# 2021 Water and Wastewater Servicing Plan Update

**Public Information Centre (PIC) No. 2**

**Wednesday, January 18, 2023**

BluePlan ENGINEERING

Niagara Region

# 2021 Master Servicing Plan Update (MSPU)

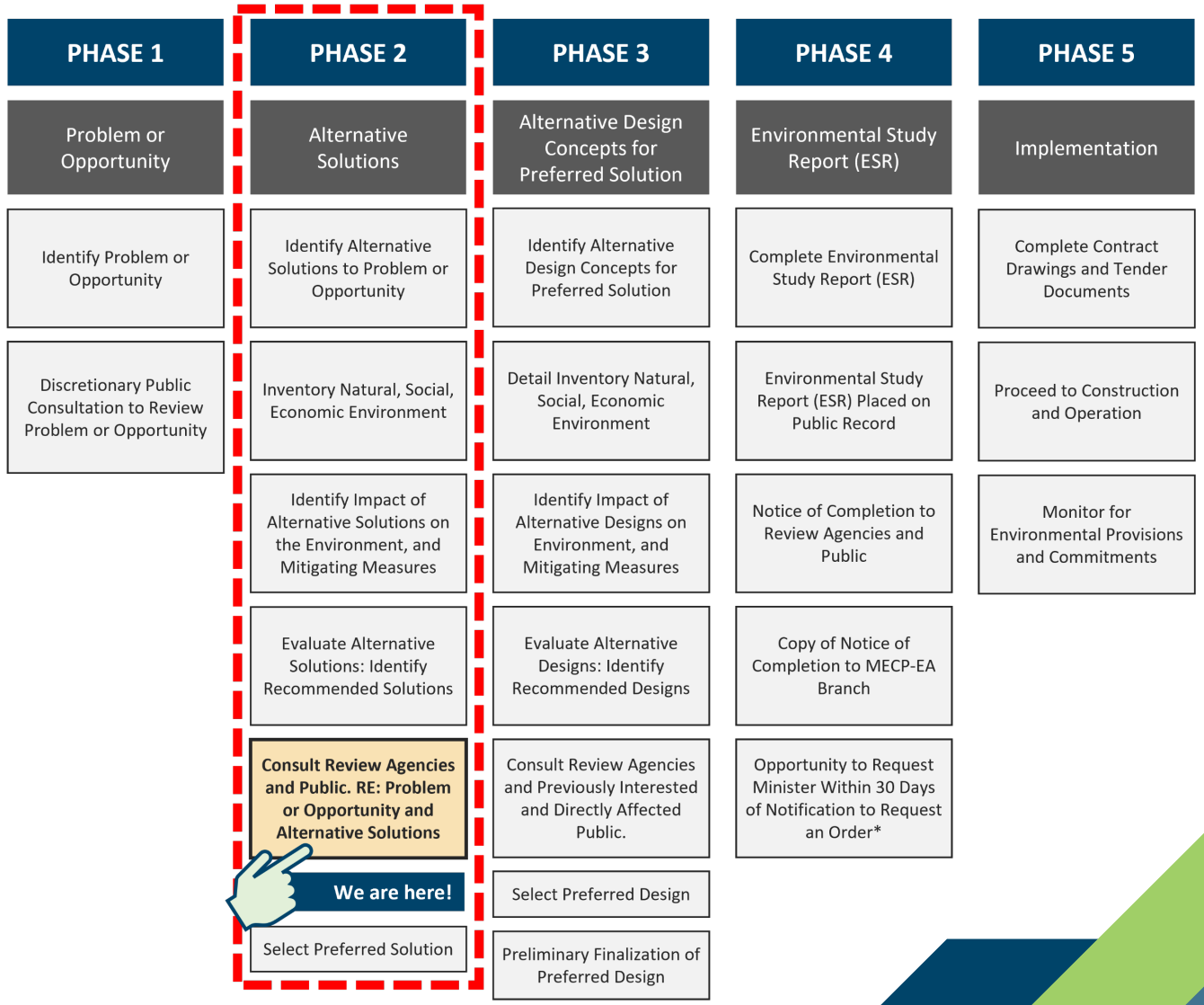
> ***The 2021 Master Plan Update will identify and develop a long-term water and wastewater servicing strategy and capital forecast to ensure level of service for existing and future residents and businesses. This will support future growth in the community to 2051 and consider potential impacts beyond 2051.***

With an updated planning horizon to 2051, the 2016 Master Servicing Plan needs to be updated to determine how the Region's water and wastewater infrastructure will establish a cost effective infrastructure program that meets the service needs of existing and future users, meets regulatory and legislative requirements, supports growth in a sustainable and responsible manner, and addresses the priority areas of climate change, energy management, infrastructure optimization, system security, and resiliency.

Niagara Region has completed several updates to the Water and Wastewater Master Plan (MSPUs). The most recent 2016 MSPU, completed in 2017, looked at servicing planned growth to year 2041.

# MSPU Class Environmental Assessment (EA) Process

- The MSPU will satisfy Phases 1 and 2 of the Class EA process
- Some projects from the recommended water and wastewater servicing strategies will move to design and construction
- Some more complex projects will require further study and may require completing Phase 3 and 4 of the Class EA process under Schedule C activities
- Essential elements of the Class EA process include:
  - A multiple bottom line evaluation process
  - Public and stakeholder engagement and consultation process



# PIC No. 2 Objectives

## Timeline

**January 18, 2023:**
New information posted on the project web site and Live Presentation (6 – 7:30 pm)

**January 18 to February 2, 2023:**
Submit questions or comments related to PIC No. 2 to the Niagara Region Project Manager
niagaramspu@niagararegion.ca

**February 23, 2023**
Responses to questions and comments related to PIC No. 2

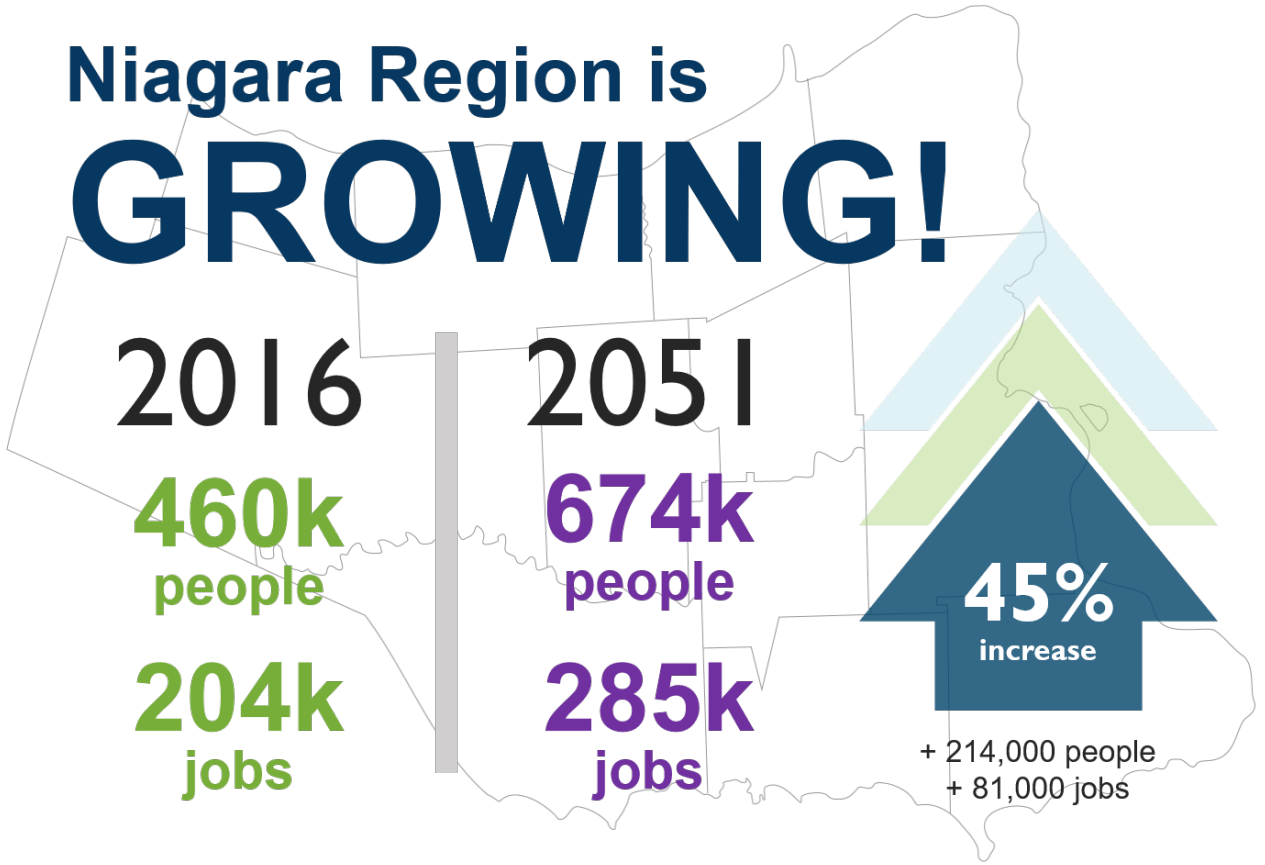
**Present the Recommended Preferred Water and Wastewater Servicing Strategies and Capital Programs**

**Provide clarity on the Master Servicing Plan Update (MSPU) process and next steps.**

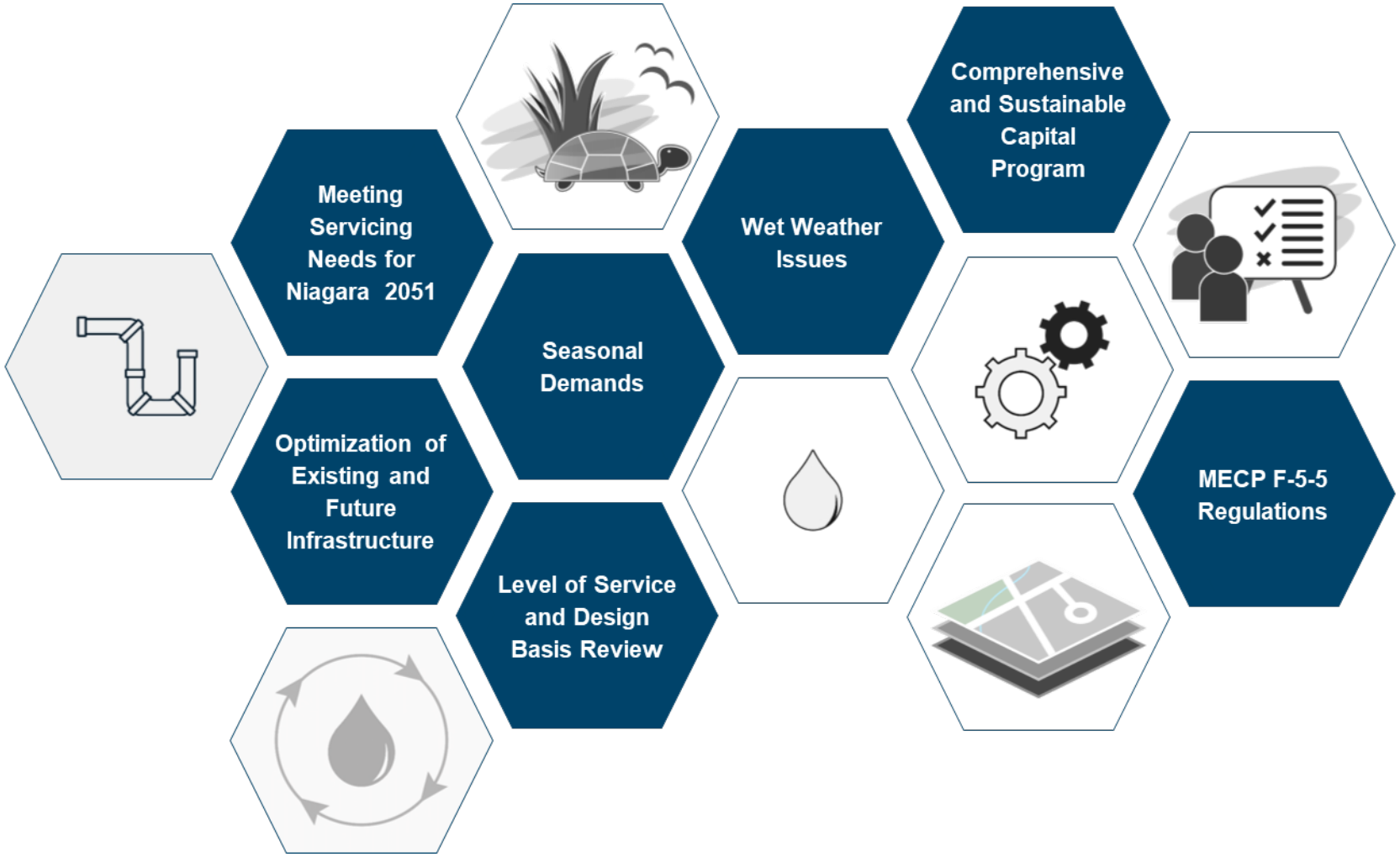
**Receive feedback and answer any questions you may have about the MSPU and Recommendations**

# Planning Context

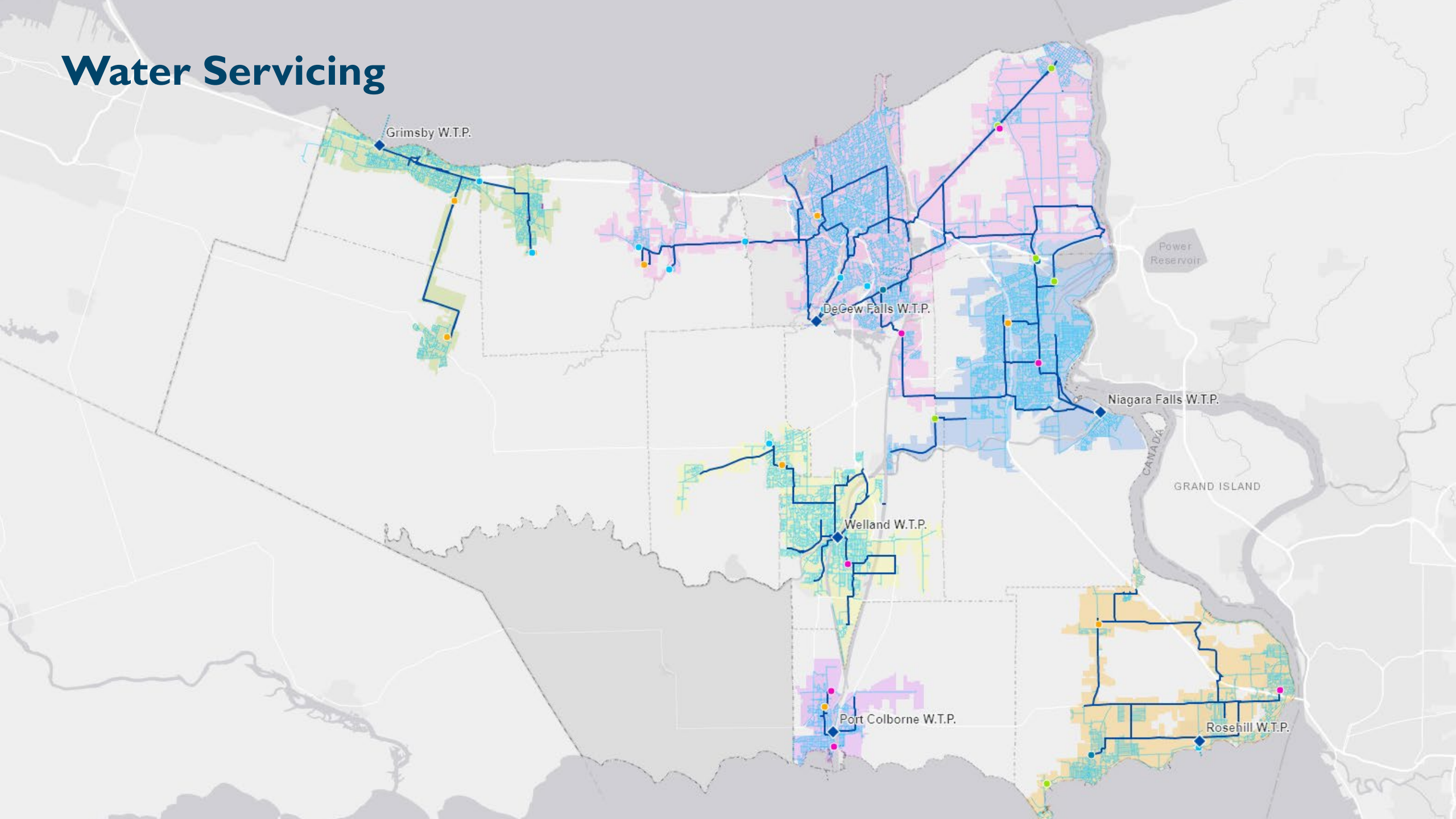
- This study is in response to the Provincial Growth Plan forecasts which identify the need for an additional 214,000 people and 81,000 jobs in the Niagara Region by 2051.
- The MSPU will identify the need, timing and cost of water and wastewater servicing and infrastructure required for Niagara Region to 2051 to support growth.
- The long-term servicing plans will review infrastructure considerations related to growth beyond 2051



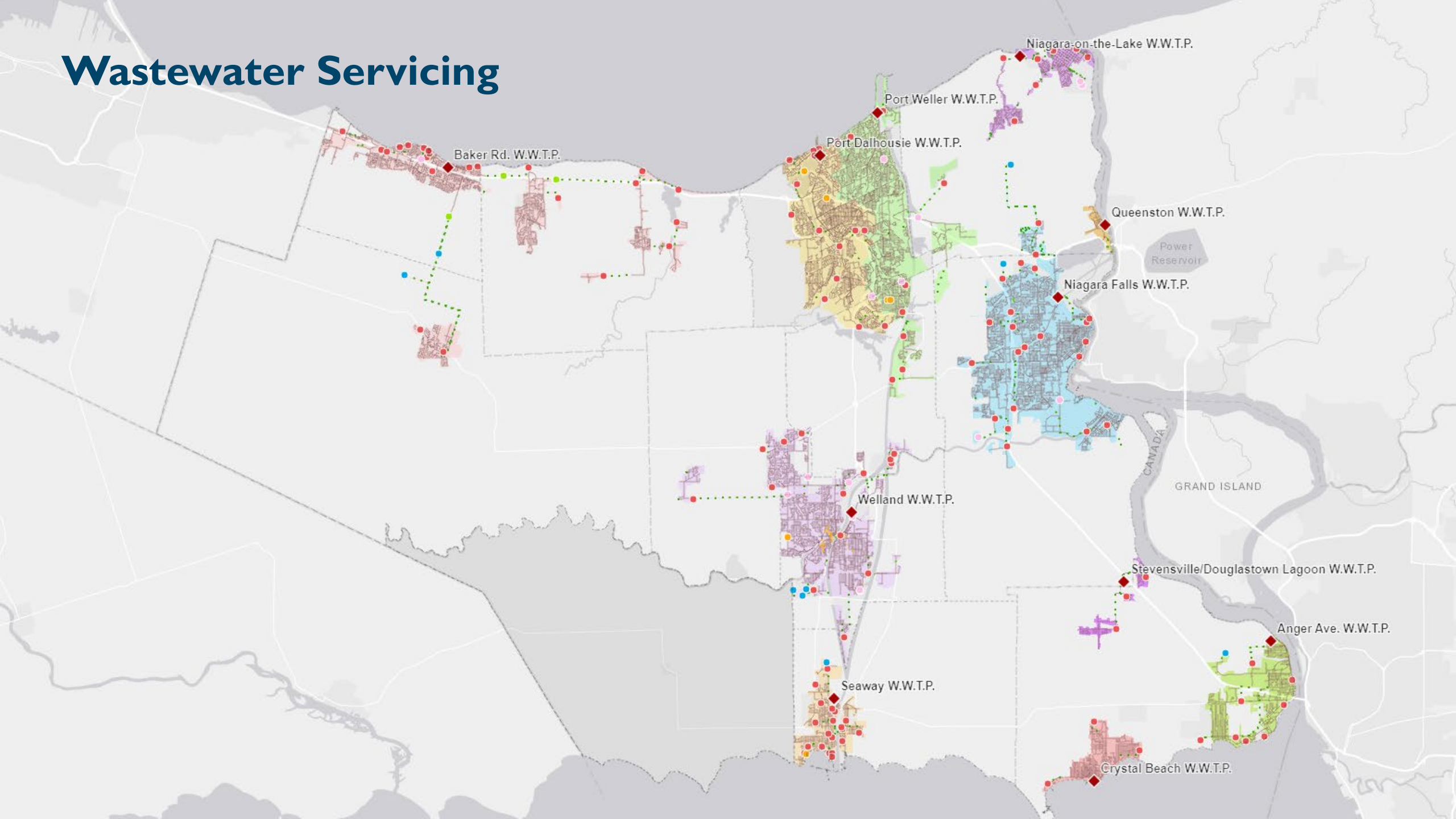
# Key Drivers for the MSPU



# Water Servicing

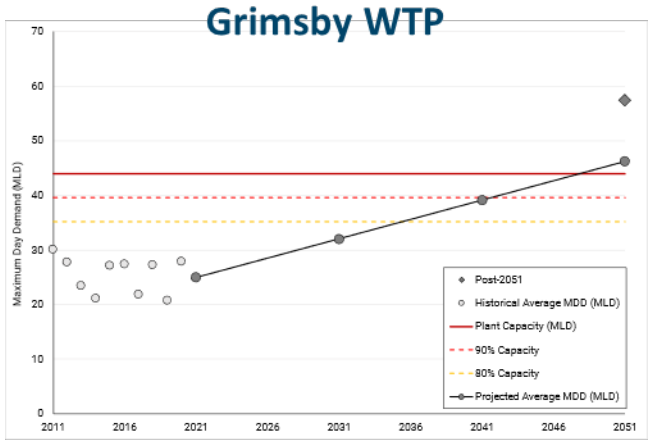


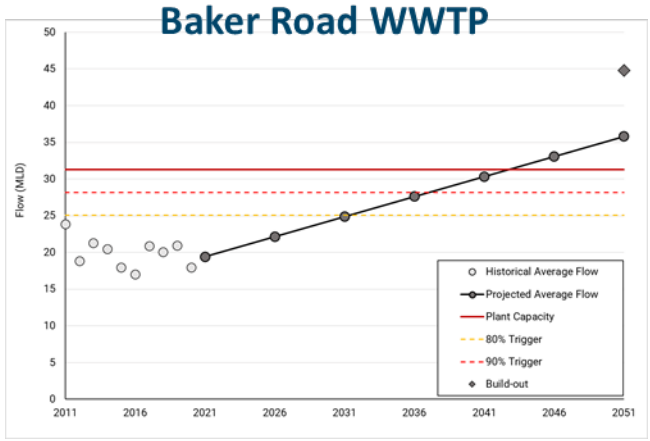
# Wastewater Servicing



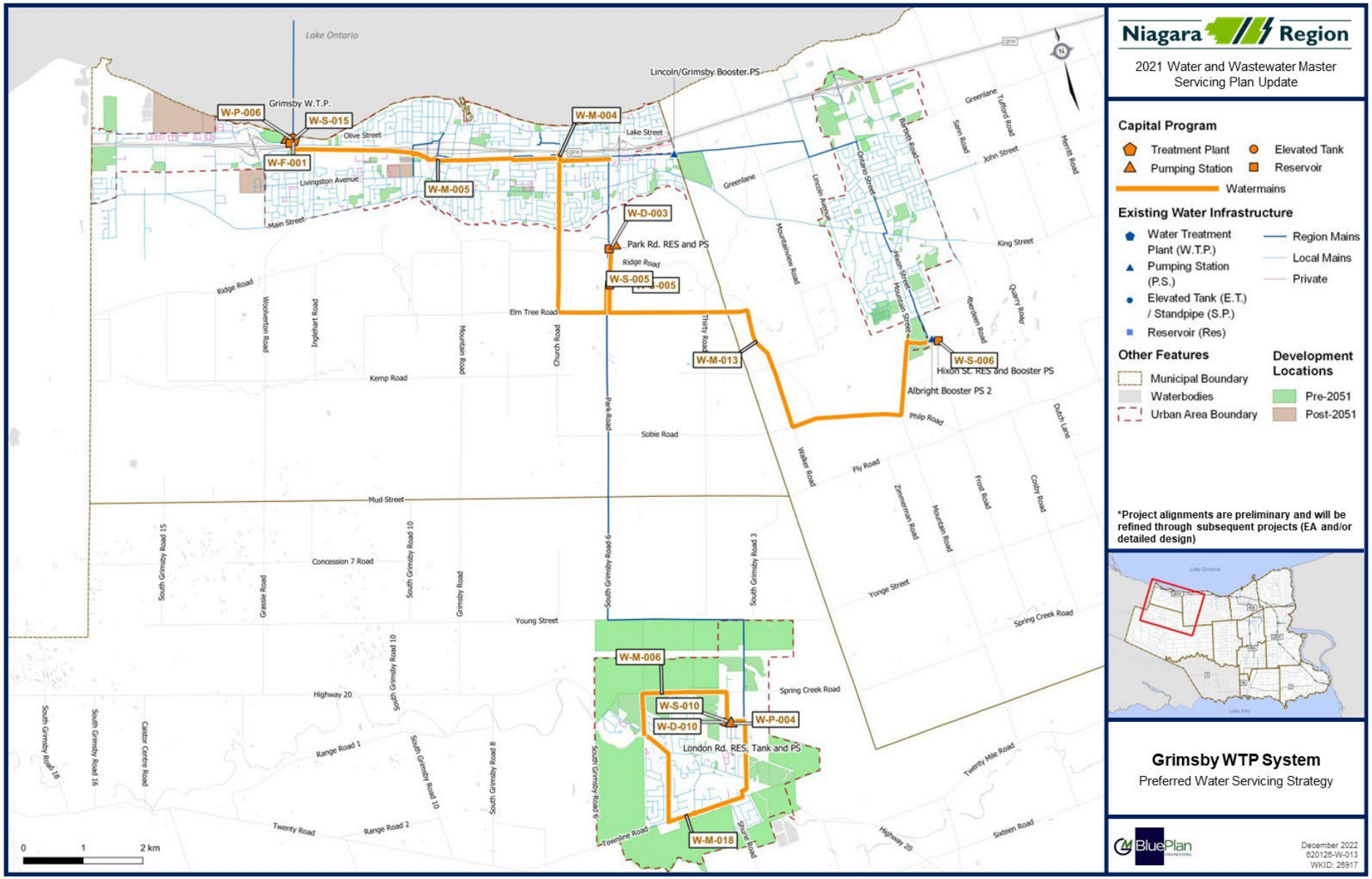
# Grimsby / Lincoln / West Lincoln

- Significant growth projected in Smithville, Beamsville and Vineland
- Continued growth in Grimsby with intensification and corridor development
- Water and wastewater treatment plants require expansion
- Water system feeds and looping required to support growth for Smithville and Beamsville and security of supply / resiliency
- Vineland supply via Decew (St. Catharines)
- Additional water storage required
- Hixon Reservoir expansion is needed post-2051 to support growth
- Significant wastewater pumping station and forcemain work required for additional capacity
- Wastewater system capacity also achieved through strategic wet weather flow reduction programs

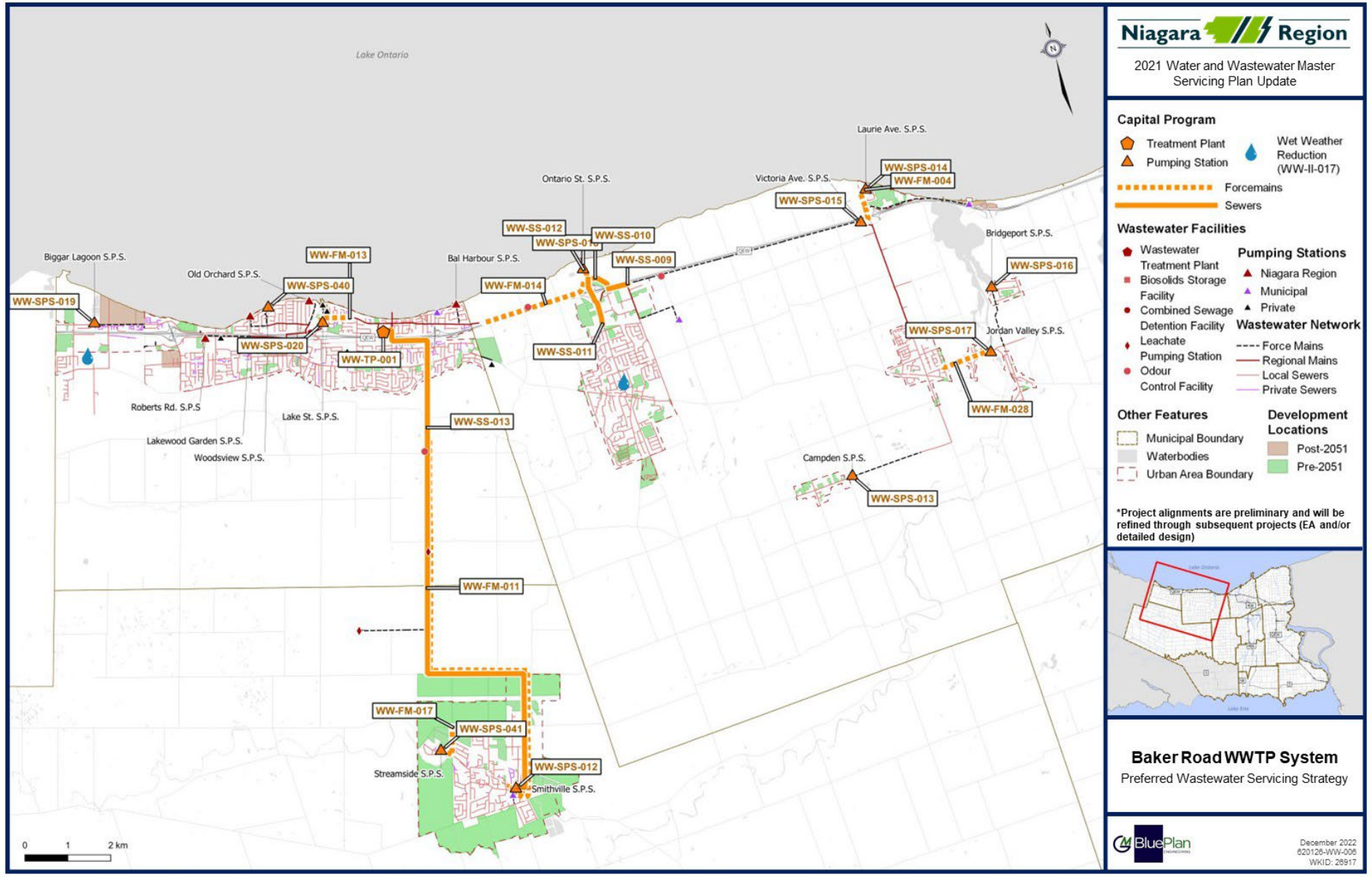


# Grimsby / Lincoln / West Lincoln – Water Strategy

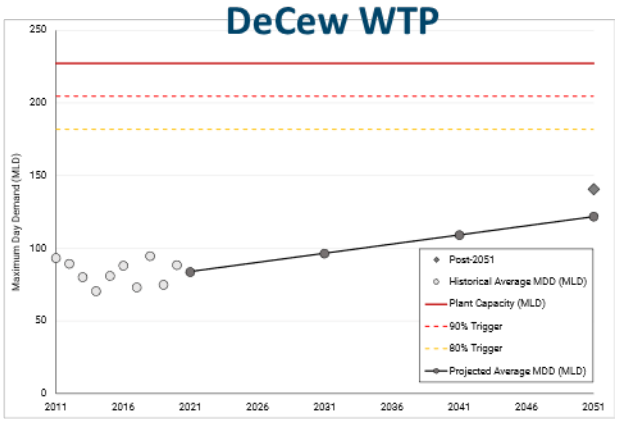


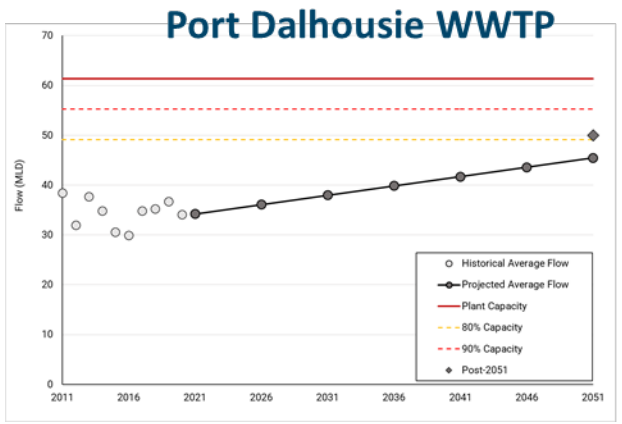
# Grimsby / Lincoln / West Lincoln – Wastewater Strategy

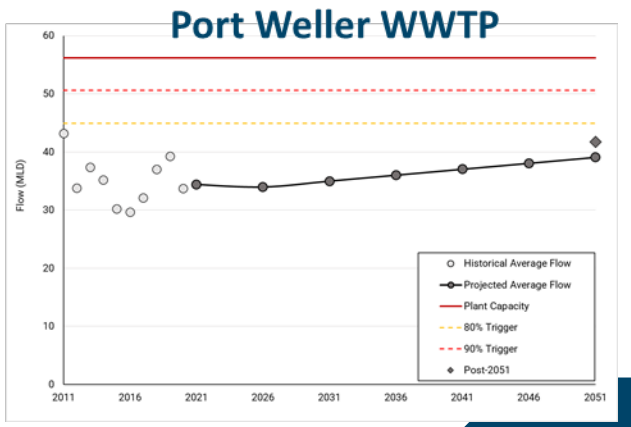


# St. Catharines

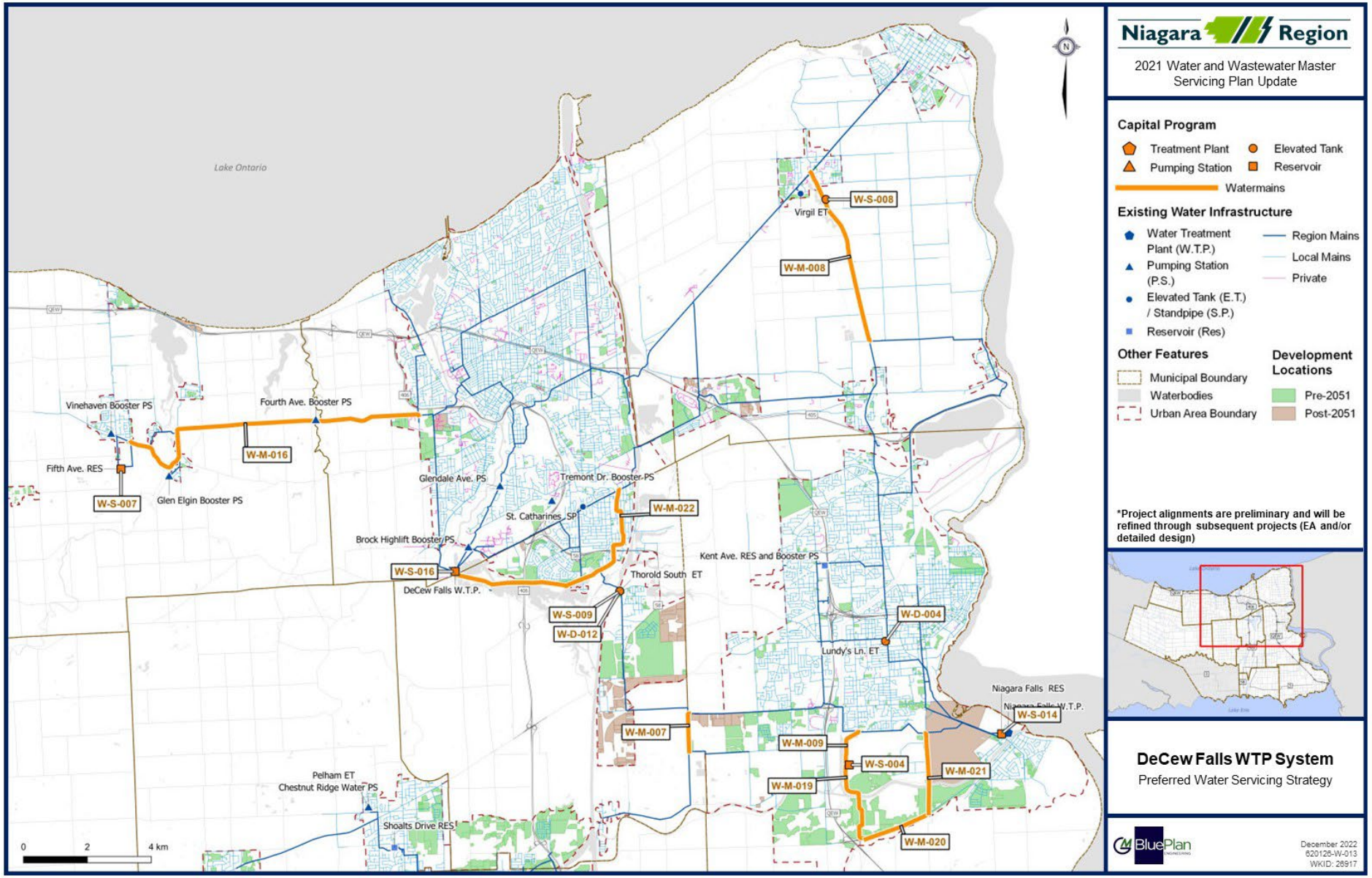
- Continued intensification across St. Catharines
- Water and wastewater treatment plants have sufficient capacity
- Water distribution system requires additional capacity to support growth flows from Decew WTP and to service Vineland
- Decew WTP reservoir expansion is required post-2051 to support growth
- Some wastewater pumping station upgrades to support growth
- Wastewater system capacity achieved through strategic wet weather flow reduction programs



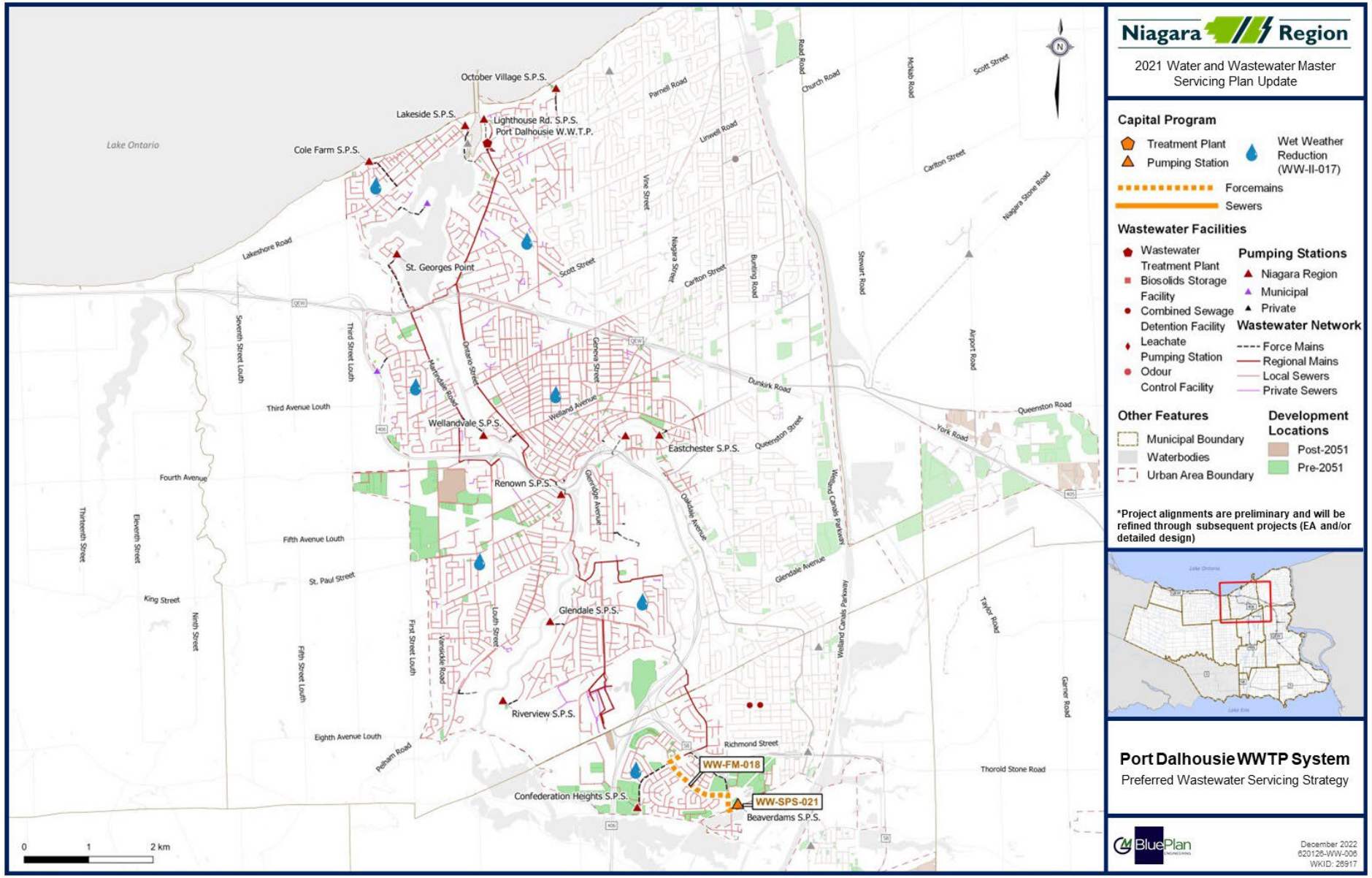



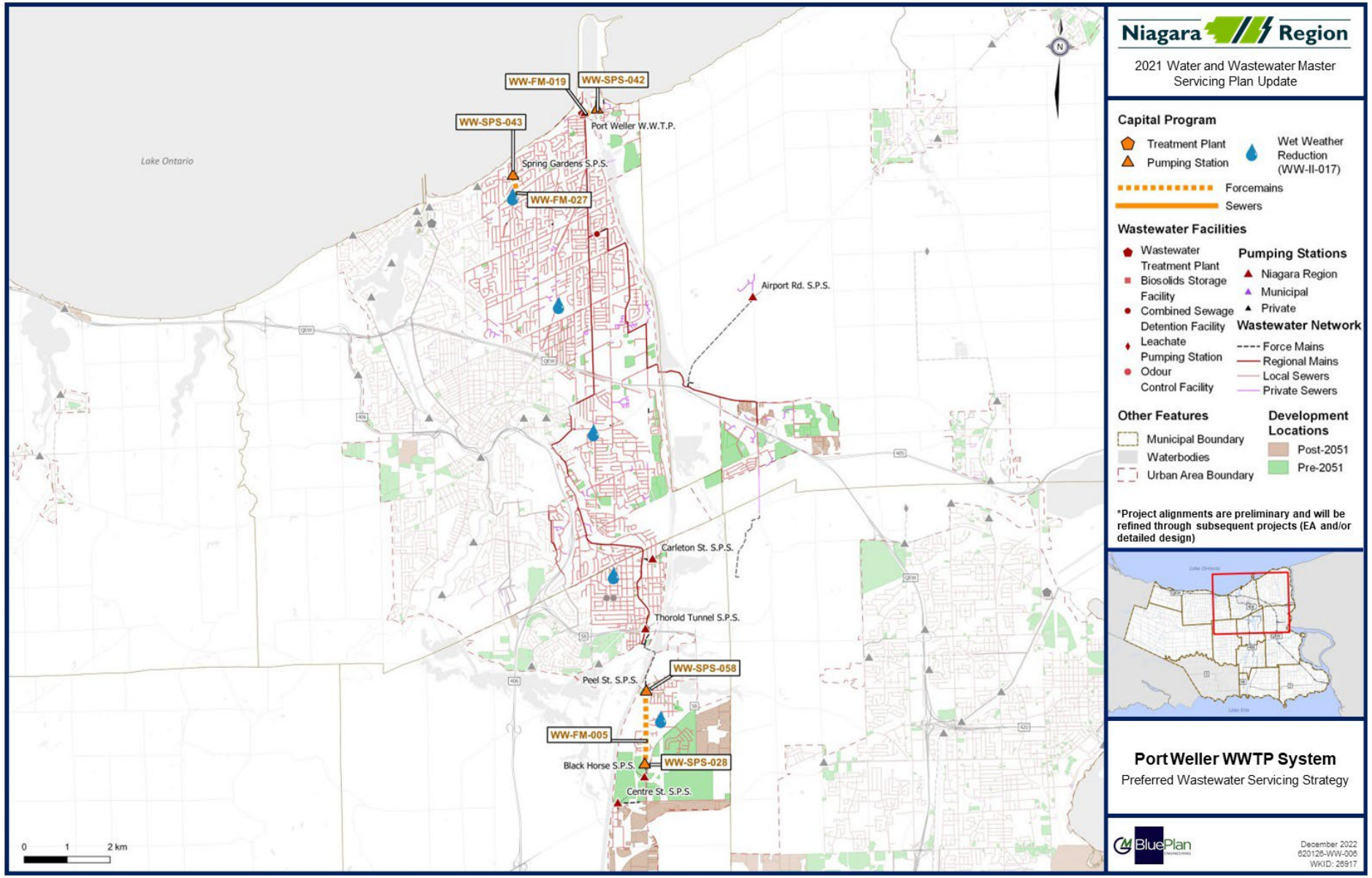
# St. Catharines – Water Strategy



# St. Catharines (Port Dalhousie) – Wastewater Strategy



# St. Catharines (Port Weller) – WWTP Wastewater Strategy



# Niagara Falls / NOTL / Thorold

## Niagara Falls

- Significant growth across City with large portion in South Niagara Falls
- Water storage and distribution system trunk looping required to support growth
- Niagara Falls WTP Reservoir expansion is required post-2051 to support growth
- Wastewater strategy based on completed South Niagara Falls Wastewater Solutions Class EA
- Several wastewater pumping station upgrades to support growth
- Long term servicing strategy to connect Chippawa to the new SNF WWTP
- Wastewater system capacity also achieved through strategic wet weather flow reduction programs

*Figure 1. Stanley Ave WWTP Flow Projections*

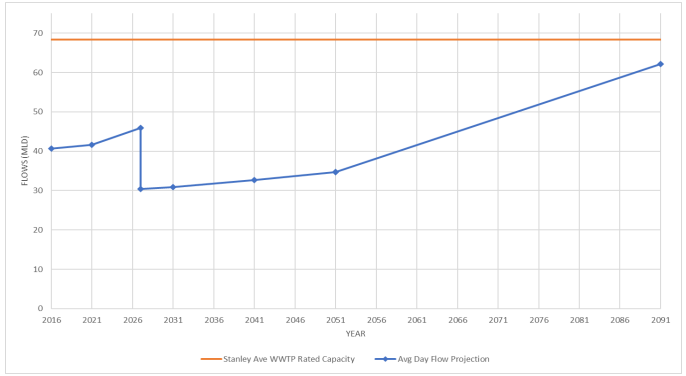
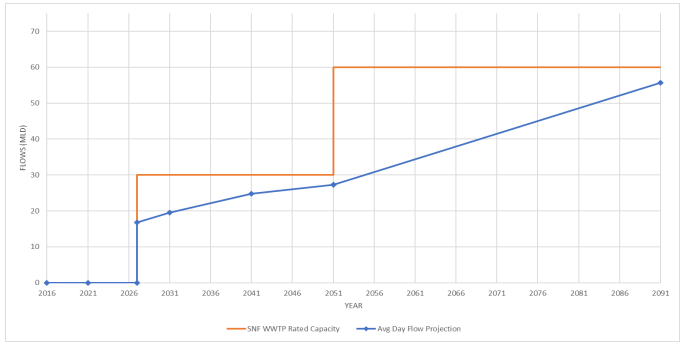
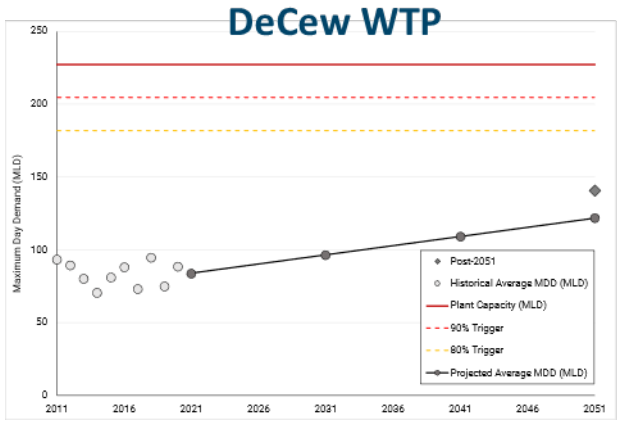
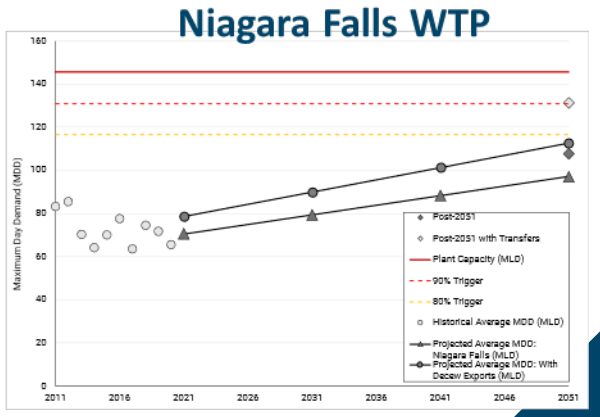



*Figure 2. SNF WWTP Flow Projections*



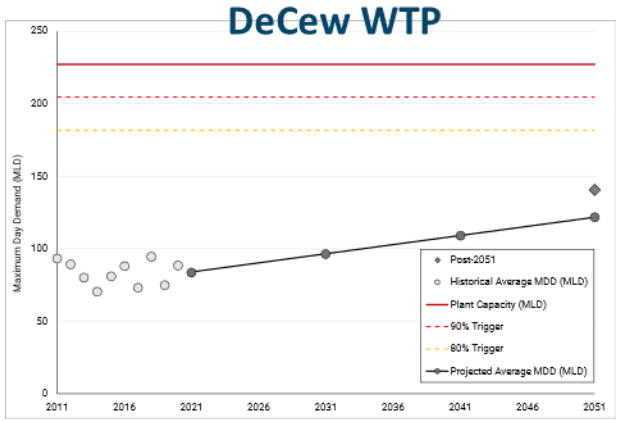



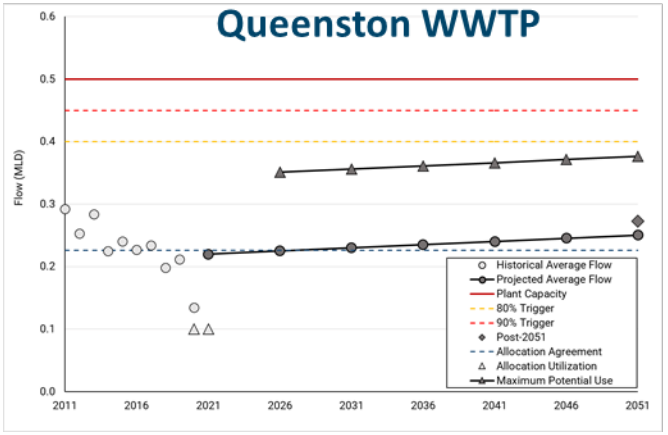



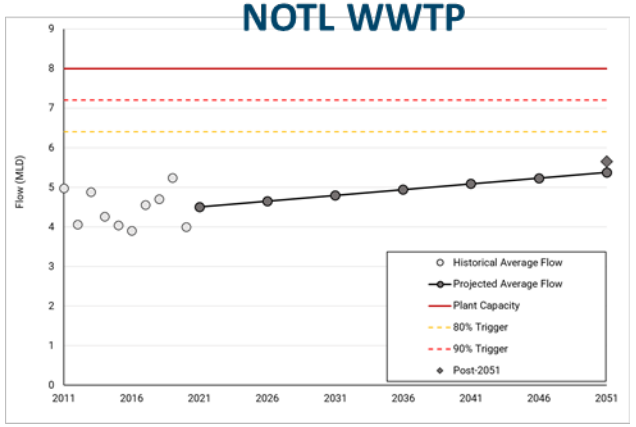
# Niagara Falls / NOTL / Thorold

## NOTL / Queenston

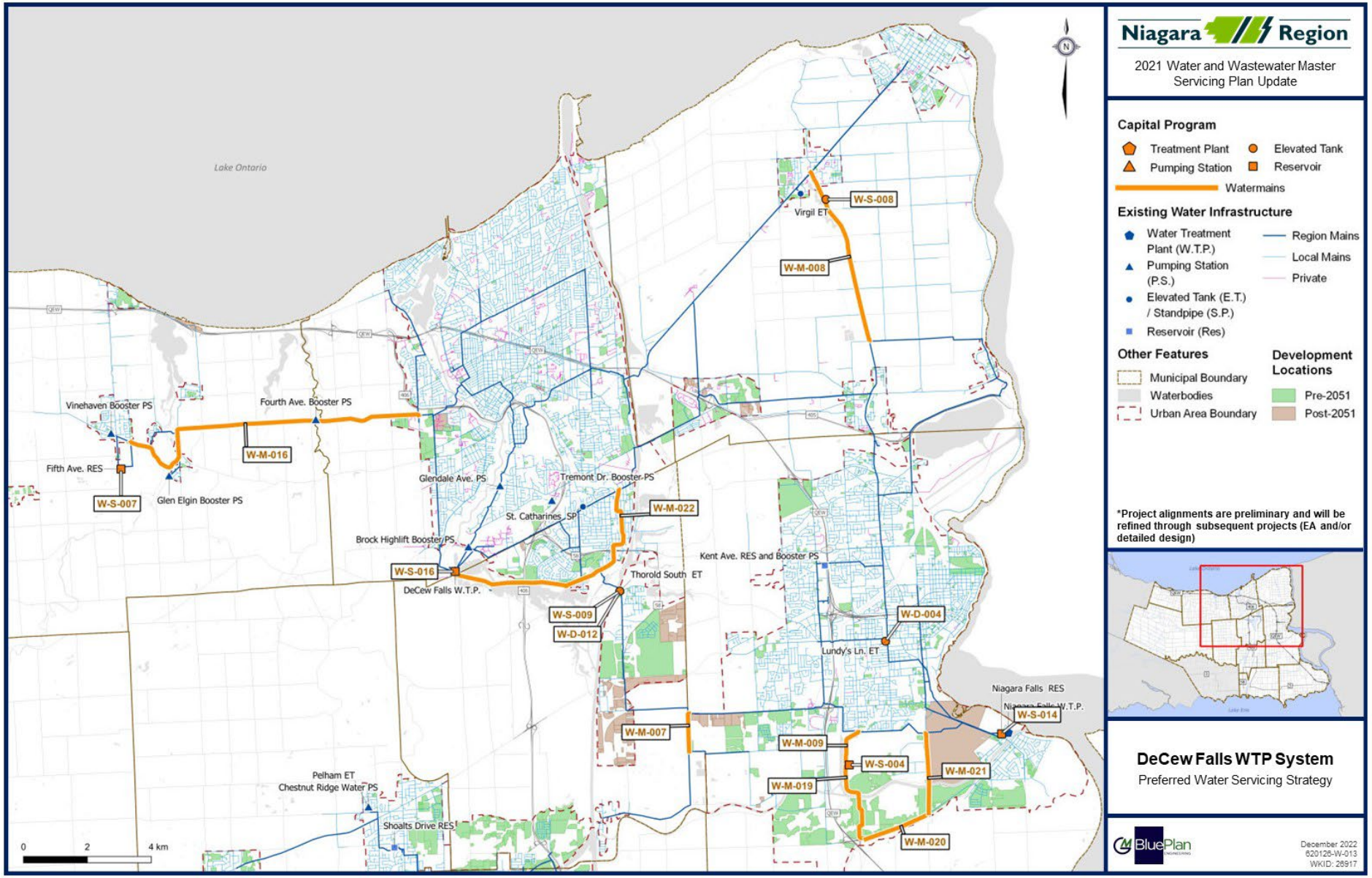
- Infill growth projected in urban centres
- Additional water storage and distribution trunk looping required to support growth
- Wastewater pumping station upgrades required to support growth
- Queenston wastewater strategy currently reflects the DC program and will be updated based on the ongoing Class EA study



# Niagara Falls / NOTL / Thorold – Water Strategy



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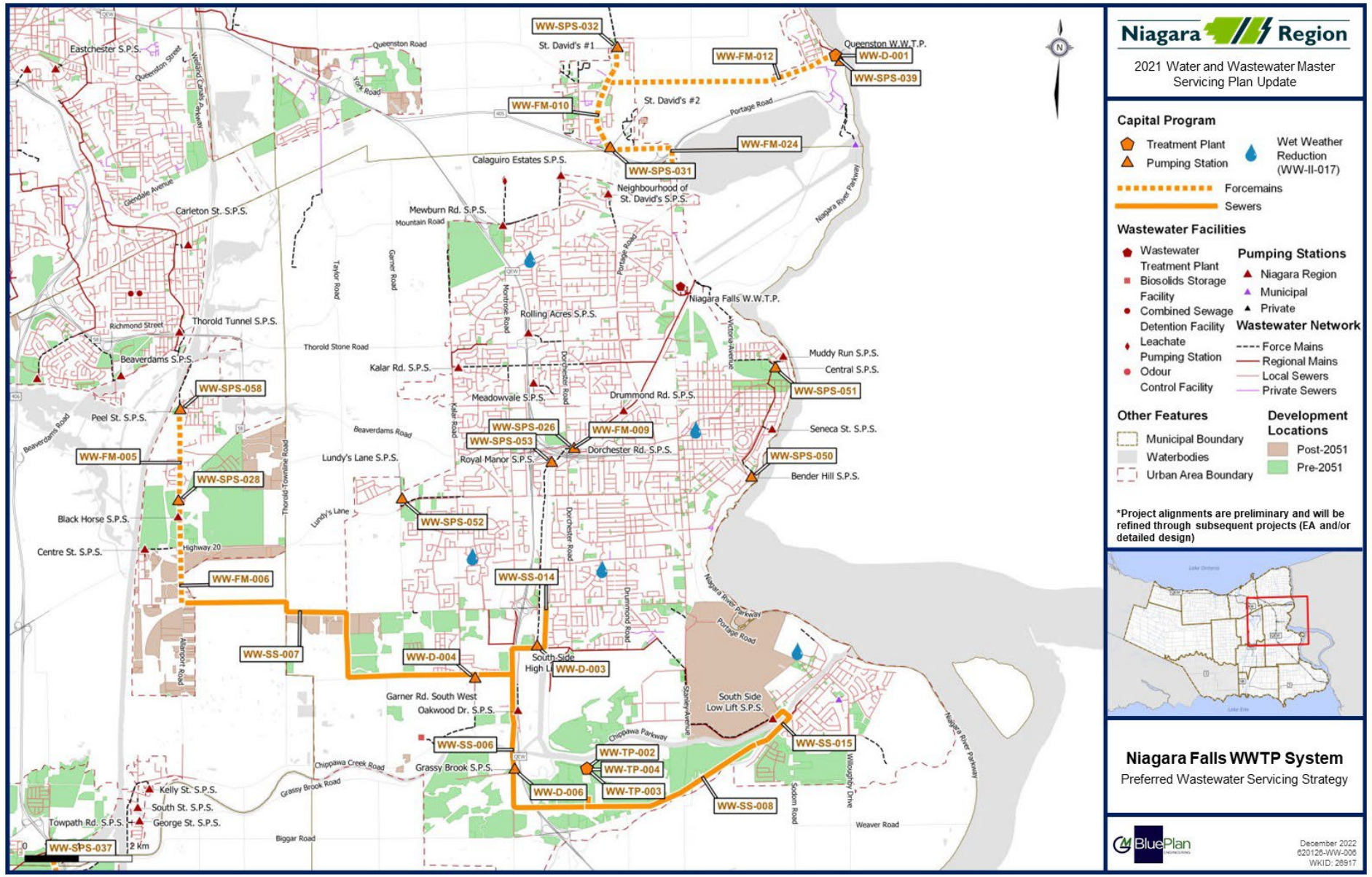

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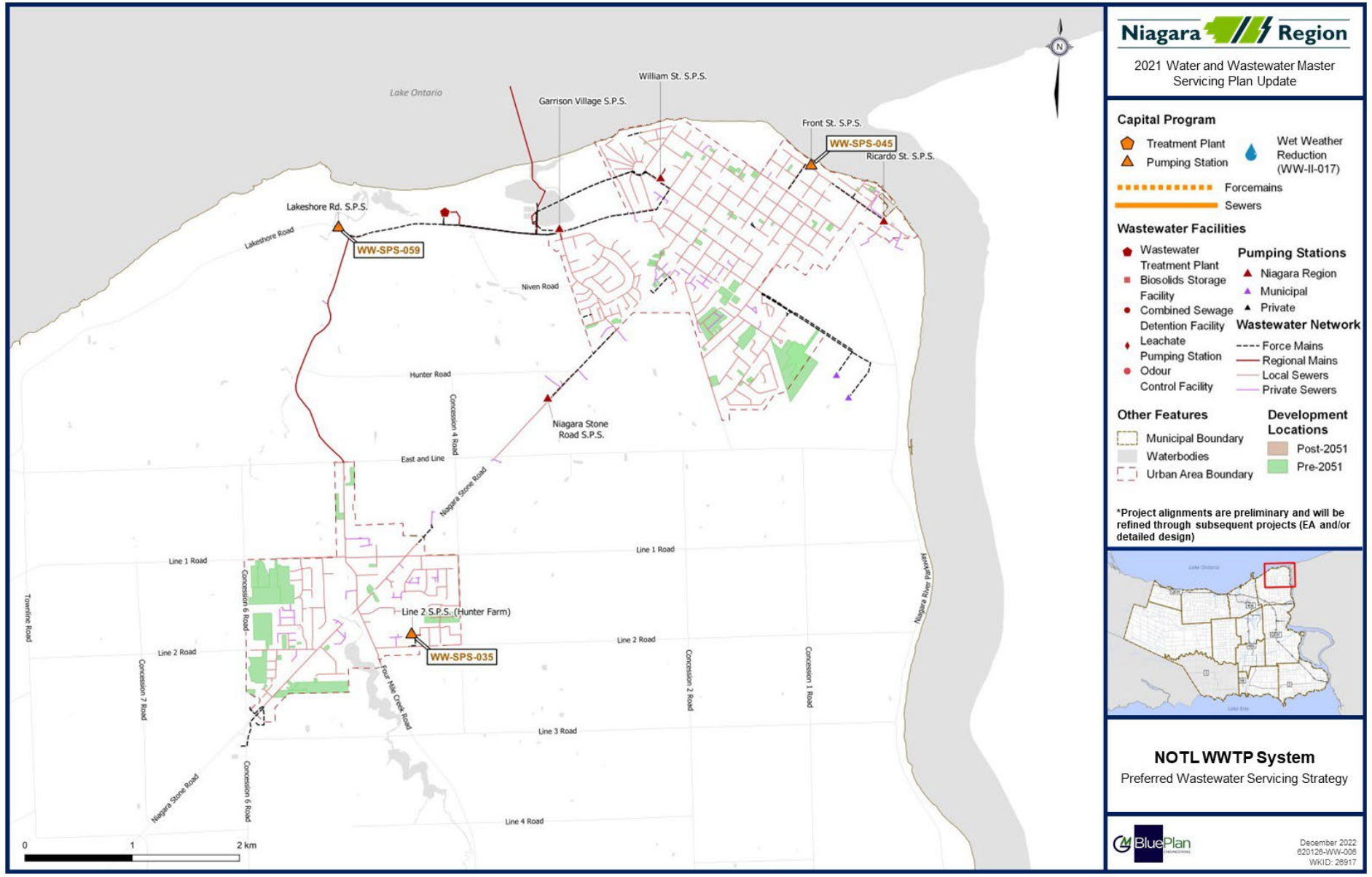
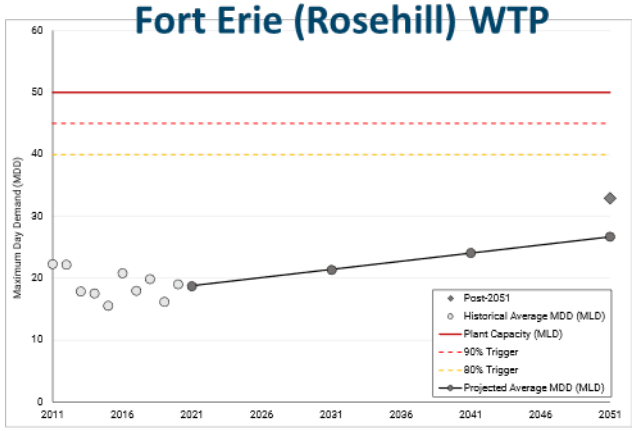
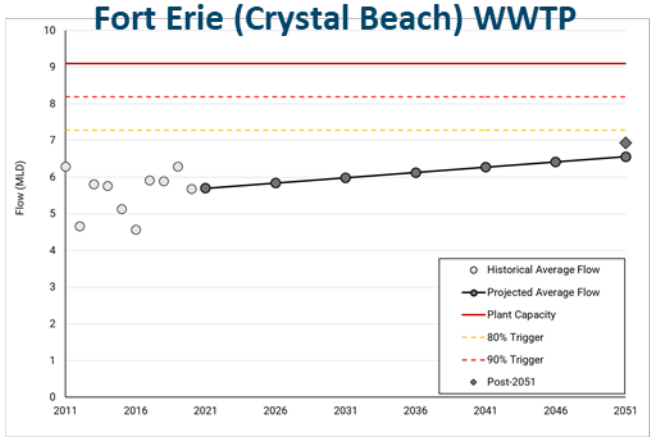
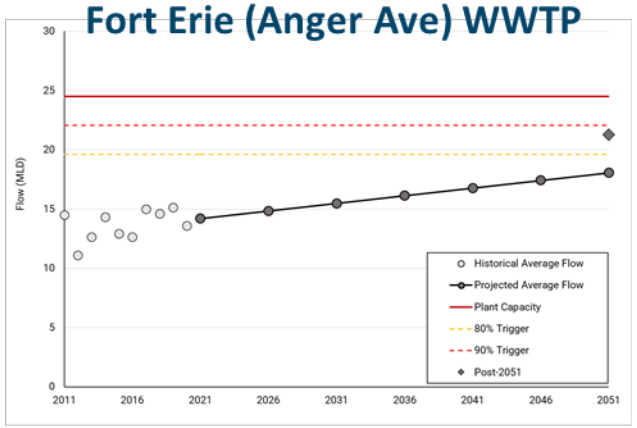


# Fort Erie

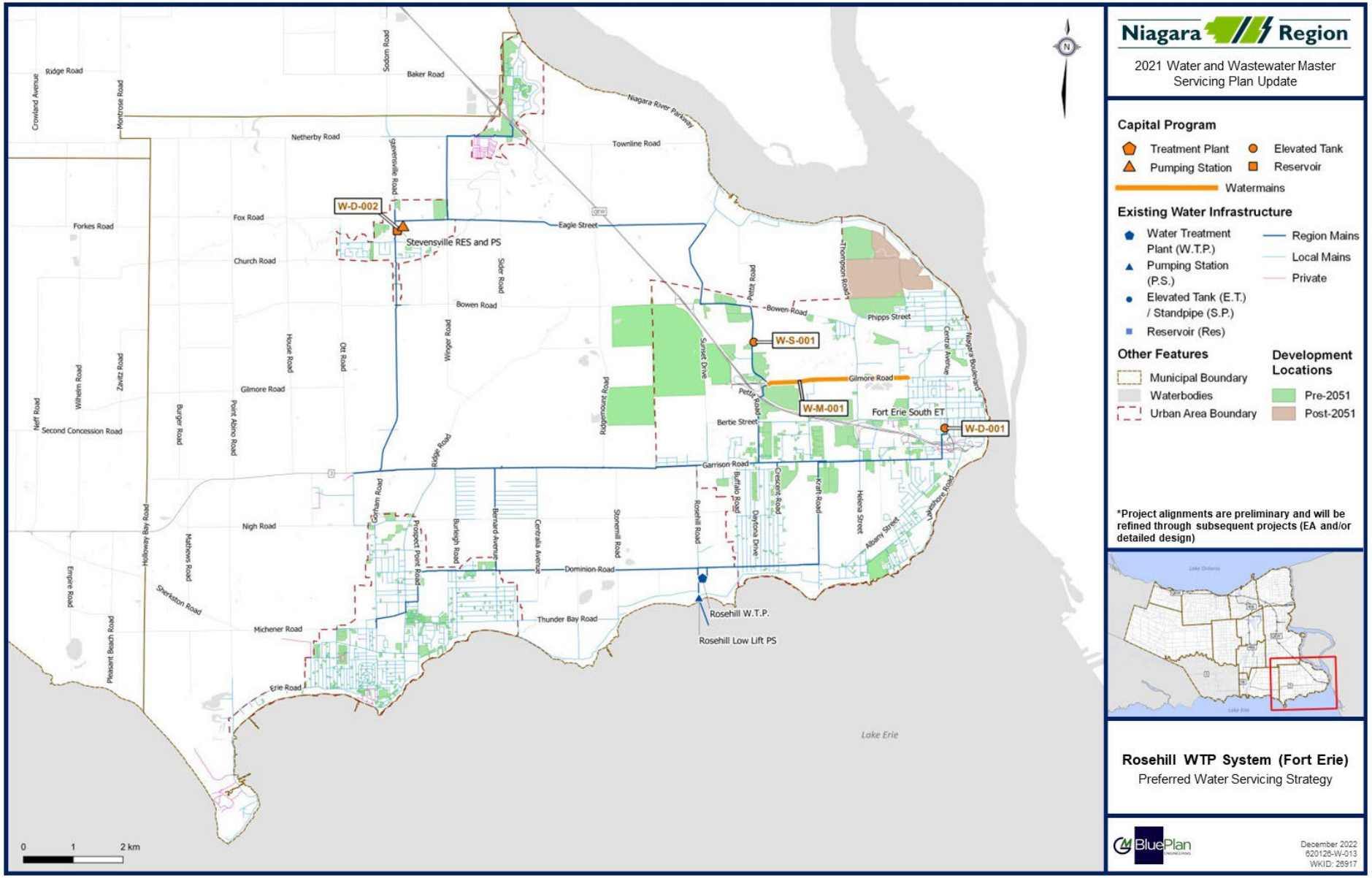
- Continued infill growth in the urban centres
- Potential greenfield growth outside Fort Erie urban area
- Water treatment capacity sufficient
- Some trunk water system upgrades required for growth
- Some wastewater pumping station upgrades required for growth capacity
- Wastewater system capacity also achieved through strategic wet weather flow reduction programs



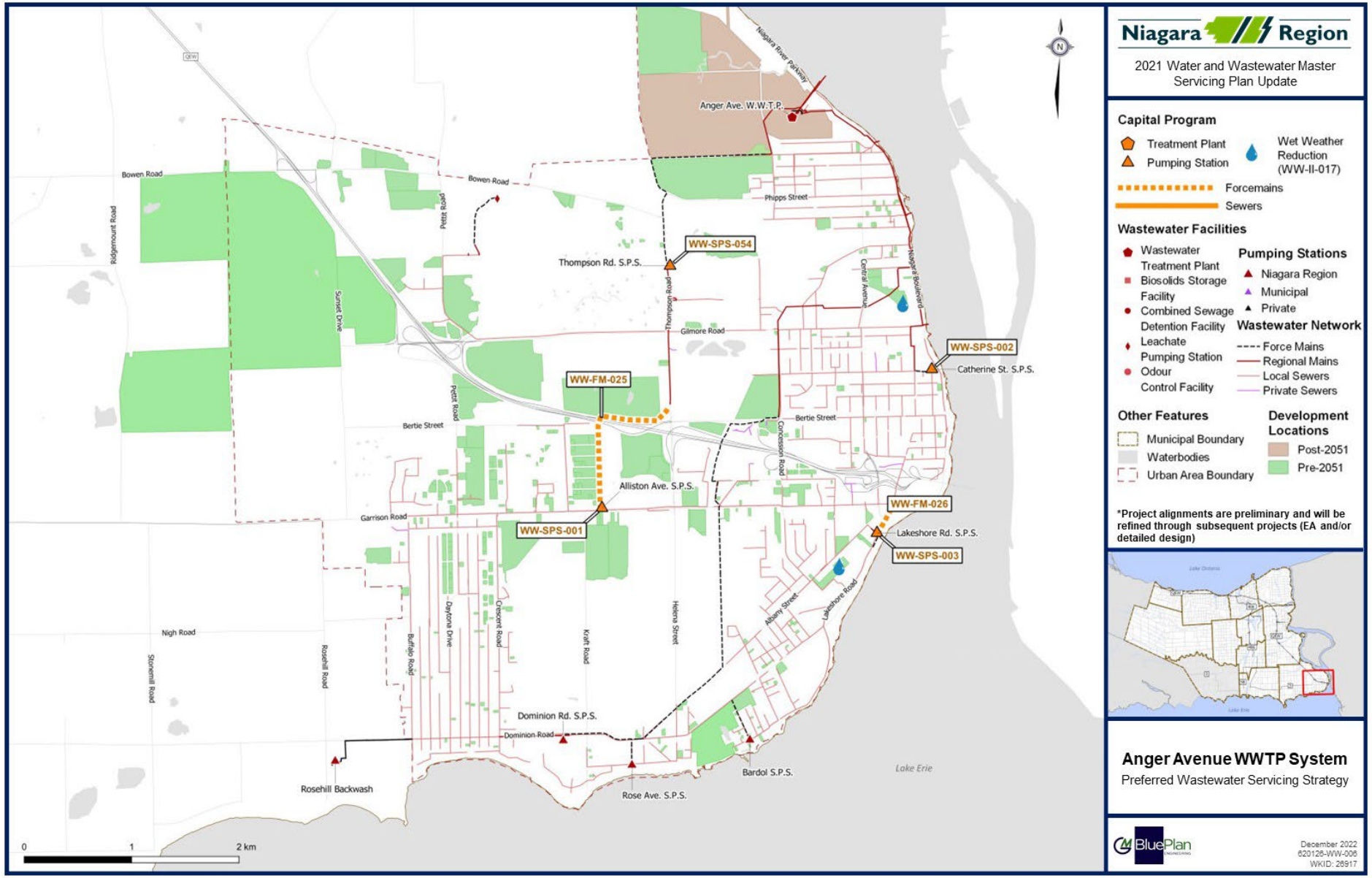



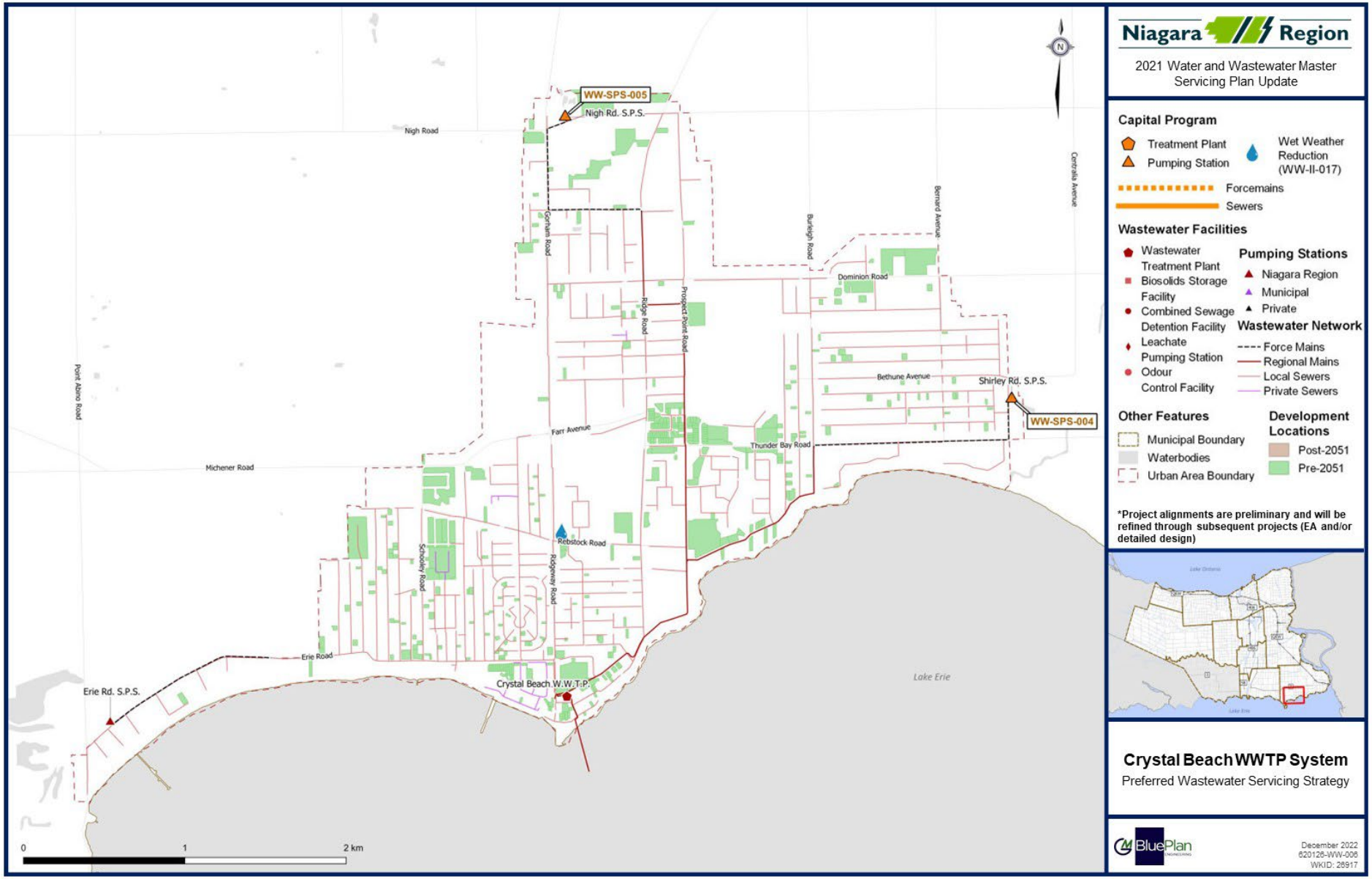
# Fort Erie – Water Strategy



# Fort Erie (Anger Ave) – Wastewater Strategy

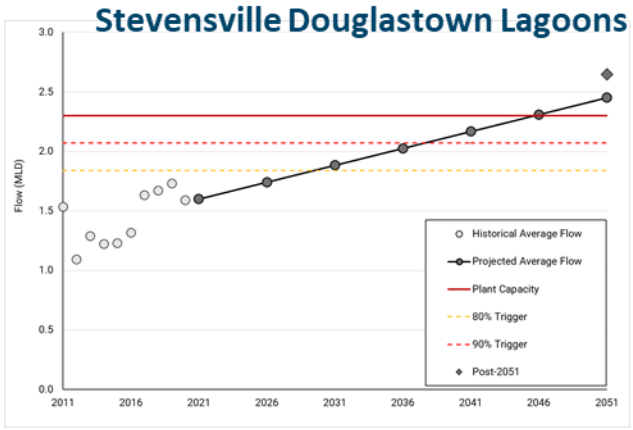


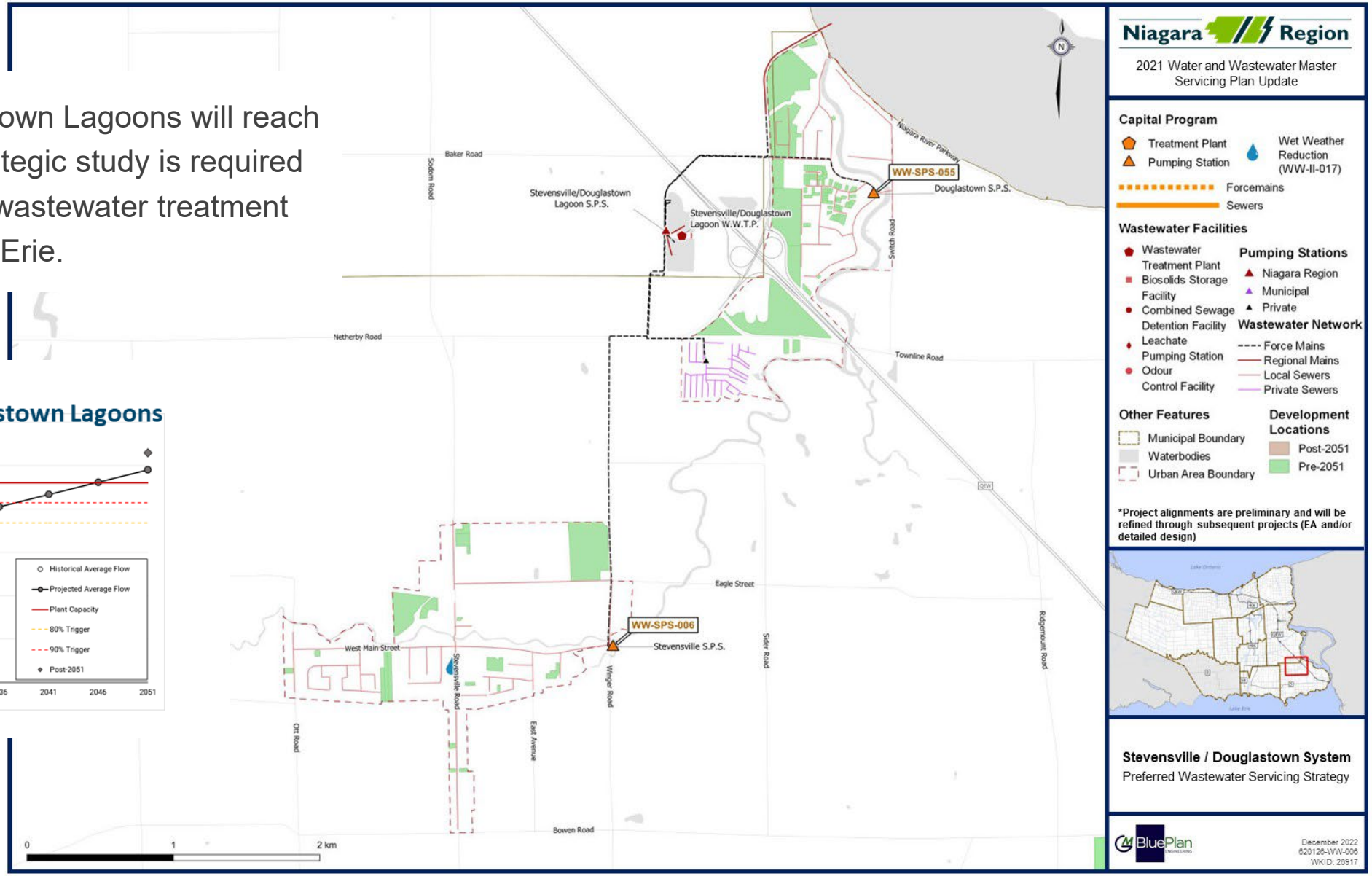
# Fort Erie (Crystal Beach) – Wastewater Strategy



# Stevensville Douglastown – Wastewater Strategy

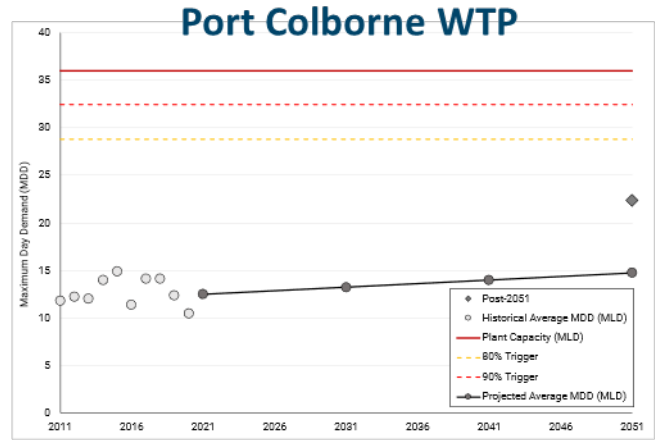
Stevensville Douglastown Lagoons will reach capacity. Broader strategic study is required to determine optimal wastewater treatment solution for all of Fort Erie.

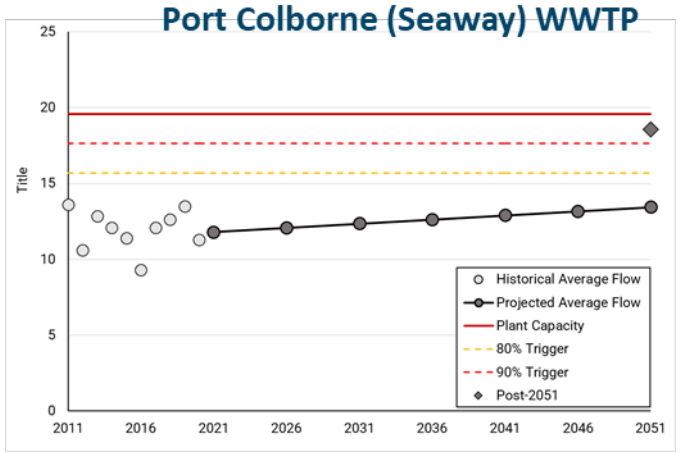


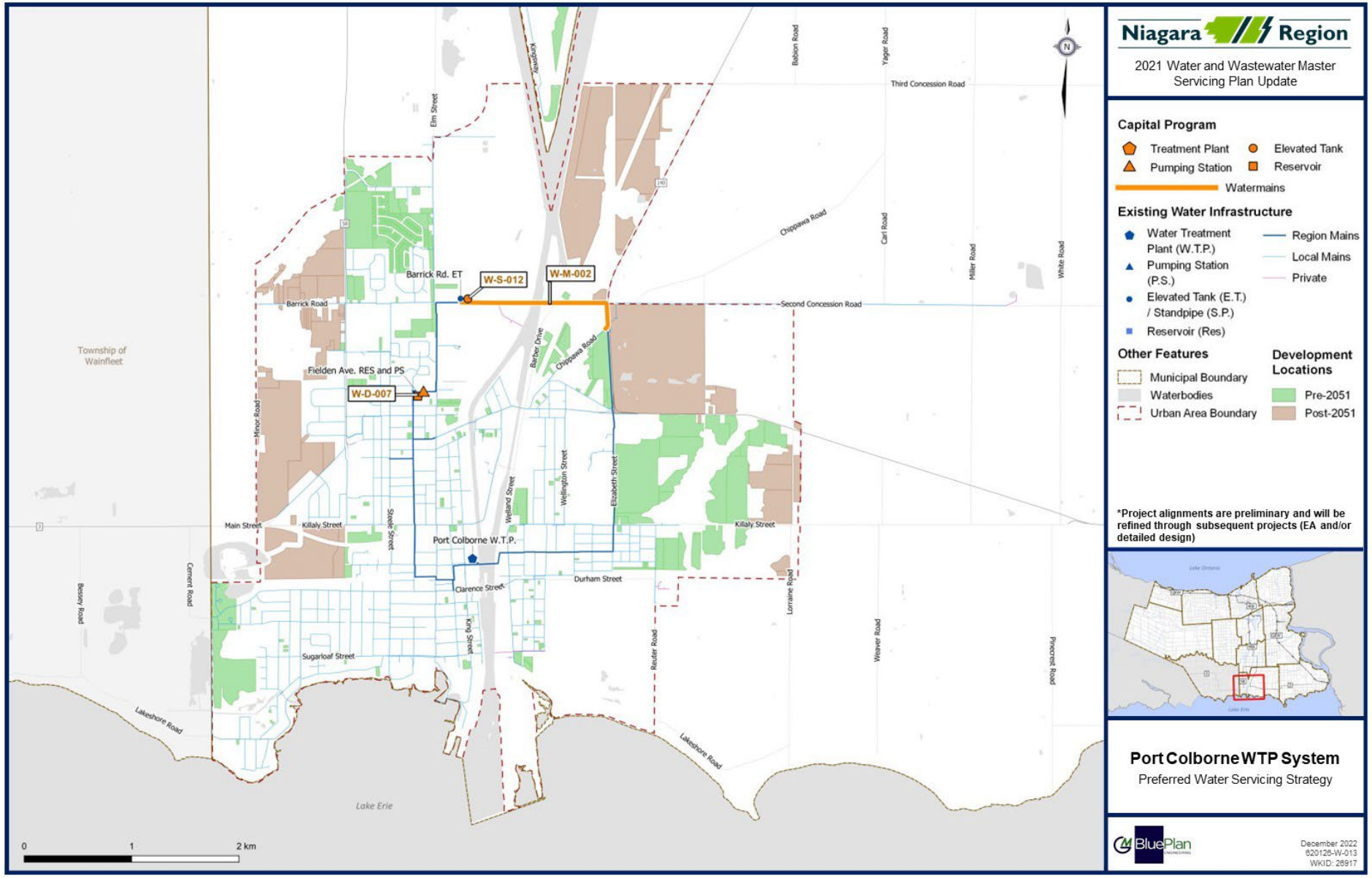
# Port Colborne

- Infill and greenfield growth
- Water and wastewater treatment plants have sufficient capacity
- Trunk watermain recommended to increase flow and provide security of supply across the canal
- New elevated tank is required post-2051 to support growth
- Wastewater pumping station upgrades required for growth capacity
- Wastewater system capacity also achieved through strategic wet weather flow reduction programs
- Awareness of long-term growth potential

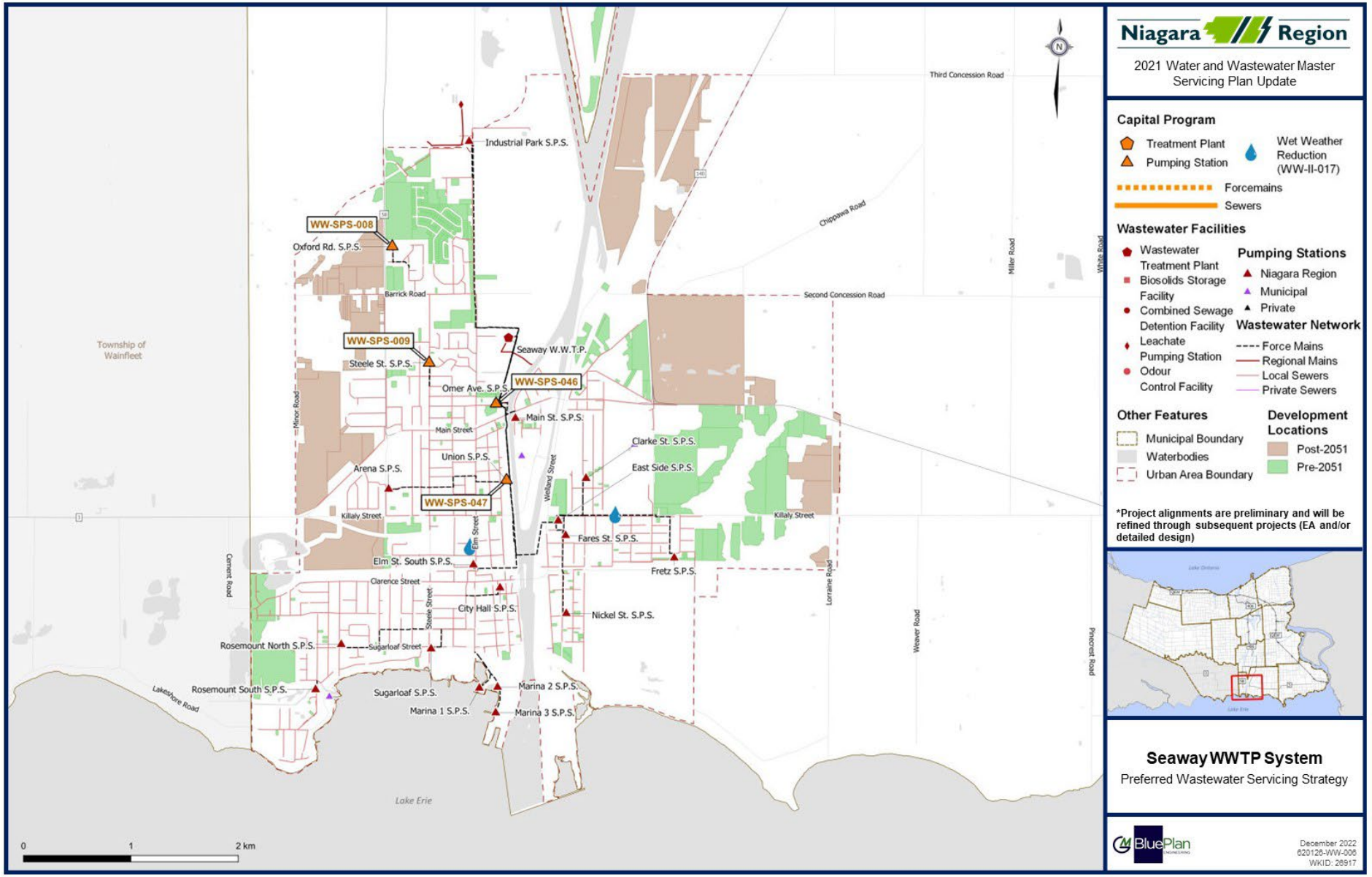


# Port Colborne – Water Strategy

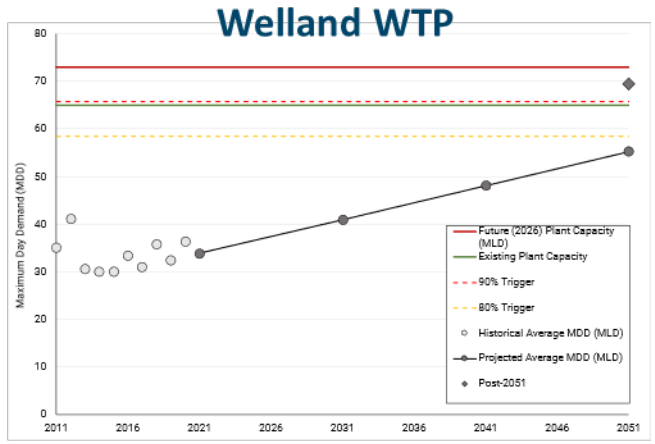


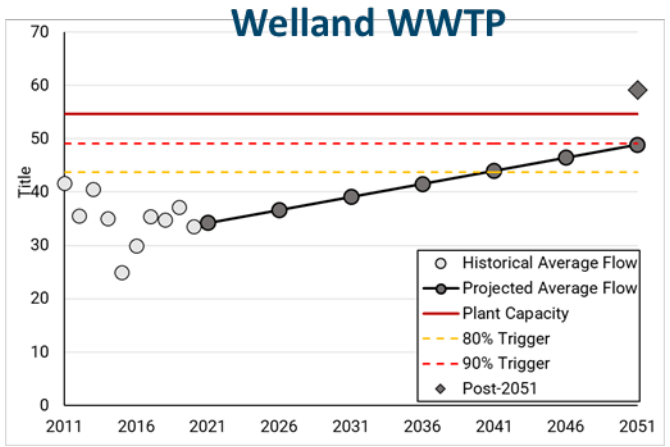
# Port Colborne – Wastewater Strategy



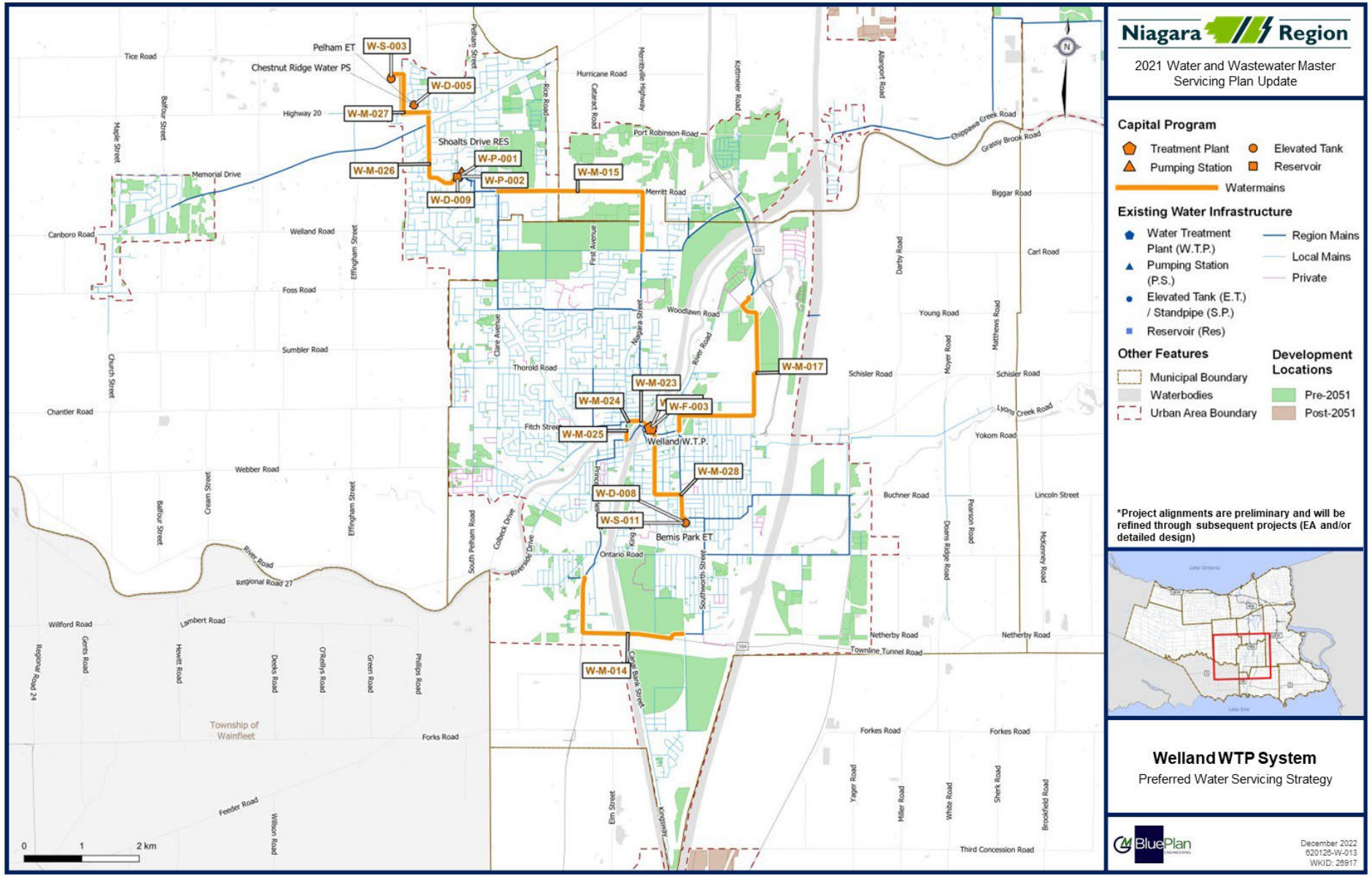
# Welland / Pelham

- Infill and greenfield growth
- Water and wastewater treatment plants will require additional capacity for growth (WTP underway, WWTP future consideration)
- Additional storage and related trunk watermain and trunk watermain looping required to support growth
- Wastewater pumping station and forcemain upgrades required for growth capacity
- Wastewater system capacity achieved through strategic wet weather flow reduction programs

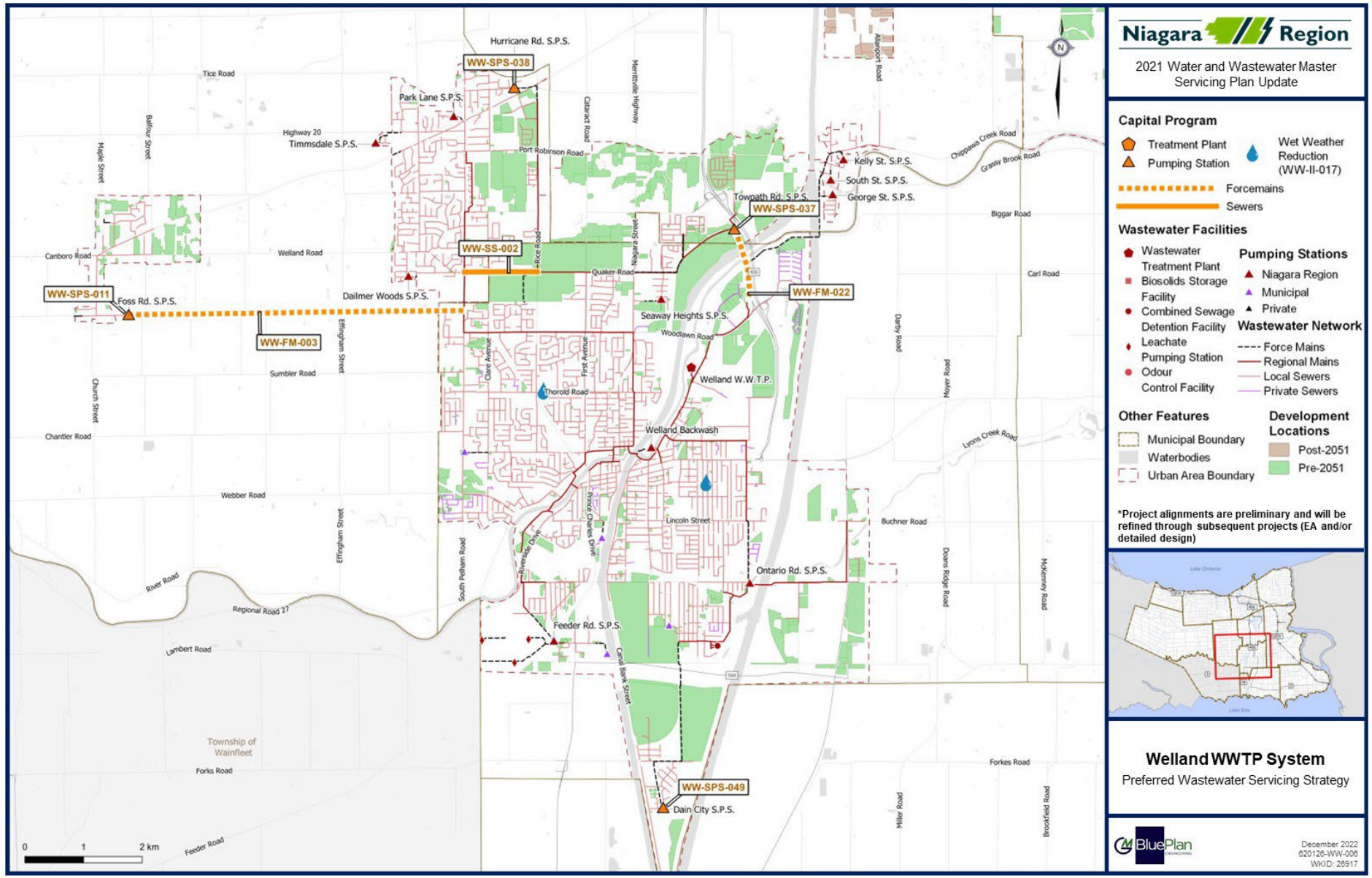


# Welland / Pelham – Water Strategy



# Welland / Pelham – Wastewater Strategy




Niagara Region

2021 Water and Wastewater Master Servicing Plan Update

**Capital Program**

- Treatment Plant
- Pumping Station
- Wet Weather Reduction (WW-II-017)
- Forcemains
- Sewers

**Wastewater Facilities**

- Wastewater Treatment Plant
- Biosolids Storage Facility
- Combined Sewage Detention Facility
- Leachate Pumping Station
- Odour Control Facility

**Pumping Stations**

- Niagara Region
- Municipal
- Private

**Wastewater Network**

- Force Mains
- Regional Mains
- Local Sewers
- Private Sewers

**Other Features**

- Municipal Boundary
- Waterbodies
- Urban Area Boundary

**Development Locations**

- Post-2051
- Pre-2051

*Project alignments are preliminary and will be refined through subsequent projects (EA and/or detailed design)



**Welland WWTP System**

Preferred Wastewater Servicing Strategy

BluePlan

December 2022
620126-WW-006
WKID: 28917

# Wet Weather Flow Reduction Program

- Strategic identification of wet weather flow reduction opportunities based on historical flow monitoring and modelling
- The Region currently, and will continue to implement a funded program to deliver projects in collaboration with the Local Area Municipalities to address wet weather flow reduction
- Projects can range from:
  - Flow monitoring
  - Hydraulic analysis
  - System testing (inspections, condition assessments)
  - Sewer separation
  - Sewer rehabilitation
  - Infrastructure upgrades (new sewers)
  - Private disconnections
- Implementation of this program can free up capacity in the system to support growth as well as improve the current level of service and environmental protection in the area

# Water Capital Program

**Impacts:**

- Additional growth out to year 2051
- Increased storage requirements
- Additional Regional Transmission Main requirements
- Increase in cost estimates for some projects previously identified in 2016 MSPU
- Additional new projects to service growth areas and 2051 capacity requirements

| | 2022 - 2031 | 2032 - 2041 | 2042 - 2051 | Total |
|---|---|---|---|---|
| Water Treatment Plants | $153,904,000 | $0 | $0 | $153,904,000 |
| Water Pumping Stations | $40,339,000 | $0 | $1,716,000 | $42,055,000 |
| Water Storage Facilities | $141,903,000 | $0 | $44,226,000 | $186,129,000 |
| Water Linear | $196,522,000 | $118,346,000 | $26,169,000 | $341,037,000 |
| Water Other | $8,692,000 | $1,802,000 | $1,290,000 | $11,784,000 |
| Water Post Period | | | | $69,960,000 |
| Additional Studies | $1,750,000 | $1,750,000 | $1,750,000 | $5,250,000 |
| Total | $543,110,000 | $121,898,000 | $75,151,000 | $810,119,000 |

# Wastewater Capital Program

**Impacts:**

- Additional growth out to year 2051
- Increased wet weather program
- Region-wide projects (odour control, ECA, flow monitoring/data)
- SNF program updated costs
- Increase in cost estimates for some projects previously identified in 2016 MSPU
- Additional new projects to service growth areas and 2051 capacity requirements

| | 2022 - 2031 | 2032 - 2041 | 2042 - 2051 | Total |
|---|---|---|---|---|
| Wastewater Treatment Plants | $208,275,000 | $323,895,000 | $0 | $532,170,000 |
| Wastewater Pumping Stations | $162,763,000 | $38,674,000 | $0 | $201,437,000 |
| Wastewater Linear | $292,800,000 | $95,105,000 | $0 | $387,905,000 |
| Wet Weather Program | $75,000,000 | $75,000,000 | $75,000,000 | $225,000,000 |
| Wastewater Other | $34,500,000 | $37,656,000 | $34,000,000 | $106,156,000 |
| Wastewater Post Period | | | | $200,000,000 |
| Additional Studies | $17,250,000 | $1,750,000 | $1,750,000 | $20,750,000 |
| Total | $790,588,000 | $572,080,000 | $110,750,000 | $1,673,418,000 |

# Integrated Program with Sustainability Initiatives

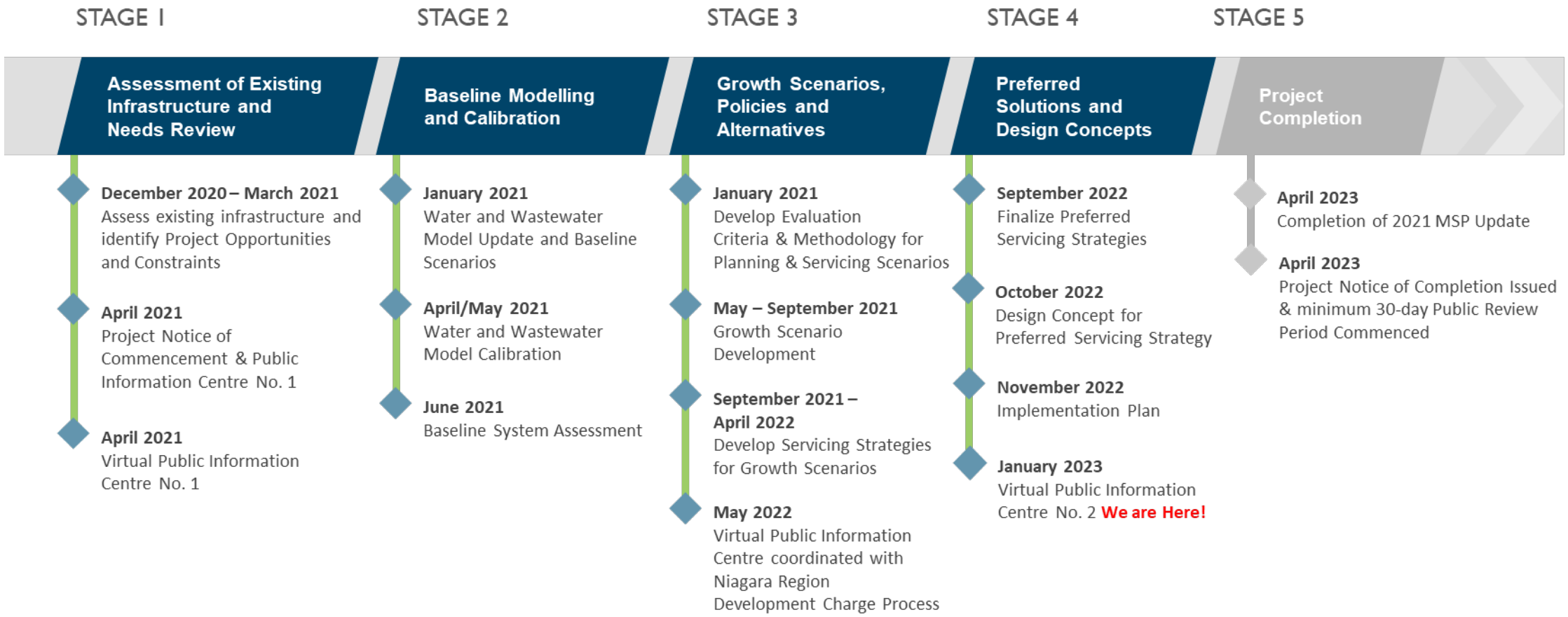
- It is essential that the existing infrastructure is maintained with good condition and performance in order to support servicing growth
- The sustainability and state-of-good-repair program is essential and is a capital program over and above the growth-related MSPU program
- The Sustainability Program was reviewed and resulted in:
  - Elimination of duplicate projects
  - Alignment of the timing for both growth and sustainability needs where appropriate
  - Focus on the next 10 year program
- Preliminary identification of Sustainability Needs are:

| | **Additional Sustainability Projects - 2022-2031** |
|---|---|
| Water | $490,737,000 |
| Wastewater | $1,048,099,500 |
| **Total** | **$1,538,836,500** |

# Key Considerations

- Servicing strategies based on maintaining appropriate levels of service throughout the systems
- Investment is needed to support operations, maintenance, staff and other resources
- With new growth-related projects will come resourcing requirements to deliver the program
- The development community must similarly commit to appropriate levels of service and construction practices to support the capacity goals for growth
- Many projects in the MSPU will require future studies to refine the recommendations and address Class EA requirements. For some projects, Class EA studies are already underway and will update the strategies (i.e. Queenston WWTP).
- Expanded urban areas will require development of servicing strategies, extension of local servicing, and new local infrastructure (in some cases including local wastewater pumping stations)
- MSPU cost estimates represent conceptual level estimating. We continue to see significant fluctuations in project costs related to volatile market conditions, supply chain issues, and other variables. It is difficult to predict future costs, however, best available information has been used under the MSPU.

# MSPU Process Overview



# Thank You for Participating – Please Stay Engaged

## We want to hear from you!

- **Visit our website:** https://niagararegion.ca/projects/www-master-servicing-plan/default.aspx
- **Provide PIC No. 2 feedback** on the website from Jan. 19, 2023 to Feb. 2, 2023
- **Continue to receive study notifications.** Sign up on the website and receive the notice of study completion when the final MSPU documentation is available for public review

**For any MSPU questions, please contact the Project Manager:**

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## Next Steps:

**Today:** PIC No. 2 (present preferred water and wastewater servicing strategies)

**February/March 2023:** Validate strategies and finalize all study documentation for public review

**April 2023:** Issue Notice of Completion and initiate minimum 30-day public review for the MSPU Report

**2023 and beyond:** Implement strategies. Some projects require additional study. Some move to design and construction.