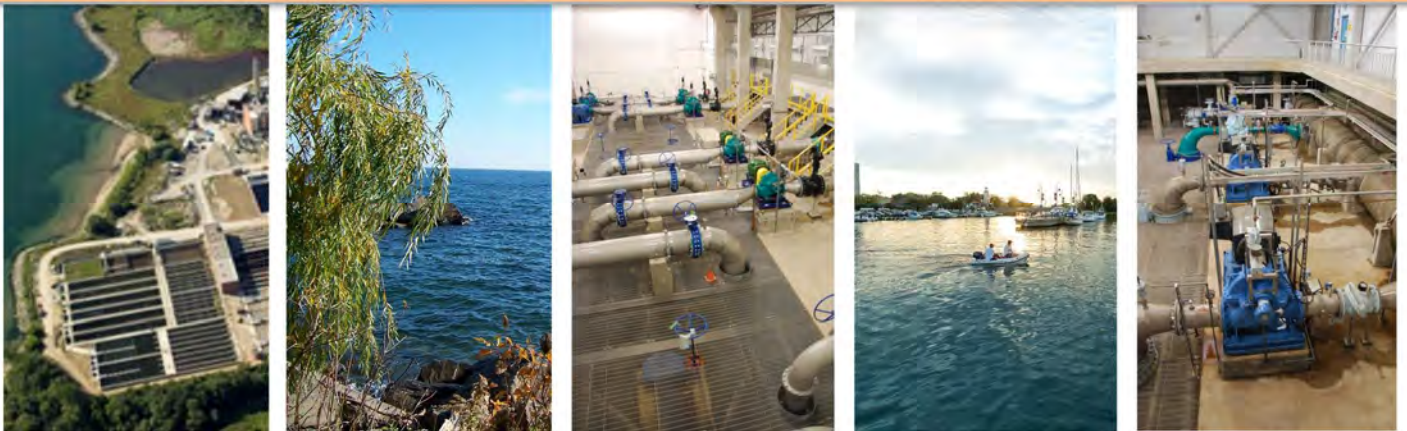


2013 Water and Wastewater
Master Plan for the Lake-Based Systems



Volume I - Executive Summary

Final Report

P001-0005

March 31, 2014



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1 Introduction

1.1 Background

The Region of Peel encompasses the City of Mississauga, the City of Brampton and the Town of Caledon. The total 2011 population in the Region is approximately 1,340,000 residents and 686,000 employees¹. The Region is responsible for water treatment, transmission and distribution mains, storage facilities and booster pumping stations, as well as wastewater treatment, sewers, force mains and sewage pumping stations. The Region employs the Ontario Clean Water Agency (OCWA) to operate, maintain and manage the major infrastructure of the lake-based water and wastewater systems, which are respectively referred to as the water transmission system and the wastewater trunk collection system.

The Region of Peel is part of the Greater Golden Horseshoe (GGH) area situated around the western end of Lake Ontario that continues to be one of the fastest growing regions in North America. The Government of Ontario's legislative growth plan, *Places to Grow Act 2005*, identifies substantial population and employment growth for the GGH to 2031.

Readily available and accessible public infrastructure is essential to the viability of existing and growing communities. Infrastructure planning, land use planning and infrastructure investment require close integration to ensure efficient, safe and economically achievable solutions to provide the required water and wastewater infrastructure. To balance the needs of growth with the protection and preservation of natural, environmental and heritage resources, the Region of Peel initiated an update of its Water and Wastewater Master Plan.

The 2013 Master Plan provides a review, evaluation and development of water and wastewater servicing strategies for all servicing within the lake-based systems. The lake-based systems service or will service all of Mississauga and Brampton and some areas of Caledon, including Bolton, Mayfield West and, for wastewater servicing, Caledon East. The study does not examine the groundwater-based systems or communal wastewater systems in Caledon. The 2013 Master Plan uses updated population and employment growth forecasts based on a 2031 planning horizon.

The 2013 Master Plan builds on previous work undertaken as part of the 1999 Master Plan, the 2002 Master Plan Addendum and the 2007 Master Plan Update. The 2013 Master Plan is a critical component in the Region's planning for growth and will provide the framework and vision for the water and wastewater servicing needs for the lake-based service areas of the Region to 2031 and beyond.

1.2 Master Plan Objectives

The Water and Wastewater Master Plan comprehensively documents the development, evaluation and selection of the preferred water and wastewater servicing strategies to meet the servicing needs of existing and future development to 2031.

¹ Region of Peel SGU GIS shapefile; P2011qand E2011qfields. Region of Peel, 2011.

The 2013 Master Plan evaluates the ability of existing and planned water and wastewater infrastructure in the Region of Peel to efficiently and effectively service the Region's existing and anticipated growth, and to evaluate and develop recommended servicing strategies.

The key objectives of the 2013 Master Plan are as follows:

- Review planning forecasts to 2031 and determine the impacts on servicing needs for the Region's lake-based water and wastewater infrastructure;
- consider potential water and wastewater infrastructure needs to beyond 2031;
- Review the Region's current lake-based water and wastewater servicing strategies to support the existing servicing agreements with York Region and the City of Toronto;
- Undertake a comprehensive review and analysis for both water and wastewater servicing requirements;
- Address key servicing considerations as part of the development and evaluation of servicing strategies including:
 - Level of service to existing users and approved growth
 - Operational flexibility
 - Security of supply
 - Mitigation of impacts to natural, social and economic environments
 - Opportunity to meet policy, policy statements, regulations and technical criteria
 - Opportunity to optimize existing infrastructure and service strategies
 - Ensuring the strategies are cost effective
- Consider and develop sustainable servicing solutions;
- Utilize updated industry trends and more detailed information from relevant Region studies and projects to provide better capital cost estimates;
- Utilize recently completed and on-going projects to update infrastructure status, capacity and cost estimates;
- Utilize the updated water and wastewater hydraulic models for the analysis of servicing alternatives;
- Establish a complete and implementable water and wastewater capital program; and
- Provide extensive consultation with the public and stakeholders.

1.3 Master Plan Documentation Layout

The 2013 Water and Wastewater Master Plan Report, including all supporting volumes, is the documentation placed on public record for the prescribed review period. The documentation, in its entirety, describes all required phases of the planning process and incorporates the procedure considered essential for compliance with the *Environmental Assessment Act*.

The Master Plan Report is organized into five volumes as illustrated in Figure 3.1 and as described below:



Figure 1.1 Master Plan Document Layout

Volume I – Executive Summary

Volume I provides a brief overview of the 2013 Master Plan, it summarizes the information contained in Volumes II, III, IV and V, including problem statement, purpose of the study, significant planning, environmental and technical considerations, description of the analysis performed and final solutions and recommendations.

Volume II – Background and Planning Context

Volume II details the master planning process including the Master Plan Class EA process, related studies, legislative and policy planning context, water and wastewater servicing principles and policies, population and employment growth forecasts, existing environmental and servicing conditions and future considerations. The appendices contain relevant baseline and planning information including:

- Appendix 2A . Water and Wastewater Servicing Principles and Policies Paper
- Appendix 2B . Planning Data
- Appendix 2C . Baseline Natural Heritage Studies Report

Volume III – Water Master Plan and Project File

Volume III is the principle document summarizing the study objectives, approach, methodologies, technical analyses, evaluation and selection of the preferred water servicing strategy. The first section provides the context for the evaluation and decision-making processes undertaken to determine the preferred servicing strategy. The second section provides detailed project-specific evaluation and technical supporting documentation for the Water Capital Plan.

Volume III – Water Master Plan Appendices

Technical background information critical in the development of the Water Master Plan is included in the appendices of Volume III. The technical appendices contain relevant project, implementation and technical analysis information, including:

- Appendix 3A . Water Demand Projections
- Appendix 3B . Historical Water Flows
- Appendix 3C . Water Design Criteria and Starting Point Methodology
- Appendix 3D . Water Concept and Strategy Evaluation Tables
- Appendix 3E . Water System Schematics
- Appendix 3F . Unit Costs
- Appendix 3G . 2014 Water DC Map & Capital Plan Projects Map

Volume IV – Wastewater Master Plan and Project File

Volume IV is the principle document summarizing the study objectives, approach, methodologies, technical analyses, evaluation and selection of the preferred wastewater servicing strategy. The first section provides the context for the evaluation and decision-making processes undertaken to determine the preferred servicing strategy, while referring the reader to the second section for detailed project-specific evaluation and technical supporting documentation for the Wastewater Capital Plan.

The second section, the Wastewater Project File, provides detailed project information for selected capital projects. Each file includes technical and financial documentation, including project tracking sheets, evaluation tables, maps and other technical supporting documentation to support the Schedule B projects satisfied under the Master Plan. The Master Plan provides systematic evaluation and documentation to support the Schedule B Class EA requirements as well as applicable review agency commitments prior to their respective implementation.

Volume IV – Wastewater Master Plan Appendices

Technical background information critical in the development of the Wastewater Master Plan is included in the appendices of Volume IV. The technical appendices contain relevant project, implementation and technical analysis information, including:

- Appendix 4A . Wastewater Flow Projections
- Appendix 4B . Historical Wastewater Flows
- Appendix 4C . Wastewater Design Criteria and Starting Point Methodology
- Appendix 4D . Wastewater Concept and Strategy Evaluation Tables
- Appendix 4E . Unit Costs
- Appendix 4F . Model Build and Calibration Report
- Appendix 4G . Trunk Sewer and Pumping Station Schematics
- Appendix 4H . Schedule B Projects
- Appendix 4I . 2014 Wastewater DC Map & Capital Plan Projects Map

Volume V – Public and Agency Consultation

Volume V contains all relevant documentation of the public consultation process including notices, comments and responses, and distribution information. Presentation material from all Public Information Centres (PICs) held during the process is included. Other presentation material and discussion information from workshops held with relevant agencies, approval bodies and other stakeholders are also included.

1.4 Master Plan Report Volume I

The current volume, Volume I, provides the analysis and summary of the master plan document as an Executive Summary. It includes the planning and background information considered, the strategy evaluation process and the preferred 2031 water and wastewater servicing strategy for the Region of Peel. It also provides the background support for satisfying the Class EA process.

This volume has been organized in eight sections as described below:

1. Introduction
2. Planning Context
3. Strategy Development, Evaluation and Selection
4. Preferred Water Servicing Strategy
5. Preferred Wastewater Servicing Strategy
6. Intensification and Post-2031 Vision
7. Glossary

Volume I is one of five volumes that make up the complete Master Plan Class EA Study Report and should be read in conjunction with the other volumes.

2 Background and Planning Context

2.1 Problem and Opportunity Statement

The problem or opportunity statement defines the principal starting point in the undertaking of the Master Plan Class EA and assists in defining the scope of the project. The problem or opportunity statement for the 2013 Water and Wastewater Master Plan for the Lake-Based Systems is defined as follows:

- Since the previous update of the Region of Peel's Water and Wastewater Master Plan in 2007, significant Provincial policies and regulations have been adopted requiring the Region to review and update its vision for planning and servicing.
- Respectively, population and employment in the Region are expected to grow by approximately 340,000 and 200,000 between 2013 and 2031. To assess the impact of this growth, a comprehensive Water and Wastewater Master Plan for the Lake-Based Systems was initiated to identify servicing requirements for existing service areas and growth areas to 2031.
- Longer range forecasting of infrastructure requirements, post-2031, was also completed to forecast impacts on existing, planned and future projects and to ensure a seamless continuation of the water and wastewater servicing visions beyond 2031.

2.2 Study Area

The Region of Peel is situated in the west-central portion of the Greater Golden Horseshoe (GGH). The Region is bounded to the south by Lake Ontario, to the west by Halton Region and Wellington County, to the east by the City of Toronto and York Region, and to the north by Dufferin County and Simcoe County. The area includes a diverse mix of urban, suburban, rural, agricultural, natural landscapes (including the Oak Ridges Moraine, the Niagara Escarpment and the Greenbelt) and encompasses the City of Brampton, the City of Mississauga and the Town of Caledon, as shown in Figure 1.1.

2.3 Planning Forecasts

The ROPA 24 planning forecasts are based on the Places to Grow projections, developed in 2006, and were previously accepted as suitable for use in infrastructure planning. The Region has since worked with the area municipalities to understand how the ROPA 24 forecasts may change based on updated information.

The following scenarios were used for the purpose of infrastructure planning in the 2013 Master Plan:

- **2031 Baseline:** For infrastructure planning purposes in the 2013 Master Plan, a slightly revised projection dataset was used as the Baseline to 2031, referred to as Scenario B.
- **Post-2031 Growth:** Post-2031 growth will be considered to determine the effects of this growth on planned infrastructure, and to consider the possibility of strategic oversizing. The scenarios to be analyzed are the following:
 - **Scenario B (2041) and Scenario B (2051).** These scenarios extrapolate from the 2031 Baseline, with additional growth in intensification areas, northwest and northeast Brampton, and parts of Caledon.

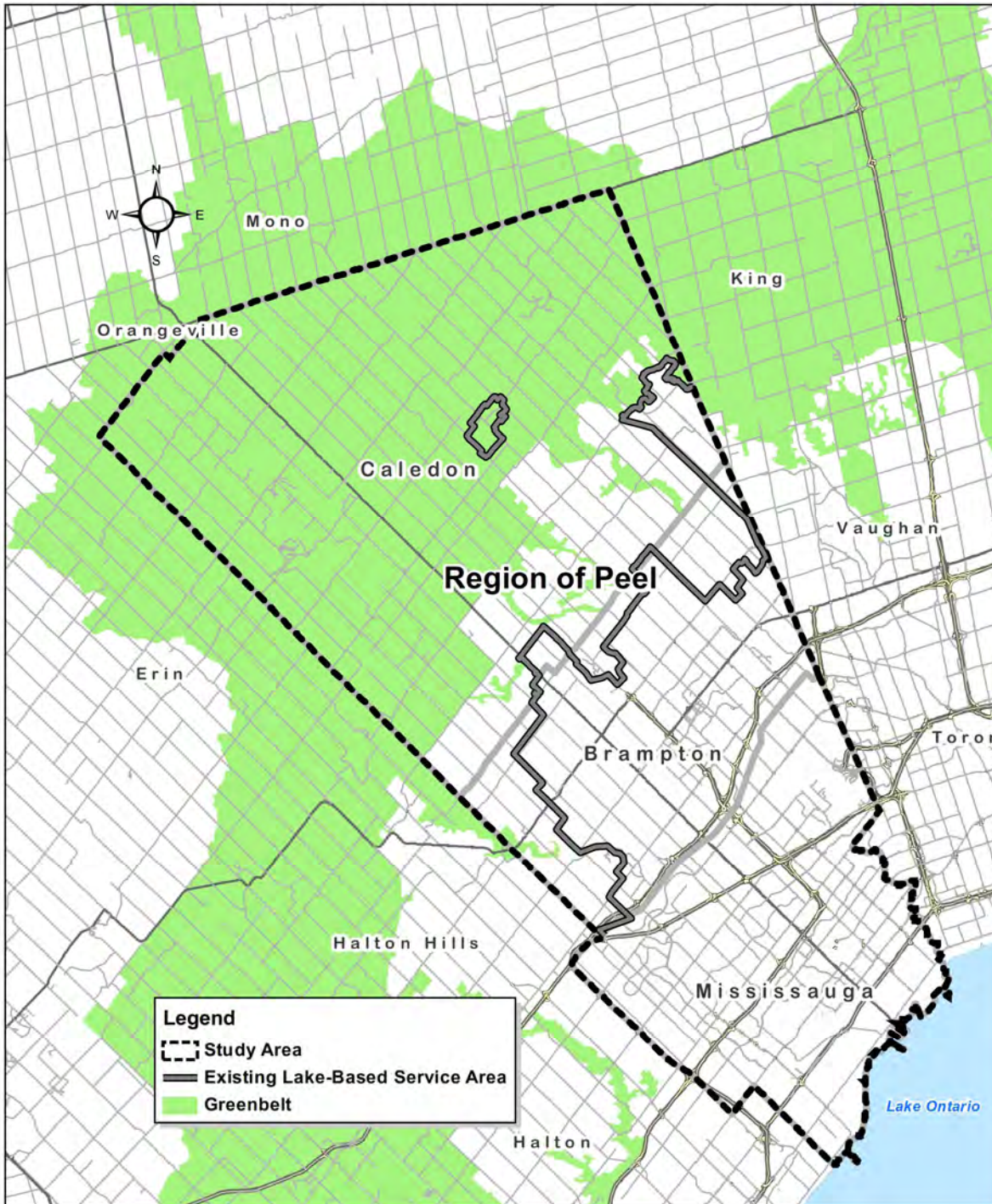


Figure 1.2 Study area for the 2013 Water and Wastewater Master Plan for the lake-based systems

The distribution of population and employment growth among the primary geographic regions of the Study Area are presented in Table 1.1 and Table 1.2.

Table 1.1 Forecasted residential population for the Region of Peel to 2031

Municipality	2011	Forecast			
		2016	2021	2026	2031
Brampton	534,000	599,000	659,000	714,000	758,000
Caledon	68,000	77,000	88,000	101,000	113,000
Mississauga	738,000	757,000	775,000	793,000	812,000
Total	1,340,000	1,434,000	1,522,000	1,608,000	1,683,000

Notes: Data source is Strategic Growth Unit GIS layer (Region of Peel, 2011)

Forecasts include the total Region of Peel residential population as opposed to just that within the study area, and include both serviced and un-serviced population. The serviced residential population of the lake-based water and wastewater systems is less than the above numbers.

Table 1.2 Forecasted employment force for the Region of Peel to 2031

Municipality	2011	Forecast			
		2016	2021	2026	2031
Brampton	203,000	239,000	274,000	295,000	320,000
Caledon	28,000	33,000	38,000	44,000	49,000
Mississauga	455,000	483,000	500,000	509,000	519,000
Total	686,000	755,000	812,000	848,000	888,000

Notes: Data source is Strategic Growth Unit GIS layer (Region of Peel, 2011)

Forecasts include the total Region of Peel employment force as opposed to just that within the study area, and include both serviced and un-serviced employment. The serviced employment force of the lake-based water and wastewater systems is less than the above numbers.

2.4 Future Considerations

The 2013 Master Plan has also considered through review of available information future planned infrastructure in the Region, including the Light Rail Transit corridor that will run from Lake Ontario to downtown Brampton and a new 400-series highway that is being planned for the northwest part of the GTA. Both of these proposed projects could have the following impacts on existing and planned water and wastewater infrastructure:

- Relocation of infrastructure could be required; and
- The creation of the LRT may lead to increased growth and intensification along this corridor, leaving to increased loadings on the water and wastewater systems.

3 Strategy Development, Evaluation and Selection

Opportunities and constraints for each system were identified at the outset of the study and are used as a starting point for identifying conceptual servicing options.

The evaluation process progresses from high-level concepts to more detailed servicing strategies and, where applicable, to detailed evaluation of individual alignments or sites. The progression from a high-level to an increasing level of detail allows for a more efficient process, as it screens out non-feasible and unfavourable servicing concepts before they are carried forward for detailed evaluation.

The process for evaluating concepts and strategies was as follows:

- At a conceptual level, each system was considered in isolation with the list of opportunities, issues, and constraints in mind, both within the larger Regional context and at the localized service level.
- A list of servicing concepts to address existing and future servicing issues was considered at a high level, weighing the advantages and disadvantages of each concept.
- Combinations of the concepts carried forward formed various strategies that are generally considered complete solutions. The descriptions of the strategies are relatively detailed and thus offer greater scope for more detailed evaluation.
- At this stage, each strategy is subjected to a five-point evaluation, which includes environmental, technical, socio/cultural, financial, and legal/jurisdictional impacts.

Each strategy is scored based on the positive and negative aspects identified for each impact category using a rating system of high, medium and low, where high is more favourable. The strategy with the highest overall score was selected as preferred.

Seven water servicing strategies were developed and evaluated with this process using the five-point evaluation criteria and one was selected as the preferred water servicing strategy.

Nine wastewater servicing strategies were evaluated against the five-point criteria and five of which were brought forward to a Strategy Short List for an additional, comparative five-point evaluation.

4 Preferred Water Servicing Strategy

The 2013 Water Master Plan evaluates the ability of existing and planned water infrastructure in the Region of Peel to efficiently and effectively service the Region's existing and anticipated growth, and to evaluate and develop a recommended servicing strategy.

4.1 Overall Water Servicing Strategy Summary

As described earlier, each strategy was evaluated using the five-point evaluation criteria, which include considerations for environmental, technical, socio-cultural, financial and legal-jurisdictional factors. The strategy with the highest overall score from the five-point short list evaluation matrix was **Strategy 2.**

Hydraulic East-West-Central Boundaries. Key aspects of the preferred strategy are:

- Current program at the Lakeview WTP and Lorne Park WTP will meet P2G (2031) capacity needs
- Feedermain upgrades currently planned (ie: Hanlan) are required and will meet P2G (2031) needs
- The East Trunk System will supply a larger portion of the lower pressure zones and will be the primary source for the Hurontario Corridor and MCC intensification areas
- The currently planned facilities will meet the P2G (2031) needs . no new storage or pumping facilities required
- Distribution system upgrades are required to support water supply and distribution throughout the network

Key projects within this strategy include:

- Streetsville, Meadowvale North and East Brampton Transmission Main twinning;
- Pumping station upgrades at Lakeview Zones 1 and 2, Herridge Zone 2, Streetsville Zones 3 and 4, West Brampton Zones 5 and 6, North Brampton Zones 6 and 7 and the Beckett Sproule Transfer Station;
- New North Bolton Elevated Tank;
- Extension of the distribution system in northwest Brampton and northeast Brampton to service new growth areas; and
- Extension of the distribution system in Bolton.

In addition to the key capital projects, several smaller upgrades are included within the strategy to address local capacity constraints within the system. The key benefits of the preferred Water Servicing Strategy include:

- Maximizing the use of existing water transmission mains and treatment infrastructure as it builds off existing and planned transmission and distribution infrastructure;
- Minimizes environmental crossings for west-to-east transfers as well as reduced transmission costs with no west-to-east transfers;
- Does not require the construction of a new water treatment plant within the 2031 horizon; and
- Opportunity to leverage the existing water servicing strategy with optimization of system hydraulics.

The preferred Water Servicing Strategy can be seen in Figure 1.3.

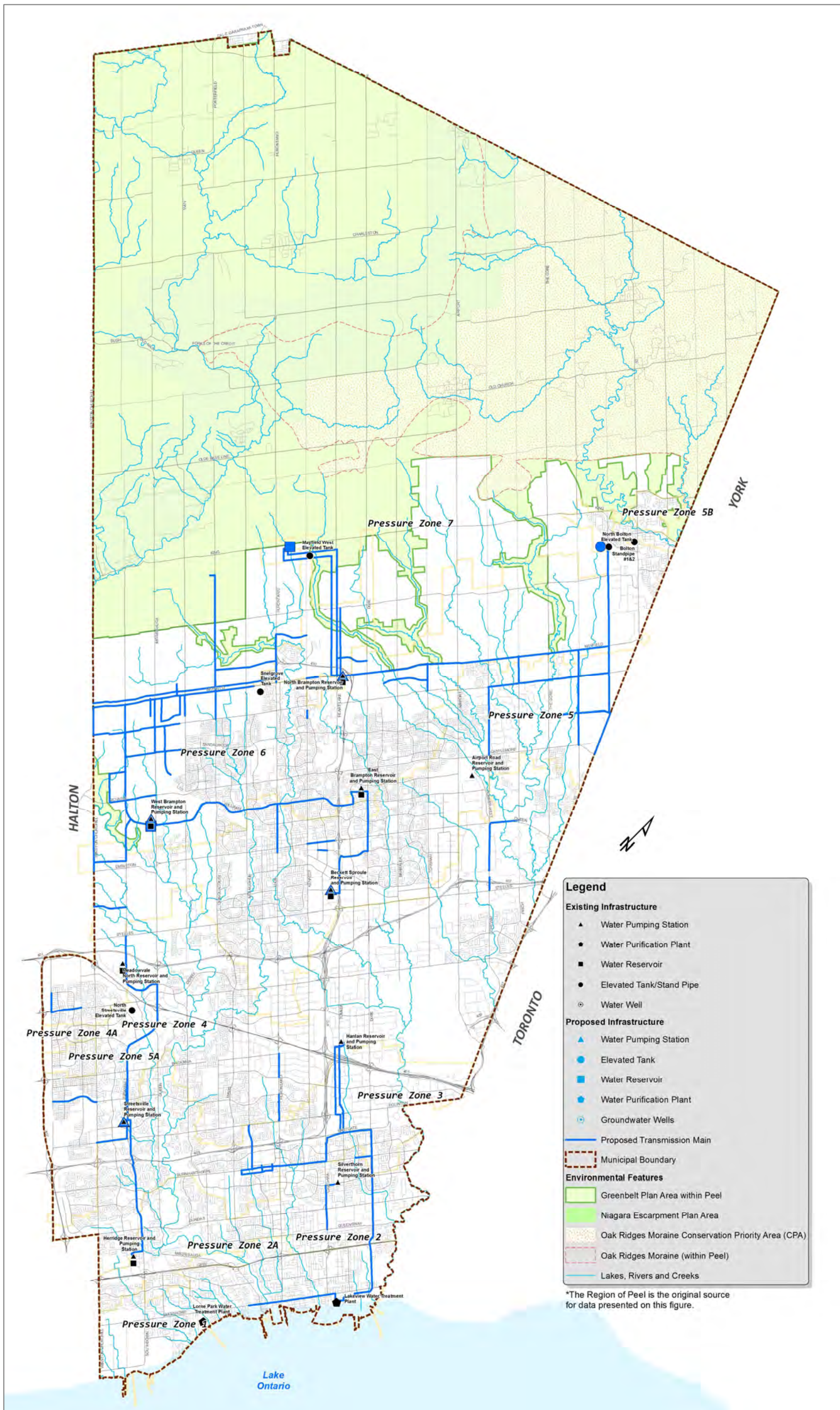


Figure 1.3 Preferred water servicing strategy for the lake-based system

4.2 Capital Program for the Preferred Water Servicing Strategy

The five-point evaluation process considered high-level analysis of the financial impacts of each strategy to provide perspective on the capital cost implications of the major capital works associated with each strategy. The strategies were compared against each other to determine the relative sub-score. Once the preferred strategy was selected, a detailed capital program was established, based on the methodology outlined earlier. The key aspects of the program are listed as follows:

- The current program at the Lakeview WTP and Lorne Park WTP will meet P2G (2031) capacity needs.
- The feedermain upgrades currently planned such as the Hanlan Feedermain, are required and will meet P2G (2031) needs.
- The east trunk system will supply a larger portion of the lower pressure zones and will be the primary source for the Hurontario Corridor and MCC intensification areas.
- The currently planned facilities will meet the P2G (2031) needs therefore no new storage or pumping facilities are required.
- Key distribution system upgrades are required to support water supply and distribution throughout the network.

Table 1.3 presents a summary of the capital program for the preferred water servicing strategy.

Table 1.3 Water capital program summary ('000s)

Infrastructure Type	EA	Design	Construction	Total Estimated Cost (2013\$)
Pipes - Transmission	\$2,200	\$49,300	\$921,300	\$972,700
Pipes - Distribution	\$0	\$30,500	\$118,400	\$148,900
Sub-Transmission	\$100	\$47,500	\$294,900	\$342,500
Pumping Stations	\$300	\$3,800	\$23,300	\$27,500
Storage	\$0	\$0	\$101,900	\$101,900
Treatment	\$0	\$0	\$33,600	\$33,600
Total Water Capital Program Cost	\$2,600	\$131,100	\$1,493,400	\$1,627,100

Note: Cost shown in 2013\$ ('000s)

A detailed description of the projects in the capital program for the preferred Water Servicing Strategy is included in Volume III.

4.3 York Water Servicing Strategy

Providing water servicing to York Region remains a fundamental component of the Peel water servicing strategy. The 2013 Master Plan is based on the original water supply requirements as per the York Peel agreement out to the year 2031. The York water requirements were supplied from York Region and defined as Schedule C of the York-Peel Water Servicing Agreement. Based on the Peel water supply strategy, York water supply requirements generally impact the Central and East Transmission Systems. The 2031 water supply requirement for York Region as carried in this Master Plan is 388 ML/d.

5 Preferred Wastewater Servicing Strategy

The 2013 Wastewater Master Plan evaluates the ability of existing and planned wastewater infrastructure in the Region of Peel to efficiently and effectively service the Region's existing and anticipated growth, and to evaluate and develop a recommended wastewater servicing strategy.

5.1 Overall Wastewater Servicing Strategy Summary

As described in earlier, each strategy was evaluated based on the detailed five-point evaluation criteria, which included considerations for environmental, technical, socio-cultural, financial and legal-jurisdictional impacts. The highest rated scores from the five-point Short List Evaluation matrix was **Strategy 6 – Convey and Divert to the West System, Expand Clarkson and I/I reduction.**

Key capital projects required to achieve this strategy include:

- Expansion of the G.E. Booth WWTF from 486 ML/d to 518 ML/d;
- East Sanitary Trunk Sewer twinning from the McVean Drive SPS discharge at Queen Street East and Goreway Drive to Highway 407 and Torbram Road;
- New West-to-East Diversion SPS;
- Fletcher's Creek Sanitary Trunk Sewer twinning;
- West Sanitary Trunk Sewer twinning (Credit Valley Sanitary Trunk Sewer extension) from the East-to-West Diversion SPS discharge point south of Highway 407 between McLaughlin Road and Hurontario Street to Highway 401 and Creditview Road;
- Sanitary trunk sewer twinning in southwest Mississauga on Lakeshore Road and Southdown Road to the Clarkson WWTF;
- Extension of the wastewater collection system in northwest Brampton and northeast Brampton to service new growth areas;
- Extension of the wastewater collection system into Bolton; and
- Upgrading of the existing 500-mm McVean Force Main to a 900-mm forcemain.

In addition to the key capital projects, several smaller upgrades are included within the servicing strategy to address local capacity constraints within the collection system.

The key benefits of the Preferred Wastewater Servicing Strategy include:

- Maximizing the use of existing trunk wastewater conveyance and treatment infrastructure;
- The east-to-west diversion strategy enables de-rating of the G.E. Booth WWTF to complete capacity upgrades to 518 ML/d;
- Does not require the construction of a new wastewater treatment facility;
- By reducing inflow and infiltration, it is expected that the system will experience smaller wet weather responses and will inherently increase peak wet weather flow capacity.

The complete Preferred Wastewater Strategy can be seen in Figure 1.4.

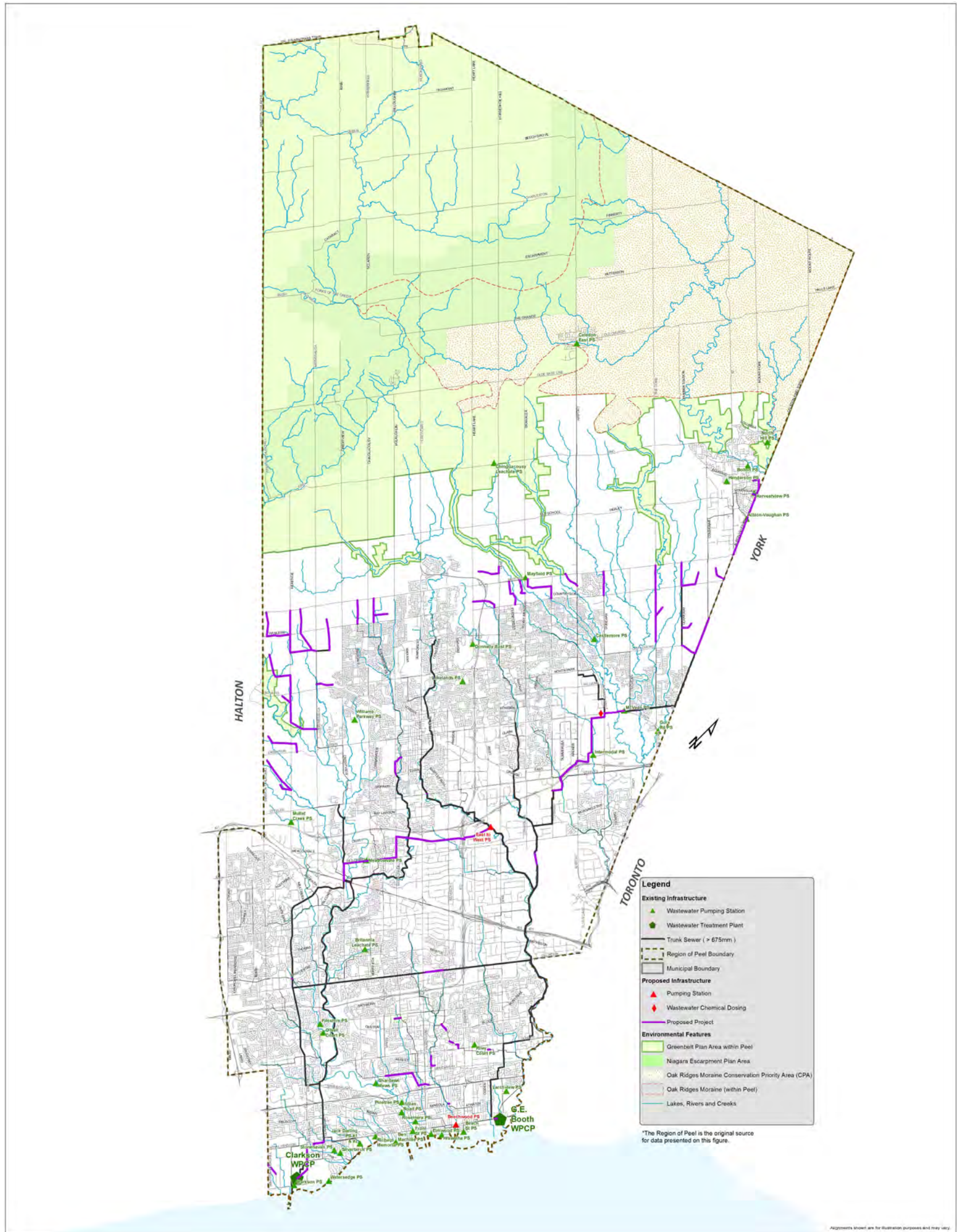


Figure 1.4 Preferred wastewater servicing strategy for the lake-based system

5.2 Capital Program for the Preferred Wastewater Servicing Strategy

The five-point evaluation process considered high-level analysis of the financial impacts of each strategy to provide perspective on the capital cost implications of the major capital works associated with each strategy. The strategies were compared against each other to determine the relative sub-score. Once the preferred strategy was selected, a detailed capital program was established, based on the methodology outlined earlier. The key aspects of the program are outlined as follows:

- Recent expansion of Clarkson WWTF to 350 ML/d is sufficient to meet 2031 needs
- G.E. Booth WWTF will need to be expanded from 486 to 518 ML/d, which is an upgrade that is currently planned and in the budget
- An east to west diversion is required to defer an expansion at the G.E. Booth WWTF and maintain all plants within 90% of their rated capacity
- Collection system upgrades are required to support conveyance to the plants
- A long term inflow/infiltration program is required to meet continued level of service and defer/eliminate additional infrastructure upgrades

Table 1.4 presents a summary of the capital program for the preferred wastewater servicing strategy.

Table 1.4 Wastewater capital program summary ('000s)

Infrastructure Type	EA	Design	Construction	Other	Total Estimated Cost
Sewers - Transmission	\$200	\$15,400	\$126,400	\$129,700	\$271,700
Sub-Transmission	\$0	\$200	\$1,500	\$99,000	\$100,700
Sewage Pumping Station	\$400	\$3,200	\$31,200	\$500	\$35,300
Forcemain	\$200	\$1,500	\$10,200	\$0	\$11,900
Treatment	\$0	\$0	\$161,000	\$0	\$161,000
Inflow and Infiltration	\$0	\$0	\$0	\$107,500	\$107,500
Total Water Capital Program Cost	\$800	\$20,300	\$330,300	\$336,700	\$688,100

Note: Cost shown in 2013\$ ('000s)

A detailed description of the projects in the capital program for the preferred Water Servicing Strategy is included in Volume IV.

5.3 Inter-Regional Servicing Strategies

The 2013 Master Plan also includes a review of the wastewater servicing strategy with respect to Peel's commitments to the Region of York and the City of Toronto, and to provide revised schedules and cost estimates for the Agency's primary collection and treatment infrastructure to service York and Toronto's wastewater flows.

5.3.1 York Region Servicing

Providing wastewater servicing to York Region remains a fundamental component of the Peel wastewater servicing strategy. The 2013 Master Plan is based on the original wastewater flow requirements as per the York Peel agreement out to the year 2031. The York wastewater requirements were supplied from York Region and defined as Schedule C of the York-Peel Water Servicing Agreement. In 2013, York and Peel agreed that York can pump their 2021 allowance of 43.9 ML/d², subject to certain conditions. Based on the Peel wastewater strategy, York wastewater requirements generally impact the East Trunk Sewer System. The 2031 wastewater supply requirement for York Region as carried in this Master Plan is 53.2 ML/d.

5.3.2 City of Toronto Servicing

The servicing agreement between Toronto and Peel is based on three locations where sewage flows cross the municipal boundary between Peel and Toronto, as listed in Table 1.5.

Table 1.5 Locations of sanitary sewer connections between and Toronto and Peel

Direction of Flow	Interconnection Point	Receiving System	Receiving Treatment Plant
Toronto to Peel	Rakely Court and Eglinton Avenue	South Peel Sanitary Trunk Sewer	G.E. Booth WWTF
Toronto to Peel	41 st Street and Lakeshore Road	South Peel Sanitary Trunk Sewer	G.E. Booth WWTF
Peel to Toronto	Disco Road and Highway 427	North Mimico Sanitary Trunk Sewer	Humber Bay WWTF

There are no agreements currently in effect to govern these flows. The draft agreement states that each municipality will receive the flow from the other at the designated interconnection points and treat the flow at the designated treatment facility. A boundary flow meter is installed at each of the interconnection points and a wastewater rate is charged on a net flow basis. The historical and projected flows demonstrate a net flow from Toronto across the connection points. This flow is considered a fundamental component of the Peel wastewater servicing strategy.

² Letter from Ric Robertshaw (Region of Peel) to Daniel Kostopoulos (Region of York), dated December 3, 2009

6 Intensification and Post-2031 Vision

6.1 2031 Intensification

Current development applications are exceeding the projected quantum and density identified under Peel's Places to Grow (P2G) (2031) projections. This trend could result in accelerated growth ahead of P2G projections and an accelerated or increased capital program beyond the currently planned P2G program.

Intensification is currently underway in many parts of the Region of Peel. Future intensification is reflected in the Region's detailed growth projections within the 2031 planning horizon. The highest impact of this intensification is within three corridors: the Mississauga City Centre (MCC), the Hurontario Corridor and the Queen Street Corridor in Brampton.

New infrastructure projects are being introduced due to water or wastewater servicing needs in the intensification areas. Depending on the location of the intensification (even varying between corners of an intersection), the impact on the local distribution or collection system can vary greatly

6.1.1 Water

Intensification growth will impact the water servicing program as follows:

- The water program has been accelerated based on the intensification to date. Large sub-trunks are planned or being implemented to support ultimate intensification
- Major trunks are currently being designed to support ultimate intensification
- There will need to be ongoing detailed modeling to confirm impact of intensification. It is anticipated that local distribution improvements will be required
- As the intensification hits a threshold additional plant capacity and intake will be triggered

In addition to the projects that make up the preferred Water Servicing Strategy outlined earlier, the 2013 Master Plan recommends several specific projects to service growth within the intensification areas, these are summarized below:

- Upgrades to the Beckett Sproule, East Brampton, Hanlan and Silverthorn Pumping Stations
- Smaller water main upgrades downstream of the MCC will be required
- A few storage expansions at key facilities
- The Lakeview Water Treatment Plant will require upgrades to the intake as well as Pressure Zone 2C pumping.

6.1.2 Wastewater

Most of the intensification areas will send flows to the G.E. Booth WWTF. Intensification growth will impact the wastewater servicing program as follows:

- Many sub-trunks have capacity in the short term, but will need capacity upgrades in the future

- There will need to be ongoing detailed modeling to confirm impact of intensification . it is anticipated that local sewer improvements will be required
- As the intensification hits a threshold, significant trunk sewer and diversion requirements will be triggered plus additional plant capacity

The longer-term strategy for 2031 intensification growth within these identified areas includes:

- Upgrades to the East Sanitary Trunk Sewer downstream of the Queen Street Corridor
- Several smaller trunk upgrades downstream of the MCC
- Upgrades to the wastewater treatment plants

These projects, coupled with the 2031 Water Servicing Strategy, give the Region the ability to service the 2031 growth, but also support long term servicing in these areas.

6.2 Post-2031 Vision

While the approved urban boundary and growth targets are to 2031, the Master Plan also considered implications of potential post-2031 growth on the system. The preferred Water Servicing Strategy addresses the growth needs to 2031 and also establishes flexibility within the system to implement a post-2031 strategy, once the long-term targets are confirmed and approved.

Post-2031 growth is anticipated at two levels: intensification and greenfield growth. It is expected that greenfield growth will most likely occur in new pressure zones and will require new pumping and storage facilities on the water system and potentially the construction of sewer extensions through the growth areas as well as increasing capacity (twinning in some cases) in the downstream sections of sanitary trunk sewers.

Additionally, depending on location, timing and scale of the significance of post-2031 growth, the east-west diversion strategy will need to be revisited and analyzed in greater detail.

6.2.1 Post-2031 Cost Impacts

Growth beyond the 2031 timeline will have cost implications which are presented in Table 1.6.

Table 1.6 Cost impacts due to Post-2031 growth

Water	Wastewater
Lakeview WTP capacity expansion and intake	Additional WWTF capacity expansion(s), incineration capacity and outfall upgrades/modifications
Pumping Station and Reservoir expansions	Major new trunk sewer and additional diversion capacity
Feedermain extensions at the north limits	Trunk sewer twinning
New pumping and storage facilities at the north limits	Localized sewage pumping stations