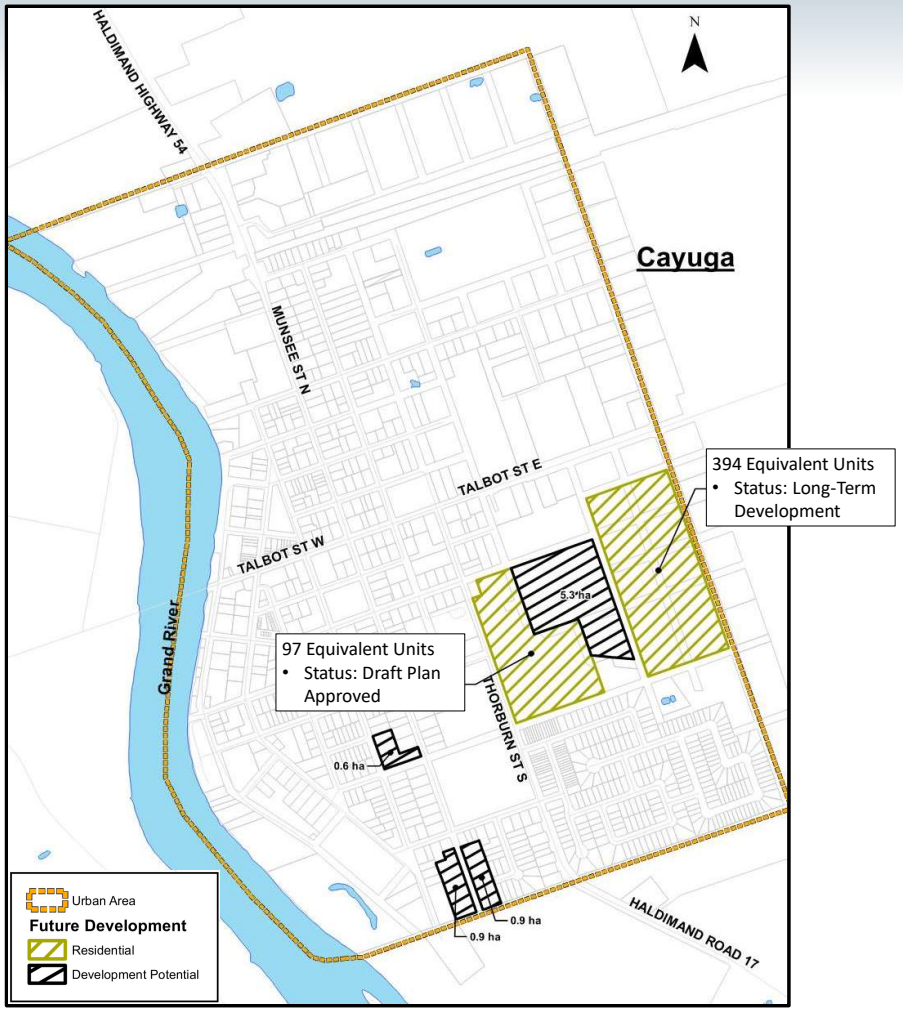
Equivalent Units

Near-Term (10-Year) & Long-Term (25-Year)

Total (Existing + Future)

2,824

Equivalent Units



*Parcels labelled as **'Development Potential'** have not been factored into the servicing requirements analysis for this Master Servicing Plan Update

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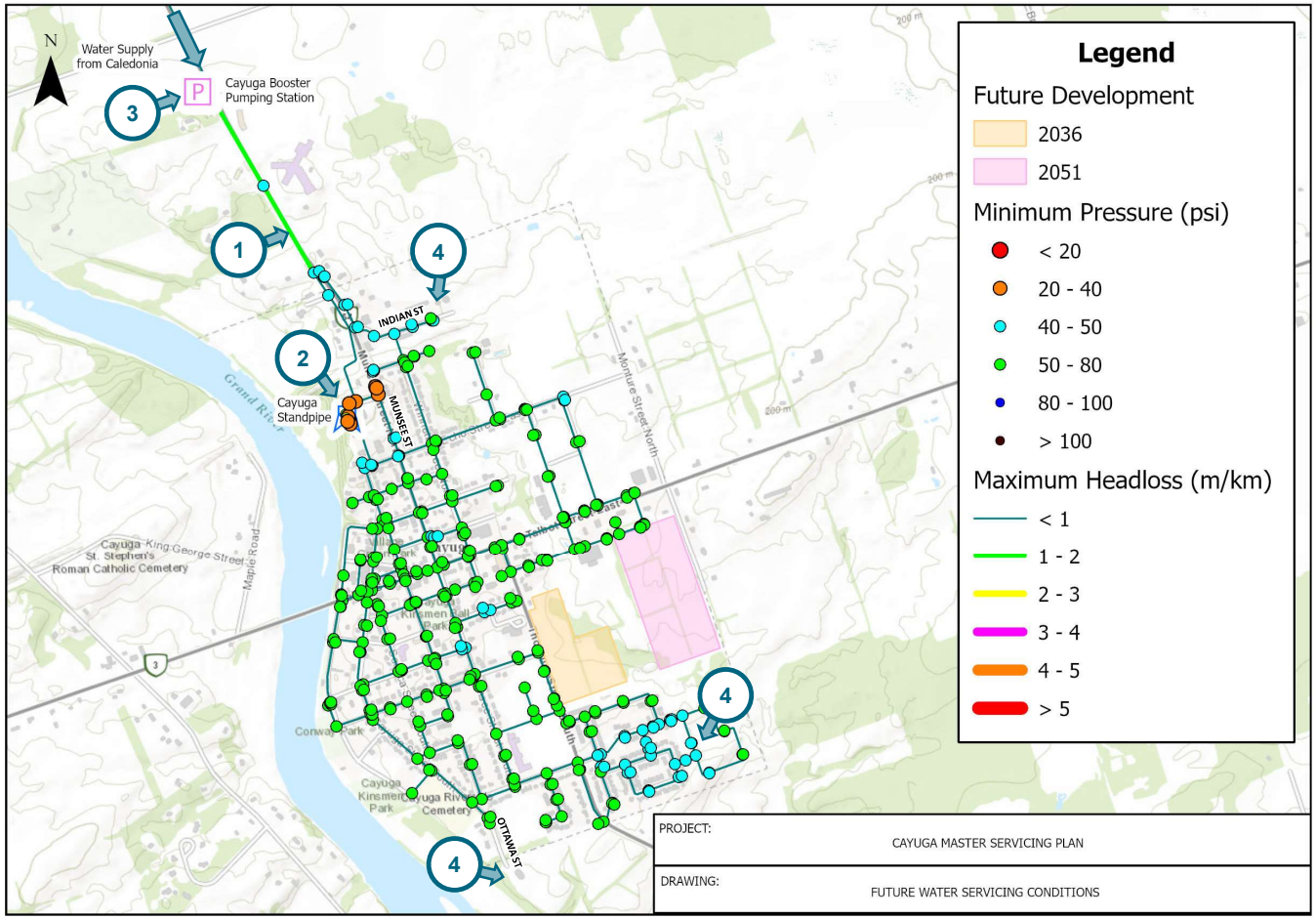
Future Water Servicing Capacities and Constraints



1. **Watermains** – All watermains within the Cayuga water system and the watermain feeding Cayuga from Caledonia have sufficient capacity under future conditions.

2. **Water Pressure** – The majority of the Water Service Area is within an acceptable operating pressure range of 40 - 80 psi. Some services along Victoria St and Munsee St have minimum pressures slightly below 40 psi.

3. **Water Storage** - Cayuga has sufficient water storage under future demands. Most storage is contained in the BPS reservoir.

4. **Water Supply** – The firm capacity of the BPS is insufficient to supplement a fire flow of 100 L/s for two hours during Max Day Demands. Areas of interest for low fire flows include areas southeast of Thorburn St, the industrial properties along Indian Street and the Cayuga Wastewater Plant on Ottawa Street.

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Evaluation of Water Servicing Alternatives

ALTERNATIVE 1
Do Nothing

- This alternative does not address the existing servicing constraints identified.
- If this alternative is chosen, pressures < 40 psi may be experienced at higher elevations near Munsee St and Victoria St.
- The firm capacity of the existing BPS will be insufficient to supply a 2-hour fire flow for commercial areas during max day demands.

ALTERNATIVE 2
BPS Upgrades

- This alternative addresses the existing and future servicing constraints identified.
- Additional pumping capacity is provided to supplement a fire flow during max day demands.
- Lower capital costs.
- Service areas at high elevations may require localized pressure boosting systems.

Capital Costs:
Smaller Impact to Existing Rate Payers

ALTERNATIVE 3
BPS Upgrades & New Pressure Zone

- This alternative addresses the existing and future servicing constraints identified.
- Additional pumping capacity is provided to supplement a fire flow during max day demands.
- More complex operation.

Capital Costs:
Smaller Impact to Existing Rate Payers

ALTERNATIVE 4
Increased Floating Storage

- This alternative addresses the servicing constraints identified and improves minimum system pressures.
- Increased floating storage available.
- Risk associated with modifying existing standpipe.
- Challenging construction to minimize disruption to the system with the existing standpipe offline.
- Higher capital costs.

Capital Costs:
Larger Impact to Existing Rate Payers

Additional minor project upgrades are also recommended to further improve distribution system results such as:

- Low fire flows in the Cayuga system

Definitions:

1. BPS: Booster Pumping Station

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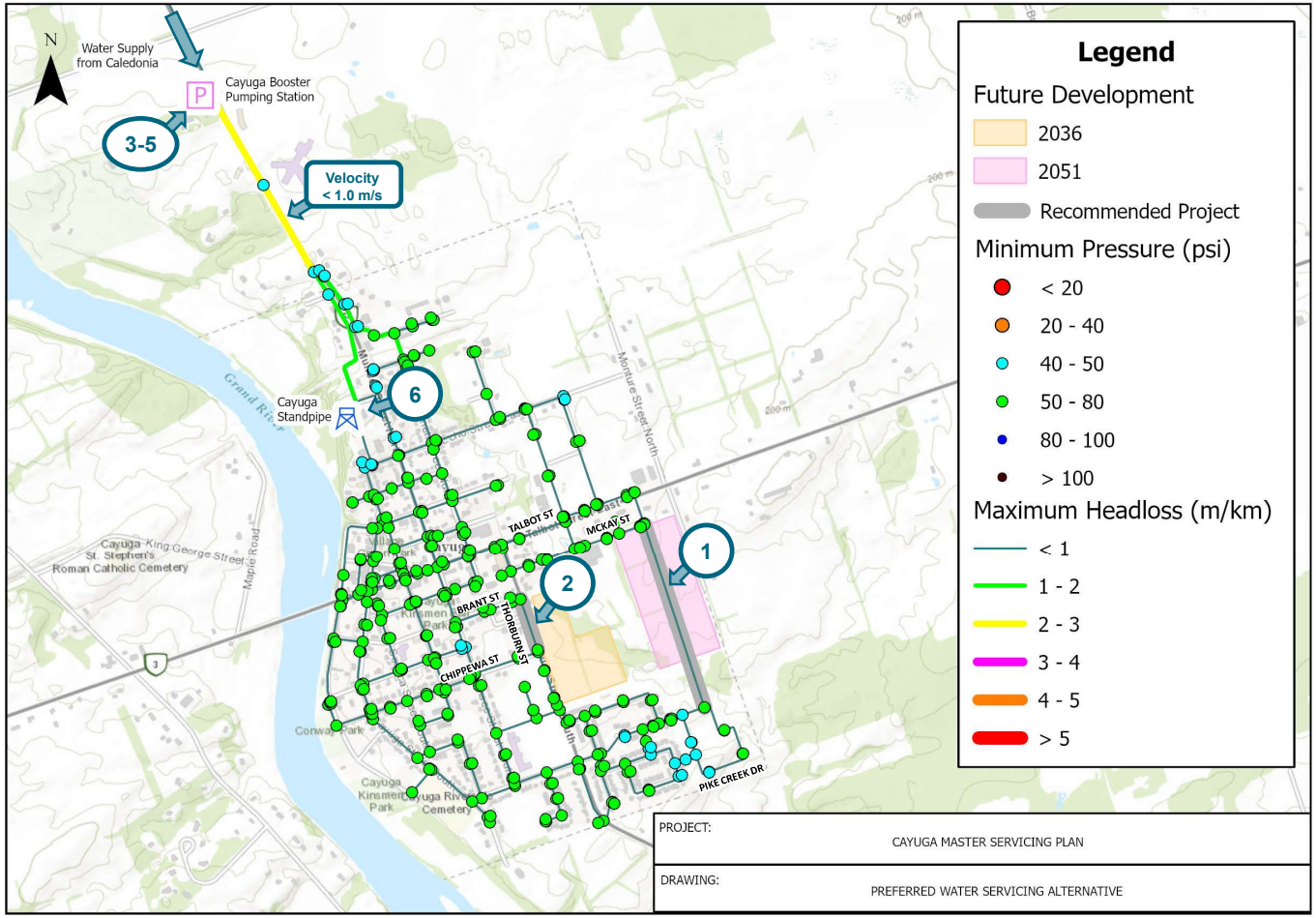
Recommended Water Servicing Alternative



Alternative 2

1. **W-WM-1 –** New 200 mm Watermain from McKay Street to Pike Creek Drive.
2. **W-WM-2** – New 200 mm Watermain on Thorburn Street from Brant Street to Chippewa Street.
3. **W-BPS-1** – Change High Lift Pump (HLP) controls to a duty/standby configuration.
4. **W-BPS-2 –** Upgrade the firm capacity of the BPS to 100 L/s and implement Variable Frequency Drives (VFDs).
5. **W-BPS-3 –** Adjust HLP controls to meet 40 psi at all service areas possible.
6. **W-PS-1** – Install a jet pump to boost pressures inside the Cayuga Courthouse.

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Recommended Water Servicing Alternative

MSP System Component	Description	Cost Estimate	Funding			Estimated Timing
			County	Developer	DC	
Watermains						
W-WM-1	New 200mm Watermain from McKay Street to Pike Creek Drive	$760,000	25%	75%	0%	Future
W-WM-2	New 200 mm Watermain on Thorburn Street from Brant Street to Chippewa Street.	Developer Led Project	0%	100%	0%	Near-Term
Booster Pumping Stations (BPS)						
W-BPS-2	Upgrade Firm Capacity of Cayuga BPS to 100 L/s and Implement VFDs	$890,000	0%	0%	100%	Near-Term
	Total Water Cost	**$1,650,000**				

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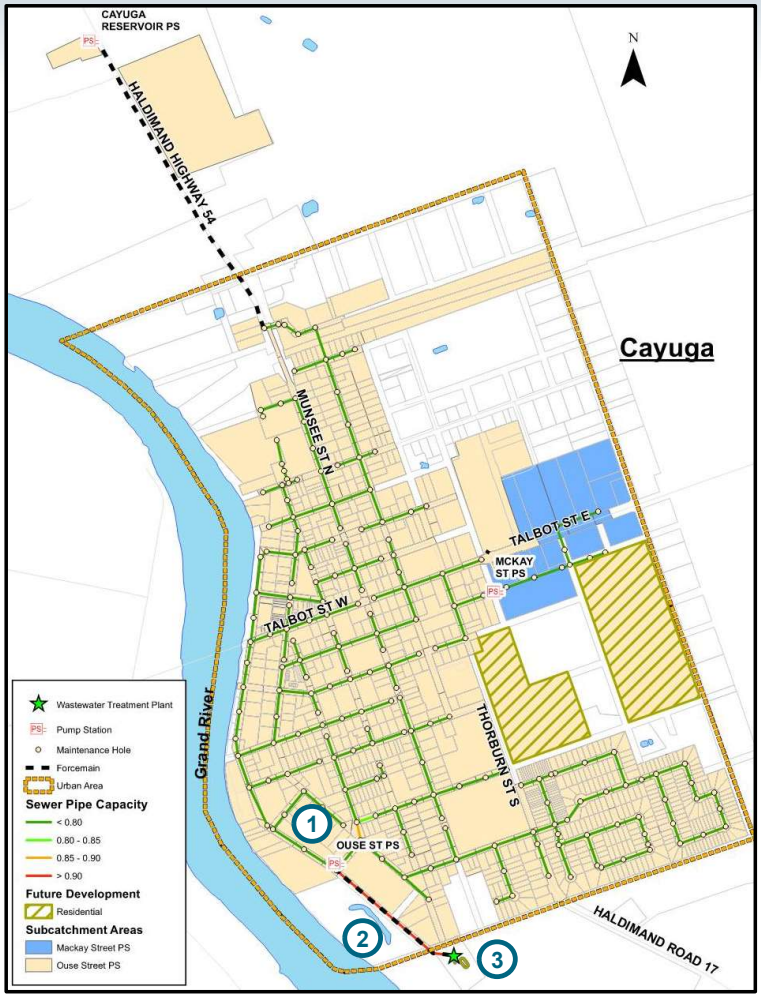
Future Wastewater Servicing Issues and Constraints



1. **The Ouse Street Sewage Pumping Station (SPS)** requires upgrades due to capacity constraints and seasonal issues. Supporting studies are being completed through this Master Plan Update to address the Schedule B Class EA requirements for the identified upgrades.

2. Additionally, **a single forcemain** conveys all flows from the SPS to the WWTP, with no redundancy in the event of failure. Twinning is required for redundancy purposes and to address long-term capacity constraints.

3. **Wastewater Treatment Plant**: Wastewater flows are anticipated to reach above 85% plant's rated capacity within the long-term considerations (10 to 25-year) planning horizon. Planning for additional capacity will be required to service future development in Cayuga.

4. **Inflow & Infiltration** in Cayuga is above typical values, partially due to flood waters from the Grand River when the riverbank overflows and river water infiltrates the equalization tank. Haldimand has an I&I abatement program and work is underway to identify causes and potential remediation measures under this program. A reduction in I&I could decrease flows to the WWTP, deferring the need for additional treatment capacity.

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Schedule B Class EA for the Ouse Street SPS

The Ouse Street Sewage Pumping Station (SPS) is experiencing capacity constraints at times, as a result of high-water levels in the Grand River which have caused the equalization (EQ) tank at the Ouse Street SPS, located in the GRCA floodplain, to fill and overflow. This can backup in the system and cause surcharging events.

Additionally, all sanitary flows in Cayuga are directed to the **Ouse Street SPS** and **a single forcemain** conveys all flows from the SPS to the WWTP, with no redundancy in the event of failure. Projected growth in Cayuga is expected to further exacerbate these existing constraints over time.

A design concept was developed to address the identified issues, which includes:

- New wet well
- New submersible pumps on rails
- Connection across Ouse Street South to integrate existing equalization tank
- Small slab-on-grade building to house PLC, MCC and electrical equipment
- Existing dry well to be decommissioned following appropriate procedures.

Stage 1 Archaeology and Cultural Heritage Assessments are currently being completed at the Ouse Street Sewage Pumping Station (SPS) to fulfill the requirements of a Schedule 'B' project under the Municipal Class Environmental Assessment (MCEA) framework.

Preliminary findings of the study include:

- Within 1 km of eleven (11) registered archaeological sites
- Adjacent to the Cayuga Cemetery (Riverside Cemetery)
- Equalization tank located in Kinsmen Park (a cultural heritage landscape)
- 145 m northeast of the Grand River

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Evaluation of Wastewater Treatment Plant Alternatives

ALTERNATIVE 1
Do Nothing

- This alternative does not address the identified wastewater treatment capacity issues
- If this alternative is chosen, the WWTP will be unable to treat increased flows from future growth and development in Cayuga will be limited

ALTERNATIVE 3
Increase Capacity at the Exiting WWTP

- Effective use of existing infrastructure
- Less potential impacts to archaeology, cultural heritage, and natural environment, as development will be entirely on previously disturbed lands at the existing site
- Limited space on site to support treatment plant expansions beyond the Master Plan planning horizon
- Construction around existing infrastructure may be technically challenging

Capital Costs: Moderate
Limited impact on existing rate payers

ALTERNATIVE 4
Build New WWTP at the Existing Site (with Land Acquisition)

- Infrastructure on a greenfield site is typically less challenging to design and construct
- The capacity of the new WWTP could be expanded in phases
- Can be designed to service community development beyond Master Plan planning horizon
- Does not utilize existing treatment infrastructure
- Moderate potential impacts to archaeology, cultural heritage, and natural environment, as development will be partially on previously disturbed lands at the existing site
- Construction around existing infrastructure may be technically challenging
- Minor land acquisition costs and negotiations

Capital Costs: High
May impact existing rate payers

ALTERNATIVE 6
Build New WWTP at a New Site

- Infrastructure on a greenfield site is typically less challenging to design and construct
- The capacity of the new WWTP could be expanded in phases
- Can be designed to service community development beyond Master Plan planning horizon
- Does not utilize existing treatment infrastructure
- Potential impacts to archaeology, cultural heritage, and natural environment, as development will be entirely on previously disturbed lands at the existing site
- Construction of new conveyance infrastructure may be disruptive and technically challenging
- Major land acquisition costs and negotiations

Capital Costs: High
May impact existing rate payers

In total, six (6) WWTP alternatives were evaluated. Only Alternatives 3, 4, and 6 were caried forward for evaluation as Alternative 2 (Re-rate Existing WWTP with Minor Modifications) and Alternative 5 (Connect Cayuga WWTP to Nanticoke WWTP) were not considered feasible based on findings from a previous study and a high-level review of regulatory requirements.

Further evaluation of the wastewater treatment alternatives is required through a **Schedule C Class Environmental Assessment** to select the preferred alternative. Key considerations include:

- Timing and magnitude of major lifecycle upgrades at the existing WWTP
- Confirmation of effluent objectives and limits to be met by a new or expanded WWTP
- Review of available technologies
- Revised consideration of capital and lifecycle costs based on the above analyses

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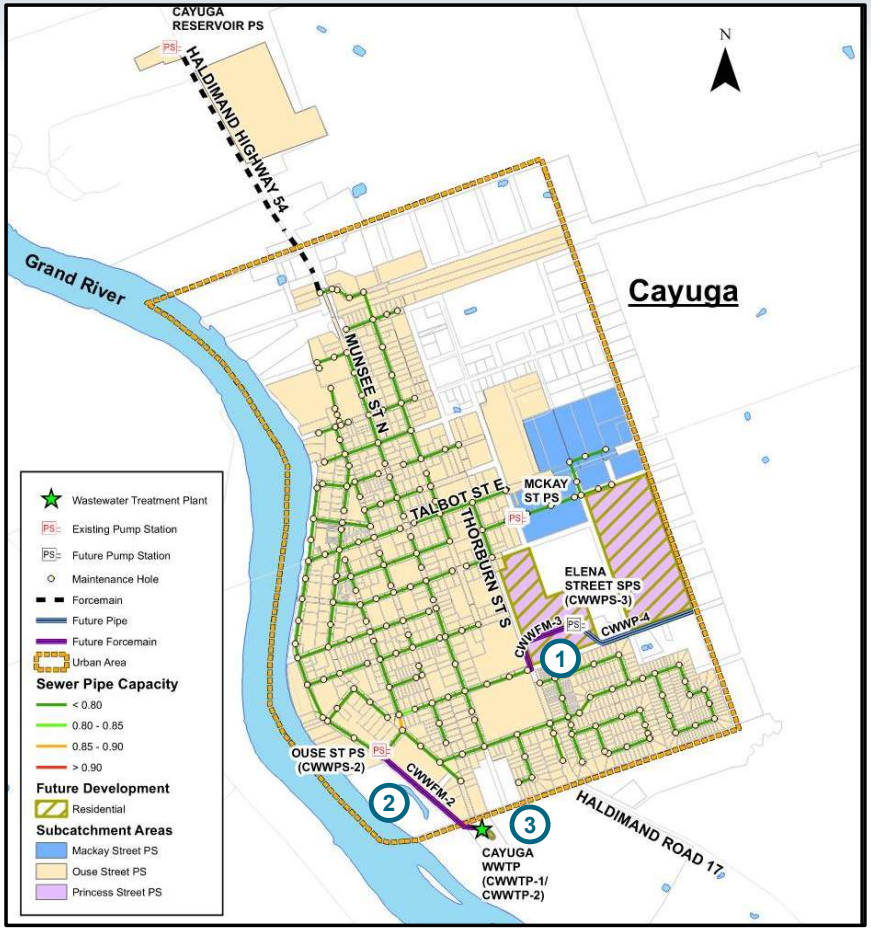
Recommended Wastewater Servicing Alternatives



1

Thorburn Village and Monture South Developments:

- **New Sanitary Pump Station (SPS) and forcemain** to service both developments
- **New sanitary network** to connect Monture South to the new SPS

2

Ouse Street SPS:

- **Upgrade capacity of SPS and twin existing forcemain** to service long-term growth and address existing issues
- **Complete equalization study** at the time of design for the SPS and equalization tank upgrades

3

Wastewater Treatment Plant (WWTP):

- Identify Cayuga as a priority for Haldimand's **Inflow & Infiltration (I&I) abatement program** and continue **monitoring flows** to the WWTP in attempt to defer the need for additional treatment capacity
- **Schedule C Class EA** for New or Expanded WWTP
- **Construction** of a New or Expanded WWTP

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Recommended Wastewater Servicing Alternatives Summary

MSP System Component	Description	Cost Estimate	Funding			Estimated Timing
			County	Developer	DC	
Pumping (Sewage Pumping Stations) and Forcemains						
CWWPS-2	Upgrade Ouse Street SPS	$3,610,000	50%	0%	50%	Near-Term
CWWFM-2	Twin Existing Ouse Street SPS Forcemain (200 mm∅)	$895,000	0%	0%	100%	Near-Term
CWWPS-3 And CWWFM-3	New Proposed Elena Street SPS and Forcemain	Developer Led Project	0%	100%	0%	Near-Term
Sanitary Mains						
CWWP-4	**New Pipe Network:** Monture South Development (200 mm∅)	Developer Led Project	0%	100%	0%	Long-Term
Wastewater Treatment Plant						
CWWTP-1	Schedule C Class EA for New or Expanded Wastewater Treatment Plant	$500,000	0%	0%	100%	Long-Term
CWWTP-2	New or Expanded Wastewater Treatment Plant	$1,200,000 – $18,000,000 (plus cost of new conveyance infrastructure)	Varies Based on Alternative Chosen			Long-Term
	Total Wastewater Cost	**$6,205,000 – $23,005,000** (excluding developer led projects & cost of new conveyance infrastructure)				

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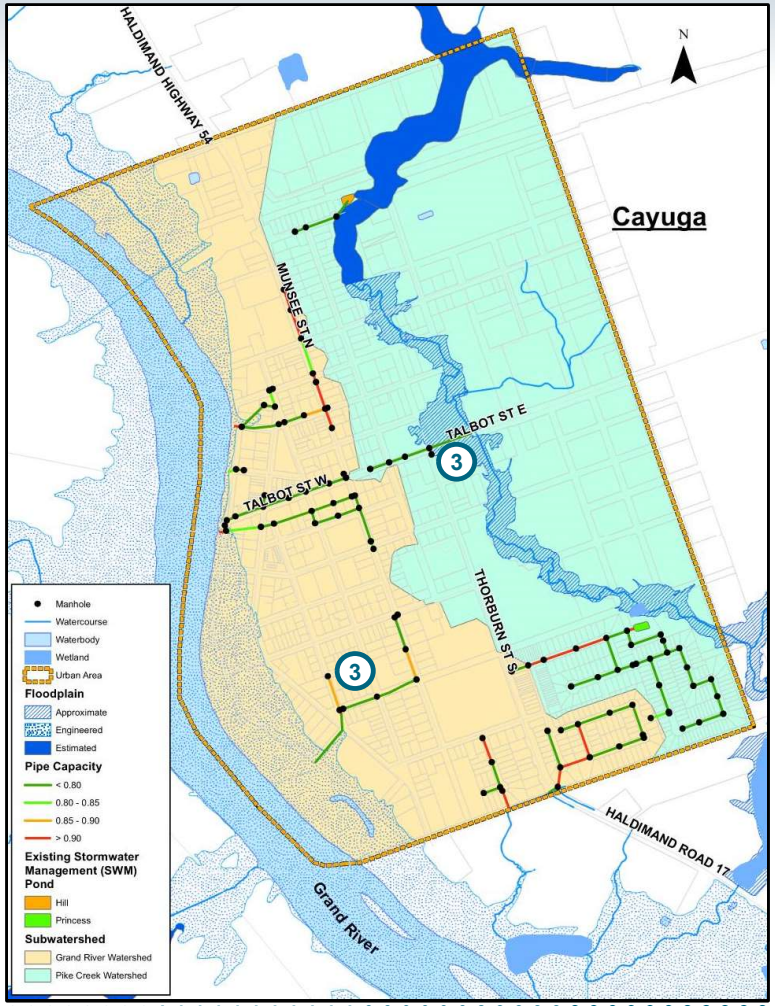
Future Stormwater Servicing Issues and Constraints



1. All future development in Cayuga is **required to control post-development stormwater flows to existing stormwater flow rates** and satisfy required water quality criteria established by the Ministry of the Environment, Conservation, and Parks (MECP).

2. **Future developments will need to adhere to all stormwater management requirements** set by the MECP at the time of approval. The figure to the left shows a proposed storm servicing plan to satisfy these stormwater management requirements

3. Two sections of storm sewer are at or above 90% capacity **and** influence the HGL in upstream pipes, representing **potential bottle necks in the system** that must be addressed.

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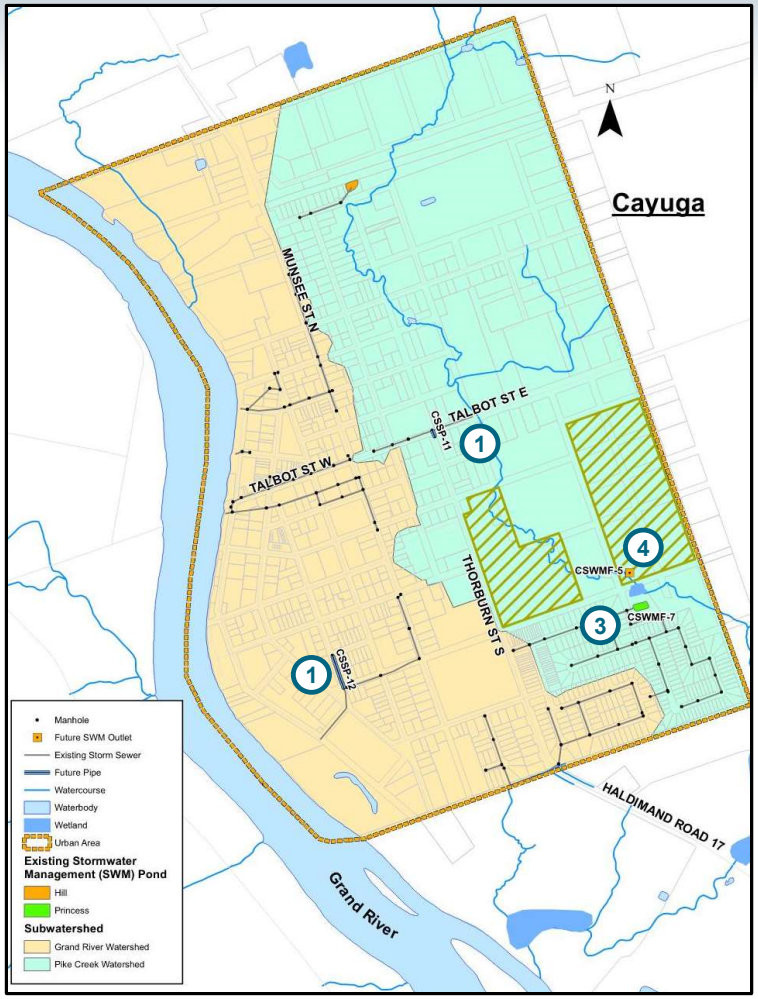
Recommended Stormwater Servicing Alternatives



1. **Stormwater Main Upgrades** along Thorburn Street and Seneca Street South

2. **Stormwater Management Measures for Future Developments:**
   - Stormwater servicing for future developments must be in compliance with the County's CLI ECA.
   - Proposed developments must address the following:
     - Water Balance
     - Water Quality
     - Erosion Control
     - Water Quantity
     - Flood Control
     - Construction Erosion and Sediment Control

3. **The Existing Princess SWM Pond** (CSWMF-7) will provide stormwater management for the Thorburn Village Development, via a **new stormwater network** consisting of storm sewers, ditches and swales.

4. Additional Stormwater Management (CSWMF-5) will be required for the **Monture South** Development

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Recommended Stormwater Servicing Alternatives Summary

MSP System Component	Description	Cost Estimate	Funding			Estimated Timing
			County	Developer	DC	
Stormwater Management						
CSWMF-5	Stormwater management for proposed Monture South Future Development.	Stormwater management for future developments must be in compliance with the County's CLI ECA. Due to the wide range of site-specific constraints and development design solutions to address the regulatory requirements (i.e., CLI ECA requirements), costs are unable to be estimated for stormwater management on a development basis. Project timing will be driven by respective development.				
CSWMF-7	Stormwater network for proposed Thorburn Village Future Development.	Developer Led Project	0%	100%	0%	Near-Term
Stormwater Mains						
CSSP-11	**Pipe Upgrade:** Sewer upgrade on Thorburn Street	$61,000	100%	0%	0%	Long-Term
CSSP-12	**Pipe Upgrade:** Sewer upgrade on Seneca Street South	$191,000	100%	0%	0%	Near-Term
	Total Stormwater Cost	**$252,000 (excluding developer led projects)**				

Stormwater Main Upgrades: Additional sections of pipe were identified as having limited capacity under the 2- and 5-year storm, however no surface flooding was experienced, and no significant issues were identified. Additionally, stormwater main upgrades may be difficult to construct due to:

- Pipes having insufficient cover once they are re-sloped due to Cayuga's shallow system
- Longer sections requiring upgrades to accommodate shallow system

Because of this, no additional storm mains have been identified for upgrades. Upgrades could be completed if there is an identified flooding issue or if other capital works projects involving excavation are being considered for identified areas.

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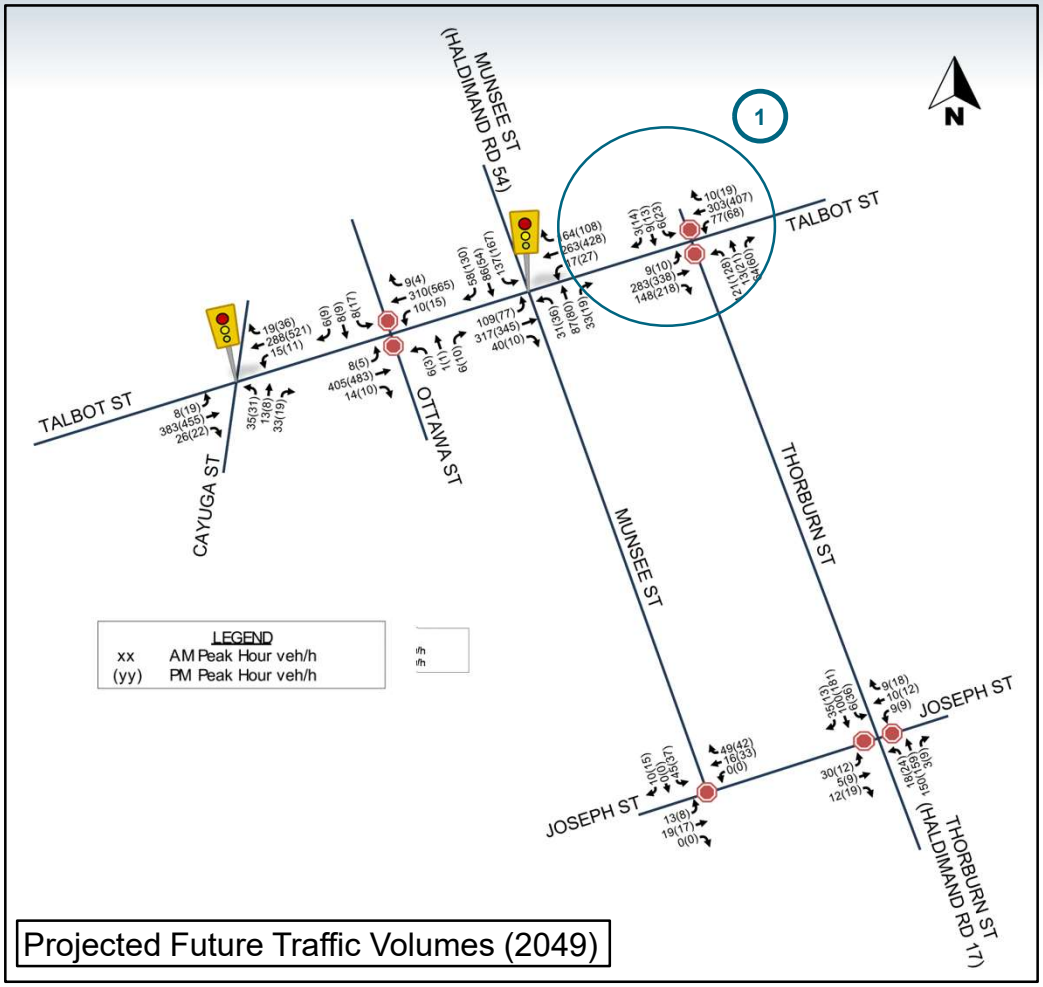
Future Transportation Servicing Issues and Constraints



Projected Future Traffic Volumes (2049)

1

Under future development conditions, the **Talbot/Thorburn intersection** is projected to experience capacity and performance challenges due to background growth, **independent of the proposed future developments**. This will result in a decreased level of service during afternoon peak hour.

Intersection capacity is assessed based on the Ontario Ministry of Transportation (MTO)'s *General Guidelines for the Preparation of Traffic Studies* to determine if intersections are operating acceptably.

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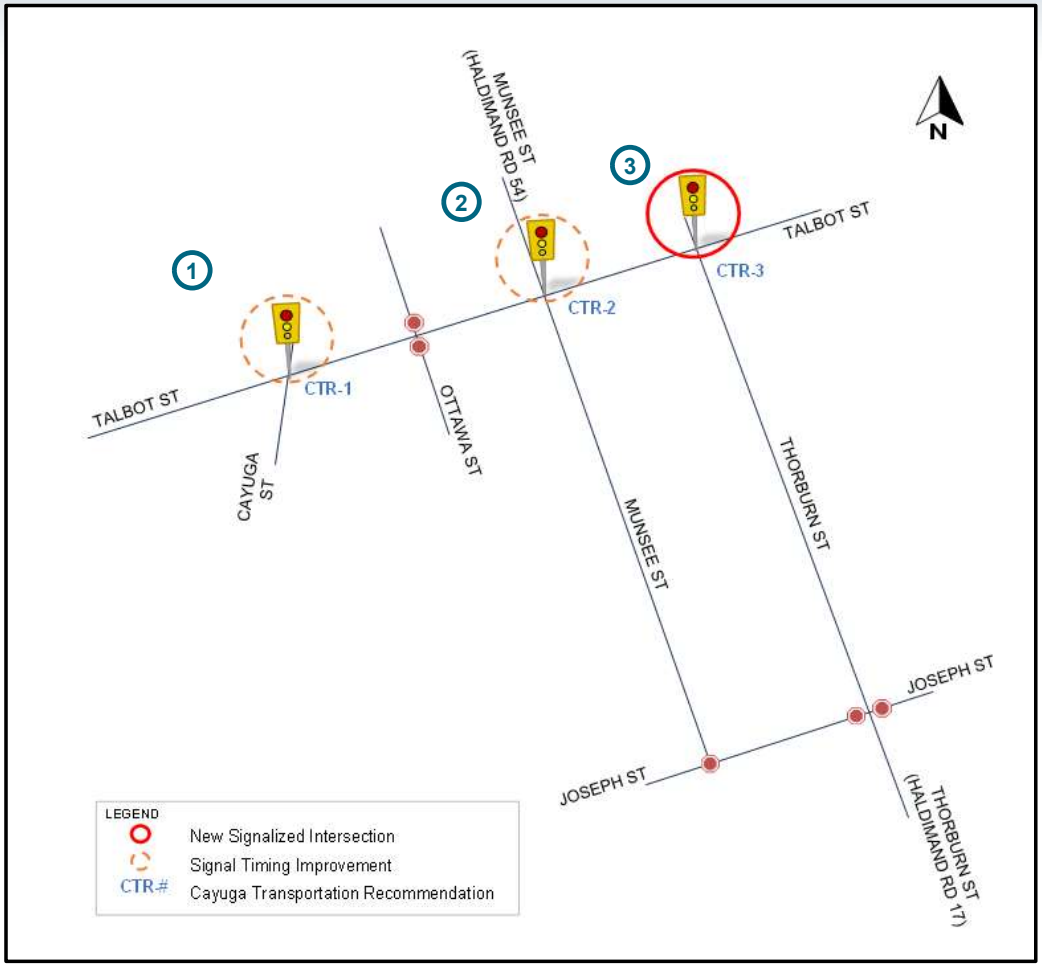
Recommended Transportation Servicing Alternatives



1. **Talbot Street / Cayuga Street:** Optimize signal timing
2. **Talbot Street / Munsee Street:** Optimize signal timing
3. **Talbot Street / Thorburn Street:** Upgrade to a signalized intersection

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Recommended Transportation Servicing Alternatives

MSP System Component	Description	Cost Estimate	Funding			Estimated Timing
			County	Developer	DC	
Transportation Component						
CTR-1	Talbot/Cayuga: Signal timing optimization	$0	100%	0%	0%	Near-term
CTR-2	Talbot/Munsee: Signal timing optimization	$0	100%	0%	0%	Near-term
CTR-3	Talbot/Thorburn: Upgrade to a signalized intersection.	$1,200,000	100%	0%	0%	Near-term
Total Transportation Cost		**$1,200,000**				

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Climate Change Impacts, Mitigation, and Adaptation

Impacts of Climate Change

- **Higher precipitation** from extreme weather
  - Increased **Inflow and Infiltration,** impacting sanitary system and treatment plant performance
  - **Higher flows** and **runoff,** impacting stormwater system performance
  - **Higher nutrient loading** and **algal blooms,** impacting drinking water treatment performance
  - **Flooding** of infrastructure
- **Water level fluctuations** in lakes and groundwater table impacting water supply
- **Evaporation** due to extreme heat
- **Energy usage** during extreme weather

Mitigation and Adaptation

- Once proposed infrastructure alternatives are identified (Phase 2 of the MCEA), climate change mitigation and adaptation measures will be identified and assessed
- **Potential Mitigation and Adaptation Measures:**
  - Working with Conservation Authority, Provincial, and Federal **climate change adaptation initiatives**
  - **Renewable energy generation** and backup power
  - Building **resilient infrastructure**
  - Consideration of **future climate** conditions during the design of infrastructure

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Cumulative Effects and Potential Impacts to Treaty Rights

Haldimand County is home to many Indigenous peoples, including the Six Nations of the Grand River and the Mississaugas of the Credit First Nation. The United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), and Canada's commitment to implement these rights under the UNDRIP Act (UNDRIPA), was used as reference to determine the potential impacts of this Master Servicing Plan to the rights of Indigenous People within the project study area:

Rights Relating to Culture, Traditions, Customs, and Spirituality:

UNDRIP Act Article	Impact Considerations	Impact Mitigation
• Articles 11.1, 12.1, 15.1, 24.1, 25, 31.1	• Several areas have **potential for archaeological and cultural heritage** significance. • Natural **features of traditional significance** (e.g., hardwood trees, medicinal plants, animals) may also be present.	• Once preferred project sites are known, a walk-through could be conducted with the affected First Nation community and knowledge learned could be incorporated into the project.

Rights Relating to Decision Making and Participation in Projects:

UNDRIP Act Article	Impact Considerations	Impact Mitigation
• Articles 13.2, 18	• First Nation peoples have the right to participate in decision-making for matters that affect their rights. • There may be interested persons who are unable to understand information and unable to participate in the project.	• The study will **meet the intention of meaningful consultation with First Nation communities**, ensuring all project information can be understood by First Nation peoples. • First Nation peoples can **participate in the evaluation and decision-making** process by providing comments and concerns on proposed projects.

Rights Relating to Development and Economic & Social Conditions:

UNDRIP Act Article	Impact Considerations	Impact Mitigation
• Articles 21.1, 21.2, 23	• First Nation peoples living in Cayuga have the right to improvement of their municipal services without discrimination.	• Areas of Cayuga requiring municipal service improvement will be identified **without discrimination against First Nation communities**. • Appropriate provincial guidelines will be followed for preferred projects so members of First Nation communities will be **protected from municipal services in poor condition**.

Rights Relating to the Environment and Conservation:

UNDRIP Act Article	Impact Considerations	Impact Mitigation
• Articles 29.1, 29.2	• Development of municipal services will be proposed as part of this MSP update, which may have environmental impacts.	• Potential projects will undergo an evaluation process that **considers the protection and conservation of the environment.** • Through consultation, particular **areas or conditions of concerns** held by First Nation communities can be **discussed and incorporated into the project.**

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Get Involved

How Do I Get More Information?

- Complete the sign-in form to join the study mailing list
- Check the website (www.haldimandcounty.ca) for study updates
- If you have questions regarding the study, or have any accessibility requirements in order to participate in this project, please contact one of the individuals below at any time:

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