City of Hamilton

The 2025 Interim Water, Wastewater and Stormwater Master Servicing Strategy

Wastewater Volume

GEI Consultants Canada

November 2025
Project No. 2402126 (717010)



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ACRONYMS AND ABBREVIATIONS

Acronym	Definition
ADF	Average Dry Weather Flow
AEGD	Airport Employment Growth District
BCSSI	Borers Creek Sanitary Interceptor
CPR	Canadian Pacific Railway
CSO	Combined Sewer Overflow
DC	Development Charge
DWF	Dry Weather Flow
EA	Environmental Assessment
EPS	Extended Period Simulations
ESI	Eastern Sanitary Interceptor
FDIF	Flooding and Drainage Improvement Framework
FM	Forcemain
GGH	Greater Golden Horseshoe
GRIDS2	Growth Related Integrated Development Strategy Update
HGL	Hydraulic Grade Line
HHRAP	Hamilton Harbour Remedial Action Plan
I/I	Inflow and Infiltration
ICI	Institutional, Commercial and Industrial
IMSS	Interim Master Servicing Strategy
L/cap/d	Litres per capital per day
L/s	Litres per Second
LOS	Level of Service
MEA	Municipal Engineers Association
MECP	Ministry of the Environment, Conservation and Parks
ML/d	Megalitres per Day
NoUBE	No Urban Expansion
O&M	Operation and Maintenance
OLT	Ontario Land Tribunal
OMB	Ontario Municipal Board
PIC	Public Information Centre
PWWF	Peak Wet Weather Flow
RHCSI	Red Hill Creek Sanitary Interceptor
RHVP	Red Hill Valley Parkway
ROW	Right-of-Way
RTC	Real-Time-Control
SCADA	Supervisory Control and Data Acquisition
SOGR	State-of-Good-Repair
SPS	Sanitary Pumping Station
TSZ	Traffic Survey Zone
UHOP	Urban Hamilton Official Plan
WSI	Western Sanitary Interceptor
WWTP	Wastewater Treatment Plan

1.0 Introduction

1.1 Background

The City of Hamilton is part of the Greater Golden Horseshoe area located in Southern Ontario. The city is made up of several communities surrounding the core city, including Stoney Creek, Dundas, Waterdown, Mount Hope, Binbrook, and Ancaster.

The scope of this **Interim Master Servicing Strategy (IMSS)** includes developing a strategy in support of the Growth Related Integrated Development Strategy Update (GRIDS2), last revised in July 2024, and ultimately preparing a capital program to support the City's growth to 2051. The IMSS was initiated in 2017 with the primary goal of developing a robust infrastructure servicing strategy for the City of Hamilton, originally targeting a 2041 planning horizon. Since its inception, the scope and objectives of the original Master Plan study have undergone significant changes, particularly in response to evolving planning scenarios, delays in growth forecast approvals, and the emergence of new development challenges.

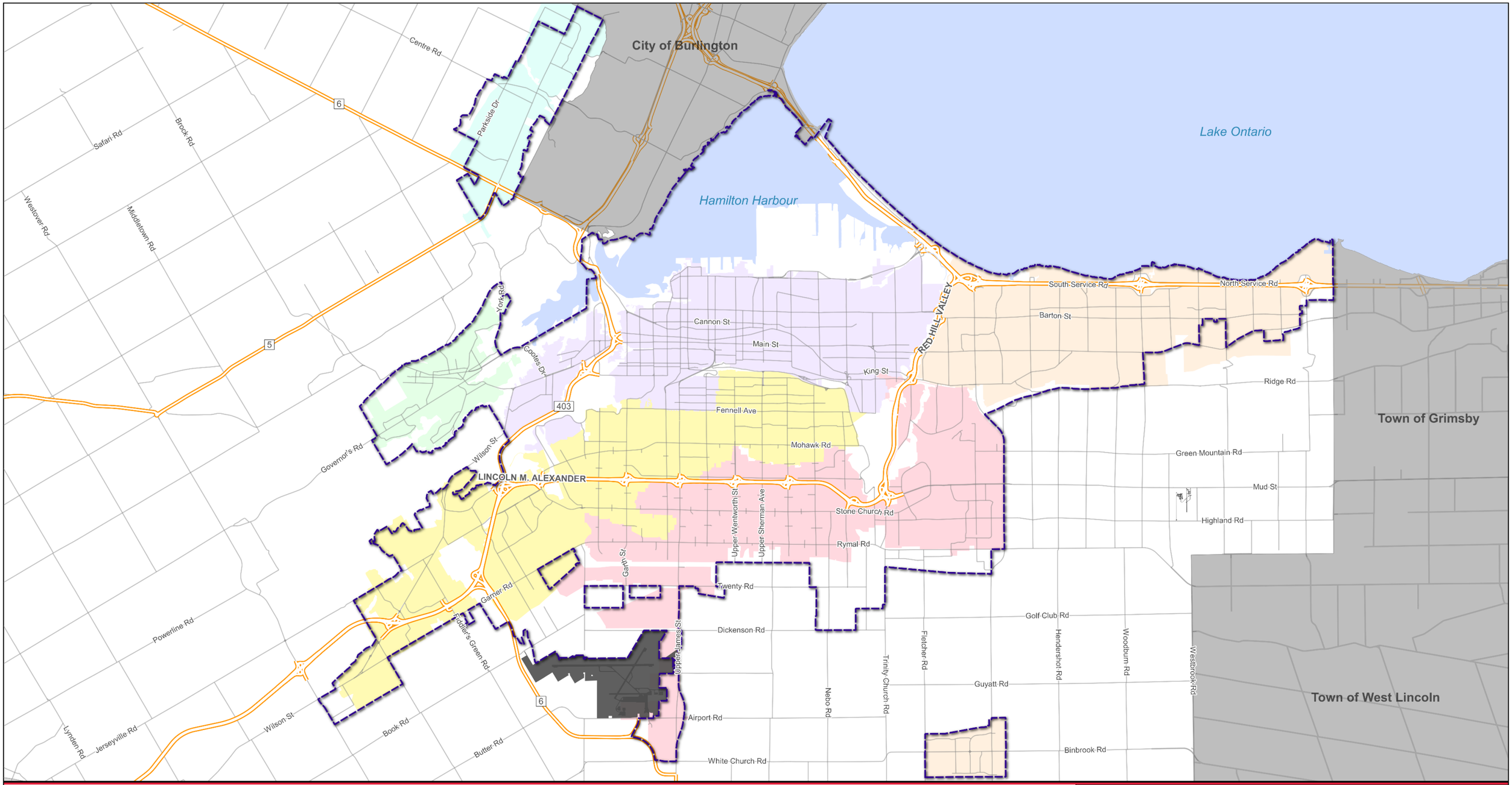
As such, the City agreed to rescope the study. The rescoping is driven by the newly received 2024 No Urban Expansion (NoUBE) Traffic Survey Zone (TSZ) data and is essential for addressing the City's infrastructure needs up to 2051. The original scope of the study was to follow the formal Municipal Engineering Association's (MEA) Class Environmental Assessment (Class EA) process. However, the new scope of the study was agreed to be a "Streamlined" Technical Strategy Project also known as the "Interim Water Wastewater and Stormwater Master Servicing Strategy". The IMSS will produce similar final outcomes in terms of Servicing Strategies and Capital Program; however, it will be completed outside of the MEA Class EA process.

This IMSS Volume provides a summary of the background review undertaken and the baseline wastewater data. It also provides a summary of the planning growth projections, an overview of how the planned growth leads to various system opportunities and constraints, a summary of the various wastewater servicing strategies considered as part of the evaluation and identifies the preliminary preferred water strategies with their associated estimated costs and timing. This volume is dedicated solely to the City's wastewater system, providing an assessment of its current and future needs. The water and stormwater systems are documented in accompanying volumes.

1.2 Study Area

The City of Hamilton is located in the Greater Golden Horseshoe (GGH), situated at the southwestern end of Lake Ontario. The study area shown in **Figure 1-1** demonstrates the existing lake-based water and wastewater servicing area for the City of Hamilton.

The City's lake-based service area is made up of the City of Hamilton and the former municipalities surrounding the urban core, including: Waterdown, Dundas, Ancaster, Mount Hope, Binbrook, and Stoney Creek. The study area for the Interim Wastewater Master Servicing Strategy extends to the urban boundary of the City of Hamilton.



Wastewater Service Area

- Dundas System
- Eastern Interceptor System
- Ancaster-Fennell System
- Red Hill Creek Interceptor System
- Waterdown System
- Western Interceptor System

General Feature

- Airport
- Urban Boundary
- Municipal Boundary

Reference(s)
1. Projection EPSG:26917
2. Base Data: City of Hamilton, 2024

2,000 4,000 6,000 8,000 m

Fig 1-1
Map Title: Existing Wastewater System

Project Name:
Water and Wastewater Master Plan

Client Name:
City of Hamilton
(Ontario, Canada)

GEI

Last Updated: April 2026
Document ID: 717010-WW-025A

2.0 Related Studies and Background Information

The section reviews the major background reports and studies relevant to the Interim Master Servicing Strategy (IMSS). These documents were assessed to identify existing conditions, planning assumptions, and servicing strategies that directly support the analysis and recommendations of this study.

1. Preliminary Traffic Survey Zone (TSZ) Projections Approach and Method for Discussion, Dillon Consulting Ltd (June 2024)

- Provides a description of the preliminary approach and method used for the distribution of growth forecasts to 2051 at the Traffic Survey Zone (TSZ) level.
- Population, household, and employment growth are distributed in accordance with the growth forecast totals and allocation policies set out in the *Urban Hamilton Official Plan* (UHOP).

2. 2006 City of Hamilton Water and Wastewater Master Plan Reports

- City of Hamilton Water and Wastewater Systems Baseline Report, KMK Consultants Limited (2006)
  - Summarizes the inventory and evaluation of the water and wastewater systems at the time of the report along with the design criteria for the water and wastewater systems.
  - Provides an overview of the water and wastewater hydraulic models previously used in the 2006 Mastre Plan analysis.
- Water and Wastewater Master Plan Policy Framework Paper, City of Hamilton (2005)
  - Summarizes the process completed for developing and enacting water and wastewater policies, which provide direction and guidelines for development, evaluation, and implementation of servicing strategies.
- City of Hamilton Water and Wastewater MP Class EA, KMK Consultants Limited (2006)
  - Provides a detailed framework for the planning and development of the City's water and wastewater infrastructure following the Class EA process.

3. Flooding and Drainage Improvement Framework, GM BluePlan Engineering Ltd. (2022)

- Established a phased implementation framework (short-, medium-, and long-term) for addressing flooding and drainage improvements, including integration with growth, climate change, and system upgrade considerations.
- Recommended initiating “Managed Sewer Separation” feasibility studies and Environmental Assessments (EAs), with an opportunistic approach in the medium term, transitioning to a more structured program in the long term to achieve full separation of combined sewer overflow (CSO) catchments.
- Identified the need for ongoing program reviews (every 5 to 10 years starting ~2032) to measure performance improvements and update management strategies in response to system changes and external factors.
- Provided a capital program summary outlining budgetary requirements, project phasing (0–10, 10–20, 20+ years), and implementation schedules, with further details in **Appendix C** of the report.

4. Roxborough School Area Re-Development – Stormwater Outlet, Preliminary Feasibility Study – Phase 1, AMEC (February 2017)

- Feasibility study for the redevelopment of the 5.5 hectares Roxborough School area, which includes a school, an apartment building, and a block of townhouses. The area is serviced by combined sewers, which directs flows to the Woodward WWTP via the Red Hill Creek "Superpipe". There is one stormwater outlet to Red Hill Creek:
  - Determined that the proposed development would direct sanitary flows to the combined system. A new stormwater outfall would be required.
  - Conceptual plan drawings were prepared, with recommendation for additional studies including hydrology and hydraulics, erosion, stability and a functional servicing report to be undertaken by the developer.

5. Airport Employment Growth District (AEGD) Related Reports

- AEGD – Phase 2 Water & Wastewater Servicing Master Plan Update, GM BluePlan (Dec 2016)
  - February 17th, 2015, the Ontario Municipal Board (OMB) approved the AEGD Secondary Plan.
  - Boundaries were modified since the last version of the Secondary Plan with areas added to the urban boundary.
  - Provides a comparison with AEGD 2010 along with the water and wastewater strategy update.
- Internal AEGD Implementation Plan, Dillon Consultants Limited (Dec 2016)
  - Identifies short-term (phase 1) and medium-term (phase 2) transportation, water, and wastewater projects, and presents the EA schedules and capital costs for projects.
- Airport Employment Growth District – Transportation Master Plan Implementation Update, Dillon Consultants Limited (Dec 2016)
  - Prepared as an update to the 2011 Transportation Master Plan to include long-term land use changes.

6. City of Hamilton Development Charges (DC) Background Study Update. Watson & Associates (2023)

- Establishes rules for the Development Charges (DC) by-law, and sets out background information on the legislation, Hamilton's DC policy, and post-adoption implementation requirements.
- Provides updated water and sewer capital projects to service growth, as well as capital cost estimates.

7. Other Documents Prepared by the City of Hamilton

- Centennial Neighbourhood Water Distribution and Wastewater Collection Servicing Study (CNSS; 2025 Draft)
- City of Hamilton Wastewater Collection System GIS (2025)
- Updated Implementation Plan for Management of Combined Sewer Overflows in Hamilton's Wastewater System Upgrades (2013)
- City of Hamilton Comprehensive Development Guidelines and Financial Policies Manual (2016)
- City of Hamilton Wastewater Treatment Facilities (2023)
- *Urban Hamilton Official Plan* (2022)
- UHOP Amendment 218 (2025)

2.1 2006 Wastewater Master Plan Projects – Status

The 2006 Water and Wastewater Master Plan established the preferred wastewater servicing strategies to support growth within the City to 2031. These servicing strategies consisted of a wide range of linear and facility projects. The wastewater program consisted of 37 capital projects with a total estimated cost of $547M. Since 2006, these projects have been further reviewed, refined, constructed, or remain awaiting implementation. As part of the IMSS, a review of the 2006 Master Plan project status was undertaken. Based on a review of existing data, models, GIS, reports, capital budgets, and other available information, the 2006 Master Plan Wastewater Project Status is summarized in **Table 2-1**.

Table 2-1- 2006 Master Plan Project Status – Wastewater

Master Plan ID	Project Name	Comment	Status	
WW-1	HC018 - Twenty Road SPS Upgrades	• SPS Upgrades complete	• Completed	• In Model / GIS
WW-2	HC018 - Twenty Road SPS Forcemain	• SPS FM upgrades complete	• Completed	• In Model / GIS
WW-3	New HC008 - Harmony Hall SPS	• New SPS construction completed (Southcote Woodlands / Maplevale PS), SPS currently in WW Model and GIS	• Completed	• In Model / GIS
WW-4	New HC008 - Harmony Hall Forcemain	• New SPS construction completed (Southcote Woodlands / Maplevale PS), SPS currently in WW Model and GIS	• Completed	• In Model / GIS
WW-5	HC008 - Harmony Hall SPS Decommission	• Decommissioning to be confirmed. SPS currently active in WW Model	• Completed	• In Model / GIS
WW-6	HC016 - Winona SPS Upgrades	• SPS upgrades completed	• Completed	• In Model / GIS
WW-7	HC016 - Winona SPS Forcemain Twinning	• Project cancelled due to I/I intervention	• Project cancelled due to I/I intervention	-
WW-8	DC018 - Waterdown SPS	• Waterdown SPS / FM completed. Currently in GIS and Model	• Completed	• In Model / GIS
WW-9	New Waterdown Forcemain	• Waterdown SPS / FM completed. Currently in GIS and Model • Project name is changed to "New Dedicated Forcemain of Waterdown SPS (DC018)	• Completed	• In Model / GIS
WW-10	Waterdown WWTP	• WWTP decommissioning completed	• Completed	• In Model / GIS
WW-11	Ancaster-to-Fennell Trunk Sewer Twinning	• Project cancelled due to I/I intervention	• Project cancelled due to I/I intervention	-
WW-12	West 18th Street Sewer Twinning	• Project cancelled due to I/I intervention	• Project cancelled due to I/I intervention	-
WW-13	Combined Sewer Overflow Control	• CSO Control complete	• Completed	• In Model / GIS
WW-14	New Centennial Trunk Sewer	• Trunk Sewer Construction Complete	• Completed	• In Model / GIS
WW-15	Woodward WWTP Upgrades	• Improved effluent for HHRAP and wet weather F-5-5 completed, growth need to be addressed in Phase 2	• Phase 2	-
WW-16	Mountain Brow Trunk Sewer	• Sewer scope and alignment has been updated in conjunction with development in southeast Waterdown. • Portions of the main trunk sewer servicing this area have been constructed and will be extended east to service growth • SPS upgrades was in 2017 Capital Budget Project List (2017)	• Completed (by developer)	• In Model / GIS
WW-17	DC014 - First Street SPS Upgrades	• SPS conceptual design of upgrades recently completed - Third pump required to meet capacity need • Other ancillary station upgrades required	• Completed	• In Model / GIS
WW-18	Scenic Drive Sewer Twinning	• Project postponed, status and scope require further confirmation	• Project scope and requirements to be confirmed through this study	-
WW-19	Bowman Street Sewer Twinning	• Project cancelled	• Project Cancelled	-
WW-20	HC058 - Binbrook SPS Upgrades	• SPS Upgrades complete	• Completed	• Model has been updated.
WW-21	Hwy 56 Forcemain Twinning	• Forcemain twinning recommended in 2014 DC, however project was not in 2017 Monthly Status Report • Scope / status to be confirmed	• Completed	• Model has been updated.
WW-22	Hwy 403 Trunk Sewer Twinning	• Sewer twinning was in 2017 Capital Budget Project List (2017-2018) from Royal to Main King • 2014 DC split project in two phases (Royal to MIP and MIP to Main King)	• Partially constructed. To be completed after LRT.	• To be Included in Future Servicing Scenario
WW-23	New Airport Lands SPS	• Since 2006, the overall AEGD servicing strategy has been updated through iterations of AEGD Master Plan. Airport Lands SPS / FM will not be required under the current land use plan and servicing strategy	• Project Cancelled	-
WW-24	New Airport Lands Hwy 6 Forcemain	• Since 2006, the overall AEGD servicing strategy has been updated through iterations of AEGD Master Plan. Airport Lands SPS / FM will not be required under the current land use plan and servicing strategy	• Project Cancelled	-
WW-25	New Hwy 6 Trunk Sewer	• Since 2006, the overall AEGD servicing strategy has been updated through iterations of AEGD Master Plan. The trunk sewer will now be an extension of the Dickenson Trunk Sewer west of Upper James Street. Additionally, a network of trunk and sub-trunk sewers have proposed through AEGD MP and DC Update. These projects will be further reviewed in the IMSS.	• Project Cancelled	-
WW-26	New Dickenson Road Trunk Sewer	• Dickenson Road Sewer / SPS / FM has been updated since the 2006 Master Plan to consist of a gravity only solution. This sewer will tie into the Centennial Trunk Sewer (which is currently under construction) • Combined into one deep trunk sewer project. Construction Phase confirmed by City	• Construction Phase	• Preliminary information received, to be incorporated in Future Servicing Scenario
WW-27	New Dickenson Road SPS	• SPS and Forcemain no longer part of the preferred solution • Combined into one deep trunk sewer project • Construction Phase confirmed by City	• Project Cancelled	-

Master Plan ID	Project Name	Comment	Status	
WW-28	New Dickenson Road Forcemain	• SPS and Forcemain no longer part of the preferred solution • Combined into one deep trunk sewer project • Construction phase confirmed by City	• Project Cancelled	-
WW-29	New HC053 - Shaver Road SPS	• Project removed from program; updated servicing strategy	• Project Cancelled	-
WW-30	New HC053 - Shaver Road Forcemain	• Project removed from program; updated servicing strategy	• Project Cancelled	-
WW-31	New Shaver Road Sewer	• Project removed from program; updated servicing strategy	• Project Cancelled	-
WW-32	HC053 - Shaver Road SPS Decommission	• Project removed from program; updated servicing strategy	• Project Cancelled	-
WW-33	Battlefield Trunk Sewer Twinning *(New Name: Lower Centennial Trunk Sewer)*	• Sewer twinning was in 2017 Capital Budget Project List (2018-2019), project to be further confirmed in the IMSS • Bottleneck to be constructed with Dickenson Trunk. IMSS update to review and confirm date required.	• Design and Construction Phase	• To be incorporated in Future Servicing Scenario
WW-34	HC002 - Scenic Drive SPS Upgrades	• Upgrades Complete	• Completed	• In GIS
WW-35	HC011 - Calvin Street SPS Upgrades	• Upgrades Complete	• Completed	• In GIS
WW-36	HC056 - Green Road Upgrades	• Upgrades Complete	• Completed	• In GIS
WW-37	HC056 - Green Road Forcemain Twinning	• Upgrades Complete	• Completed	• In GIS

3.0 Wastewater Servicing Principles and Policies

A principles and policies paper was developed during the 2006 Master Plan and updated in 2020 as part of this study. Through this study, the principles and policies were reviewed and updated to guide the development of water servicing strategies, which were adopted by the City Council.

In general, the City's goal is to build and maintain efficient, reliable, sustainable, and well-managed wastewater systems that provide a high level of service to the public. To capture these goals, the servicing principles and policies are structured as follows.

General Water and Wastewater Policies – Outlines policies and guiding principles that impact both water and wastewater servicing.

- G.01: Planning and Servicing
- G.02: Planning and Servicing
- G.03: New Development
- G.04: Servicing Strategy Municipal Servicing
- G.05: Planning Horizon
- G.06: Existing Infrastructure
- G.07: Reserve Capacity
- G.08: Standards and By-Laws
- G.09: Efficiency and Optimization
- G.10: Communication
- G.11: Services and Facility Location
- G.12: Monitoring
- G.13: Environmental Protection
- G.14: System Reliability and Security
- G.15: Climate Change
- G.16: Level of Service
- G.17: Program Costing
- G.18: Strategic Plan
- G.19: Operations
- G.20: Coordination

Wastewater Policies – Outlines policies and guiding principles that impact water servicing only.

- WW.01: New Growth Areas – Separated System
- WW.02: Sewer Use Criteria
- WW.03: Wastewater Collection and Pumping Systems Reliability and Security
- WW.04: Combined Sewer Overflow
- WW.05: Hamilton Harbour Loading
- WW.06: Wastewater Treatment
- WW.07: Biosolids Management
- WW.08: Health and Safety
- WW.09: Wastewater Flow Projections
- WW.10: Environmental Compliance
- WW.11: Wet Weather Flow Criteria
- WW.12: Wet Weather Strategies
- WW.13: Capacity Allocation

For the complete list of servicing principles and policies please refer to **Appendix A**.

4.0 Planning and Growth Projections

This section provides an overview of the population and employment growth projections that form the basis for the Interim Water Master Servicing Strategy analysis. The forecasts are based on the 2024 No Urban Expansion (NoUBE) Traffic Survey Zone (TSZ) data, endorsed by Council, and extend to 2051. These projections establish the foundation for assessing future infrastructure needs and identifying servicing strategies.

A significant change in the *Provincial Planning Statement, 2024* is that municipalities must begin basing population and employment growth projections on Ministry of Finance projections (Policy 2.1.1), but this policy document also states:

- Municipalities "may modify projections, as appropriate"; and,
- Municipalities may continue to use the previous forecast issued by the Province until its next Official Plan review.

As shown in **Table 4-1**, the updated 2025 Ministry of Finance population projections for Hamilton are approximately 4% higher than the UHOP forecast, with the Ministry of Finance projecting more people in Hamilton by 2051. It is important to note these projections do not incorporate explicit economic or planning assumptions. They are developed using a standard demographic methodology in which assumptions for population growth reflect recent trends in all streams of migration and the continuing evolution of long-term fertility and mortality patterns. As a result, they fluctuate year to year and are heavily influenced by recent migration trends which are now trending down after a period of historically high immigration levels.

Table 4-1- Comparison of UHOP and Ministry of Finance Projections

	Population	Households
Urban Hamilton Official Plan (UHOP)	652,000	258,100
Ministry of Finance	679,654	269,047
Difference	**27,654**	**10,947**

While these updated projections have not been incorporated into the City's Official Plans, they indicate the potential for the City's 2051 population, household and employment forecasts may be modified in the future when the City completes its Official Plan review. It is important to note that the Official Plan review will also be influenced by the outcome of the Ontario Land Tribunal (OLT) hearings on privately initiated urban boundary expansion applications, through which the OLT may make rulings respecting both the City's forecasted growth and land needs

4.1 Population and Employment Planning Projections

The 2024 NoUBE TSZ dataset, endorsed by council, forecasts future population and employment growth to 2051. This growth is distributed in accordance with the totals and allocation policies set out in the current *Urban Hamilton Official Plan (UHOP)*. It should be noted that future development applications and Official Plan amendments may affect this growth strategy. **Table 4-2** and **Figure 4-1** illustrates the residential and employment growth to 2051.

Table 4-2- Project Residential and Employment Population for the City of Hamilton to 2051

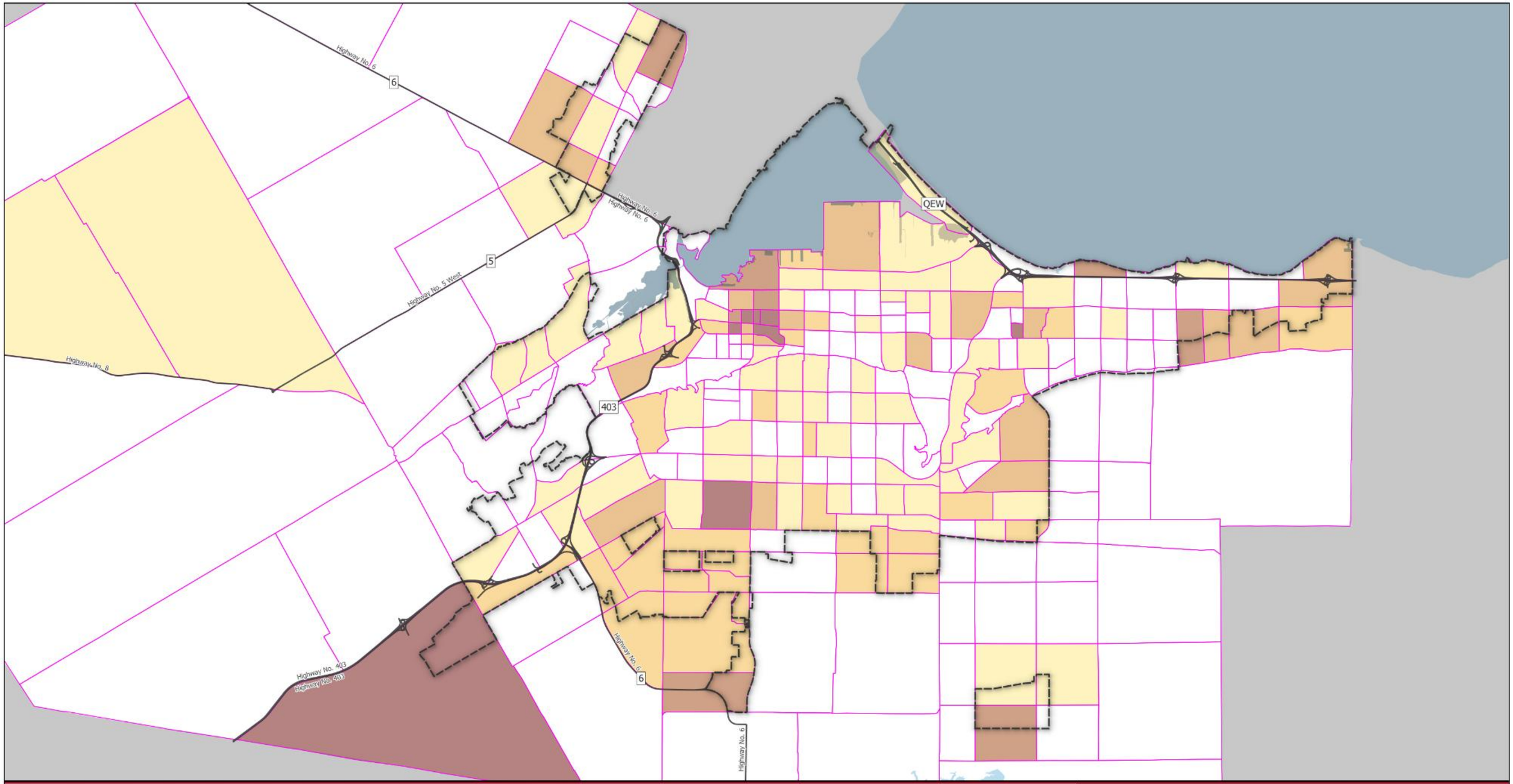
	Year	Residential Population	Employment Population
	2021	583,720	240,310
	2031	653,820	278,680
	2041	735,500	318,720
	2051	820,610	360,610
Change from 2021-2051		**236,890**	**120,300**

4.2 Wastewater Service Area Projections

After receiving the newly updated 2024 NoUBE TSZ residential and employment projections, the wastewater service area population projections have been refined to align with the City of Hamilton's existing wastewater service areas. Each TSZ was analyzed and mapped to the City's nine (9) wastewater service areas based on sewer network connectivity and service delineations. Residential and employment estimates within each TSZ were allocated to the corresponding wastewater catchments, ensuring that the updated projections accurately represent anticipated growth and associated wastewater flows across the system.

Table 4-3- Wastewater Service Area Residential and Employment Projections to 2051

Service Area	2021		2031		2041		2051	
	POP	EMP	POP	EMP	POP	EMP	POP	EMP
Waterdown	24,150	10,470	28,630	11,910	37,450	13,910	38,460	14,880
Dundas	28,930	15,680	29,950	15,870	30,730	16,040	32,890	16,390
Ancaster	40,510	18,710	43,330	21,760	48,520	25,130	50,990	28,150
Lower Hamilton	193,220	90,990	225,130	106,720	241,820	120,550	303,020	141,490
Upper Hamilton	158,800	48,670	167,690	51,460	183,570	55,170	193,900	58,260
Mount Hope / AEGD	3,520	3,420	5,900	12,590	6,110	21,480	6,310	30,360
Glanbrook	7,080	2,070	7,250	4,700	8,110	7,430	8,670	10,130
Stoney Creek	80,620	33,970	94,230	36,630	122,170	41,190	127,930	42,940
Binbrook	11,980	2,450	15,060	2,870	18,590	3,360	19,190	3,460
Within Urban Area	**548,800**	**226,440**	**617,190**	**264,520**	**697,080**	**304,260**	**781,360**	**346,040**
Outside Urban Area	34,930	13,870	36,640	14,160	38,420	14,470	39,260	14,570
Total	**583,720**	**240,310**	**653,820**	**278,680**	**735,500**	**318,720**	**820,610**	**360,610**



GRIDS 2 / TZ outline
Urban Boundary
Waterbody

Total Growth 2021 - 2051

- < 500
- 500 - 1500
- 1500 - 3000
- 3000 - 5000
- 5000 - 7500
- >7500

Reference(s)
1. Projection EPSG:26917
2. Base Data: City of Hamilton, 2024

3,000 6,000 9,000 12,000 m

Map Title: Total Growth 2021 - 2051 (Updated July 2024 No UBE Scenario)

Project Name:
Integrated Water, Wastewater, and Stormwater Master Plan

Client Name:
City of Hamilton (Ontario, Canada)

GEI

Last Updated: August 2024
Document ID: 717010-Planning

5.0 Existing Wastewater Collection System

5.1 Existing Wastewater Infrastructure

The City of Hamilton's wastewater system consists of both combined and separated service areas. The collection system includes approximately 1,916 kilometres of sewers, serving a total area of about 23,000 hectares. The system comprises approximately 635 kilometres of combined sewers, more than 1,100 kilometres of storm sewers, and approximately 1,000 kilometres of sanitary sewers. The combined sewer system is primarily located in the older parts of the City, covering the downtown core and the northern sections of the Hamilton Mountain. Areas such as Ancaster, Dundas, Flamborough, Mount Hope, Binbrook, and Stoney Creek are serviced by separated sewer systems.

During dry weather conditions and minor storm events, the City's combined sewer interceptor system conveys flows from both combined and separated areas to the Wastewater Treatment Plants (WWTPs). During significant storm events, sanitary and stormwater flows are conveyed to the WWTPs, but excess flows are diverted to local receiving waters via Combined Sewer Overflows (CSOs). There are 28 CSOs in 22 addresses in place to help reduce the risk of basement flooding by diverting excess stormwater before it reaches the WWTPs. To meet environmental targets, the City has systematically constructed CSO storage tanks as end-of-pipe solutions and implemented a Real-Time Control (RTC) system on certain areas within the network to optimize inline storage and CSO tank utilization during wet weather conditions.

The overall wastewater system includes two (2) conventional activated sludge plants, 45 sewage pumping stations (SPS) and three leachate pumping stations. In addition, the system contains numerous flow control devices such as weirs, orifices, and gates. More than 7,000 sewer backwater valves have been installed in the wastewater system as a preventive measure against basement flooding.

5.2 Wastewater Treatment Plants

The City of Hamilton operates two lake-based wastewater treatment plants:

- The Woodward Avenue WWTP
- The King Street (Dundas) WWTP

A third facility, the Main Street (Waterdown) WWTP, was decommissioned in 2018. A SPS was constructed at the former plant site, along with a forcemain to convey flows from the service area to the Borers Creek trunk sewer, which ultimately discharges to the Dundas WWTP.

5.2.1 Woodward Avenue Wastewater Treatment Plant

The Woodward WWTP is a conventional activated sludge plant with a secondary treatment facility located at 700 Woodward Avenue in the City's east end. It serves the urban areas of Hamilton, with the exception of the Dundas WWTP service area, and is the primary facility for treating wastewater flows for most of the City. Operational since 1964, the plant has undergone several capacity and treatment quality upgrades. The plant has a rated capacity of 409 ML/d for average daily flow and 614 ML/d for peak flow. In 2023, the plant treated an average of 322 ML/d. Following secondary treatment, the effluent is disinfected with chlorine from May 15 to October 15 and discharged into the Red Hill Creek leading into Hamilton Harbour.

Woodward WWTP has undergone substantial upgrades to improve performance and reliability in F-5-5 wet weather. Primary treatment upgrades which was completed in 2014, included the installation of two (2) new additional primary clarifiers—going from 12 to 14—with a firm capacity of 1,300 ML/d along with provisions for Chemically Enhanced Primary Treatment. Additional major projects completed between 2022-2024, including:

- Construction of a new main pumping station consisting of 12 wastewater pumps with a firm capacity of 1,700 ML/d and 700 horsepower drive motors.
- Construction of a new Electrical Power Station Centre with four 3-megawatt standby generators, fuel storage tanks, and a 13.8-kilovolt distribution loop.
- Construction of the tertiary treatment facility with 10 disk filter units, with capacity of 614 ML/d with a new downstream 1,000 ML/d chlorine contact tank downstream.
- Increased capacity of south secondary treatment process, including a new chlorine contact tank and outfall.

Woodward WWTP's catchment area generally covers Hamilton's downtown and mountain areas, including Ancaster and Stoney Creek. The area's topography slopes south to north, with the Niagara Escarpment as a significant geographical feature dividing the catchment. In several locations, topographical challenges and environmental constraints prevent the use of full gravity servicing, necessitating the use of sewage pumping stations to convey flows to the gravity system.

The separated sanitary flows from Ancaster, Mount Hope, the Upper Mountain, Binbrook, and Stoney Creek are subject to varying degrees of rainfall-derived inflow and infiltration. Additionally, the central core of the City contains many combined sewers, resulting in Woodward WWTP receiving a mixture of sanitary and stormwater flows. Consequently, the plant experiences significant wet weather flows, reaching up to four (4) times the average dry-weather flow rate. Wastewater is conveyed to the plant through three main trunk sewers:

- The Western Sanitary Interceptor (WSI)
- The Eastern Sanitary Interceptor (ESI)
- Red Hill Creek Sanitary Interceptor (RHCSI)

5.2.2 Dundas Wastewater Treatment Plant

The Dundas WWTP is a conventional activated sludge facility with nitrification and tertiary filtration, providing a rated average daily capacity of 18.2 M/dD and a peak flow capacity of 42.2 ML/d. In 2023, the plant treated an average daily flow of approximately 11.8 ML/d. Wastewater entering the treatment plant undergoes preliminary treatment, including bar screening and grit removal, with ferric sulphate in addition to aid phosphorus removal.

The plant consists of two treatment trains. Plant A, originally constructed in 1919, treats an average daily flow of 6.1 ML/d, while Plant B, constructed in 1977, has an average daily flow of 12.1 ML/d. Following aeration and secondary treatment, the effluent is disinfected with chlorine from May 1 to October 31 and undergoes tertiary sand filtration to further reduce suspended solids and phosphorus content. The treated effluent is then released into the Desjardins Canal after dechlorination with sodium bisulphite.

Raw wastewater from Dundas and Waterdown is conveyed to the Dundas WWTP by gravity sewers, with a portion of the flow pumped to the headworks by an on-site pumping station. As the plant does not have its own solids treatment processes, all sludge is hauled by truck to the Woodward WWTP for further processing. An on-site diversion chamber is available to redirect peak flows exceeding 42.2 ML/d to the Woodward WWTP collection system for treatment.

Planned improvements include upgrades to meet updated effluent targets established under the Hamilton Harbour Remedial Action Plan. A conceptual design study is underway to assess the necessary upgrades to achieve these targets, with capital design expected to commence in 2025. In 2023, additional operational improvements included transferring control of effluent chamber pumps from float devices to level transmitters to enhance process control. Other safety and operational improvements, such as concrete restoration and guardrail replacements, were scheduled for 2024.

5.3 Combined Sewer Overflows

When wastewater flows exceed the capacity of the combined sewer system, CSOs discharge the excess combined sewage into local receiving water bodies to reduce the risk of basement flooding. Currently, there are 22 CSO outfalls across the City, as detailed in **Table 5-1**.

Table 5-1- CSO Outfalls

No.	CSO Outfall	Receiving Waterbody	Location of CSO Outfall
1	Ewen	Coldwater Creek	Hydro right-of-way at north end of Ewen Road
2	Sterling	Cootes Paradise	North side of Sterling Street, east of Forsyth Avenue
3	Royal / Stroud CSO tank	Chedoke Creek (Cootes Paradise)	East end of Royal Avenue at Stroud Road
4	Aberdeen	Chedoke Creek (Cootes Paradise)	Aberdeen, just east of Studholme, below ground box culvert for Chedoke Creek
5	Main King CSO tank	Chedoke Creek (Cootes Paradise)	West side of Hwy 403 beneath the King Street overpass
6	Dundas Equalization Tank	Cootes Paradise	South of King Street East, in Desjardins Canal
7	Bayfront Park CSO Tank	Hamilton Harbor	Bayfront Park at the west end of Strachan Street
8	James CSO Tank	Hamilton Harbor	North end of James Street at Guise Street
9a	Eastwood Park CSO Tank	Hamilton Harbor	North end of Catharine Street, north of Dock Service Road
9b	Eastwood Park CSO Tank	Hamilton Harbor	North end of Ferguson Avenue, north of Dock Service Road
10a	Wellington	Hamilton Harbor	North end of Wellington Street, north of Burlington Street
10b	Wellington	Hamilton Harbor	North end of Wellington Street, north of Burlington Street
11	Wentworth	Hamilton Harbor	North end of Wentworth Street, north of Land Street
12	Hillyard	Hamilton Harbor	North end of Hillyard Street, north of Land Street
13a	Birch	Hamilton Harbor	North side of Burlington Street, just west of Birch Avenue
14a	Plymouth (Gage)	Hamilton Harbor	North end of Plymouth / Depew St., north of Industrial Drive
14b	Plymouth (Gage)	Hamilton Harbor	North end of Plymouth / Depew St., north of Industrial Drive
15a	Ottawa West	Hamilton Harbor	North end of Ottawa Street, north of Industrial Drive
15b	Ottawa East	Hamilton Harbor	North end of Ottawa Street, north of Industrial Drive
16a	Kenilworth	Hamilton Harbor	North end of Kenilworth Avenue, north of Burlington Street
16b	Kenilworth	Hamilton Harbor	North end of Kenilworth Avenue, north of Burlington Street
17a	Strathearne	Hamilton Harbor	North end of Strathearne Avenue, north of the CNR line
18	Parkdale	Hamilton Harbor	North end of Parkdale Avenue, north of Burlington Street
19	Dunn	Red Hill Creek	Mouth of Red Hill Creek on the east side of Woodward Avenue
20	Red Hill Superpipe	Red Hill Creek	North of Barton Street East, east of RHVP
21	Greenhill	Red Hill Creek	East end of Greenhill Avenue, east of Rosseau Road
22	Woodward WWTP Bypass	Red Hill Creek	Mouth of Red Hill Creek on the east side of Woodward Avenue

5.4 CSO Tanks and Storage

To mitigate wet-weather loading to Hamilton Harbour, the City has constructed nine off-line CSO storage tanks since 1988, including three added since 2006, as well as one equalization tank within the combined sewer system. These tanks, typically located upstream of outfalls, are designed to capture and store over 90 percent of wet-weather flows, which are then pumped back into the interceptors during dry weather periods. By temporarily storing combined sewage during storm events, the tanks help reduce overflow occurrences. The locations and approximate storage volumes of these tanks are provided in **Table 5-2**.

Table 5-2- CSO Tanks and Storage

Storage Tank ID	Description	Location	Approx. Volume (m^3)	Receiving System	Year in Service	Gravity / Pumping Drainage
HCS01	Original Greenhill	East of Greenhill Avenue and West of Red Hill Creek	83,500	Fennell / RHCSI	1988	Gravity
HCS02	Bayfront Park	Hamilton's Bayfront Park & Strachan Street	21,000	WSI	1993	Pumping
HCS03	James Street (James and Guise)	James Street and Guise Street	1,400 + 1,800 (D/S sewer)	WSI	1993	Gravity
HCS04	Main King	Cathedral Park	77,100	WSI	1997	Gravity and Pumping
HCS05	Eastwood Park (Brock and Mary)	Eastwood Park	27,350	WSI	1997	Pumping
HCS06	New Greenhill (Greenhill & Cochrane)	East of Greenhill Avenue and East of Red Hill Creek	66,800	Fennell / RHCSI	2004	Gravity
HCS07	Red Hill Superpipe (Red Hill Creek Expressway)	Parallel to Red Hill Creek Sanitary Interceptor	14,400	Fennell / RHCSI	2007	Gravity
HCS08	Royal (Royal and Stroud)	Near Royal Avenue and Stroud Road (Stroud Park)	15,000	WSI	2007	Pumping
HCS09	McMaster (Ewen)	Near West Park Avenue and Sanders Boulevard	5,935	WSI	2011	Pumping
DA10HC60	Dundas Equalization Tank	North of King Street East and west of Olympic Drive	13,000	WSI	2011	Pumping

5.5 Regulating Structures

There are numerous regulating structures distributed throughout the City's wastewater system. These structures are designed to control the hydraulics of the collection system by regulating flows through manual or automated control systems. The key regulating structures are incorporated into the City's hydraulic model. As part of this study, the real time control (RTC) Phase II has been incorporated into the City's hydraulic model.

5.6 Sewage Pumping Stations

The City of Hamilton's wastewater sewer system comprises 45 pumping stations. An overview of these stations is provided in **Table 5-3** below:

Table 5-3- Sewage Pumping Station Overview

SPS ID	Facility	Location	No. of Pumps	Firm Capacity (L/s)
DC013	FN19PS01	Mill Street	2	20
DC014	FN17PS01	Dundas and First	2	456
DC015	FL23PS01	Hwy 5 and Rockcliffe	3	108
DC016	FK24PS01	Innovation Drive	2	32.3
DC018	FN19PS02	Waterdown Main Street	4	270
FC001	FM17PS01	Elgin Street	2	20
FC003	FN20PS01	Carl Crescent	2	20
DC001	DI05PS01	Sleepy Hollow and York	2	5.4
DC005	DH10PS01	Turnbull and Terrace	2	16
DC006	DI08PS01	Hillside Avenue	2	53
DC007	DB10PS01	McMaster University Lot	2	3.2
DC008	DI06PS01	125 King Street WWTP	3	186
DC009	DG11PS01	Rhodes Court	2	16
DC010	DF10PS01	Bridlewood	3	80
DC011	DG10A081	Pleasant Avenue and Edenbridge	1	69
DC012	DH09PS01	Pleasant Avenue and Sunrise	1	88
DC017	DF11PS01	Taywood Court	2	19
HC060	DA10PS01	Dundas Equalization Tank (King and Olympic)	3	600
HC002	HD13PS01	West 31st & Scenic Drive	3	221
HC005	AK06PS01	Old Dundas Road	2	189
HC006	AJ11PS02	Seminole and Wilson	2	20
HC007	AK11PS01	St. Margarets & Douglas	2	18
HC009	AJ11PS01	Orchard & Taylor	2	8.5
HC010	AK08PS01	Sulphur Springs	2	44
HC011	AL12PS01	Calvin Street	2	82
HC013	AJ13PS01	Cavendish Drive	3	152
HC014	AG18PS01	Osprey Road	2	210
HC020	AO04PS01	Daffodil Cres	2	9.5
HC021	AI08PS01	Woodsview and Sulphur Springs	3	80
HC028	AJ14PS01	Garner Road	3	226
HC053	AH12PS01	Shaver and Morwick	2	5.5
HC061	AM11PS02	Maplevale Drive	2	30
HC018	GD02PS01	Upper James and Twenty Road	2	1000
HC019	GD07PS01	Upper James and Mount Hope	2	210

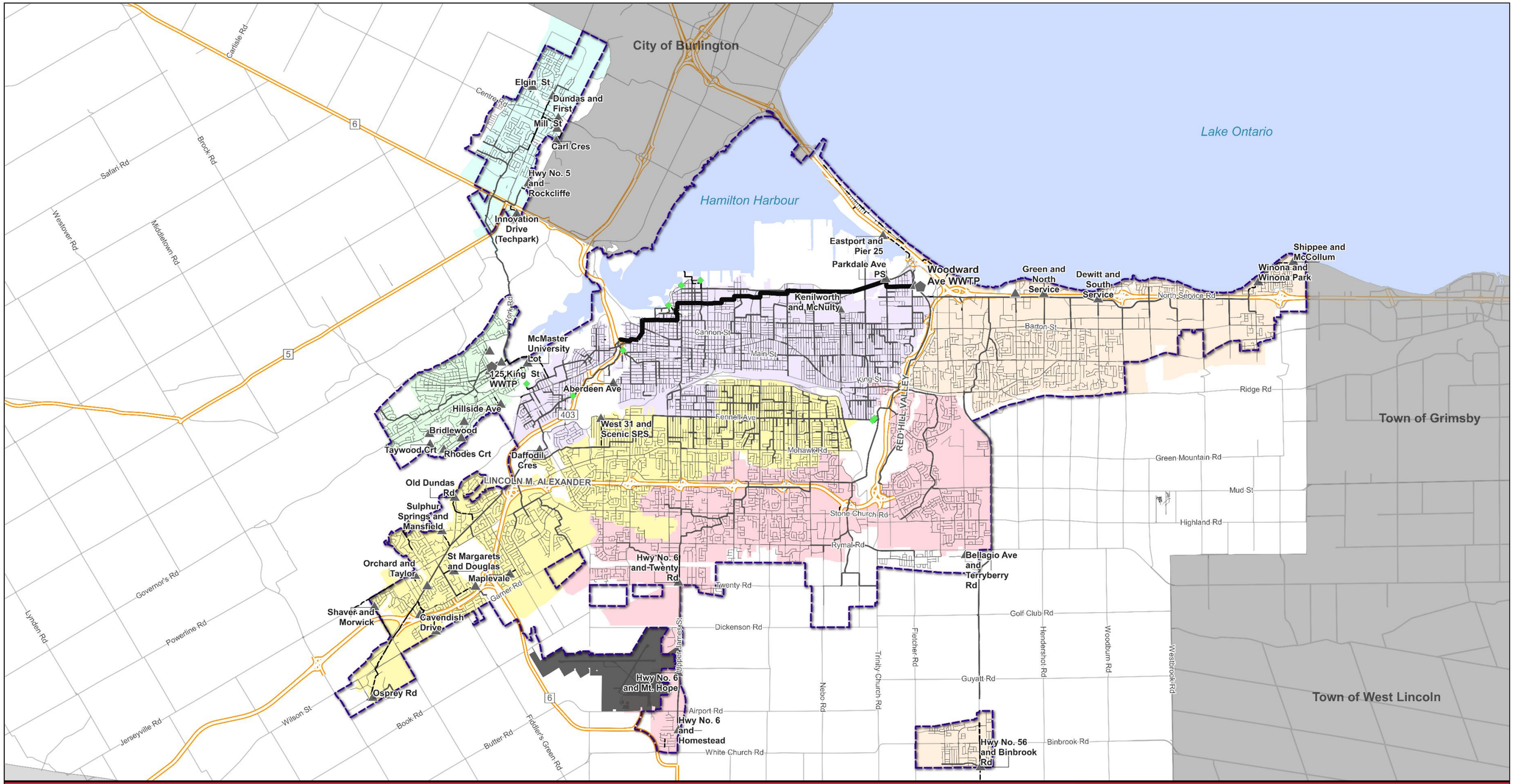
SPS ID	Facility	Location	No. of Pumps	Firm Capacity (L/s)
HC027	GD11PS01	Upper James and Homestead	3	208
HC058	GP14PS01	Binbrook Road and Southbrook Drive	2	514
HC001	HB11PS01	Parkdale Avenue	6	2100
HC015	HE11PS01	Aberdeen Avenue	22	13.60
HC017	HZ01PS03	Eastport and Pier 25	3	252
HC022	HN07PS001	Kenilworth and McNulty	1	227
HC016	SN02PS01	Winona Drive	2	150
HC055	HT06PS01	Grays Road and North Service Road	2	64
HC056	SF03PS01	Green Road and North Service Road	2	144
HC057	SH03PS01	Dewitt Road and South Service Road	2	62
HC059	SO01PS01	Shippee Avenue and McCollum Road	3	104

5.7 Wastewater Collection System

The overall Hamilton wastewater collection system is divided into six main systems:

- Waterdown
- Dundas
- Ancaster-Fennell
- Red Hill Creek Sanitary Interceptor (RHCSI)
- Eastern Sanitary Interceptor (ESI)
- Western Sanitary Interceptor (WSI)

These areas reflect the diverse sewer infrastructure across the City, including both separated and combined sewer systems. The following section provides an overview of the existing wastewater infrastructure and flow characteristics within each service area, highlighting key features such as sewer types, major trunk systems, and connections to the City's treatment facilities. In addition, an overview of the wastewater collection system is presented in **Figure 5-2**.



Existing Infrastructure

- Wastewater Treatment Plant (WWTP)
- Sanitary Pumping Station
- Combined Sewer Overflow
- Western Sanitary Interceptor
- Forcemain
- Trunk (>=600mm)
- Sewers (<600mm)

Wastewater Service Area

- Dundas System
- Eastern Interceptor System
- Ancaster-Fennell System
- Red Hill Creek Interceptor System
- Waterdown System
- Western Interceptor System

General Feature

- Airport
- Urban Boundary
- Municipal Boundary

Reference(s)
1. Projection EPSG:26917
2. Base Data: City of Hamilton, 2024

2,000 4,000 6,000 8,000 m

Fig 5-1
Map Title: Existing Wastewater System

Project Name:
Water and Wastewater Master Plan

Client Name:
City of Hamilton
(Ontario, Canada)

GEI

Last Updated: May 2026
Document ID: 717010-WW-025A

5.7.1 Waterdown System

Waterdown is serviced by a separated sanitary and storm sewer system. The decommissioned Waterdown WTTP, formerly located at 250 Main Street South, discharged treated effluent into Grindstone Creek. The 2006 Water and Wastewater Master Plan identified the need to decommission the plant and replace it with a pumping station. This decommissioning was the preferred alternative, enabling the City to achieve the goals set out in the Hamilton Harbour Remedial Action Plan (HHRAP) and providing a cost-effective solution by redirecting wastewater treatment to the Dundas WWTP.

To facilitate this transition, a new sanitary forcemain was constructed, connecting the Waterdown SPS to the Borers Creek Sanitary Sewer Interceptor (BCSSI). The BCSSI, approximately 15 kilometres long, extends from Riley Street to the Dundas WWTP along York Road. Under normal conditions, sanitary flows from the Waterdown SPS are conveyed partially to the Dundas Equalization Tank via the BCSSI, where flow is pumped to the Woodward WWTP, while under high wet weather flow conditions additional flow is diverted to the Dundas WWTP. The existing aeration tanks at the former Waterdown WWTP have been repurposed as overflow storage tanks, providing additional capacity within the wastewater system.

The Waterdown wastewater system is divided into three (3) primary service areas:

- **Central Service Area**: Drains by gravity to the Waterdown SPS, which then pumps flows to the BCSSI.
- **Western Service Area:** Drains by gravity directly through the BCSSI.
- **Eastern Service Area**: Drains to SPS DC014, located at Dundas Street and First Street, which then pumps flows across to the western service area and ultimately to the BCSSI.

5.7.2 Dundas System

The Dundas system services the former Town of Dundas, with wastewater generally draining from west to east to the Dundas WWTP. Dundas is primarily serviced by separated sanitary and storm sewers; however, there is an isolated neighborhood within Dundas that is serviced by combined sewers in accordance with the City's Sewer Use By-law.

Raw wastewater from both Dundas and Waterdown is conveyed to the Dundas WWTP through gravity sewers, with a portion of the flow being pumped to the headworks by an on-site pumping station. An on-site diversion chamber is available to redirect peak flows exceeding 42.2 ML/d to the Woodward WWTP for treatment. The plant effluent is discharged into Cootes Paradise via the Desjardin Canal.

Figure 5-2 provides an overview of the existing schematics of the facilities within the Waterdown and Dundas systems.

5.7.3 Eastern Sanitary Interceptor System

The Eastern Sanitary Interceptor (ESI) mainly runs east to west along South Service Road, extending from Oriole Avenue to Woodward WWTP. It exclusively receives sanitary sewage from the former municipality of Stoney Creek and from Binbrook, with no combined sewers within its drainage area.

Currently, the ESI has excess capacity; however, it can experience backwater conditions depending on the wet well level at the Woodward WWTP influent pumping station. When the wet well elevation is high, the effective conveyance capacity of the ESI is reduced.

The ESI begins with a diameter of 1,200 mm at Oriole Avenue and gradually increases to 1,950 mm where it merges with the Red Hill Creek Sanitary Interceptor just upstream of Woodward WWTP. The peak capacity of the ESI increases progressively from east to west, reaching a max of 380 ML/d upstream of the plant.

Error! Reference source not found. provides an overview of the existing schematics of the ESI facilities.

5.7.4 Ancaster-Fennell System

The Ancaster-Fennell system is serviced by a separated sanitary network with two main trunk sewers. The Ancaster Trunk Sewer flows south to north along Wilson Street West, serving the Ancaster, Meadowlands, and Mohawk areas. The Fennell Trunk Sewer runs west to east, ultimately discharging into two CSO storage tanks located at the east end of Greenhill Avenue, before draining into the Red Hill Creek Sanitary Interceptor (RHCSI). Excess storm flow is discharged into the outfall under high wet weather conditions.

Figure 5-4 provides an overview of the existing schematics of the facilities within the Ancaster-Fennell, RHCSI, and WSI systems.

5.7.5 Red Hill Creek Sanitary Interceptor System

The RHCSI runs south to north, extending from the intersection of Rymal Road and Dartnall Road to the Woodward WWTP. It receives combined sewage from the North Mountain area via the Fennell Trunk Sewer and separated sewage from the South Mountain, Ancaster, Mount Hope, and South Stoney Creek. Additionally, the RHCSI collects and conveys wastewater from the separate sanitary sewer systems in the southern areas of the City, which are primarily located above the Niagara Escarpment.

There are four CSOs within the RHCSI drainage area that can discharge into Hamilton Harbour via the Red Hill Creek during rainfall events. Two (2) CSO storage tanks have been constructed at the eastern end of Greenhill Avenue, where the Fennell Trunk Sewer discharges into the RHCSI. Furthermore, a CSO storage tunnel runs parallel to the existing RHCSI from Lawrence Road to the south of Barton Street, providing CSO control for the Lawrence Road, Queenston Road, and Melvin Avenue outfalls.

Figure 5-4 provides an overview of the existing schematics of the facilities within the Ancaster-Fennell, RHCSI, and WSI systems.

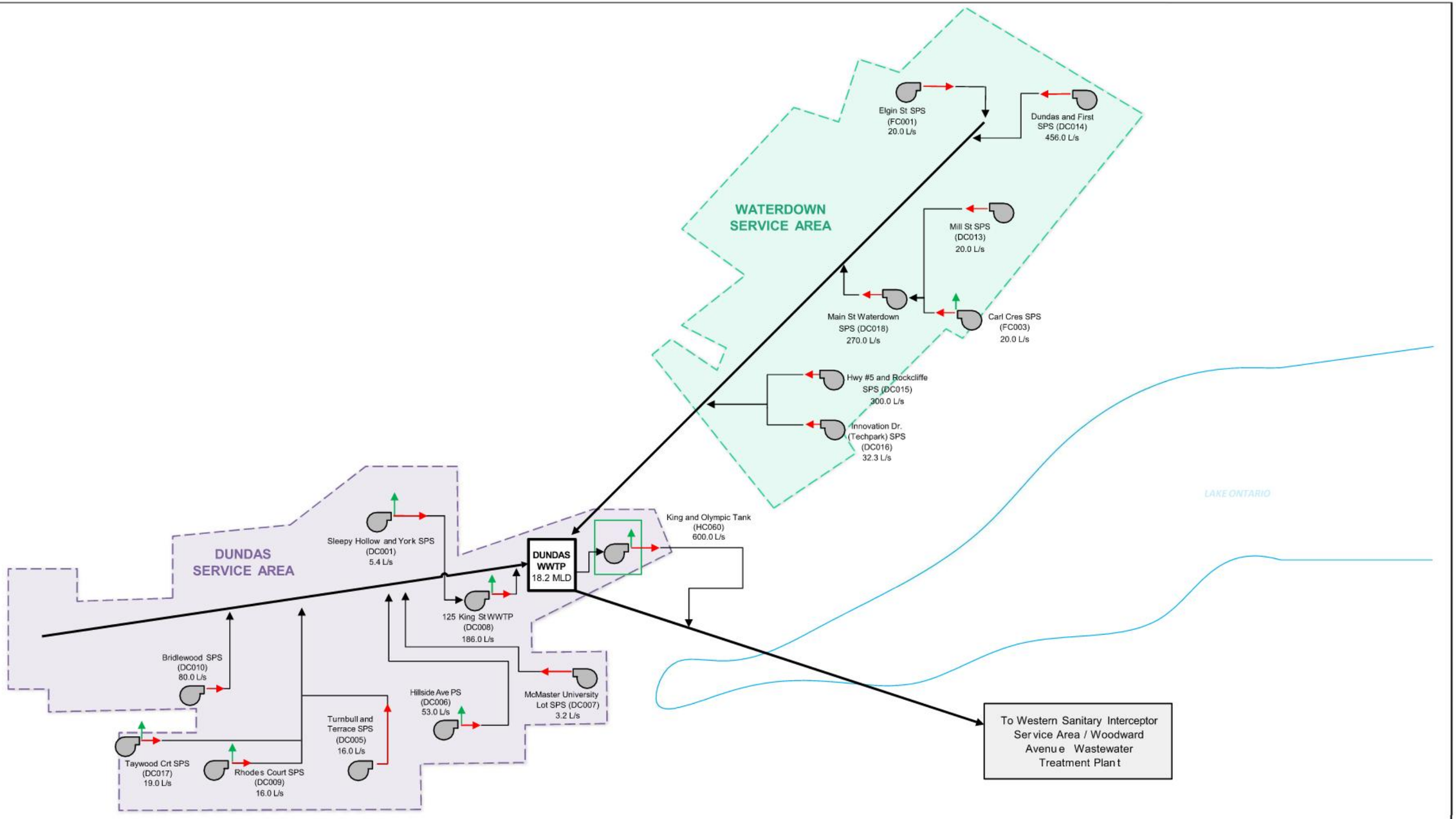
5.7.6 Western Sanitary Interceptor System

The WSI runs west to east along Hamilton Harbour, from the Main-King CSO Tank to the Woodward Avenue WWTP. It collects over 35% of the City's total sewage, primarily from the downtown core. It also serves separated areas along the former Ancaster-Hamilton border and parts of Waterdown and Dundas.

The WSI passes through densely populated and environmentally sensitive areas in the western core of the City. It stretches about 18 kilometres long, with sewer diameters ranging from 1500 mm to 2600 mm and depths varying from 10 to 30 metres, with an average depth between 12 and 15 metres.

The WSI has two (2) branches—the South Branch and the North Branch, which converge into a single sewer at the intersection of Burlington Street and Plymouth Drive. The South Branch has a diameter of 1,500 mm immediately downstream of the Main-King CSO Tank, increasing to 2,250 mm where it merges with the North Branch. The North Branch, starting with a 900 mm diameter at Ferguson Street, increases to a 1,500 mm wide by 1,600 mm high arched box sewer at Plymouth. The downstream section of the WSI further increases in diameter to 2,550 mm immediately upstream of the Woodward WWTP. The peak capacity of the WSI increases progressively from west to east, reaching a maximum capacity of 795 ML/d upstream of the plant.

Figure 5-4 provides an overview of the existing schematics of the facilities within the Ancaster-Fennell, RHCSI, and WSI systems.



WWTP Rated Capacity — Wastewater Treatment Plant (WWTP)

Firm Capacity — Sewage Pumping Station (SPS)

Service Area Boundary

CSO Tank

Forcemain

CSO / Outfall / Overflow

Connection from Sewers

NOT TO SCALE

Reference(s)
1. Projection EPSG:26917
2. Base Data: City of Hamilton, 2024



Figure 5-2

Map title: Existing Wastewater Schematic - Waterdown and Dundas Service Areas

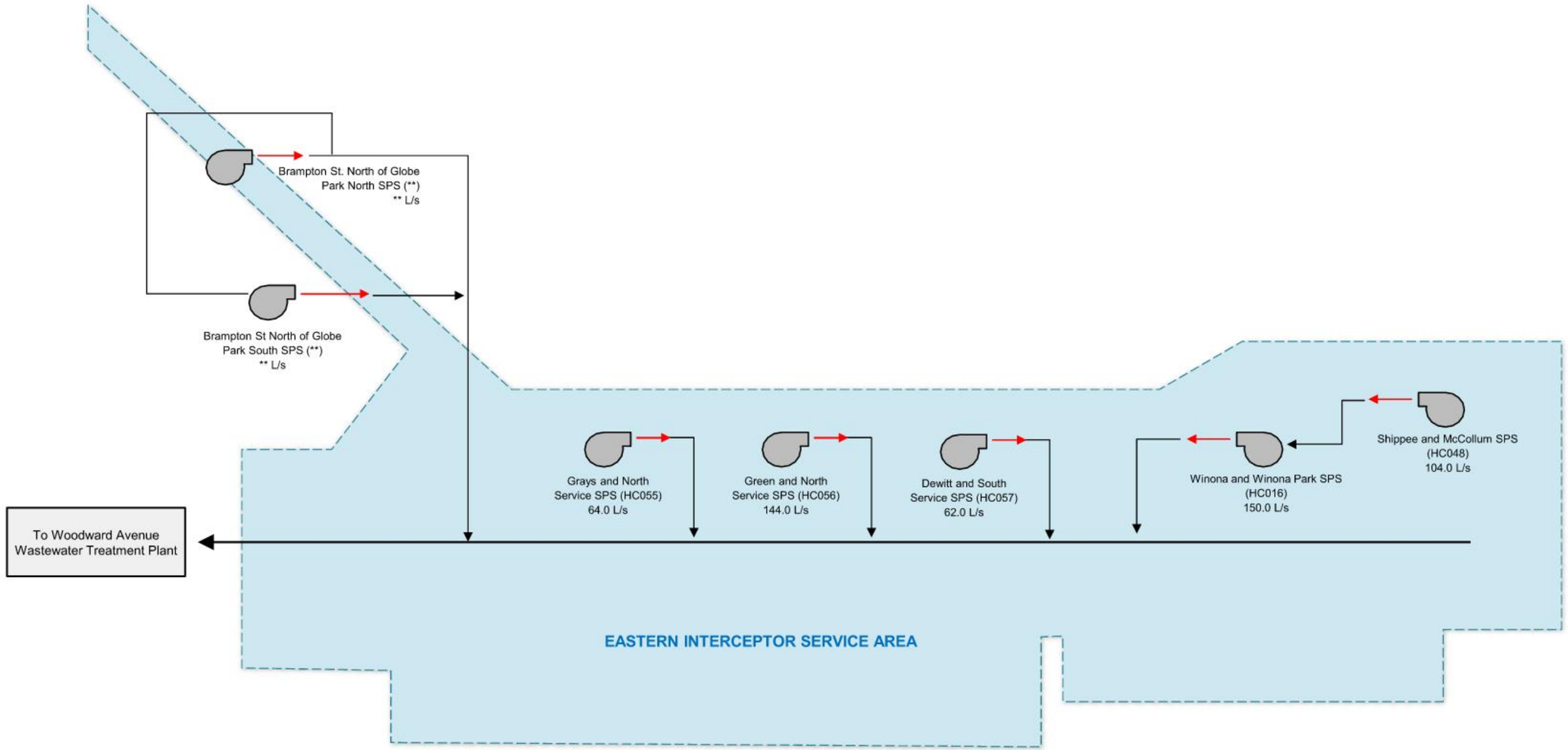
Project Name:
Interim W/WW/SW Master Servicing Strategy

Client Name:
City of Hamilton
(Ontario, Canada)

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Last Updated: January 2025
Document ID: 717010-WW-025

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WWTP Rated Capacity — Wastewater Treatment Plant (WWTP)

Firm Capacity — Sewage Pumping Station (SPS)

Service Area Boundary

CSO Tank

Forcemain

CSO / Outfall / Overflow

Connection from Sewers

** Firm Capacity to be Confirmed
(**) Facility ID to be Confirmed

NOT TO SCALE

Reference(s)
1. Projection EPSG:26917
2. Base Data: City of Hamilton, 2024



Figure 5-3

Map title: Existing Wastewater Schematic - ESI System

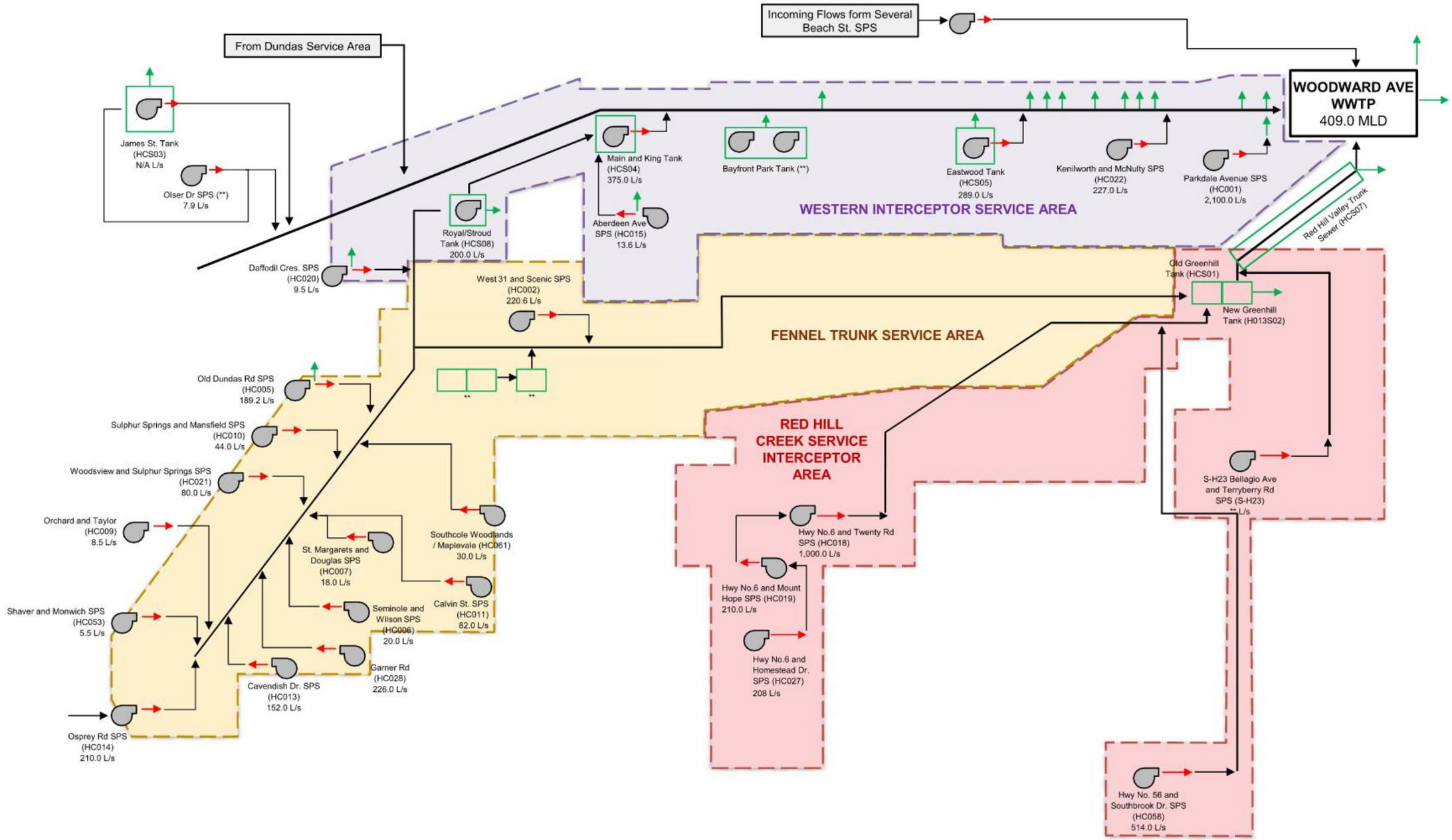
Project Name:
Interim W/WW/SW Master Servicing Strategy

Client Name:
City of Hamilton
(Ontario, Canada)

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Last Updated: January 2025
Document ID: 717010-WW-025

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WWTP Rated Capacity — Wastewater Treatment Plant (WWTP)

Firm Capacity — Sewage Pumping Station (SPS)

Service Area Boundary

CSO Tank

Forcemain

CSO / Outfall / Overflow

Connection from Sewers

** Firm Capacity to be Confirmed
(**) Facility ID to be Confirmed

NOT TO SCALE

Reference(s)
1. Projection EPSG:26917
2. Base Data: City of Hamilton, 2024



Figure 5-4

Map title: Existing Wastewater Schematic - Ancaster Fennell, WSI and RHCSI System

Project Name:
Interim W/WW/SW Master Servicing Strategy

Client Name:
City of Hamilton
(Ontario, Canada)

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Last Updated: January 2025
Document ID: 717010-WW-025

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6.0 Analysis Process and Tools

The following section provides a summary of the various processes, criteria and tools used and / or developed as part of this study. The Interim Master Servicing Strategy (IMSS) design criteria, level of service (LOS) targets, and the wastewater system hydraulic model were updated to provide guidelines and direction to the master servicing strategy process, while also ensuring that wastewater flow estimates are adequately representative to support decision making for sizing and timing of future collection and treatment infrastructure. More detailed information regarding the design criteria, LOS, and wastewater hydraulic model can be found in **Appendix E** (Technical Memorandum 3.2).

6.1 Design Criteria

Based on the review of City of Hamilton production, billing, and SCADA data, **Table 6-1** provides a summary of the recommended IMSS Wastewater Design Criteria to be applied to new growth.

Table 6-1- Summary of Design Criteria

Criteria	2025 Interim Master Servicing Strategy[1]
Average Dry Weather Flow – Residential Growth – Network and Treatment (L/cap/d)	300
Average Dry Weather Flow – Employment Growth – Network and Treatment (L/emp/d)	260
Peaking Factor	Babbitt Formula ($\frac{5}{Pop^{0.2}}$, $1 \leq Pop \geq 1000\ in\ thousands$)
Extraneous Flow Allowance – Network (New Net Greenfield Growth Areas, previously undeveloped) (L/s/ha)	0.4, 0.6* Majority of new greenfield growth areas will apply 0.4 L/s/ha
Extraneous Flow Allowance – Treatment (New Net Greenfield Growth Areas, previously undeveloped) (L/s/ha)	0.2 – 0.4

Note*: An infiltration of 0.6 L/ha/s to be used where no storm sewers, or shallow storm sewers which require weeping tiles of dwellings to be drained by a sump pump.

6.2 Levels of Service

Based on the review of City of Hamilton wastewater system guidelines, as well as other related guidelines (other similar municipalities in Ontario), **Table 6-2** provides a summary of the recommended IMSS LOS to be applied to the wastewater system assessment.

Table 6-2- Summary of Levels of Service (LOS)

LOS Criteria	2025 Interim Master Servicing Strategy
Design Storms - Network	• 5 yr – 6hr Soil Conservation Service (SCS)
Design Storms – F-5-5	• 1988 Representative Storms
Conveyance System	• >= 675 mm unless under special circumstances
Conveyance Upgrade Trigger – Separated	• q/Q > 0.75 and HGL <1.8 m below ground under 5yr SCS Design Storm
Conveyance Upgrade Trigger - Combined	• q/Q > 0.85 and HGL <1.8 m below ground under 5yr SCS Design Storm
Pumping Capacity Trigger	• Firm capacity to meet 5 yr – 6 hr SCS • Firm Capacity is defined as the capacity with the largest pump out service
Treatment Capacity Trigger	• Treatment expansion planning as per City's Capacity Monitoring Tool (CMT). • Expansion timing to be in place at ~95% of Average Day Rated Capacity.

6.3 Hydraulic Model

The City's wastewater system model has evolved significantly since its original development in 2004 using DHI MOUSE. Subsequent updates in 2009 (LEED All Pipes model), 2012 (city-wide calibration), 2014 (integration of LEED area), and 2019–2020 (MIKE URBAN) progressively expanded coverage and improved calibration. The model was recently transitioned into MIKE+ (2025), incorporating updated sewage pumping station capacities, forcemains, and background data.

The current MIKE+ model represents approximately 29,000 nodes, 30,000 links/pipes, and 25,000 catchments across a drainage area of ~21,000 hectares, serving a modeled population of ~522,000. It includes combined and separated systems, 124 sewage pumps, 272 flow regulators (orifices / weirs), and 14 CSO / storage basins.

Model completeness checks identified a generally robust dataset, with minor gaps such as limited invert data, inconsistencies in Manning's roughness values, and parameters requiring standardization (e.g., spill coefficients, headloss units, effective flow areas). Outfalls *(n=54)* are fully represented, including 27 CSOs and multiple overflow points at tanks, pumping stations, and treatment facilities. Opportunities remain to verify boundary conditions and improve parameter consistency across nodes, links, and regulators.

Hydrologically, most catchments are modeled with the Kinematic Wave (Model B) approach in combination with the RoadI module, which provides flexibility for calibration and differentiation of runoff from impervious and pervious surfaces. However, in the Airport Employment Growth District (AEGD) area, calibration completed in 2021 has been incorporated into the model. These catchments use the Time-Area method rather than the Kinematic Wave + RoadI approach, reflecting the methodology established during the AEGD study.

Rainfall inputs include 2-yr and 5-yr SCS design events, F-5-5 event series, and a continuous 1988 "average year" simulation for wet weather flow assessment. To ensure full system drainage, an extended runtime of 12 hours beyond each event is recommended.

While comprehensive, the existing MIKE+ (2025) model will require a future overhaul and recalibration to better reflect new sewer infrastructure, updated flow monitoring, and evolving system conditions. Within the scope of this study, analysis has been focused on the major trunk sewers (≥675 mm diameter), providing a reliable basis for identifying system-level constraints and prioritizing strategic infrastructure planning.

In addition to the hydraulic model, there is also a desktop analysis tool (Excel) that is used to complete the Woodward WWTP flow projections.

7.0 Assessment of Existing and Future Wastewater Infrastructure

Building on the approach established in the 2006 Water and Wastewater Master Plan, an important first step in the current Master Plan process was to evaluate the performance of the existing infrastructure under projected future growth conditions. This assessment formed the foundation for developing the IMSS' recommendations, ensuring that they are supported by a comprehensive and detailed analysis of the system. By examining how future growth flows may impact the wastewater network, potential constraints and opportunities were identified, allowing for the development of appropriate servicing strategies. The following sections outline the current system limitations and evaluate its capacity to accommodate growth through the 2051 planning horizon.

7.1 Assumptions and Limitations

As part of the IMSS, an assessment of alternative sewer alignments or facility locations is not feasible. At this stage, the overall servicing concepts and the most immediately apparent alignment options have been considered for costing and mapping purposes. For all identified projects, EA study will be required for individual projects, where applicable to refine options and confirm feasibility, particularly as more information becomes available on environmental impacts, financial implications, and local conditions.

The focus of the IMSS is on the overall servicing strategies for major trunk sewers, major sewage pumping stations, and treatment system. However, it is recognized that much of the existing calibration is outdated and that new infrastructure, such as storm relief sewers, may not be fully represented in the current model. In particular, SPSs are complex facilities that often require site-specific reviews of development applications, hydraulics, redundancy, and operational performance, and should be evaluated individually outside of this study.

Localized system issues, such as small diameter sewer constraints, basement flooding reports, inflow and infiltration sources, or aging infrastructure, are also not assessed in detail through this study. These types of local challenges should be addressed through targeted inflow / infiltration (I/I) reduction programs, state-of-good-repair (SOGR) assessments, or localized area studies.

7.2 Opportunities and Constraints

The assessment of opportunities and constraints presented in this section provides a snapshot of the current system capacity, high-level constraints and servicing opportunities. These findings form the basis for evaluating future servicing strategies to accommodate projected growth to 2051, as discussed in Section 8. The assessment draws on planned infrastructure reviews, hydraulic model analysis, existing flow monitoring data, and established levels of service criteria.

Existing and future wastewater opportunities and constraints were identified through discussions with City staff, as well as through hydraulic analyses, and a review of other related infrastructure data (e.g., GIS, design reports, etc.). The existing hydraulic model was used to analyze the performance of the existing and future system under peak wet weather flow conditions. Sewer capacity constraints were identified using flow-capacity ratios (q/Q) and Hydraulic Grade Line (HGL) results, with flooding conditions flagged where the HGL intersects ground elevation.

7.2.1 Waterdown System

The Waterdown system is serviced by a separated sanitary and storm sewer system and is divided into three (3) primary service areas: the Central, Western, and Eastern service areas. The Central Service Area conveys flow by gravity to the Waterdown SPS, which is connected to the Borers Creek Sanitary Sewer Interceptor (BCSSI) via forcemain. The Western service area also drains by gravity to the BCSSI, which flows to the Dundas diversion structure and ultimately discharges to the Woodward WWTP. The Eastern service area is pumped across to the Western service area before ultimately discharging to the BCSSI.

Growth Context

According to the TSZ projections, growth is anticipated in the Waterdown area, particularly south of Dundas Street and Burke Street, with additional development expected along North Waterdown Drive. Planned infrastructure reviews indicate that these areas will be serviced by extensions of the local sanitary network, ultimately discharging into the BCSSI for conveyance to the Dundas WWTP.

Conveyance

Under future growth conditions, the BCSSI demonstrates capacity constraints, with several downstream sections between Willowglen Court and the Dundas WWTP exceeding capacity under a 5-year design storm. Isolated reaches with shallow gradients also limit conveyance, further compounding system stress. Given that the BCSSI is a critical outlet for servicing the Waterdown area, enhanced resiliency and additional capacity should be considered to ensure reliable performance.

Most SPSs have sufficient capacity to convey projected future growth flows; however, two (2) SPSs (DC016 and DC018) are expected to exceed their firm capacity under 2051 growth conditions. As new developments proceed and growth projections are refined, these SPSs should be closely monitored, with future upgrades identified and implemented as necessary to maintain reliable system performance.

7.2.2 Dundas System

Under normal flow conditions, a portion of flows from the BCSSI are directed to the Dundas Equalization Tank and are pumped via the Dundas forcemain to a gravity sewer at Cootes Drive / College Court where flows are conveyed via gravity to the Woodward WWTP. During the period of high wet weather flows, a larger portion of BCSSI and Dundas system flows are directed to the Dundas Equalization Tank, where the excess flows are stored to balance peak flows discharging to the College Court sewer. The Dundas Equalization Tank also has an overflow weir, which may be activated and overflows to the Desjardins Canal during extreme wet weather flow events.

The Dundas Equalization Tank has a 12,000 m^3 storage volume, divided into wet wells with three (2 duty, 1 standby) submersible sewage pumps (provision for a fourth), each rated at 300 L/s.

Growth Context

According to TSZ projections, growth within the Dundas system will be limited and primarily through intensification. As a result, no new infrastructure is currently planned in this area.

Conveyance

Model results confirm that the BCSSI experiences capacity constraints near the Dundas WWTP under the 5-year design storm, with localized surcharging along the 750 mm York Road sewer receiving flow from the larger 1727 mm x 1092 mm trunk. However, the impact of growth from the Dundas System on this system is expected to be minimal.

Flows entering the Dundas Equalization Tank (HC060) currently exceed the firm capacity of the SPS as per the hydraulic model results. Discussions with City staff confirm that this has not resulted in operational constraints to date. Therefore, the recommended approach is to monitor performance as intensification occurs, with upgrades considered in the future if operational challenges emerge.

7.2.3 Ancaster-Fennell System

The Ancaster-Fennell system is primarily served by two major trunk sewers. The Ancaster Trunk Sewer runs south to north along Wilson Street West, servicing the Ancaster, Meadowlands, and Mohawk areas. The Fennell Trunk Sewer flows west to east and discharges into two (2) CSO storage tanks located at the east end of Greenhill Avenue. These tanks provide storm relief to the Red Hill Creek Sanitary Interceptor (RHCSI) during significant rainfall events. The majority of flows from the Ancaster-Fennell system is conveyed to the WSI, with approximately 35% of the flow directed east along the Fennell Trunk to the RHCSI.

Growth Context

Some greenfield growth is anticipated within the Ancaster-Fennell service area. Portions of AEGD growth are also expected to drain to this system via the Ancaster Meadowlands sewers along Raymond Road (Southcote-Glancester) and the future Garner Road sewer, increasing the base sanitary loads and wet-weather sensitivity along the Ancaster and Fennell trunk sewer.

Conveyance

Hydraulic results indicate the Fennell Avenue trunk sewer exceeds capacity west of Kimberly Drive with many reaches operating near or above capacity under the 5-year event. The Bluebell-Lavender diversion behaves as intended at DWF (directing all flow to the Ancaster-Fennell system), but under the 5-year event it splits peaks (~35% to WSI; balance to Ancaster – Fennell), a useful pressure-relief pathway that nonetheless leaves several Ancaster-Fennell segments capacity limited during storms.

Of the fourteen SPSs in the Ancaster-Fennell system, thirteen convey the 5-year event within firm capacity; however, three storage/firm capacity pinch points remain. The Original Greenhill (HCS01) and New Greenhill (HCS06) facilities both receive 5-year volumes that exceed available storage, elevating the risk of surcharge and overflow without modified operational controls or storage augmentation. In addition, the Daffodil Crescent SPS (HC020) exceeds firm capacity under existing 5-year inflows.

While the network model is comprehensive, portions of its wet-weather calibration are dated, and certain responses, particularly SPS and storage inflow peaks may be conservatively represented. As such, pair these findings with proactive verification: targeted flow monitoring, and event-based checks on pump run-times and storage utilization, and periodic recalibration of runoff parameters using recent rainfall data.

A substantial portion of wet-weather stress in the Fennell corridor stems from runoff entering the combined network. Sewer separation in contributing subcatchments would remove a large volume of storm-derived inflow from the Fennell Trunk, lowering peak HGLs, reducing surcharge frequency, and mitigating localized surface flooding. The magnitude of relief will depend on achievable separation extents and confirmation of suitable storm outlets.

7.2.4 Red Hill Creek Sanitary Interceptor System

The RHCSI runs south to north, from the intersection of Rymal Road and Dartnail Road to the Woodward WWTP. It receives combined sewage from the North Mountain area (generally north of Mohawk Road, vial the Fennell Trunk sewer), and separated sewage from the South Mountain, Mount Hope, and South Stoney Creek. The RHCSI is understood to receive a portion of flows from Ancaster, with the balance conveyed to the WSI via the Lavender / Bluebell diversion; however, recent modeling suggests this split differ from previous understanding.

The RHCSI has a diameter of 1,650 mm immediately downstream of Greenhill CSO Tanks, increasing to 1,950 mm where it merges with the ESI just upstream of the Woodward WWTP. The peak capacity of the RHCSI increases somewhat steadily from south to north, reaching a maximum capacity of 6,281 L/s upstream of the plan where it converges with the ESI.

RHCSI System has eight pumping stations most of which are located south of Lincoln Alexander Parkway and Red Hill Valley Parkway (RHVP). The system also has one storage tank, Red Hill Valley Superpipe) that runs under the RHVP from King Street to the CN Rail track. The Twenty Road SPS (HC018) has been recently upgraded, in anticipation of the AEGD growth. Additionally, Dickenson trunk sewer is under construction which is expected to take a large portion of the AEGD flows away from the Twenty Road SPS and ultimately RHCSI.

Growth Context

The RHCSI is expected to service significant intensification and moderate greenfield growth within its drainage area. In parallel, the Dickenson trunk sewer (under construction) will divert a large portion of AEGD flows away from the Twenty Road SPS, easing demand on that station. The Dickenson trunk will connect to Upper / Lower Centennial trunk, and ultimately ESI enroute to the Woodward WWTP, providing a new conveyance path that reduces reliance on the RHCSI for those growth areas.

Conveyance

Model results indicate apparent spare capacity in the RHCSI. However, this is likely influenced by excess wet weather flow discharging at CSO outfalls (notably Lawrence Road, Queenston Road, and Melvin Avenue). In other words, the interceptor's modeled headroom partly reflects overflow relief rather than true in-system conveyance to treatment. Further confirmation of overflow occurrence, flow conditions and system response is required prior to defining future mitigation measures.

7.2.5 Eastern Sanitary Interceptor System

The ESI runs east-to-west along Lake Ontario, from Oriole Avenue to the Woodward WWTP. It receives sanitary sewage from the former municipality of Stoney Creek only. When the ESI was originally constructed, it included an allowance for development of the lands south of the existing service area, which is now protected by the *Greenbelt Plan*. While the ESI has excess capacity at present, it can experience backwater conditions depending on the wet well level at the Woodward WWTP influent pumping station. When the elevation in the wet well is high (66.7 metres or above), the effective conveyance capacity of the ESI is reduced. The ESI System has five sewage pumping stations, most of which are located north of the QEW. The ESI system is a separated system with no storage or CSOs.

Growth Context

The ESI corridor is expected to service significant greenfield growth, increasing base sanitary loads and wet weather sensitivity along the downstream reach approaching the Woodward WWTP.

Conveyance

Model results indicate the ESI operates at ~88% of capacity during the 5-year design storm. Additional greenfield uptake in the ESI catchment could exhaust remaining headroom and potentially necessitate relief near the WWTP interface. However, any upgrade concept at the plant tie-in should first be informed by a targeted check of ESI invert elevations, WWTP wet-well operating levels, control set-points, and local tailwater conditions, as these factors govern hydraulic constraint at this location.

Within the ESI system, five SPSs are identified; three are not represented in the current model. Of the two modelled SPSs, results show insufficient firm capacity for the 5-year event, and Winona Park SPS (HC016) exceeds the firm capacity under the same condition, suggesting that new development in its catchment could advance upgrade timing. However, given the incomplete SPS coverage and dated wet-weather calibration, this capacity flags should be treated as planning-level indicators only. Apparent deficiencies may reflect conservative assumptions, i.e., rainfall-runoff response, pump curves, controls, rather than confirmed shortfall.

7.2.6 Western Sanitary Interceptor System

The WSI is a major trunk sewer that extends west to east along Hamilton Harbour, beginning in the Main-King Tank catchment and ultimately discharging to the Woodward WWTP. The WSI conveys combined sewage from the downtown core and also services partially separated areas along the former Ancaster-Hamilton boundary, as well as portions of the Waterdown system. It has been commonly referenced that approximately 65% of dry- and wet-weather flows from Ancaster are conveyed to the WSI via the Lavender / Bluebell diversion; however, recent model results indicate that a smaller portion of flow is actually diverted to the WSI. The system receives predominantly combined flows and is therefore highly susceptible to significant wet weather inflows. To mitigate peak wet weather flows, the system includes 18 combined CSO outlets and five CSO storage tanks. Despite these controls, the WSI continues to experience substantial overflows during storm events. Most sections of the WSI operate at or near capacity, with flows exceeding 85% of design capacity, and further increases in peak discharge are expected to exacerbate overflow volumes.

7.2.6.1 Main King System

The Main King catchment consists of a combined sewer system serving the older areas of the City of Hamilton, northwest of Hwy 403, including the South Westdale and Ainslie Wood neighbourhoods. In addition to the combined system, the majority of the Hamilton Mountain sanitary network drains to the Main King Tank.

The catchment includes six pumping stations and three CSO storage tanks with pumped discharge. The Dundas forcemain, originating from the Dundas Equalization Tank, discharges to a gravity sewer on College Court. From there, flows are conveyed by gravity to the Western Sanitary Interceptor (WSI), passing through the Main King Tank.

Between the Dundas forcemain discharge and the upstream end of the WSI, several control facilities are in place to manage peak flows and maintain HGLs. These include the Sterling CSO, Glen CSO, and several overflow weirs. The Sterling CSO features an overflow weir located on Sterling Street, east of Forsyth Avenue, which discharges to a local creek ultimately draining into Cootes Paradise. Based on model results, the sewer at this location can convey up to approximately 1,500 L/s before overflowing at the Sterling weir. Flows discharged from the Dundas forcemain, after being regulated at the Sterling CSO, continue via a trunk sewer along Sterling and King Street to the Main King Tank.

The Main King Tank is situated at the upstream end of the WSI and functions as a peak flow management and regulation facility. Flow is controlled through a series of weirs and structures that direct sewer flows either to the WSI, into the Main King Tank, or toward the Glen Road CSO. Several overflows within this system convey excess flow to the Glen Road CSO, which discharges to a canal west of Hwy 403, ultimately flowing into Cootes Paradise.

7.2.6.2 Downtown WSI System

The downtown WSI system consists of a combined sewer system that services the older City of Hamilton areas, east of Hwy 403, north of the Niagara Escarpment and west of Red Hill Valley Parkway (RHVP).

There are four CSO tanks within the catchment. With the exception of the James Street CSO tank, all other CSO tanks discharge via pumping. In addition to these tanks, the system includes 16 CSO outfalls and the Woodward WWTP. The CSO tanks and outfalls provide wet weather relief to the WSI. The Main King CSO tank discharges directly to the WSI. Between the Main King tank and the Woodward WWTP, several control facilities are in place to manage peak flows and maintain system HGLs.

Growth Context

Significant infill (downtown core) and some greenfield growth in tributary areas are expected to load the corridor over the planning horizon.

Conveyance

Most WSI reaches operate at or near capacity under 5-year design storm conditions. The corridor includes 18 CSO outfalls and 5 CSO storage tanks; despite these controls, substantial overflow occurs during storms and localized surcharging persists. Upstream of the interceptor, the Main-King area uses a network of controls (e.g., Sterling CSO, Glen CSO, tank weirs) to regulate peak delivery; however, capacity constraints are still observed on key trunks (e.g. King Street between Marion Avenue North and Paradise Road South; Sanders Boulevard; Longwood North). Increases to Dundas forcemain peak rates or total volumes can stress the Sterling COS (overflow onset around ~1,500 L/s at the local weir), potentially raising overflow frequency and volume without control retuning. Downstream of Main-King, continued reliance on the existing WSI without additional peak volume management is expected to exacerbate surcharging and CSO discharges to Hamilton Harbour as growth proceeds.

In this context, corridor-scale relief routing (parallel/twin conveyance) would off-load stressed reaches and lower HGLs; in contributing subcatchments, sewer separation/inflow reduction would remove storm-derived volume that currently drives surcharge; and control optimization / RTC would shape hydrographs, balance flows between barrels/corridors, and better match available treatment capacity. At localized hotspots, targeted conveyance or storage improvements may be warranted to manage residual constraints while broader corridor measures are advanced. Where practical, new development flows should be moderated or routed to avoid the most constrained WSI segments until downstream headroom is restored.

Within the broader WSI catchment, many SPSs are flagged as not meeting firm capacity for the 5-year event in the current model, and modelled incoming 5-year volumes exceed storage at Ewen (HCS09), Royal Stroud (HCS08), and Main–King (HCS04) tanks. These are planning-level indicators: portions of the model's wet-weather calibration are dated, and SPS inflow peaks, storage drawdown, and control logic may be conservatively represented. Before sizing interventions, it is strongly recommended that the City undertake targeted verification (temporary flow monitoring at key trunks, CSO tanks, and SPSs; confirm pump curves and control set-points; event-based checks on drawdown), followed by periodic recalibration of rainfall runoff parameters using recent storms. Findings should guide right-sized sequencing of local conveyance fixes, separation packages, control / RTC adjustments, and any corridor-scale relief so that improvements remain evidence-based while accommodating growth.

Figure 7-1 to Error! Reference source not found. illustrate the opportunities and constraints for each respective wastewater system. These figures show the performance of the wastewater system under 2051 growth load. Constraints observed under both existing and 2051 conditions are not growth-related, and future data revision and model refinement is recommended to consider infrastructure implementations.

Upstream BCSSI shows isolated capacity constraints due to growth and shallow slopes

Few sections of Dundas St Sewer (525mm) exceeds capacity; Existing Constraints – not growth related

Centre Rd
Robson Rd
North Waterdown Dr
Parkside Dr
Elgin St
Avonsyde Boulevard
Evans Rd
Hamilton St
Main St
Dundas St
Dundas and First
Burke St
Mill St
Skinner Rd
Kerns Rd
Claappison Ave
Dundas St
Hwy No. 5 and Rockcliffe
Innovation Drive (Techpark)
Waterdown Main St
Mill St
Carl Cres
Mountain Brow Rd
Waterdown Rd
King Rd
Sydenham Rd
Rock Chapel Rd
Valley Rd
York Rd
Snake Rd
6
5

Existing Infrastructure
- Wastewater Treatment Plant (WWTP)
- Sanitary Pumping Station
- Combined Sewer Overflow
- Forcemain

Future Conditions 5-Year (q/Q)
- Flooding (Above Ground Level)
- >=1.0
- 0.85 to 1.0

Total Growth 2021 - 2051
- < 500
- 500 - 1500
- 1500 - 3000
- 3000 - 5000
- 5000 - 7500
- >7500

Wastewater Service Area
- Dundas System
- Eastern Interceptor System
- Ancaster-Fennell System
- Red Hill Creek Interceptor System
- Waterdown System
- Western Interceptor System

General Feature
- Airport
- Urban Boundary
- Municipal Boundary

Reference(s)
1. Projection EPSG:26917
2. Base Data: City of Hamilton, 2024

0.6 1.2 km

Future 2051 - Existing Infrastructure
5-Year Results
Waterdown

Project Name:
Interim WWW/SW Master Servicing Strategy

Client Name:
City of Hamilton
(Ontario, Canada)

GEI

Last Updated: June 2026
Document ID: 171010-WW-025A

Document Path: D:\Working\HAMILTON ON\CITY OF\240126 - 171010 Hamilton W, WW & SW Master Plans\5 Work in Progress\GIS and Databases\171010-WW-025A-Maps.mxd

York Rd & Hunter St Sewer (750mm) exceeds capacity – not growth related

BCSSI Twinning/Upsizing would be required to accommodate Waterdown growth

BCSSI exceeds capacity downstream of Willowglen Ct to Dundas Equalization Tank due to growth

Crooks Hollow Rd
Brock Rd
Harvest Rd
Governor's Rd
Bridlewood Dr
Jerome Park Dr
Bridlewood
Huntingwood Ave
Creighton Rd
Mill St
King St
Hatt St
Park St
Sydenham St
Cross St
Dundas WWTP
125 King St WWTP
East St
King St
Dundas St
Sleepy Hollow and York
Olympic Dr
York Rd
Cootes Dr
McMaster University Lot
Ogilvie St
South St
Osler Dr
Hillside Ave
Old Ancaster Rd
Pleasant Ave and Edenbridge
Pleasant Ave and Sunrise
Taywood Crt
Pleasant Ave
Rhodes Crt
Turnbull and Terrace
Sterling St
King St
Main St
Leland St
Emerson St
Whitney Ave
Longwood Rd
403

Existing Infrastructure
- Wastewater Treatment Plant (WWTP)
- Sanitary Pumping Station
- Combined Sewer Overflow
- Forcemain

Future Conditions 5-Year (q/Q)
- Flooding (Above Ground Level)
- >=1.0
- 0.85 to 1.0

Total Growth 2021 - 2051
- < 500
- 500 - 1500
- 1500 - 3000
- 3000 - 5000
- 5000 - 7500
- >7500

Wastewater Service Area
- Dundas System
- Eastern Interceptor System
- Ancaster-Fennell System
- Red Hill Creek Interceptor System
- Waterdown System
- Western Interceptor System

General Feature
- Airport
- Urban Boundary
- Municipal Boundary

Reference(s)
1. Projection EPSG:26917
2. Base Data: City of Hamilton, 2024

0.6 1.2 km

Future 2051 - Existing Infrastructure 5-Year Results Dundas

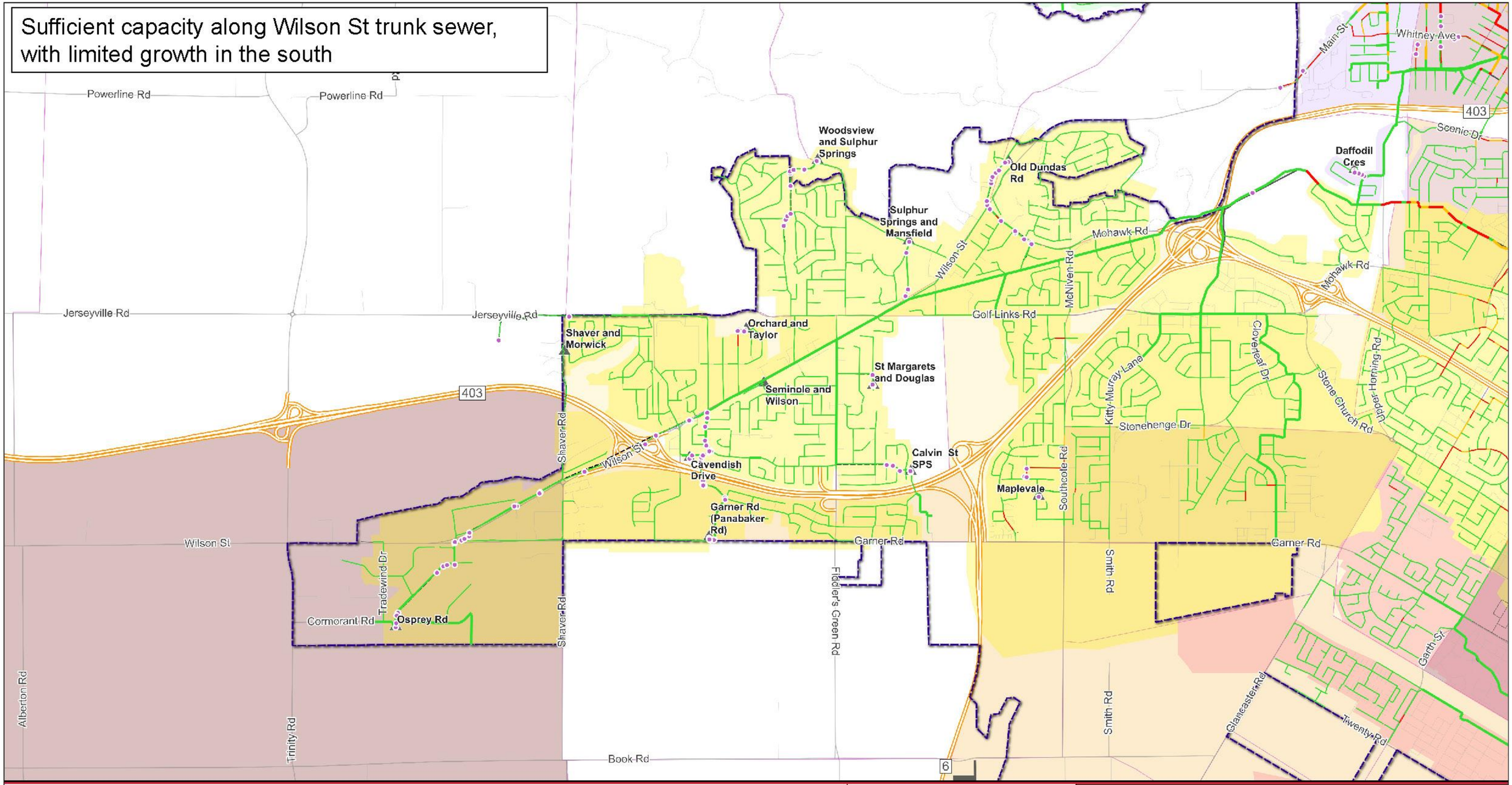
Project Name:
Interim WWW/SW Master Servicing Strategy

Client Name:
City of Hamilton
(Ontario, Canada)

GEI

Last Updated: June 2025
Document ID: 717010-WW-025A

Sufficient capacity along Wilson St trunk sewer, with limited growth in the south



Existing Infrastructure
- Wastewater Treatment Plant (WWTP)
- Sanitary Pumping Station
- Combined Sewer Overflow
- Forcemain

Future Conditions 5-Year (q/Q)
- Flooding (Above Ground Level)
- >=1.0
- 0.85 to 1.0

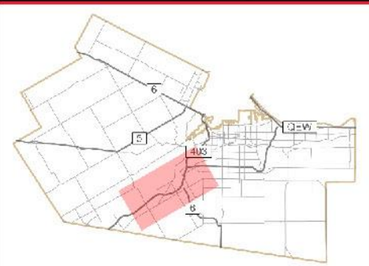
Total Growth 2021 - 2051
- < 500
- 500 - 1500
- 1500 - 3000
- 3000 - 5000
- 5000 - 7500
- >7500

Wastewater Service Area
- Dundas System
- Eastern Interceptor System
- Ancaster-Fennell System
- Red Hill Creek Interceptor System
- Waterdown System
- Western Interceptor System

General Feature
- Airport
- Urban Boundary
- Municipal Boundary

Reference(s)
1. Projection EPSG:26917
2. Base Data: City of Hamilton, 2024

0.9 1.8 km



Future 2051 - Existing Infrastructure
5-Year Results
Ancaster-Fennell West

Project Name:
Interim WWW/SW Master Servicing Strategy

Client Name:
City of Hamilton
(Ontario, Canada)

GEI

Last Updated: June 2025
Document ID: 717010-WW-025A

Opportunity for sewer separation within the Ancaster–Fennell system to divert wet-weather flows away from the trunk, reducing surcharge and creating capacity for growth.

Chedmac Dr trunk sewer (750mm) exceeds capacity – not growth related

Pleasant Ave and Edenbridge
Bridlewood
Taywood Crt
Turnbull Rd
Turnbull and Terrace
Rhodes Crt
Emerson St
403
Scenic Dr
West 31 and Scenic SPS
Daffodil Cres
Rice Ave
Inverness Ave
Queensdale Ave
Franklin Rd
Macassa Ave
Mohawk Rd
Hester St
Limeridge Rd
LINCOLN M. ALEXANDER
Garth St
West 5th St
Wilson St
Old Dundas Rd
Mohawk Rd
McNiven Rd
Golf Links Rd
Kitty Murray Lane
Stonehenge Dr
Sulphur Springs and Mansfield
Jerseyville Rd
St Margarets and Douglas
Maplevale
Southcote Rd
Garner Rd
Rymal Rd
Christie St
Glancaster Rd
Miles Rd

Existing Infrastructure
- Wastewater Treatment Plant (WWTP)
- Sanitary Pumping Station
- Combined Sewer Overflow
- Forcemain

Future Conditions 5-Year (q/Q)
- Flooding (Above Ground Level)
- >=1.0
- 0.85 to 1.0

Total Growth 2021 - 2051
- < 500
- 500 - 1500
- 1500 - 3000
- 3000 - 5000
- 5000 - 7500
- >7500

Wastewater Service Area
- Dundas System
- Eastern Interceptor System
- Ancaster-Fennell System
- Red Hill Creek Interceptor System
- Waterdown System
- Western Interceptor System

General Feature
- Airport
- Urban Boundary
- Municipal Boundary

Reference(s)
1. Projection: EPSG:26917
2. Base Data: City of Hamilton, 2024

0.8 1.6 km

Future 2051 - Existing Infrastructure 5-Year Results Ancaster-Fennell Central

Project Name:
Interim WWW/SW Master Servicing Strategy

Client Name:
City of Hamilton
(Ontario, Canada)

GEI

Last Updated: June 2026
Document ID: 717010-WW-025A

Opportunity for sewer separation within the Ancaster–Fennell system to divert wet-weather flows away from the trunk, reducing surcharge and creating capacity for growth.

Surface Flooding under 5-Year Design Storm Event – not growth related

Upper Wentworth St sewer (1200mm) exceeds capacity – not growth related

Fennell Ave trunk sewer (3200mm x 3500mm) exceeds capacity under 5-year peak Design Storm Event – not growth related

Cumberla
Access
King St
Kenilworth Access
Crockett St
Crockett St
Inverness Ave
Inverness Ave
Queensdale Ave
Bruce dale Ave
Kimberly Dr
Rosedale Ave
Cochrane Rd
Greenhill Ave
Fennell Ave
Franklin Rd
Macassa Ave
Ninth Ave
Broker Dr
Mohawk Rd
Hester St
West 5th St
Upper James St
Limeridge Rd
Limeridge Rd
Limeridge Rd
Upper Gage Ave
Limeridge Rd
Carson Dr
Paramount Dr
Old Mud St
Mud St

Existing Infrastructure
- Wastewater Treatment Plant (WWTP)
- Sanitary Pumping Station
- Combined Sewer Overflow
- Forcemain

Future Conditions 5-Year (q/Q)
- Flooding (Above Ground Level)
- >=1.0
- 0.85 to 1.0

Total Growth 2021 - 2051
- < 500
- 500 - 1500
- 1500 - 3000
- 3000 - 5000
- 5000 - 7500
- >7500

Wastewater Service Area
- Dundas System
- Eastern Interceptor System
- Ancaster-Fennell System
- Red Hill Creek Interceptor System
- Waterdown System
- Western Interceptor System

General Feature
- Airport
- Urban Boundary
- Municipal Boundary

Reference(s)
1. Projection EPSG:26917
2. Base Data: City of Hamilton, 2024

0.6 1.2 km

Future 2051 - Existing Infrastructure 5-Year Results Ancaster-Fennell East

Project Name:
Interim WWW/SW Master Servicing Strategy

Client Name:
City of Hamilton
(Ontario, Canada)

GEI

Last Updated: June 2028
Document ID: 7170-10-WW-025A

Isolated Capacity Constraints within ESI

Proposed Lower Centennial Trunk Sewer to convey flow from Binbrook and diverted flows from AEGD through Dickenson Trunk Sewer

Proposed Disconnection & Diversion Strategy as per CNSS

Eastport and Pier 25
Parkdale Ave PS
Woodward Ave WWTP
Woodward WWTP
Grays and North Service
Green and North Service
Dewitt and South Service
Shippee and McCollum
Winona and Winona Park
North Service Rd
QEW
Lake Ave
Grays Rd
Gray Rd
Green Rd
Millen Rd
Dewitt Rd
Arvin Ave
Jones Rd
McNeilly Rd
Lewis Rd
Winona Rd
Fifty Rd
Strathearne Ave
Parkdale Ave
Main St
King St
Nash Rd
RED HILL VALLEY
Rosedale Ave
Cochrane Rd
Mount Albion Rd
Quigley Rd
Ridge Rd
Eighth Rd
Smith Rd
Eleventh Rd
Green Mountain Rd
First Rd
Second Rd
Third Rd
Tapleytown Rd
Fifth Rd
Sixth Rd
Eighth Rd
Tenth Rd
Eleventh Rd

Existing Infrastructure
- Wastewater Treatment Plant (WWTP)
- Sanitary Pumping Station
- Combined Sewer Overflow
- Forcemain

Future Conditions 5-Year (q/Q)
- Flooding (Above Ground Level)
- >=1.0
- 0.85 to 1.0

Total Growth 2021 - 2051
- < 500
- 500 - 1500
- 1500 - 3000
- 3000 - 5000
- 5000 - 7500
- >7500

Wastewater Service Area
- Dundas System
- Eastern Interceptor System
- Ancaster-Fennell System
- Red Hill Creek Interceptor System
- Waterdown System
- Western Interceptor System

General Feature
- Airport
- Urban Boundary
- Municipal Boundary

Reference(s)
1. Projection EPSG:26917
2. Base Data: City of Hamilton, 2024

1 2 km

Future 2051 - Existing Infrastructure 5-Year Results Eastern Inteceptor

Project Name:
Interim WWW/SW Master Servicing Strategy

Client Name:
City of Hamilton
(Ontario, Canada)

GEI

Last Updated: June 2026
Document ID: 71701-WW-025A

Opportunity for a WSI Twin to intercept flows at strategic locations to resolve existing capacity constraints and accommodate growth. Additionally, reduce/eliminate combined sewer overflows.

Proposed Hwy 403 Twinning will resolve existing capacity constraints and accommodate growth

Capacity constraints identified along Main-King LRT corridor; LRT Upgrades and sewer separation within the corridor will resolve existing capacity constraints and accommodate growth

Old Guelph Rd
403
York Boulevard
Harvest Rd
Sydenham St
Sleepy Hollow and York
King and Olympic SPS
125 King St WWTP
WWTP
Cootes Dr
McMaster University Lot
Sterling St
Main St
Dundas St
Hatt St
King St
Mill St
South St
Osler Dr
Hillside Ave
Leland St
Whitney Ave
Longwood Rd
Macklin St
Dunlop St
Aberdeen Ave
Pleasant Ave and Sunrise
Pleasant Ave and Edenbridge
Bridlewood
Jerome Park Dr
Taywood Crt
Turnbull and Terrace
Rhodes Crt
Wilson St
Daffodil Cres
Scenic Dr
West 31 and Scenic SPS
Bay St
James St
John St
Wellington St
Victoria Ave
Barton St
Birch Ave
Cannon St
Hunter St
Stinson St
Industrial Dr
Burlington St
Beach Rd
King St
Maplewood Ave
Lawrence Rd
Sherman Access
Crockett St
Brucedale Ave
Franklin Rd
Macassa Ave
Ninth Ave
Mohawk Rd
Garth St
Hester St

Existing Infrastructure
- Wastewater Treatment Plant (WWTP)
- Sanitary Pumping Station
- Combined Sewer Overflow
- Forcemain

Future Conditions 5-Year (q/Q)
- Flooding (Above Ground Level)
- >=1.0
- 0.85 to 1.0

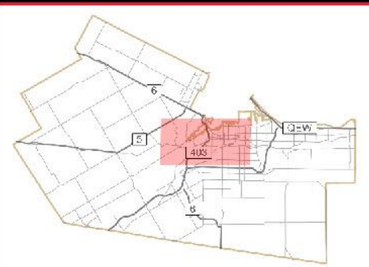
Total Growth 2021 - 2051
- < 500
- 500 - 1500
- 1500 - 3000
- 3000 - 5000
- 5000 - 7500
- >7500

Wastewater Service Area
- Dundas System
- Eastern Interceptor System
- Ancaster-Fennell System
- Red Hill Creek Interceptor System
- Waterdown System
- Western Interceptor System

General Feature
- Airport
- Urban Boundary
- Municipal Boundary

Reference(s)
1. Projection EPSG:26917
2. Base Data: City of Hamilton, 2024

0.9 1.8 km



Future 2051 - Existing Infrastructure
5-Year Results
Western Interceptor West

Project Name:
Interim WWW/SW Master Servicing Strategy

Client Name:
City of Hamilton
(Ontario, Canada)

GEI

Last Updated: June 2023
Document ID: 717010-WW-025A

Opportunity for a WSI Twin to intercept flows at strategic locations to resolve existing capacity constraints and accommodate growth. Additionally, reduce/eliminate combined sewer overflows.

Parkdale Ave PS
Industrial Dr
Burlington St
Kenilworth and McNulty
Beach Rd
Barton St
Ottawa St
Parkdale Ave
Strathearne Ave
Main St
Queenston Rd
Central Ave
Lawrence Rd
Mountain Brow Boulevard
Kimberly Dr
Rosedale Ave
Cochrane Rd
Mount Albion Rd
York Boulevard
Bay St
James St
Wellington St
Victoria Ave
Wentworth St
Birch Ave
Sherman Ave
Ottawa St
Locke St
Macklin St
Cannon St
Wilson St
John St
King St
Main St
Hunter St
Stinson St
Delaware Ave
Maplewood Ave
Cumberland Ave
Sherman Access
Concession St
Crockett St
Inverness Ave
Queensdale Ave
Brucedale Ave
Fennell Ave
Beckett Dr
Aberdeen Ave
West 31 and Scenic SPS

Existing Infrastructure
- Wastewater Treatment Plant (WWTP)
- Sanitary Pumping Station
- Combined Sewer Overflow
- Forcemain

Future Conditions 5-Year (q/Q)
- Flooding (Above Ground Level)
- >=1.0
- 0.85 to 1.0

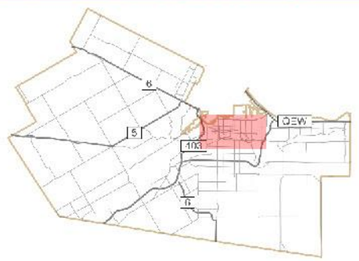
Total Growth 2021 - 2051
- < 500
- 500 - 1500
- 1500 - 3000
- 3000 - 5000
- 5000 - 7500
- >7500

Wastewater Service Area
- Dundas System
- Eastern Interceptor System
- Ancaster-Fennell System
- Red Hill Creek Interceptor System
- Waterdown System
- Western Interceptor System

General Feature
- Airport
- Urban Boundary
- Municipal Boundary

Reference(s)
1. Projection EPSG:26917
2. Base Data: City of Hamilton, 2024

0.7 1.4 km



Future 2051 - Existing Infrastructure
5-Year Results
Western Interceptor Central

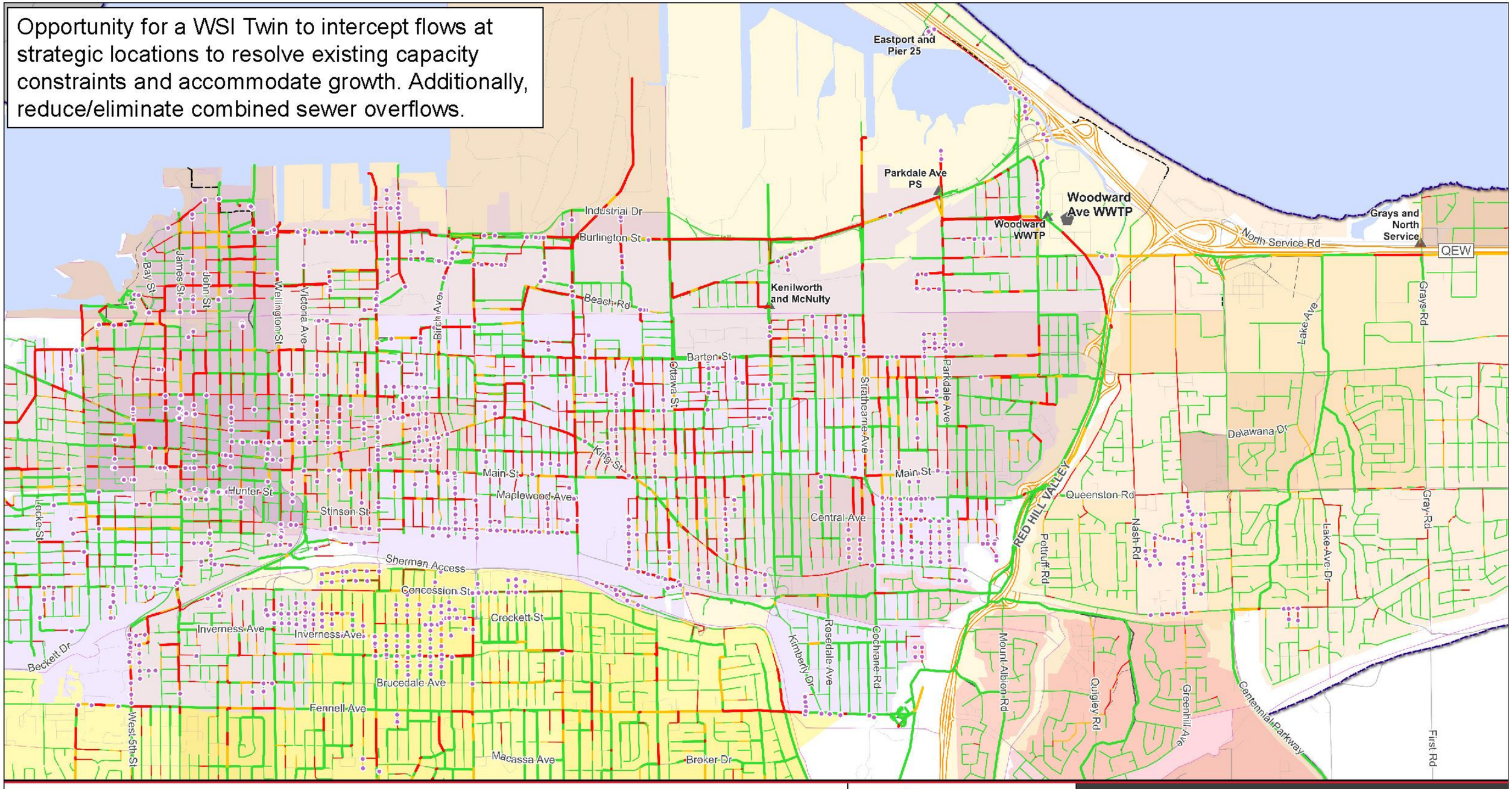
Project Name:
Interim W/WW/SW Master Servicing Strategy

Client Name:
City of Hamilton
(Ontario, Canada)

GEI

Last Updated: June 2026
Document ID: 71701-0-WW-025A

Opportunity for a WSI Twin to intercept flows at strategic locations to resolve existing capacity constraints and accommodate growth. Additionally, reduce/eliminate combined sewer overflows.



Existing Infrastructure
- Wastewater Treatment Plant (WWTP)
- Sanitary Pumping Station
- Combined Sewer Overflow
- Forcemain

Future Conditions 5-Year (q/Q)
- Flooding (Above Ground Level)
- >=1.0
- 0.85 to 1.0

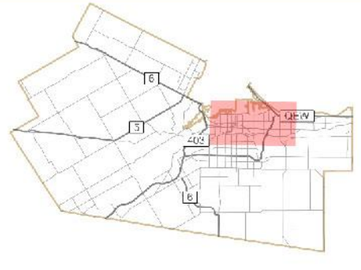
Total Growth 2021 - 2051
- < 500
- 500 - 1500
- 1500 - 3000
- 3000 - 5000
- 5000 - 7500
- >7500

Wastewater Service Area
- Dundas System
- Eastern Interceptor System
- Ancaster-Fennell System
- Red Hill Creek Interceptor System
- Waterdown System
- Western Interceptor System

General Feature
- Airport
- Urban Boundary
- Municipal Boundary

Reference(s)
1. Projection EPSG:26917
2. Base Data: City of Hamilton, 2024

0.0 1.8 km



Future 2051 - Existing Infrastructure
5-Year Results
Western Interceptor East

Project Name:
Interim WWW/SW Master Servicing Strategy

Client Name:
City of Hamilton
(Ontario, Canada)

GEI

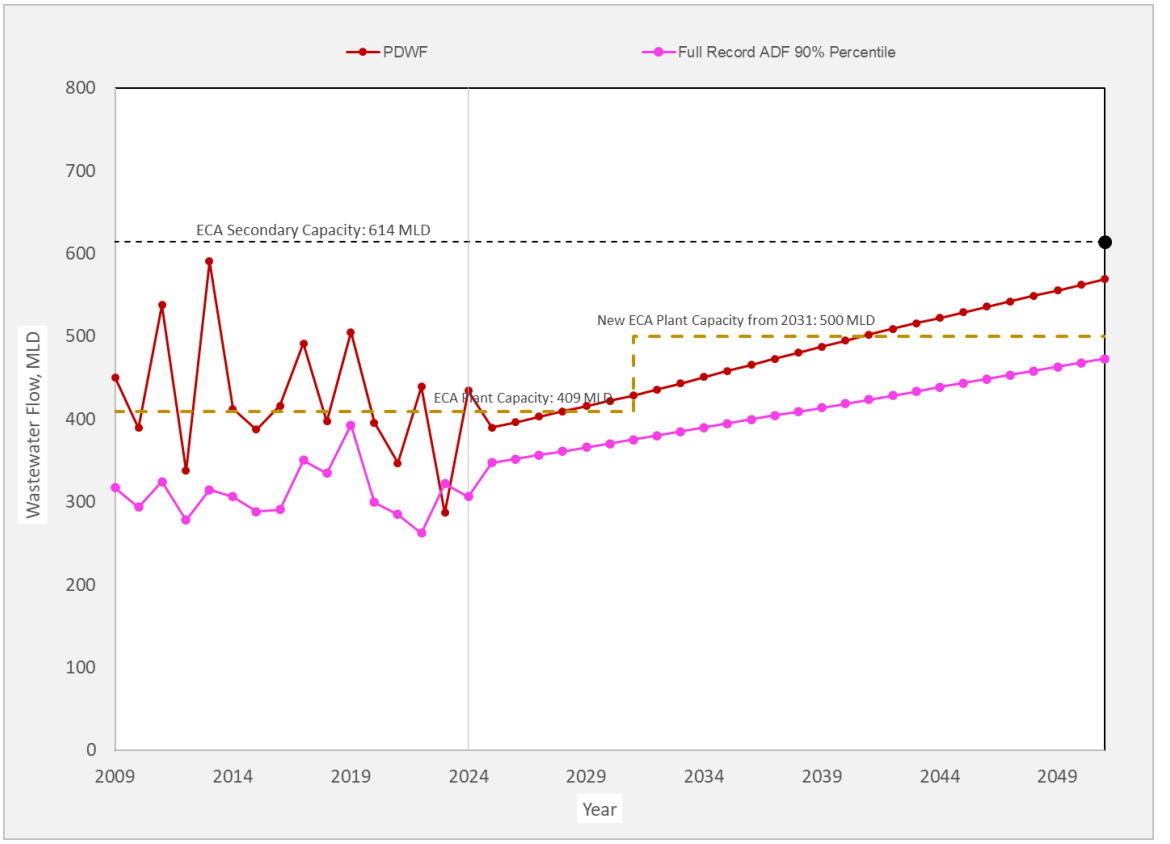
Last Updated: June 2026
Document ID: 21701D-WW-025A

7.2.7 Woodward WWTP Capacity Constraints

In 2020, the City undertook a capacity assessment of the Woodward WWTP, which set the foundation for the current Phase 2 expansion project, due to capacity triggers identified circa 2031. Under this study, GEI undertook a revised capacity monitoring tool (CMT) to identify capacity constraints and schedule upgrades for the Woodward WWTP, by estimating future flow projections. The CMT used historical data of the WWTP's average annual incoming flow for the 2012-2024 period to establish a starting point for flow projections to the WWTP. Future flow is then projected for the 2025-2051 period by applying the updated design criteria for residential (300 L/cap/d) and employment (260 L/cap/d) flow rates to growth forecasts taken from the GRIDS2 update. Extraneous flow was also included and estimated by applying an I/I rate of 0.4 L/ha/s to future development areas.

The resulting projections indicate that the WWTP has sufficient capacity for ADF and exceeds the current capacity of 409 ML/d by 2038, as shown in below in **Figure 7-1**.

Figure 7-10- Woodward WWTP Capacity Monitoring Tool Projections



A detailed technical memorandum documenting the CMT tool was prepared as part of the IMSS. Refer to **Appendix B** for details.

7.2.8 Dundas WWTP Capacity Constraints

The combination of the existing Dundas WWTP and Dundas Diversion Structure have sufficient capacity to meet current and projected Dundas and Waterdown flows. However, due to the age of the Dundas WWTP, refurbishment of the plant infrastructure is required. The Dundas WWTP upgrade project design is expected to commence in 2025 with construction starting in 2028 and completion by 2033. The upgrade is expected to keep the average treatment capacity and peak at 18.2 ML/d and 42 ML/d, respectively. Beyond 42 ML/d, flows will be diverted to the Woodward WWTP catchment.

8.0 Wastewater Servicing Strategy Development

The identification and evaluation of wastewater servicing alternatives is a core element of the IMSS process. Developing servicing strategies enables a comprehensive review of potential solutions and is carried out through a transparent approach that demonstrates decision-making and provides clear recommendations.

As an update to the 2006 Master Plan, the IMSS involved a review of the servicing strategies established in 2006 to confirm their ongoing relevance for supporting growth. In addition, projects identified through the 2024 DC Update were assessed to establish an updated set of servicing strategies that address projected needs to the 2051 planning horizon.

8.1 Objectives

The objective of the wastewater servicing strategy development was to validate current wastewater servicing strategies, develop new wastewater strategies where new system constraints have been triggered by growth concerns, and ensure that suitable alternatives were considered while clearly outlining the rationale for the recommended wastewater servicing solutions.

As noted in **Section 7.1** the IMSS does not include a detailed assessment of potential transmission main alignments or facility locations, as this level of analysis is beyond the scope of the study. Instead, conceptual corridors and representative facility sites have been identified to support costing and mapping at the IMSS level. These will be refined through future Class EA or design studies once more detailed environmental, technical, and financial information becomes available.

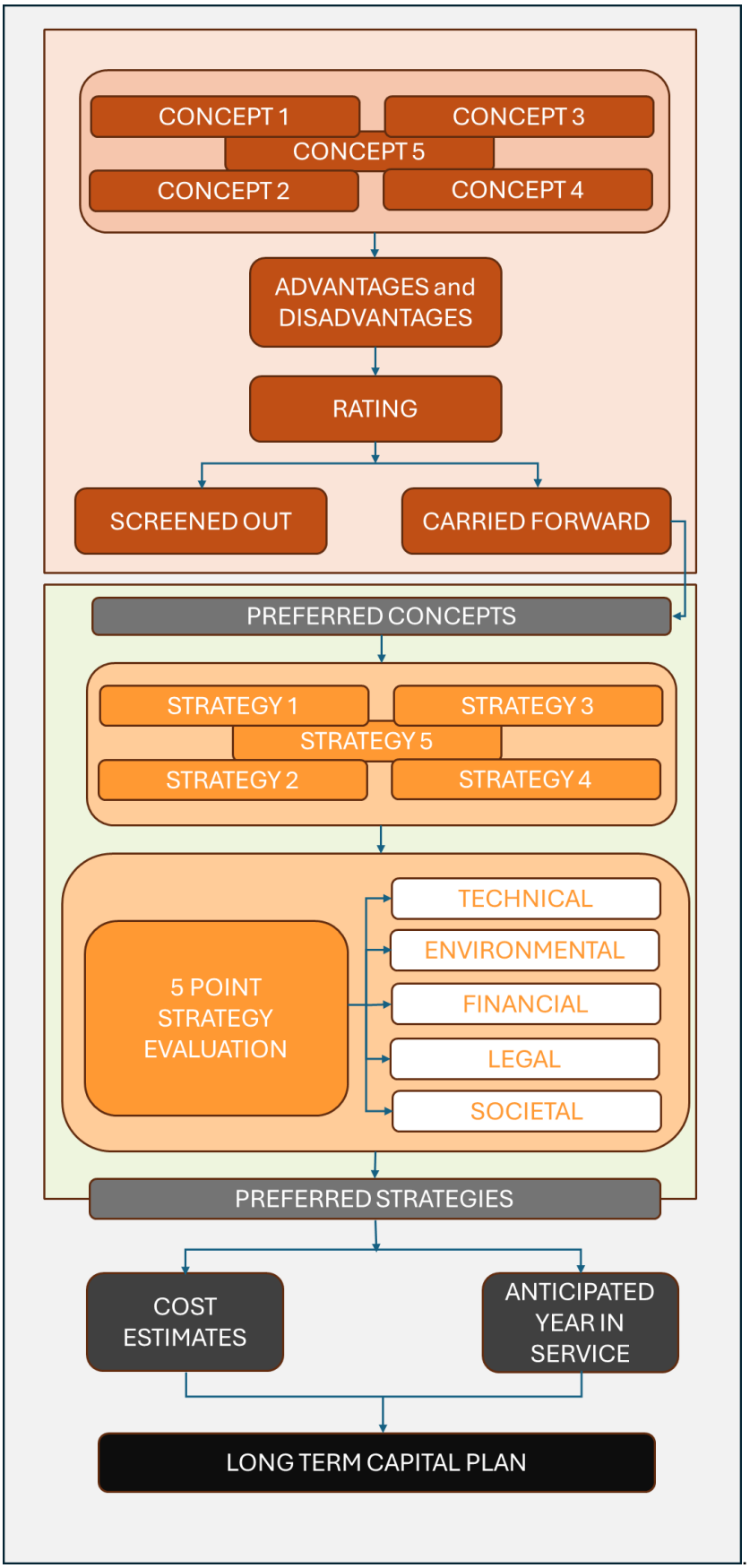
The strategy development approach described herein was designed to ensure a logical and defensible process that documents evaluation and decision-making while integrating sustainability, resiliency, and long-term planning principles. Key guiding considerations included:

1. Optimizing use of existing infrastructure and maximizing system efficiency before constructing new facilities.
2. Supporting financially sustainable solutions that balance capital investment with lifecycle operating costs.
3. Enhancing system resiliency and reliability to accommodate growth and respond to future uncertainties.
4. Minimizing environmental impacts and supporting climate change mitigation and adaptation objectives.
5. Promoting coordinated planning with other infrastructure programs and the efficient use of City-owned lands and corridors.
6. Ensuring flexibility and adaptability of the system to meet service needs to 2051 and beyond.

8.2 Servicing Strategies Development

The first step in the servicing strategy development process is to identify and screen a long list of alternative servicing concepts as “Carried Forward” or “Screened Out” based on their ability to meet the objectives and the City’s growth forecast. The second step is to develop a short list of alternative servicing strategies by combining concepts that passed the screening-level evaluation. The detailed evaluation of these strategies uses 5-point criteria consisting of technical, societal, environmental, legal / regulatory, and financial factors. Option with the most benefit and least impact, is selected as the preliminary preferred strategy to complete the last step of the evaluation approach (**Figure 8-1**).

Figure 8-1- Schematic Overview of Evaluation Approach



8.3 Concept Screening

The following City-Wide servicing concepts were identified for consideration under the IMSS:

1. Do Nothing
2. Separation Only – Trunk
3. Separation Only – Sub-Trunk
4. WSI Twin – Combined
5. New WWTP
6. Mountain Diversion – Combined
7. Mountain Diversion – Sanitary
8. Storage / High-Rate Treatment

These concepts were developed in addition to the planned 2024 Development Charges projects, which will be incorporated directly into the IMSS capital program. The “Do Nothing” concept refers to maintaining status quo, which acts as a reference point to compare with the other concepts.

The “Separation Only” concepts, at both trunk and sub-trunk levels, aim to reduce wet-weather inflows by introducing dedicated stormwater conveyance within the existing combined network. This approach facilitates the gradual transition from a combined to separated system, thereby increasing available sanitary conveyance and downstream treatment efficiency.

The “WSI Twin concept” represents a major conveyance solution for increasing trunk capacity throughout Downtown Hamilton. By introducing a parallel trunk interceptor, this concept seeks to redistribute flows from the existing WSI, mitigate surcharging conditions, and decrease reliance on CSO discharges.

The “New WWTP” concept focuses on addressing long-term treatment capacity requirements through the construction of a new WWTP, with potential discharge locations either at Chedoke Creek or the Red Hill Valley. By redistributing a portion of flow from the upstream systems, this approach intends to alleviate flows to the Woodward WWTP, increase conveyance capacity within the downtown corridor, and reduce the frequency and volume of CSO discharges.

The “Mountain Diversion” concepts represent an alternative conveyance strategy which aimed at redirecting flows away from the downtown combined system, through the redistribution of flows from the Ancaster-Fennel system toward the Greenhill CSO via a combined or sanitary trunk sewer. This approach aims to increase conveyance capacity within the combined system, increase treatment efficiency of the Woodward WWTP, and reduce CSO discharges.

The “Storage / High-Rate Treatment” concept focuses on managing peak wet-weather flows through increasing storage and including high-rate treatment at the CSOs. This aims to reduce surcharging conditions, increase conveyance capacity, and increase treatment efficiency of the Woodward WWTP.

Collectively, these concepts represent a spectrum of strategies targeting source control, conveyance expansion, flow diversion, and treatment capacity to address long-term servicing needs.

The purpose of the concept screening process is to build on the DC program by identifying City-wide servicing strategies that address system-wide constraints and support growth to 2051, extending beyond the scope of local DC funded works.

To ensure a transparent and defensible process, the concept screening was undertaken using a set of clearly defined evaluation criteria, including:

1. **Support Growth** – Proximity / connectivity to growth areas; conveyance capacity for growth flows; treatment capacity expansion or flow reduction; growth-driven priorities.
2. **Minimize Life Cycle Cost** – Consideration of total life cycle costs; preference for existing infrastructure; alignment with other programs such as SOGR or asset replacement.

3. **Provide Enhanced Environmental Protection** – Reduction of combined sewer overflows and improvement of receiving water quality.
4. **Mitigate Wet Weather Impacts (Flooding)** – Addressing system surcharging and basement flooding risks.
5. **Ability to Adjust / Adapt to Climate Change** – Flexibility to respond to changing rainfall patterns.
6. **Provide Additional Conveyance Capacity** – Both trunk/sub-trunk and local system capacity needs.
7. **Implementation Complexity / Feasibility** – Practical considerations such as the long-term commitment required for sewer separation or short-term constraints of single-pipe systems.
8. **Public Interest / Perception / Support** – Alignment with community expectations and stakeholder acceptance.

Through this framework, the concept screening process establishes a consistent basis for comparing alternatives, integrating planned DC-funded works with broader City-wide strategies to ensure resilient, cost-effective, and environmentally protective wastewater servicing to 2051. **Table 8-1** summarizes the results of the concept screening, indicating which servicing concepts are recommended to be carried forward for further evaluation.

Table 8-1- Concept Screening Results and Recommendations

Evaluation Criteria	Baseline	1a	1b	2b	3	4a	4b	5
1. Support Growth: Proximity / Connectivity to growth areas	↓	↑	↑	↑	↓	↓	↓	↓
1. Support Growth: Conveyance capacity for growth flow	↓	↑	↑	↑	↓	↓	↓	↓
1. Support Growth: Increase treatment capacity / reduce flows to plant	↓	↑	↑	↓	↑	↓	↓	↑
1. Support Growth: Predominantly growth driven.	↓	↓	↓	↑	↑	↓	↓	↑
2. Minimize Life Cycle Cost: Total life cycle cost	↓	↓	↓	↓	↓	↓	↓	↓
2. Minimize Life Cycle Cost: New infrastructure only	–	↑	↑	↑	↑	↑	↑	↑
2. Minimize Life Cycle Cost: Support other programs (SOGR / replacement)	–	↑	↑	↑	↓	↓	↓	↓
3. Provide Enhanced Environmental Protection	↓	↑	↑	↑	↑	↓	↓	↑
4. Mitigate Wet Weather Impacts (Flooding)	↓	↑	↑	↑	↑	↑	↑	↑
5. Ability to Adjust / Adapt to Climate Change	↓	↑	↑	↑	↑	↑	↑	↑
6. Provide Additional Conveyance Capacity: Trunk / Sub-Trunk	↓	↑	↑	↑	↓	↑	↑	↓
6. Provide Additional Conveyance Capacity: Local	↓	↑	↑	↓	↓	↓	↓	↓
7. Implementation Complexity / Feasibility	–	↓	↓	↓	↓	↓	↓	↓
8. Public Interest / Perception / Support	↓	↑	↑	↓	↓	↓	↓	↓
Results								

The results for the concept screening identified Sewer Separation and the WSI Twin as the most appropriate servicing strategies to be carried forward for further evaluation. These strategies are anticipated to provide balanced benefits across the screening criteria, address critical existing system deficiencies, and ensure that the wastewater system has the capacity and resiliency required to accommodate growth to 2051.

Sewer separation is anticipated to directly address environmental and operational issues by removing stormwater inflows from the combined sewer system. This will reduce the frequency and volume of combined sewer overflows, lower pressure on real time control units, and help mitigate basement flooding and surface ponding risks during wet weather events.

From a growth perspective, separation will free sanitary capacity within existing pipes by eliminating storm-related flows, thereby creating additional conveyance capacity to accommodate intensification and new development throughout the system. At the IMSS level, the Sewer Separation Implementation Plan developed through the Flooding and Drainage Improvement Framework (FDIF) study will be integrated into the servicing strategies. This will allow prioritization and phasing to be aligned with growth areas, renewal programs, and funding availability. Although separation represents a long-term and resource-intensive program, it is projected to deliver measurable environmental improvements, align with SOGR priorities, and strengthen system resiliency against more intense rainfall associated with climate change.

The WSI is one of the City's most critical trunk sewers and currently experiences capacity limitations under both existing and future peak wet weather conditions. Twinning the WSI provides substantial additional conveyance capacity, addresses existing constraints and ensures that growth flows can be reliably conveyed to treatment facilities.

The WSI Twin will divert flows into a new sewer, thereby lowering hydraulic loading on the existing WSI, reducing localized surcharging, and improving overall system performance. This additional capacity will support development to 2051 while also providing redundancy, improving operational flexibility, and extending the service life of the existing WSI.

Although the WSI Twin represents a significant capital investment, it is considered a highly effective trunk solution. In combination with sewer separation, the twin will establish a balanced strategy in which inflows are reduced at the source while trunk conveyance is expanded downstream. Together, these measures will provide the necessary backbone for long-term growth and system resiliency.

The other servicing concepts (New WWTP, mountain diversions, and storage / high-rate treatment) were not carried forward. While these options introduce new infrastructure and mitigate wet weather impacts, they have a limited impact on supporting increased capacity relative to growth.

The "New WWTP" concept, while beneficial in increasing treatment capacity, does not adequately address upstream conveyance limitations or wet-weather inflow challenges, and therefore provides limited system-wide benefit relative to its complexity and cost.

Similarly, the "Mountain Diversion" concepts (both combined and sanitary) introduce alternative flow routing to increase trunk sewer conveyance, but do not sufficiently improve overall system performance, nor do they support long-term growth objectives or achieve meaningful environmental benefits.

The "Storage / High-Rate Treatment" concept was also screened out as it primarily addresses peak wet-weather flows at the downstream end of the system and does not resolve underlying conveyance constraints or provide sustained capacity improvements for future growth.

Therefore, advancing Sewer Separation and the WSI Twin provides the most effective and balanced approach to address current deficiencies (CSOs, surcharging, and trunk capacity constraints) while ensuring that future growth to 2051 can be serviced sustainably. Together, these strategies are anticipated to deliver cost-effective, resilient, and environmentally protective long-term solutions that integrate with the City's DC-funded program and ongoing SOGR initiatives.

8.4 Servicing Strategies

Using the concepts that advanced through the screening-level evaluation in the previous section, a shortlist of servicing strategies was developed for detailed assessment. These strategies combine the carried-forward concepts with the planned DC projects to form integrated, City-wide solutions. Each strategy represents a different approach to accommodating growth and addressing existing system deficiencies, while also considering resiliency, cost, and environmental performance.

The shortlisted strategies are summarized as follows:

1. **Strategy 1 – Sewer Separation**
    a. Incorporates phased sewer separation guided by the FDIF Implementation plan.
    b. Focuses on reducing CSOs, freeing sanitary capacity, and supporting growth and intensification.
2. **Strategy 2 – WSI Twin**
    a. Implements a twin to the WSI to add major trunk capacity.
    b. Focuses on relieving existing trunk constraints, mitigating surcharging, and supporting future growth conveyance.
3. **Strategy 3 – Sewer Separation + WSI Twin**
    a. Combines the benefits of both carried-forward concepts.
    b. Reduces inflows to the combined system while providing expanded trunk capacity to convey growth flows.
    c. Offers the most comprehensive approach for long-term resiliency, CSO reduction, and growth accommodation to 2051.

8.5 Evaluation Criteria

The wastewater servicing strategies were evaluated using five (5) criteria: environmental, social / cultural, technical, financial, and legal / jurisdictional considerations. Each criterion consists of specific factors used to identify the best overall servicing strategy subject to refinement prior to implementation (**Table 8-2**).

Table 8-2- Wastewater Servicing Evaluation Criteria

Criteria	Potential Impacts
Environmental Impacts	• Minimizes major environmental crossings to help protect environmental features, wildlife and species at risk. • Minimizes proximity (and subsequent impacts) to environmentally sensitive features (e.g., wetlands, ESAs, ANSIs, woodlots, other natural areas, etc.). • Minimize impacts to climate change and consider climate change adaptation measures. • Supports Ministry of the Environment, Conservation and Parks (MECP) environmental protection goals. • Reduces CSOs and meets MECP Procedure F-5-5 requirements.
Social / Cultural Impacts	• Minimize resident / business impacts long-term. • Minimize potential noise, odour, dust, vibration and traffic disruptions to residents and businesses during construction and/or facility operation. • Considers public interest and level of community support for the servicing strategy.
Technical Feasibility	• Maximize use of existing infrastructure. • Improves system resiliency/security, supporting reliable service. • Optimizes operational flexibility and minimizes operational complexity. • Supports phased expansion of the system. • Minimizes construction risk (use of rights-of-way; limits conflict with LRT and other major crossings; etc.) • Supports constructability of the servicing strategy. • Achieves capacity for growth, including both local and trunk servicing needs. • Considers implementation of timing and phasing constraints and opportunities.
Financial Viability	• Supports a cost effective and financially sustainable solution. • Consider impact of lifecycle costs (capital costs plus operation and maintenance costs).
Legal / Jurisdictional Requirements	• Maximize the use of City owned lands and road right of ways. Minimizes land requirement issues and agency concerns. • Minimize expected approvals and permitting needs.

Following the evaluation, three (3) shortlisted servicing strategies were assessed. The following sections provide an overview of the key components and considerations of the proposed servicing strategies followed by the detailed evaluation presented in **Table 8-2**.

8.5.1 Strategy 1 – Sewer Separation

The first servicing strategy builds on the Sewer Separation Implementation Plan identified through the City's FDIF study. The FDIF study established high, medium, and low priority areas for separation across the combined sewer system based on multiple criteria. These priority areas provide the foundation for phased separation over the planning horizon.

For modeling and evaluation purposes, it was recognized that full separation across all combined areas may not be achievable within the planning horizon. To reflect a more realistic outcome, a conservative set of assumptions was applied, assuming 50% of flows would be separated in high-priority areas, 25% in medium-priority areas, and 10% in low priority areas. These assumptions were incorporated into the modelling assessment by subtracting the respective percentage from catchment flows to estimate the incremental benefits of sewer separation without assuming a complete program implementation.

Sewer separation is a multi-decade process requiring sustained investment and coordination with state-of-good repair and road reconstruction programs. Benefits are realized gradually as neighborhoods are separated, rather than all at once. Uncertainty remains regarding the final outlet locations for storm sewers and the extent of reconstruction required in different areas, which will have a major influence on project feasibility and costs. In some cases, localized separation may be straightforward, while in others full reconstruction of both storm and sanitary systems may be required.

Despite these challenges, even partial separation provides significant system-wide benefits. Reducing storm inflows into the combined system will decrease CSO volumes, improve water quality, reduce surcharging, and create additional sanitary capacity to accommodate future growth. Separation also builds long-term resiliency by reducing the system's sensitivity to extreme wet-weather events. While the financial and logistical realities mean separation cannot be completed everywhere, a targeted, prioritized program will still yield measurable improvements that address both existing deficiencies and future servicing needs.

Figure 8-2 illustrates the general high, medium, and low priority separation areas identified in the FDIF study.

The modelling assessment of the sewer separation strategy resulted in system wide benefits under the 2051 planning horizon, both in terms of reducing CSOs and improving hydraulic performance across the collection system.

Key Considerations

Conceptual Interception of Local and Trunk Sewers

Both alignments have been designed to strategically intercept flows from the local and trunk sewer systems. This approach maximizes capture efficiency and provides flexibility in managing peak wet weather flows.

Large Capacity Conveyance (3600mm Diameter)

A 3.6 metre diameter sewer is proposed for both alignments, offering substantial conveyance capacity. This ensures resilience under extreme wet weather conditions and provides long-term servicing capacity to accommodate projected growth and system demands.

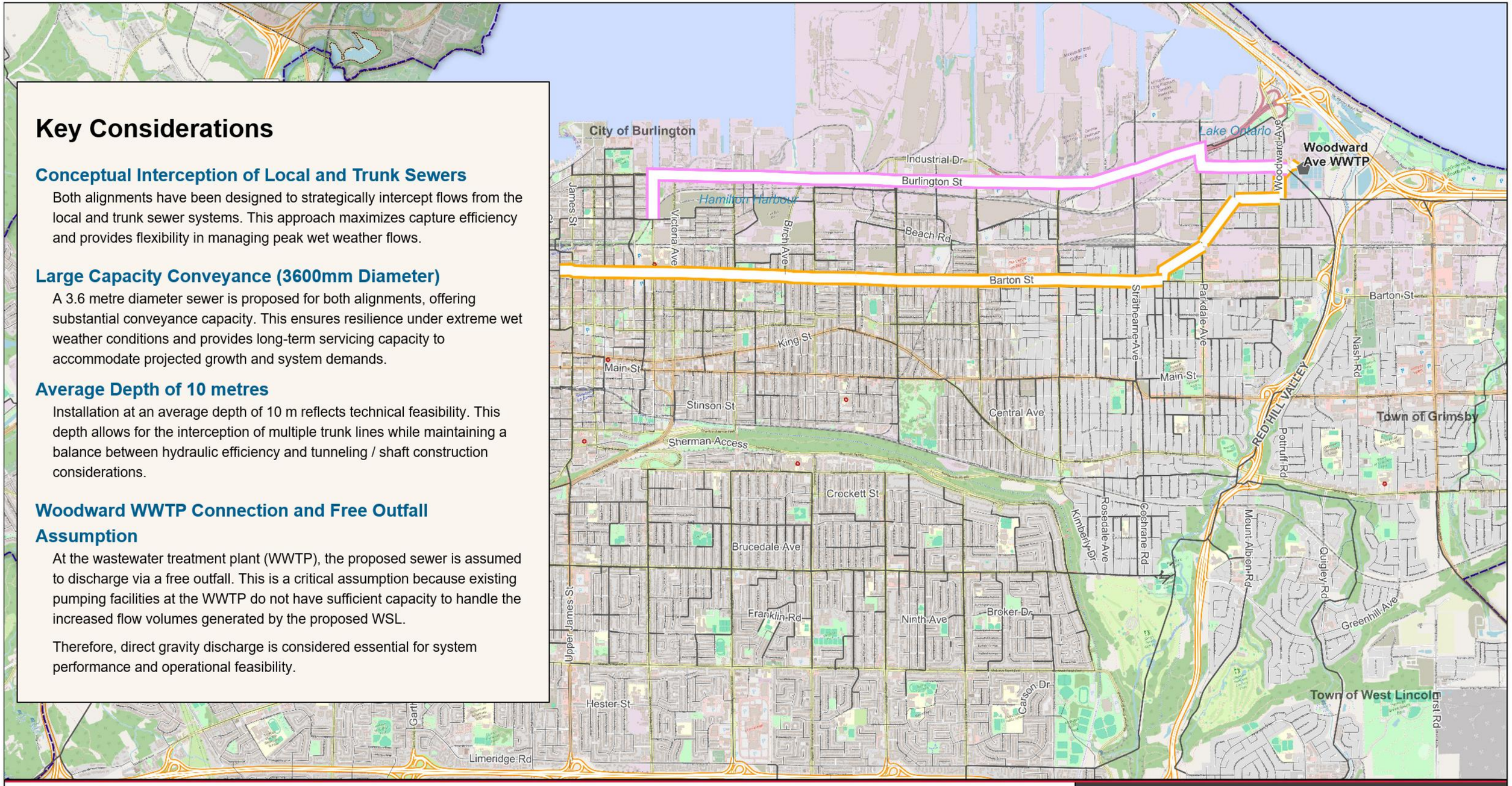
Average Depth of 10 metres

Installation at an average depth of 10 m reflects technical feasibility. This depth allows for the interception of multiple trunk lines while maintaining a balance between hydraulic efficiency and tunneling / shaft construction considerations.

Woodward WWTP Connection and Free Outfall Assumption

At the wastewater treatment plant (WWTP), the proposed sewer is assumed to discharge via a free outfall. This is a critical assumption because existing pumping facilities at the WWTP do not have sufficient capacity to handle the increased flow volumes generated by the proposed WSL.

Therefore, direct gravity discharge is considered essential for system performance and operational feasibility.



WSI Options
- WSI Proposed Burlington St Alignment
- WSI Proposed Barton St Alignment

General Feature
- Urban Boundary
- Airport
- Municipal Boundary
- Highway
- Major Road
- Local Road

Reference(s)
1. Projection EPSG:26917
2. Base Data: City of Hamilton, 2024

900 1,800 2,700 3,600 m

Proposed WSI Alignment Options

Project Name:
Water and Wastewater Master Plan

Client Name:
City of Hamilton
(Ontario, Canada)

GEI

Last Updated: August 2025
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8.5.1.1 CSO Reduction

Implementation of partial separation modeled using the FDIF priority-based assumptions, results in an estimated 35% reduction in total CSO volume. This represents a substantial improvement in system performance and compliance with MECP Procedure F-5-5 requirements. Importantly, the reduction is not limited to a single outfall but distributed across multiple CSO locations throughout the downtown and lower system. This indicates that even targeted separation delivers broad environmental benefits, improving water quality outcomes for both receiving streams and Hamilton Harbour.

8.5.1.2 Localized Flooding

The modelling results also show significant improvements in reducing the risk of localized flooding conditions under a 5-year design storm, with a measurable reduction in the number of manholes experiencing surcharging to ground level. While flooding is not fully eliminated, separation reduces wet-weather inflows enough to lower HGLs. This provides a tangible level-of-service benefit to residents and businesses, directly reducing the risk of basement backups and surface ponding.

8.5.1.3 Trunk Capacity Performance

At the trunk level, sewer separation lowers average flow-to-capacity ratios (q/Q) from 0.97 under existing conditions to 0.86 under the separation strategy. This system-wide improvement demonstrates that separation not only reduces CSOs but also improves conveyance performance within the major trunk network. In practical terms, this creates spare capacity within the existing system that can be used to accommodate growth without requiring immediate major trunk upsizing.

8.5.1.4 Growth and Resiliency Benefits

From a growth perspective, sewer separation provides a sustainable way of freeing sanitary capacity for intensification and new development. By removing stormwater from the combined system, sanitary pipes are less constrained by wet-weather peaks, which means more of their capacity can be dedicated to accommodating population and employment growth. This benefit is particularly important in the core combined areas, where growth pressures are highest and opportunities for new trunk infrastructure are limited.

In terms of resiliency, separation reduces the system’s sensitivity to climate change impacts by lowering peak wet-weather volumes and reducing hydraulic grade responses during high-intensity rainfall. This makes the wastewater system more robust under future climate scenarios and reduces reliance on downstream storage or high-rate treatment facilities, which primarily address symptoms rather than the source of inflow.

8.5.2 Strategy 2 – WSI Twin

The WSI is the backbone of Hamilton's wastewater conveyance system, carrying flows from a large portion of the service area to the Woodward WWTP. Under both existing and projected 2051 conditions, the WSI is heavily utilized, with sections already exhibiting surcharging and limited spare capacity. Without intervention, these constraints will intensify as population and employment growth increases flows, heightening the risk of basement flooding, CSO activations, and operational stress on the downstream system.

The twinning of the WSI provides a direct means to increase system-wide trunk capacity. A new parallel interceptor would relieve hydraulic loading from the existing WSI, reduce modelled HGLs, and restore resiliency in the system's primary trunk. Importantly, the WSI Twin complements sewer separation by ensuring that the reduced wet-weather inflows achieved through separation can be effectively conveyed downstream without creating new bottlenecks.

As part of this study, two conceptual alignments were identified:

- Burlington Street corridor
- Barton Street corridor

Both alignments were intended to strategically intercept flows from local and trunk sewers, maximizing capture efficiency and improving flexibility in managing PWWF. While both corridors remain at a high-level planning stage, they illustrate the technical feasibility of a large-diameter trunk solution within established urban corridors.

Key Design Considerations

- **Large-Capacity Conveyance:** Both alignments assume a 3.6 metre diameter sewer, providing substantial conveyance capacity to manage extreme wet-weather events while safeguarding long-term growth servicing needs.
- **Installation Depth:** An average depth of 10 m has been assumed, balancing the ability to intercept multiple existing trunk lines with constructability and tunneling considerations.
- **WWTP Connection:** At Woodward WWTP, the twin sewer is assumed to discharge via a free outfall, as existing pumping facilities cannot accommodate the additional peak flows. A direct gravity connection is therefore essential to ensure operability.

Figure 8-3 presents the two conceptual WSI Twin alignment options considered in this assessment.

8.5.2.1 Model Results (2051 Scenario)

The following summarizes the high-level model performance for both alignment options under 2051 conditions, based on current modelling assumptions with no Real-Time Control or dynamic equalization.

1. **Burlington Street Alignment**
   - CSO volume reduction: ~63%
   - Localized flooding: Little to no improvement
   - System capacity (avg q/Q): 0.97 → 0.98
   - PWWF to Woodward WWTP (5-yr): ~20 → 71 m³/s (no RTC)
2. **Barton Street Alignment**
   - CSO volume reduction: ~57%
   - Localized flooding: More noticeable improvement
   - System capacity (avg q/Q): 0.97 → 0.84
   - PWWF to Woodward WWTP (5-yr): ~20 → 64 m³/s (no RTC)

Valley Rd
Old Guelph Rd
403
York Rd
Olympic Dr
Cootes Dr
Sterling St
Longwood Rd
Macklin St
York Boulevard
Dundurn St
Aberdeen Ave
Main St
Osler Dr
Whitney Ave
403
Scenic Dr
Garth St
West 5th St
Hester St
Limeridge Rd
Bay St
James St
Victoria Ave
Birch Ave
Industrial Dr
Burlington St
Beach Rd
Main St
King St
Stinson St
Sherman Access
Barton St
Brucedale Ave
Franklin Rd
Ninth Ave
Crockett St
Central Ave
Carson Dr
Woodward Ave
Strathearne Ave
Parkdale Ave
Main St
Rosedale Ave
Cochrane Rd
RED HILL VALLEY
Barton St
Nash Rd
Mount Albion Rd
Quigley Rd
Greenhill Ave
First Rd

Catchment Area Priority
- High
- Low
- Medium

General Feature
- Urban Boundary
- Airport
- Municipal Boundary
- Highway
- Major Road
- Local Road

Reference(s)
1. Projection EPSG:26917
2. Base Data: City of Hamilton, 2024

900 1,800 2,700 3,600 m

FDIF Priority Catchment Areas

Project Name:
Interim Water, Wastewater, Stormwater Master Servicing Strategy

Client Name:
City of Hamilton
(Ontario, Canada)

GEI

Last Updated: November 2025
Document ID: 717010-WW-025A

8.5.2.2 Interpreting the Higher PWWF at Woodward WWTP

The substantial increase in modelled peak wet-weather flow to Woodward (from ~20 m³/s today to 64 - 71 m³/s) reflects restored conveyance rather than degraded performance. Under existing constraints, significant wet-weather inflows cannot reach the plant and instead appear as surcharging, street/basement flooding, or CSOs. By removing trunk bottlenecks, the twin conveys flows that currently spill or flood to controlled treatment. With future RTC and in-system equalization, these peaks are expected to attenuate while retaining CSO and flooding benefits.

8.5.2.3 System Benefits

The WSI Twin is anticipated to provide a wide range of system benefits, including:

- Relief of existing surcharging along the WSI corridor, improving hydraulic performance and reducing basement flooding risks.
- Redundancy and operational reliability, with flow balancing possible between the trunk sewers.
- Additional trunk conveyance capacity, supporting long-term growth servicing needs by restoring trunk headroom and maintaining the ability to convey under future conditions.
- Reduced stress on aging infrastructure, prolonging asset life and reducing the risk of failures.
- Integration with separation efforts, ensuring downstream conveyance capacity is available as inflows are reduced in combined catchments.

8.5.2.4 Implementation Challenges

The scale of the WSI Twin represents a major capital investment, requiring extensive planning, staging, and approvals. Constructability challenges include coordination with existing utilities, tunnelling within constrained corridors, and potential environmental crossings.

While complex, the WSI Twin directly addresses the City's most critical trunk deficiency and provides a solution that is resilient, scalable, and complementary to other strategies.

8.5.2.5 Screening Outcome

Both alignments reduce CSOs and improve system resiliency. However, the Barton alignment provides a more balanced outcome overall, offering stronger localized capacity relief and a lower peak flow to Woodward WWTP, with anticipated fewer corridor conflicts. Accordingly, the Barton alignment is carried forward for integration with sewer separation in Strategy 3 (**Section 8.5.3**).

It should be noted that both alignments are high-level conceptual options. Further detailed analysis and design steps are required to confirm the preferred alignment, which may ultimately differ from the conceptual corridors presented in this report.

8.5.3 Strategy 3 – Sewer Separation + WSI Twin

Strategy 3 integrates Targeted Sewer Separation (Strategy 1) with the WSI Twin along the Barton Street corridor Strategy 2). The combined approach addresses the two primary constraints in Hamilton's wastewater system:

1. Excessive wet-weather inflows driving CSOs and localized flooding in the combined area, and;
2. Conveyance limitations along the existing WSI that restrict reliable delivery of flows to the Woodward WWTP.

The modelling assumptions for sewer separation and the WSI Twin are consistent with those described in Strategies 1 and 2 respectively, including priority-based separation targets and the conceptual Barton corridor alignment for the twin trunk sewer. Real-Time Control (RTC) and in-system equalization were not included at this stage, consistent with earlier strategies.

8.5.3.1 Model Results (2051 Conditions)

The combined strategy provides the strongest overall performance of the three options assessed:

- **CSO Volume:** ~72% reduction (distributed across multiple outfalls in the core combined area).
- **Localized flooding:** Significant reductions in risk of localized flooding, with fewer nodes surcharging to ground and lower HGLs in chronic hotspots.
- **System Capacity (avg q/Q):** 0.97 → 0.74, reflecting substantial relief of trunk stress and restored spare capacity.
- **Peak Wet Weather Flow at Woodward WWTP (5-year event):** ~20 → 52 m³/s.

It should be noted that with RTC and in-system equalization not modelled throughout the entire system, additional peak attenuation is anticipated in later phases while maintaining the CSO and flooding benefits above.

8.5.3.2 Growth, Resiliency, and Compliance Outcomes

- **Growth Support:** Lower q/Q values and increased trunk capacity support intensification and planned development to 2051 without immediate reliance on widespread upsizing of downstream mains.
- **Climate Resiliency:** Reduced wet-weather sensitivity and enhanced trunk redundancy support improved response to high-intensity rainfall events.
- **Environmental Performance:** Material CSO reductions support MECP Procedure F-5-5 compliance and HHRAP objectives while reducing the risk for basement flooding and surface ponding.
- **Operational Reliability:** Parallel conveyance introduces redundancy and enhances operational flexibility.

8.5.3.3 Implementation Considerations

- **Integration with Road and SOGR Programs:** Sewer separation will continue as a multi-decade, neighbourhood-based implementation, aligned with planned works where possible.
- **Outlets and Local Integration:** Some storm discharge locations require confirmation and may involve interim controls or staged outlet solutions.
- **Tunnel Constructability:** The Barton Street corridor will require deep tunnelling and multiple shafts in constrained urban rights-of-way; geotechnical variability, groundwater control, major utility crossings, and traffic management will drive risk, staging, and cost.
- **WWTP Interface and RTC:** Coordination with Woodward WWTP hydraulics and future upgrades will be required; development of RTC strategy will be key to moderating peak flows while preserving CSO / flooding benefits.
- **Financial Strategy:** Capital program to be coordinated through phased implementation under the City's DC and capital budgeting framework.
- **Stakeholder Engagement:** Proactive communications will be essential to manage construction impacts and maintain community support for the implementation of the servicing strategy.

Figure 8-4 compares the total modeled CSO volume across all the strategies under 5-year design storm event. Separation reduces CSOs by ~ 35%, WSI Twin – Burlington reduces ~63%, WSI Twin – Barton reduces ~57%; and the combined Separation + WSI Twin (Barton) by ~72% - the greatest reduction. In the evaluation, total CSO volume is one of the primary indicators of environmental performance, so this figure provides a direct, comparable basis for scoring the strategies.

Figure 8-4- CSO Volume Comparison – Bar Chart

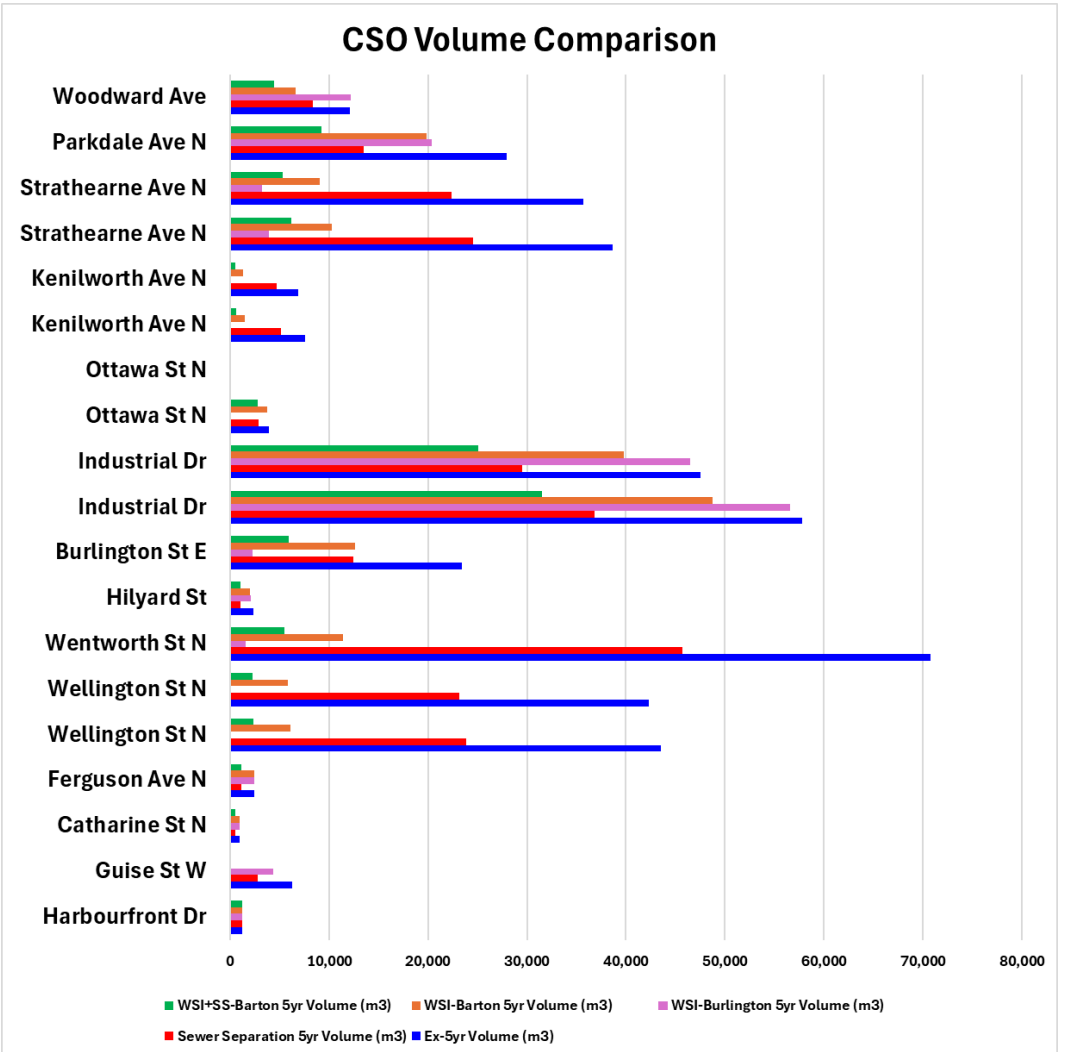


Table 8-3- Strategy Evaluation

		Separation Only	WSI Twin Only (Burlington Alignment)	WSI Twin Only (Barton Alignment)	Separation + WSI Twin
Description of Strategy		- Enhanced/accelerated sewer separation program beyond FDIF priorities; focuses on targeted subcatchments and local constraints.	- Construct a new Burlington-corridor WSI twin to offload the existing WSI; continue only the managed separation already identified in the FDIF.	- Construct a new Barton-corridor WSI twin to offload the existing WSI; continue only the managed separation already identified in the FDIF.	- Combine an enhanced/accelerated separation program with a new WSI twin (Barton) to reduce inflows and add trunk capacity.
Technical	Constructability	Low	Low	Low	Low
	Achieve capacity for growth (local, trunk)	Medium	Medium	Medium	High
	Relieve existing and future constraints	High	Medium	Medium	High
	Implementation - Timing, phasing constraints/opportunities	Low	Medium	Medium	Medium
	Implementation - Complexity / Feasibility	Low	Medium	Medium	Medium
	Technical Comments	Wet weather flows is expected to be diverted from the trunk sewers and WWTP. This will result in residual capacity within the trunk and WWTP.	The existing WSI twin is over utilized as a result the new WSI twin will provide residual capacity in the existing WSI twin and can achieve further capcity for growth.	The existing WSI twin is over utilized as a result the new WSI twin will provide residual capacity in the existing WSI twin and can achieve further capcity for growth.	WSI Twin coupled with enhanced/accelarated sewer separation willd address the existing and future constraints within the overall wastewater system of the City.
	Rank	**Low**	**Medium**	**Medium**	**Medium**
Evironmental	Meets Hamilton Harbour Remedial Action Plan (HHRAP)	Medium	Medium	Medium	High
	MECP Goals	High	High	High	High
	CSO/F-5-5 Requirements	High	High	High	High
	Environmental Comments	MECP goals and F-5-5 requirements is expected to be met through this strategy. Overflow events will be significantly reduced, if not completely.	MECP goals and F-5-5 requirements is expected to be met through this strategy. Overflow events will be reduced.	MECP goals and F-5-5 requirements is expected to be met through this strategy. Overflow events will be reduced.	CSO overflow events will be significantly reduced, if not completely. Significant amount of wet weather flows will be diverted from the WWTP.
	Rank	**Medium**	**Medium**	**Medium**	**High**
Financial	New Infrastructure	Low	Medium	Medium	Low
	Support other programs (piggyback on SOGR/replacement of older infrastructure)	Low	High	High	Medium
	Financial Comments	Significant financial commitment required over a short period of time.	Some of the sewer separation identified in FDIF is being completed under road improvement projects which minimizes cost. The WSI twin would require substantial financial commitment.	Some of the sewer separation identified in FDIF is being completed under road improvement projects which minimizes cost. The WSI twin would require substantial financial commitment.	Significant financial commitment required but provides long term benefits to alleviate existing and future constraints.
	Rank	**Low**	**Medium**	**Medium**	**Medium**
Socio-Cultural	Disruption	Low	Medium	Medium	Medium
	Public Interest / Support	Medium	Medium	Medium	High
	Socio-Cultural Comments	Disruptions in local streets, major and arterial roads. Public support will require display of benefit in long-term.	Moderate disruptions along localized and major roads due to sewer separation and construction of WSI twin.	Moderate disruptions along localized and major roads due to sewer separation and construction of WSI twin.	Long term benefits for the public, although disruptions would occur around the City.
	Rank	**Medium**	**Medium**	**Medium**	**High**
Legal / Jurisdictional	Property Needs	Low	Medium	Medium	Medium
	Legal / Jurisdicational Comments	Property acquisition will be required in some areas to fully separate the system.	Some property acquisiton will be required for the WSI twin and managed sewer separation program	Some property acquisiton will be required for the WSI twin and managed sewer separation program	Property acquisiton will be required for the WSI twin and accelarated sewer separation program.
	Rank	**Low**	**Medium**	**Medium**	**Medium**
Preferred Strategy		**No**	**No**	**No**	**Yes**

8.5.4 Strategy Evaluation – Preferred Technical Strategy

Using the evaluation criteria outlined in **Section 8.5** and the detailed evaluation summarized in **Table 8-2**, Strategy 3 – Sewer Separation + WSI Twin, was identified as the preferred wastewater servicing technical strategy. It consistently provides the most balanced, system-wide benefit across technical, environmental, financial, socio-cultural, and legal/jurisdictional factors. It achieves substantial reductions in CSO volume, meaningful relief of localized flooding, restored spare capacity within the trunk system, and a reliable network capable of supporting planned growth to 2051.

While Strategy 3 requires a larger capital investment than the single-component strategies, the combined benefits of targeted sewer separation and the WSI Twin (Barton alignment) result in improved LOS and stronger long-term value. By reducing wet-weather inflow at the source and adding backbone conveyance, Strategy 3 addresses CSOs, flooding, and trunk constraints together rather than in isolation, thereby creating headroom for intensification and new development. The associated increase in peak wet-weather flows to the Woodward WWTP reflects improved capture of flows that currently surcharge or overflow; future incorporation of RTC and downstream optimization is expected to moderate these peaks without compromising CSO or flooding benefits.

On this basis, Strategy 3 forms the preferred long-term wastewater servicing strategy for the Interim Master Servicing Strategy. The recommended strategy pairs priority-driven sewer separation with the WSI Twin (Barton) within a resilient, adaptable, and stageable program that can be coordinated with the City's DC and SOGR programs. It should be noted that the preferred technical strategy also assumes implementation of all wastewater projects identified in the 2023 DC program, with staging to be refined through subsequent capital planning and project-level studies. Additionally, given that redevelopment overcontrol may incrementally improve local wet weather performance, future DC review would need to assess the extent to which components of this strategy are attributable to growth versus existing conditions.

Furthermore, an expanded and enhanced flow monitoring program is recommended as a key component of the Interim Master Servicing Strategy (IMSS). This program should build on the monitoring framework outlined in the FDIF study, with consideration given to increasing the number of monitoring locations and extending the duration of data collection beyond the initial 2 to 2.5 year period. A longer-term monitoring horizon (e.g., 5 to 10 years) would improve model calibration and support area-specific decision-making for future intensification opportunities. Given the scale and complexity of the recommended strategy, the scope, timing, and delivery should be further refined through future capital planning and project-level studies to support effective and sustainable implementation.

9.0 Preferred Wastewater Servicing Technical Strategy and Capital Program

Strategy 3 - Sewer Separation + WSI Twin is the recommended preferred technical strategy to service the projected growth to 2051. The preferred servicing strategy was developed to ensure that the wastewater system is aligned with existing planning policies, designated residential and employment growth areas, can support intensification, and that the IMSS follows an integrated approach with the City's SOGR program. The primary objective of the wastewater servicing strategy is to build off the configuration of the existing wastewater system within the City of Hamilton.

The wastewater capital program will work as a foundation for the City of Hamilton Capital Budget. The capital program provides a list and timing of new assets that the City will operate and maintain, and therefore, it is the starting point for the planning of operation and maintenance costs and resources allocation for new wastewater infrastructure.

9.1 Cost Estimation Framework and Methodology

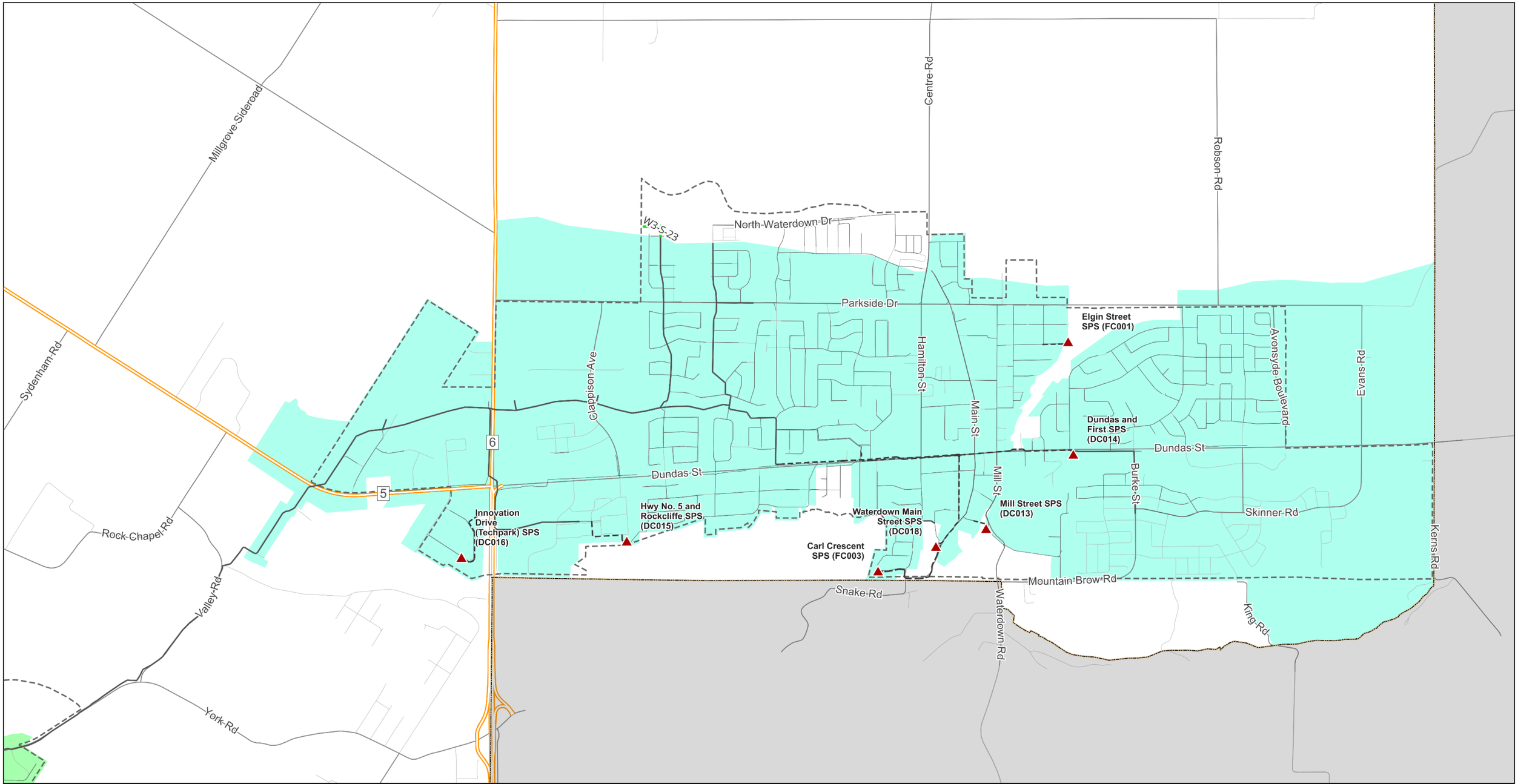
The cost estimation methodology for capital projects at an Interim Master Servicing Strategy planning level are typically based on an overall unit cost approach. The unit cost rates used for this Interim Master Servicing Strategy (IMSS) are representative in 2025 dollars. A summary of the unit costs is provided in **Appendix C – Costing Framework Technical Memorandum**.

A capital cost is provided for all projects proposed as part of the IMSS. The costing framework combines project characteristics (Complexity and Project Type) with a defined set of cost components that roll up to Total Project Cost.

- Base construction costs are built from unit rates (for linear works) or capacity-based curves (for vertical works).
- Allowances for General Items, Provisional Items, and Construction Contingency are applied as percentages of Installation Cost.
- Design (soft) costs are applied as percentages of Total Construction Cost and vary by project size.
- A Project Contingency is then applied based on cost estimate class and project complexity.
- Unit rates and curves have been updated using recent tender data and market information to ensure estimates reflect current construction trends.

9.2 Capital Program for the Preferred Wastewater Servicing Technical Strategy

The Preferred Wastewater Servicing Strategy includes a City-Wide strategy and is designed to address existing system constraints and support long-term growth to 2051. The strategy builds on previous planning efforts and incorporates updated flow projections to ensure reliable, efficient, cost effective and environmentally and community responsible wastewater servicing across the City of Hamilton. The entire capital program is show below in **Table 9-1**. A detailed capital program costing is provided in **Appendix D - Wastewater Capital Program**.



Future Infrastructure

- Sanitary Pumping Station (SPS) By 2031

Future Sanitary Sewers

- By 2031
- By 2041
- By 2051

Existing Infrastructure

- Wastewater Treatment Plant
- Sanitary Pumping Station (SPS)
- CSO Tank
- Forcemain
- Trunk (>=600mm)
- Sewers (<600mm)

Sanitary Service Area

- Dundas System
- Eastern Interceptor System
- Ancaster-Fennell System
- Red Hill Creek Interceptor System
- Waterdown System
- Western Interceptor System

General Feature

- Urban Boundary
- Municipal Boundary

Reference(s)

1. Projection EPSG:26917
2. Base Data: City of Hamilton, 2024

0.5 1 km

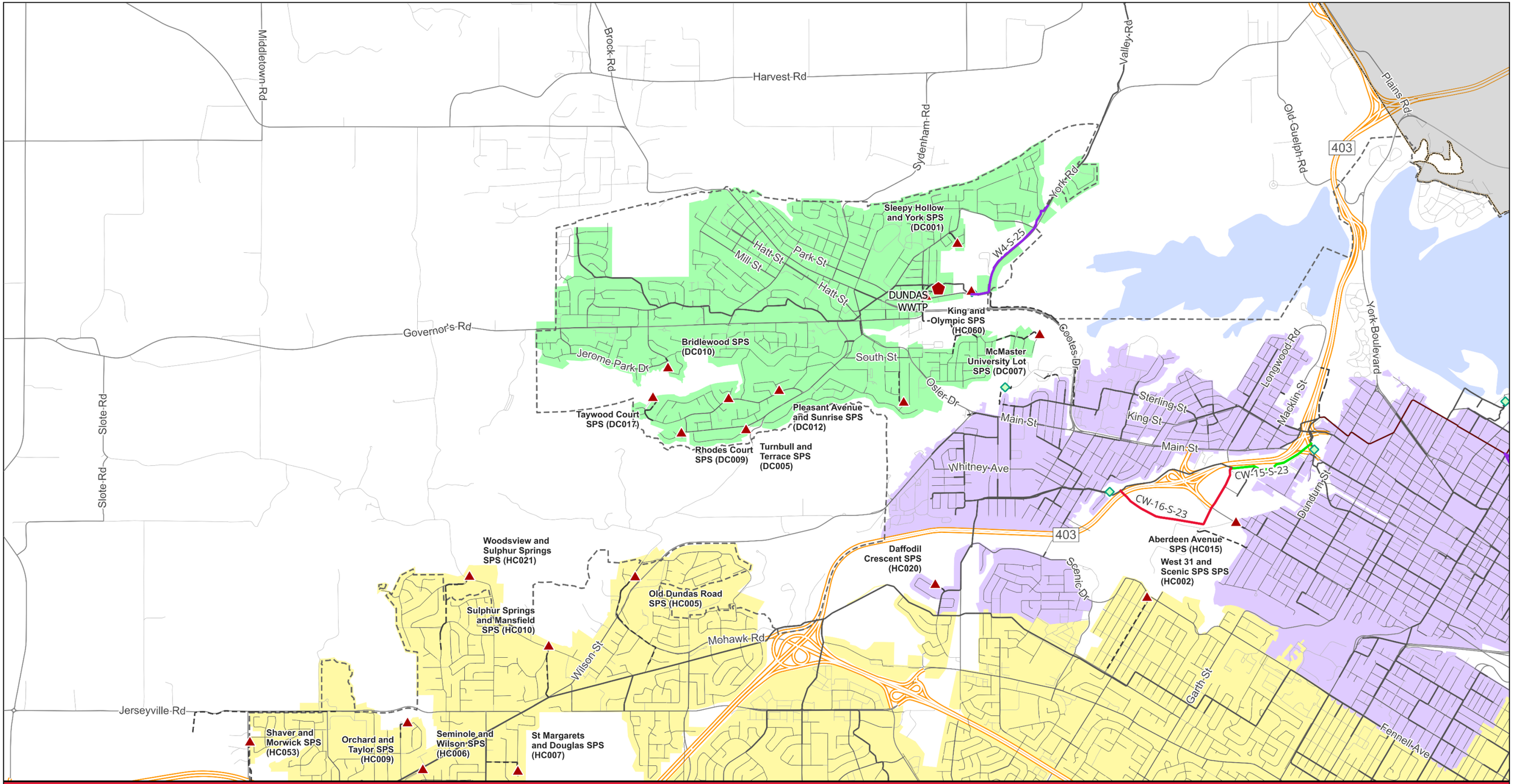
Capital Program for the Preferred Wastewater Servicing Strategy - Waterdown

Project Name:
Interim Water, Wastewater, Stormwater Master Servicing Strategy

Client Name:
City of Hamilton
(Ontario, Canada)

GEI

Last Updated: November 2025
Document ID: 717010-WW-026



Future Infrastructure

- Sanitary Pumping Station (SPS) By 2031

Future Sanitary Sewers

- By 2031
- By 2041
- By 2051

Existing Infrastructure

- Wastewater Treatment Plant
- Sanitary Pumping Station (SPS)
- CSO Tank
- Forcemain
- Trunk (>=600mm)
- Sewers (<600mm)

Sanitary Service Area

- Dundas System
- Eastern Interceptor System
- Ancaster-Fennell System
- Red Hill Creek Interceptor System
- Waterdown System
- Western Interceptor System

General Feature

- Urban Boundary
- Municipal Boundary

Reference(s)

1. Projection EPSG:26917
2. Base Data: City of Hamilton, 2024

0.9 1.8 km

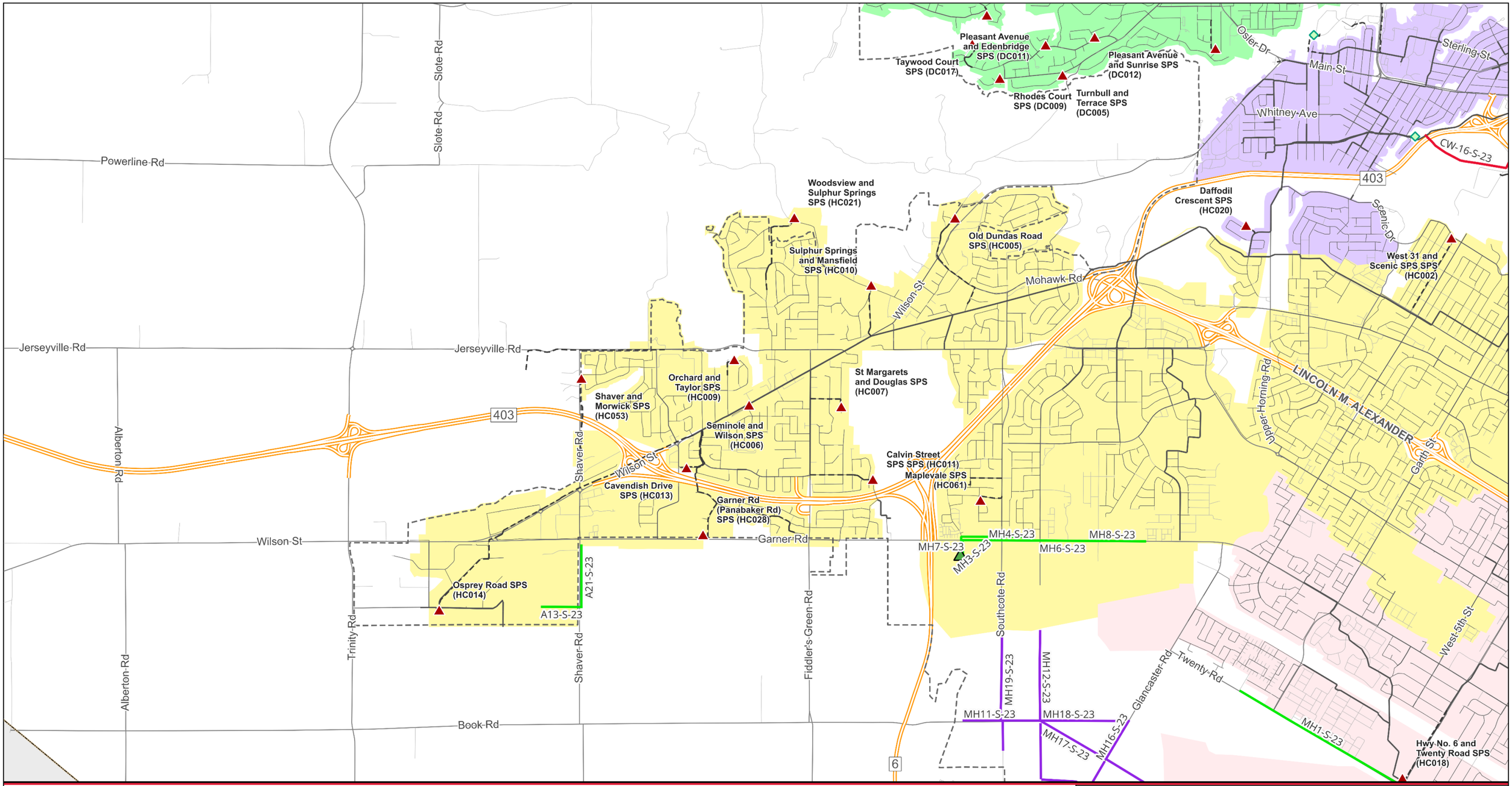
Capital Program for the Preferred Wastewarer Servicing Strategy - Dundas

Project Name:
Interim Water, Wastewater, Stormwater Master Servicing Strategy

Client Name:
City of Hamilton
(Ontario, Canada)

GEI

Last Updated: November 2025
Document ID: 717010-WW-026



Future Infrastructure

- Sanitary Pumping Station (SPS) By 2031

Future Sanitary Sewers

- By 2031
- By 2041
- By 2051

Existing Infrastructure

- Wastewater Treatment Plant
- Sanitary Pumping Station (SPS)
- CSO Tank
- Forcemain
- Trunk (>=600mm)
- Sewers (<600mm)

Sanitary Service Area

- Dundas System
- Eastern Interceptor System
- Ancaster-Fennell System
- Red Hill Creek Interceptor System
- Waterdown System
- Western Interceptor System

General Feature

- Urban Boundary
- Municipal Boundary

Reference(s)

1. Projection EPSG:26917
2. Base Data: City of Hamilton, 2024

0.9 1.8 km

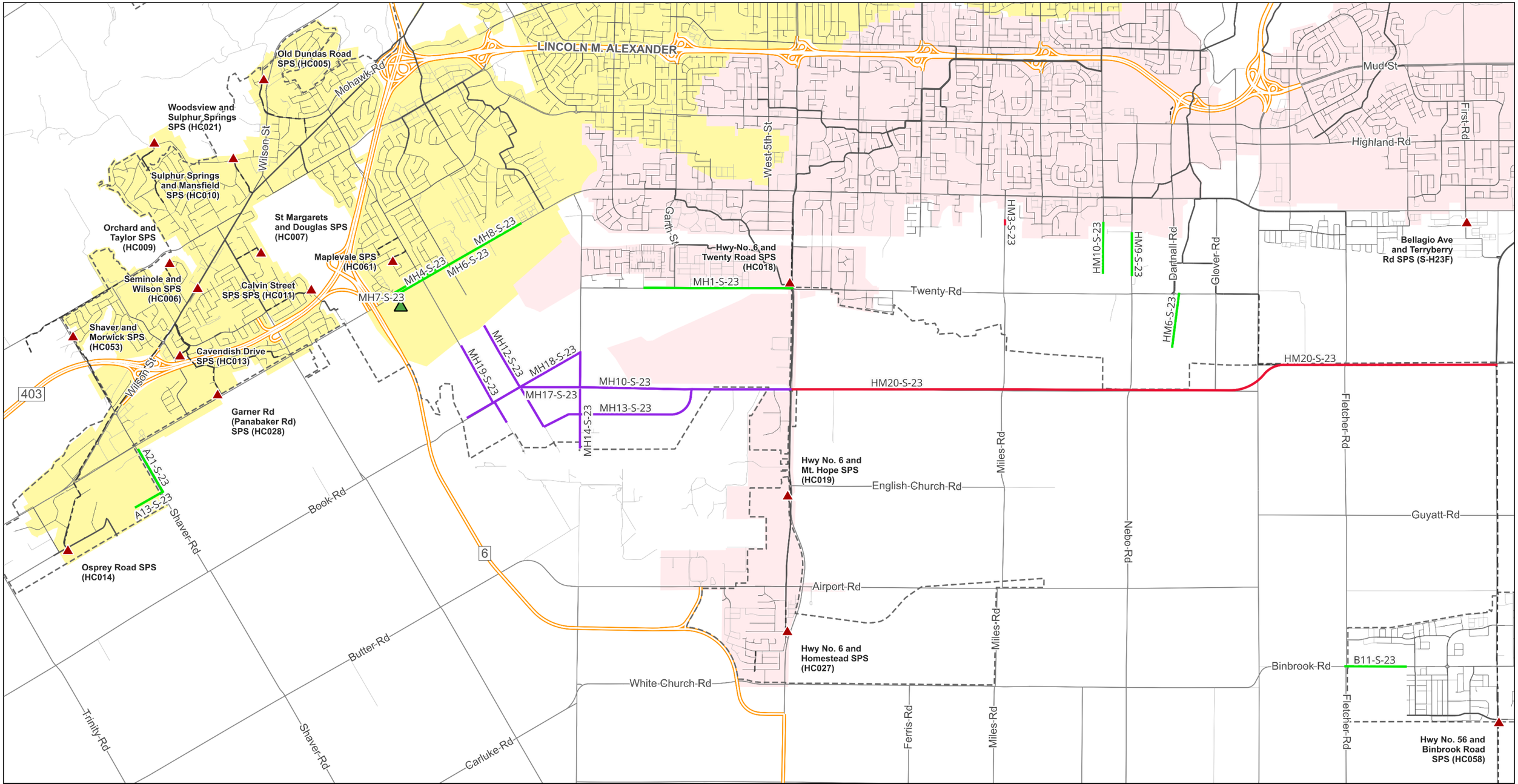
Capital Program for the Preferred Wastewarer Servicing Strategy - Ancaster

Project Name:
Interim Water, Wastewater, Stormwater Master Servicing Strategy

Client Name:
City of Hamilton
(Ontario, Canada)

GEI

Last Updated: November 2025
Document ID: 717010-WW-026



Future Infrastructure

- Sanitary Pumping Station (SPS) By 2031

Future Sanitary Sewers

- By 2031
- By 2041
- By 2051

Existing Infrastructure

- Wastewater Treatment Plant
- Sanitary Pumping Station (SPS)
- CSO Tank
- Forcemain
- Trunk (>=600mm)
- Sewers (<600mm)

Sanitary Service Area

- Dundas System
- Eastern Interceptor System
- Ancaster-Fennell System
- Red Hill Creek Interceptor System
- Waterdown System
- Western Interceptor System

General Feature

- Urban Boundary
- Municipal Boundary

Reference(s)

1. Projection EPSG:26917
2. Base Data: City of Hamilton, 2024

1 2 km

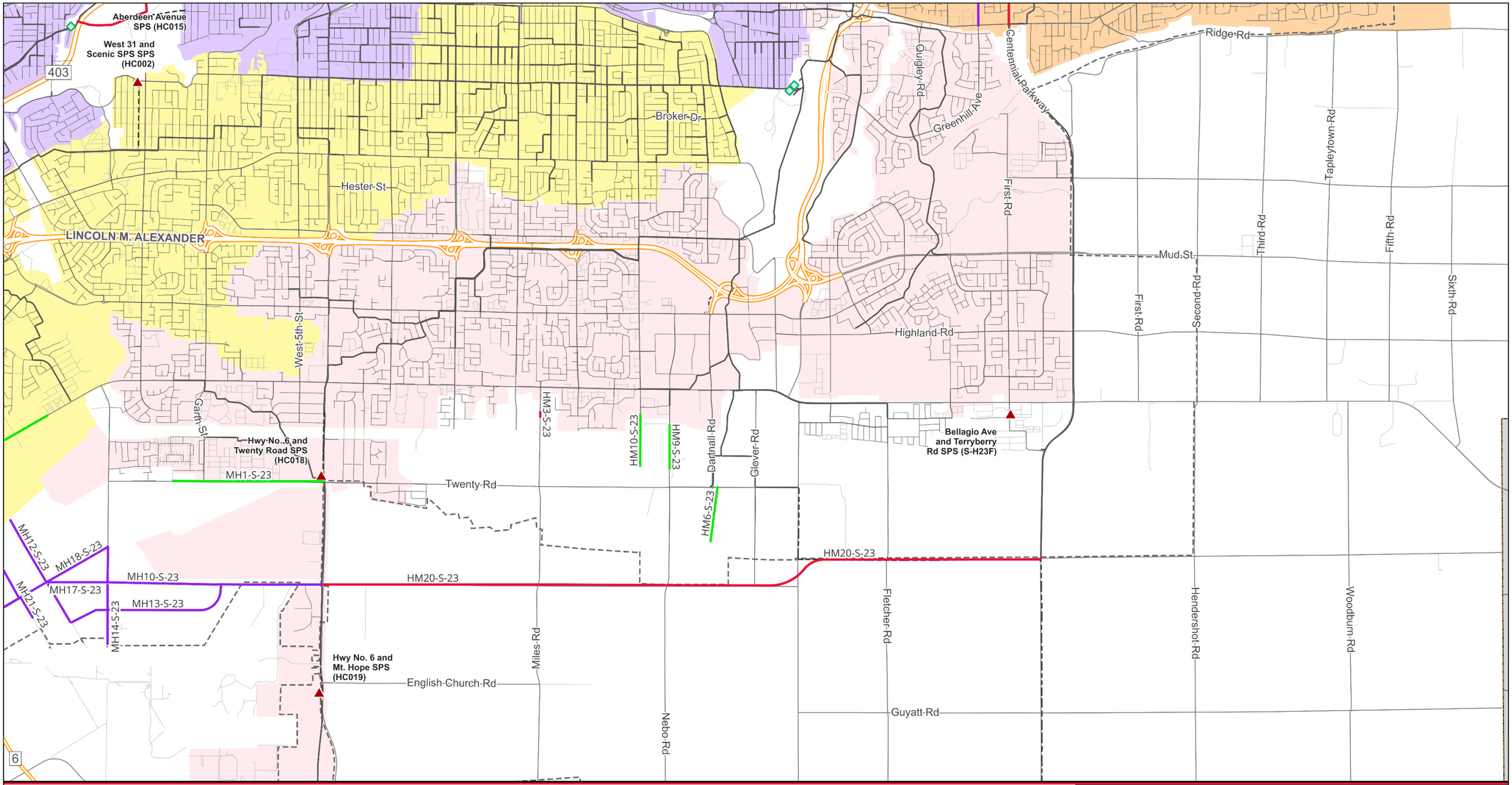
Capital Program for the Preferred Wastewater Servicing Strategy - AEGD-MountHope

Project Name:
Interim Water, Wastewater, Stormwater Master Servicing Strategy

Client Name:
City of Hamilton
(Ontario, Canada)

GEI

Last Updated: November 2025
Document ID: 717010-WW-026



Future Infrastructure

- Sanitary Pumping Station (SPS) By 2031

Future Sanitary Sewers

- By 2031
- By 2041
- By 2051

Existing Infrastructure

- Wastewater Treatment Plant
- Sanitary Pumping Station (SPS)
- CSO Tank
- Forcemain
- Trunk (>=600mm)
- Sewers (<600mm)

Sanitary Service Area

- Dundas System
- Eastern Interceptor System
- Ancaster-Fennell System
- Red Hill Creek Interceptor System
- Waterdown System
- Western Interceptor System

General Feature

- Urban Boundary
- Municipal Boundary

Reference(s)

1. Projection EPSG:26917
2. Base Data: City of Hamilton, 2024

1 2 km

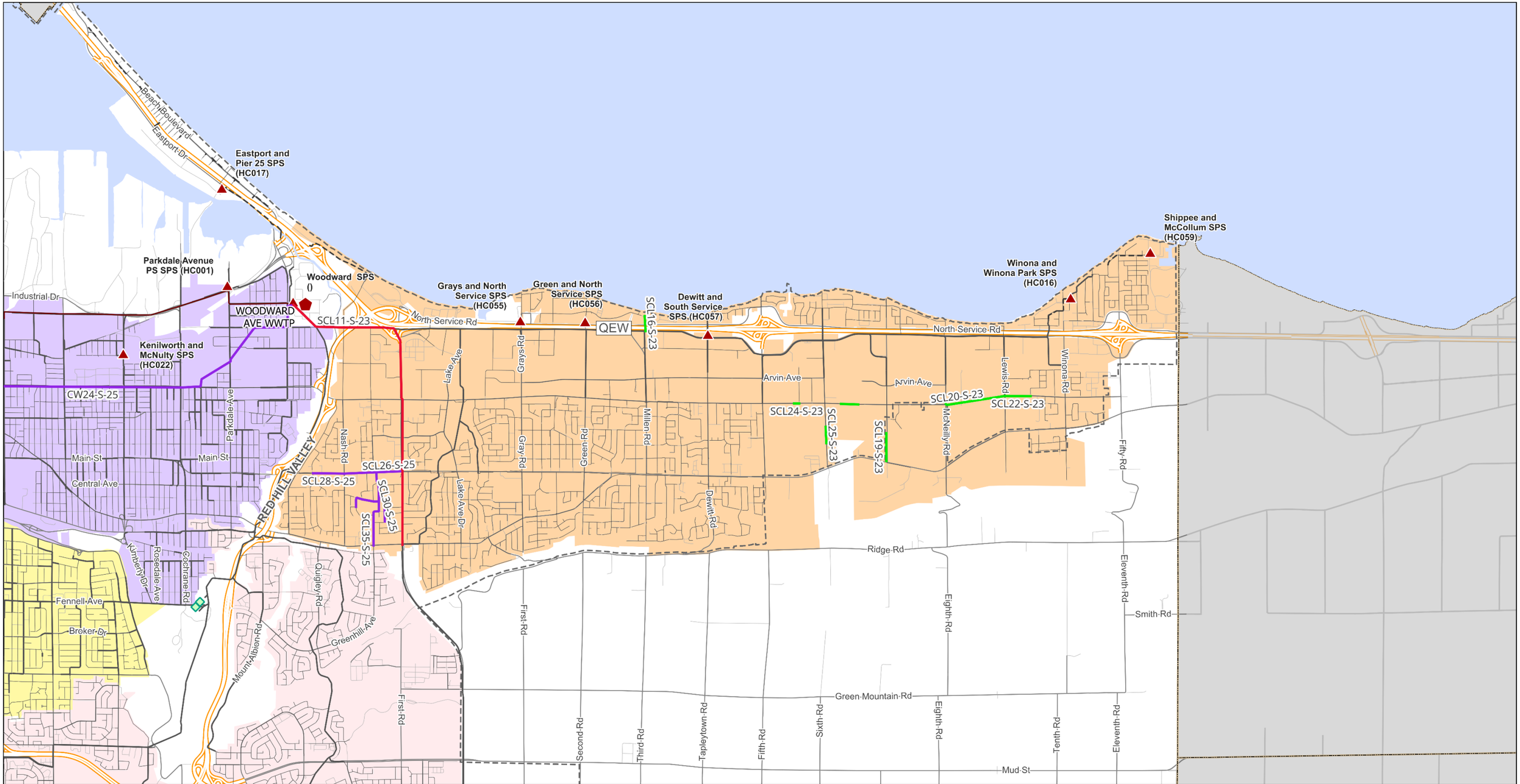
Capital Program for the Preferred Wastewarer Servicing Strategy - Hamilton Mountain

Project Name:
Interim Water, Wastewater, Stormwater Master Servicing Strategy

Client Name:
City of Hamilton
(Ontario, Canada)

GEI

Last Updated: November 2025
Document ID: 717010-WW-026



Future Infrastructure

- Sanitary Pumping Station (SPS) By 2031

Future Sanitary Sewers

- By 2031
- By 2041
- By 2051

Existing Infrastructure

- Wastewater Treatment Plant
- Sanitary Pumping Station (SPS)
- CSO Tank
- Forcemain
- Trunk (>=600mm)
- Sewers (<600mm)

Sanitary Service Area

- Dundas System
- Eastern Interceptor System
- Ancaster-Fennell System
- Red Hill Creek Interceptor System
- Waterdown System
- Western Interceptor System

General Feature

- Urban Boundary
- Municipal Boundary

Reference(s)
1. Projection EPSG:26917
2. Base Data: City of Hamilton, 2024

1 2 km

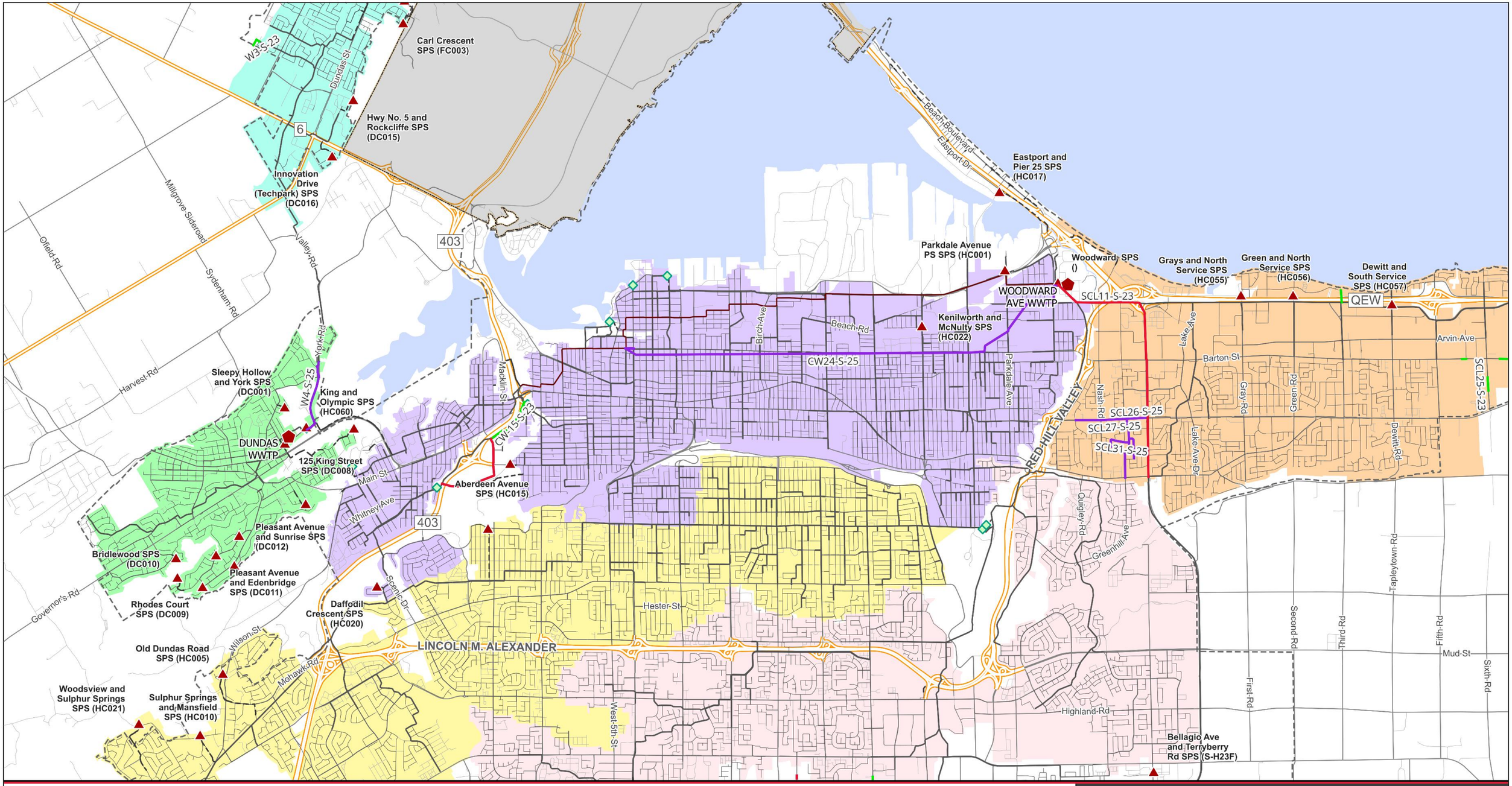
Capital Program for the Preferred Wastewarer Servicing Strategy - Stoney Creek

Project Name:
Interim Water, Wastewater, Stormwater Master Servicing Strategy

Client Name:
City of Hamilton
(Ontario, Canada)

GEI

Last Updated: November 2025
Document ID: 717010-WW-026



Future Infrastructure

- Sanitary Pumping Station (SPS) By 2031

Future Sanitary Sewers

- By 2031
- By 2041
- By 2051

Existing Infrastructure

- Wastewater Treatment Plant
- Sanitary Pumping Station (SPS)
- CSO Tank
- Forcemain
- Trunk (>=600mm)
- Sewers (<600mm)

Sanitary Service Area

- Dundas System
- Eastern Interceptor System
- Ancaster-Fennell System
- Red Hill Creek Interceptor System
- Waterdown System
- Western Interceptor System

General Feature

- Urban Boundary
- Municipal Boundary

Reference(s)
1. Projection EPSG:26917
2. Base Data: City of Hamilton, 2024

1 2 km

Capital Program for the Preferred Wastewater Servicing Strategy - Hamilton Downtown

Project Name:
Interim Water, Wastewater, Stormwater Master Servicing Strategy

Client Name:
City of Hamilton (Ontario, Canada)

GEI

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Table 9-1- Capital Program for the Preferred Wastewater Servicing Strategy

Project ID	Project Description / Purpose	Area	Construction Type	Project Type	Size / Capacity	Length (m)	Planning Period	Total Estimated Cost ($2025)
W3-S-23	Waterdown North Area – Extension of Servicing; Between McCurdy Avenue and North Waterdown Drive	Waterdown	Linear	Sanitary Sewer	600 mm	340	By 2031	$ 1,957,000
W4-S-25	Twin Borer's Creek Sanitary Sewer Interceptor; Between Willowglen Court to King Street / Olympic Drive	Waterdown	Linear	Sanitary Sewer	1050 mm	1,350	By 2031	$ 32,491,000
A13-S-23	Ancaster Industrial Park Area – Hydro Corridor; Between Shaver Road and New Road	Ancaster	Linear	Sanitary Sewer	600 mm	400	By 2041	$ 2,302,000
A21-S-23	Shaver Road Sanitary Sewer; Between Osprey Drive and Hydro Corridor	Ancaster	Linear	Sanitary Sewer	375 mm	660	By 2041	$3,260,000
MH1-S-23	Twenty Road Sanitary Sewer; Between Silverbirch Boulevard and Upper James Street	Mount Hope	Linear	Sanitary Sewer	450 mm	2,000	By 2041	$ 9,496,000
MH3-S-23	John Frederic Drive – Garner Road Sewer	Mount Hope	Linear	Sanitary Sewer	375 mm	430	By 2041	$ 2,125,000
MH4-S-23	Forcemain – Garner Road	Mount Hope	Linear	Sanitary Sewer	200 mm	1,100	By 2041	$ 2,189,000
MH6-S-23	Garner Road Sewer; Between Kitty Murray Lane and Springbrook Avenue	Mount Hope	Linear	Sanitary Sewer	375 mm	360	By 2041	$ 4,7412,000
MH7-S-23	New SPS – South of Garner Road on New Street	Mount Hope	Vertical	Pump Station	30 L/s	N/A	By 2041	$ 6,770,000
MH8-S-23	Garner Road Trunk Sewer; Between Springbrook Avenue and Barley Lane	Mount Hope	Linear	Sanitary Sewer	600 mm	700	By 2041	$ 9,220,290
MH9-S-23	Garner Road Sewer; Between Kitty Murray Lane and Southcote Road	Mount Hope	Linear	Sanitary Sewer	300 mm	480	By 2041	$ 2,252,000
MH10-S-23	Dickenson Road Trunk Sewer Extension; Between Glancaster Road and Gart St Extension	Mount Hope	Linear	Sanitary Sewer	525 mm	1530	By 2041	$ 9,325,000
MH11-S-23	Book Road Trunk Sewer; Between Southcote Road and Smit Road	Mount Hope	Linear	Sanitary Sewer	600 mm	830	By 2041	$ 5,280,000
MH12-S-23	Smith Road Sewer; Between Hydro Corridor and Smith Road	Mount Hope	Linear	Sanitary Sewer	375 mm	950	By 2041	$ 4,476,000
MH13-S-23	Garth Street Trunk Sewer; Between Smith Road and Upper James Street	Mount Hope	Linear	Sanitary Sewer	750 mm	3,620	By 2041	$ 20,714,000
MH14-S-23	Glancaster Road Sewer; Between Airport and Garth Street Extension	Mount Hope	Linear	Sanitary Sewer	375 mm	450	By 2041	$ 2,224,000
MH15-S-23	Glancaster Road Sewer; Between Dickenson Road and Garth Street Extension	Mount Hope	Linear	Sanitary Sewer	375 mm	375	By 2041	$ 1,851,000
MH16-S-23	Glancaster Road Sewer; Between Book Road and Dickenson Road	Mount Hope	Linear	Sanitary Sewer	375 mm	380	By 2041	$ 1,878,000
MH17-S-23	Dickenson Road Trunk Sewer Extension; Between Garth Street Extension and Smith Road	Mount Hope	Linear	Sanitary Sewer	525 mm	825	By 2031	$ 4,339,000
MH18-S-23	Book Road Sewer; Between Glancaster Road and Smith Road	Mount Hope	Linear	Sanitary Sewer	375 mm	950	By 2041	$ 4,476,000
MH19-S-23	Southcote Road Sewer; Between Hydro Corridor and Book Road	Mount Hope	Linear	Sanitary Sewer	375 mm	875	By 2041	$ 4,122,000
MH20-S-23	Smith Road Sewer; Between Book Road and Garth Street Extension	Mount Hope	Linear	Sanitary Sewer	375 mm	675	By 2041	$ 3,335,000
MH21-S-23	Southcote Road Sewer; Between Book Road and Garth Street Extension	Mount Hope	Linear	Sanitary Sewer	375 mm	525	By 2041	$ 2,594,000
B11-S-23	Binbrook Road Sewer; Between Fletcher Road and Brigham Ave	Binbrook	Linear	Sanitary Sewer	375 mm	850	By 2041	$ 4,199,000
HM3-S-23	Miles Road Sewer; Connection of Sewers East and West of Miles Road	Hamilton Mountain	Linear	Sanitary Sewer	375 mm	50	By 2041	$ 247,000
HM6-S-23	Dartnall Road Extension Trunk Sewer	Hamilton Mountain	Linear	Sanitary Sewer	525 mm	730	By 2041	$ 4,025,000
HM9-S-23	Nebo Road Sewer; Between Twenty Road East and Rymal Road	Hamilton Mountain	Linear	Sanitary Sewer	375 mm	630	By 2041	$ 3,607,000
HM10-S-23	Upper Ottawa Street Sewer; Between Twenty Road East and Rymal Road	Hamilton Mountain	Linear	Sanitary Sewer	375 mm	675	By 2041	$ 3,335,000
HM20-S-23	Dickenson Road Trunk Sewer; Between Upper James Street to Miles Road	Hamilton Mountain	Linear	Sanitary Sewer	1500 mm	9,700	By 2041	$ 125,443,200
SCL11-S-23	Centennial Trunk Sewer	Stoney Creek	Linear	Sanitary Sewer	1500 mm	4,200	By 2031	$ 85,920,000
SCL16-S-23	Milen Road Sewer and Easement (QEW Crossing); Between South Service Road and North Service Road	Stoney Creek	Linear	Sanitary Sewer	450 mm	120	By 2031	$ 628,000
SCL18-S-23	Barton Street Sewer; Between Jones Road and Glover Road	Stoney Creek	Linear	Sanitary Sewer	450 mm	250	By 2031	$ 1,591,000
SCL19-S-23	Glover Road Sewer; Between Hwy 8 and Watercourse 7	Stoney Creek	Linear	Sanitary Sewer	450 mm	500	By 2031	$ 3,182,000
SCL20-S-23	Barton Street Sewer; Between McNeilly Road and 200 metres east of McNeilly Road	Stoney Creek	Linear	Sanitary Sewer	450 mm	330	By 2031	$ 1,726,000
SCL21-S-23	Barton Street Sewer; Between 200 metres east of McNeilly Road to Lewis Road	Stoney Creek	Linear	Sanitary Sewer	450 mm	520	By 2031	$ 2,719,000
SCL22-S-23	Barton Street Sewer; Between Lewis Road to 350 metres east of Lewis Road	Stoney Creek	Linear	Sanitary Sewer	450 mm	370	By 2031	$ 2,243,000
SCL24-S-23	Barton Street Sewer; 350 metres east of Fruitland Road	Stoney Creek	Linear	Sanitary Sewer	450 mm	74	By 2031	$ 448,000

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SCL25-S-23	Jones Street Sewer	Stoney Creek	Linear	Sanitary Sewer	450 mm	120	By 2031	$ 1,394,000
SCL26-S-25	Queenston Road Sewer - From CNSS; Between Kenora Avenue and Centennial Parkway	Stoney Creek	Linear	Sanitary Sewer	1500 mm	359	By 2051	$ 5,159,000
SCL27-S-25	Queenston Road Sewer – From CNSS; Between Nash Road and Kenora Avenue	Stoney Creek	Linear	Sanitary Sewer	750 mm	457	By 2051	$ 4,138,000
SCL28-S-25	Queenston Road Sewer – From CNSS; Between Woodman Drive and Nash Road	Stoney Creek	Linear	Sanitary Sewer	600 mm	446	By 2051	$ 3,459,000
SCL29-S-25	Greenford Drive Sewer – From CNSS; Between Dover Drive and Queenston Road	Stoney Creek	Linear	Sanitary Sewer	1200 mm	421	By 2051	$ 4,731,000
SCL30-S-25	Cromwell Street Sewer – From CNSS; Between Cromwell Court to Greenford Drive	Stoney Creek	Linear	Sanitary Sewer	675 mm	418	By 2051	$ 3,214,000
SCL31-S-25	Dover Street Sewer – From CNSS; Between East of Teresa St and Greenford Drive	Stoney Creek	Linear	Sanitary Sewer	675 mm	237	By 2051	$ 1,573,000
SCL32-S-25	Teresa Street Sewer – From CNSS; Between Meta Street and Dover Drive	Stoney Creek	Linear	Sanitary Sewer	600 mm	221	By 2051	$ 1,273,000
SCL33-S-25	Greenford Drive Sewer – From CNSS; Between Owen Place and Dover Drive	Stoney Creek	Linear	Sanitary Sewer	825 mm	451	By 2051	$ 4,181,000
SCL34-S-25	Owen Place Sewer – From CNSS; North of King Street	Stoney Creek	Linear	Sanitary Sewer	750 mm	80	By 2051	$ 728,000
SCL35-S-25	Owen Place Sewer – From CNSS; Between King Street and Owen Place	Stoney Creek	Linear	Sanitary Sewer	600 mm	164	By 2051	$ 1,097,000
CW1-S-23	Flow Monitoring - Total cost over a period of 5-10 years. Study being undertaken to know various flow characteristics to calibrate the Sanitary Sewer Model to assist the Future Master Planning Study	City Wide	N/A	Study	N/A	N/A	By 2041	$ 3,911,000
CW2-S-23	I/I Reduction Program - Program to free up extra capacity within the existing sewers - costs over five years	City Wide	Linear	N/A	N/A	N/A	By 2031	$ 2,356,000
CW5-S-23	Land requirement for new sewage pumping stations and easements - Areas for SPS footprints and easements- 5 Hectares	City Wide	N/A	N/A	N/A	N/A	By 2031	$ 915,000
CW6-S-23	Intensification Infrastructure Upgrades - Wastewater (0-5 years) - Upgrades to existing infrastructure to accommodate intensification	City Wide	N/A	N/A	N/A	N/A	By 2031	$ 22,456,000
CW7-S-23	Intensification Infrastructure Upgrades - Wastewater - Upgrades to existing infrastructure to accommodate intensification	City Wide	N/A	N/A	N/A	N/A	By 2041	$ 22,456,000
CW15-S-23	Hwy 403 Trunk sewer twinning - Phase 1 - MIP to Main-King	City Wide	Linear	Sanitary	900 mm	930	By 2031	$ 16,110,000
CW16-S-23	Hwy 403 Trunk sewer twinning - Phase 2 - Royal CSO to MIP	City Wide	Linear	Sanitary	900 mm	1,620	By 2041	$ 12,578,000
CW19-S-23	Regional Subdivider's Share for Local Improvements - Royal CSO to MIP	City Wide	Linear	Sanitary	N/A	N/A	By 2031	$ 384,000
CW23-S-23	LRT Related - LRT Related WW Capital Projects	City Wide	Linear	Sanitary	N/A	N/A	By 2041	$ 5,639,000
CW24-S-25	Western Sanitary Interceptor (WSI) Twinning	City Wide	Linear	Combined Sewer	3600 mm	8,855	By 2051	$ 444,311,000
CW25-S-25	Sewer Separation Program - Related Studies	City Wide	N/A	Study	N/A	N/A	By 2031	$ 6,159,000
CW26-S-25	Sewer Separation Program -Short Term (By 2031)	City Wide	N/A	Study	N/A	N/A	By 2031	$ 170,911,000
CW27-S-25	Sewer Separation Program -Medium Term (By 2041)	City Wide	N/A	Study	N/A	N/A	By 2041	$ 249,929,000
CW28-S-25	Sewer Separation Program -Long Term (By 2051)	City Wide	N/A	Study	N/A	N/A	By 2051	$ 768,424,000
							Total Wastewater Program	**$2,137,797,000**

9.3 Capital Program Implementation

The preferred wastewater servicing strategy will support the servicing needs for future growth to 2051. This strategy will be implemented in accordance with each project's Class EA schedule. The Interim Master Servicing Strategy (IMSS) was prepared as a broad level assessment and recognizes that further detailed assessment will be required through separate studies to satisfy project specific fulfillment of the MEA Class EA requirements for Schedule B and C projects identified within this study.

During the next steps of the implementation program, primarily during Class EAs and / or detailed design of the projects, the following requirements should be considered:

- Refinement of infrastructure locations and alignments
- Review and confirmation of potential property requirements
- Identification of preferred construction methodologies
- Completion of additional supporting investigations as required (e.g., source water protection, climate change impacts, geotechnical, hydrogeological, etc.)
- Review and mitigation of potential construction related impacts
- Fulfillment of all provincial, municipal and conservation authority approval requirements

With respect to planning and budgeting, this program will be utilized as a high-level baseline estimate for the City's capital budget. These costs will be further developed and refined during the implementation phase as detailed information becomes available.

The anticipated timing of each project within the preferred strategy has been established based on the projected population and employment growth within the City's wastewater system. While this study provides a sound planning basis to inform system-level decisions, future site-specific implementation should continue to be informed by more detailed studies as required.