

Water and Wastewater Master Servicing Plan – Development Charges Update
2025 Amendment

Volume II – Plan and Policy

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Key Acronyms and Definitions

EA (Environmental Assessment)

An Environmental Assessment, or in the context of this document the MEA Municipal Class EA, is an approved planning process for municipal infrastructure that can be used to meet the requirements of the EAA. The Municipal Class EA process was revised and updated in 1993, 2000, 2007, 2011, 2015, and 2021.

EAA (Environmental Assessment Act)

Environmental Assessment Act is a planning and design process that proponents must follow to examine and document the environmental effects that could result from major projects or activities.

LOSB (Lands Outside Service Boundary)

Lands which do not fall under the City's responsibility for water, wastewater, and stormwater servicing.

MCR (Municipal Comprehensive Review)

Municipal Comprehensive Review is a process undergone by municipalities within Ontario to ensure that their official plans conform to policies within A Place to Grow: Growth plan for the Greater Golden Horseshoe. The MCR will complete background review, public consultation, and development of policies necessary for input into a new or amended official plan.

MEA (Municipal Engineers Association)

Municipal Engineers Association is an association of Ontario public sector Professional Engineers performing various roles within the field of municipal engineering.

MSP (Master Servicing Plan)

The Master Servicing Plan is a comprehensive document that provides a review, evaluation, and development of water, wastewater, and stormwater servicing strategies to support existing needs and projected growth forecasts to 2051.

VSA (Vulnerable Scoring Area)

Vulnerable Scoring Area, as it relates to source water protection plans, is the area surrounding surface water intakes and municipal wells.

WTP (Water Treatment Plant)

Water Treatment Plant is a facility which contains a treatment process to clean water, passing through many steps to meet water quality requirements, before it enters the water distribution system.

Wastewater Treatment Plant (WWTP)

Wastewater Treatment Plant is a facility which contains a treatment process to clean wastewater, passing through many steps to meet treatment requirements, before it is discharged into the Grand River.

1. Introduction and Background

1.1. City of Brantford Context

The City of Brantford is located in southwest Ontario along the banks of the Grand River and is within proximity of the City of Hamilton and the County of Brant. The City of Brantford is a single tier municipality, which owns and is responsible for the planning, construction, and management of the municipal water, wastewater, and stormwater infrastructure.

The City owns and operates its water system, which includes water treatment, storage facilities, pumping stations, and trunk and distribution watermains. The City's water is supplied by a single surface water treatment plant (WTP) that draws water from the Grand River and distributes treated water to its residents, businesses, and other water users.

The City owns and operates its wastewater system, which includes wastewater treatment, pumping stations, and collection and trunk sewers. The City's wastewater is collected and conveyed to a single wastewater treatment plant (WWTP) that treats the City's wastewater before discharging into the Grand River.

The City owns, maintains, and operates the majority of the stormwater collection and management infrastructure, which includes catch basins, storm sewers, ditches, culverts, stormwater management facilities, and other stormwater infrastructure. The entirety of the City is located within the Grand River watershed. The majority of the City's existing stormwater sewers and managed ditches drain directly to the Grand River or the following Grand River tributaries: Phelps Creek, Mohawk Lake and D'Aubigny Creek; however, a significant portion of the City's northeast discharges to local creeks along the City's north and east before discharging into Fairchild Creek.

Readily available and accessible public infrastructure is essential to the viability of existing and growing communities. Infrastructure planning, land use planning, and infrastructure investment require close integration to ensure efficient, safe, and economically achievable solutions to provide the required water, wastewater, and stormwater infrastructure.

To balance the needs of growth with the protection and preservation of natural, environmental, and heritage resources, the City of Brantford completed the 2021 Master Servicing Plan Update – 2051 Amendment (2021 MSP Update) for water, wastewater, and stormwater services under the Municipal Engineers Association (MEA) Master Plan Class Environmental Assessment process. This update amended the 2020 MSP to extend the planning horizon to 2051 and was completed in 2021. Since then, comprehensive block plans have identified higher densities than originally assumed, creating a need to reassess servicing capacities. The 2025 MSP Amendment builds upon the 2020 and 2021 plans by incorporating updated growth forecasts, revised density targets, and provincial policy changes. It evaluates the impacts of increased density and additional growth through sensitivity analysis, updates hydraulic modeling, and identifies

associated capital programs and cost implications to inform the City's Development Charges By-law and long-term infrastructure planning.

1.2. Municipal Comprehensive Review

The City of Brantford started its Official Plan Review in 2013. Between 2013 and 2016, completed work included the hosting of visioning sessions, the preparation of technical background papers and the creation of a new Draft Official Plan (Version 1, issued in July 2016). The Official Plan Review was put on hold while the Municipal Boundary Adjustment Agreement, between the City of Brantford and the County of Brant, was finalized and approved by the Province, and pending updates to the Growth Plan for the Greater Golden Horseshoe to which the new Official Plan must conform.

In 2016, the municipal boundary, between the City of Brantford and the County of Brant, was adjusted to secure additional lands for the City's future growth, effective January 1, 2017. These lands are referred to as the Boundary Adjustment Lands.

The municipal boundary adjustment brought new lands into Brantford's municipal boundary; however, this did not automatically include the lands in the City's urban area boundary, also referred to as a Settlement Area boundary. To expand the City's Settlement Area boundary, the Province requires municipalities to conduct a Municipal Comprehensive Review (MCR) as input into their new or amended Official Plan. The MCR is necessary as it determines the extent to which the Settlement Area boundary is to be expanded. Following the completion of the MCR, the new or amended Official Plan can designate urban land uses within the expanded Settlement Area boundary.

The City undertook the MCR and revisions to the 2016 Draft Official Plan to include the Boundary Adjustment Lands. The City of Brantford established an eight-stage study process to complete the Municipal Comprehensive Review and finalize the new Official Plan – entitled **Envisioning Our City**, and a new draft Official Plan was released to the public for review and comment in June 2020. To assist the City in completing a new Official Plan, the City retained a team of consultants led by SGL Planning & Design Inc., and includes The Planning Partnership, Cushman Wakefield, Hemson Consulting, AgPlan Limited, ASI (Archaeological Services Inc.), Ecosystem Recovery Inc., GM BluePlan Engineering, Plan B Natural Heritage, and Dillon Consulting.

The new Official Plan was adopted by City Council in March 2021, approved by the Ministry of Municipal Affairs in August 2021, coming into effect August 5, 2021. The Official Plan has since been amended from time to time, and the current office consolidation is dated August 2025.

GM BluePlan Engineering was retained to support the MCR Study with respect to the determination of the appropriate water, wastewater, and stormwater servicing plan for the lands to be included within the Settlement Area boundary in the North Brantford and Tutela Heights Boundary Adjustment Lands.

1.3. Master Servicing Plan

In support of the Official Plan Review, and to ensure that infrastructure servicing recommendations to support the new urban land uses are made in a cohesive and integrated manner with the City's long-term servicing needs of the existing system, the City undertook an update to its MSP. In 2021, the MSP was amended to extend the planning horizon to 2051. This update incorporated minimal additional growth beyond 2041 and refined servicing assumptions based on updated population and employment forecasts.

The 2021 MSP Update – 2051 Amendment provided a review, evaluation, and development of water, wastewater, and stormwater servicing strategies to support existing needs and projected growth forecasts based to 2051; including the servicing of new urban land uses within the City's new Official Plan, adopted by Council in March 2021 and came into effect August 5, 2021.

The 2021 MSP Update was completed concurrently with the City's new Official Plan and the Transportation Master Plan Update to enable, where advantageous, alignment of recommended work or capital projects, minimizing potential impacts and disruptions to the public. Following the completion of the 2021 MSP Update to the 2041 growth horizon, updated growth numbers were provided by the Province's Growth Plan to the 2051 growth horizon.

The 2021 MSP Update – 2051 Amendment was a critical component of the City's planning for growth and will provide the framework and vision for the management, expansion and funding of the water, wastewater, and stormwater systems for the entire City to 2051 and beyond.

The 2025 MSP Amendment builds upon these previous MSPs, subsequent monitoring and data collection, studies since 2021, hydraulic modelling calibrations based on system update, and additional evaluations. It considers the impacts of increased density and potential additional growth through the assessment of alternate density targets. The amendment also identifies the associated capital program and cost implications to inform updates to the City's Development Charges By-law.

1.4. Master Servicing Plan Objectives

The MSP Update for water, wastewater and stormwater services comprehensively documents the development, evaluation, and selection of the preferred water, wastewater, and stormwater servicing strategies to meet the servicing needs of existing and future development to 2051 and beyond.

The 2021 MSP Update evaluated the ability of existing and planned water, wastewater, and stormwater infrastructure in the City of Brantford to efficiently and effectively service the City's existing and anticipated growth, including servicing of the new urban land uses within the City's new Settlement Area boundary in accordance with the draft Official Plan, and to evaluate and develop recommended servicing strategies.

The 2025 MSP Amendment builds upon the 2020 and 2021 updates by incorporating revised density targets, updated growth forecasts, and provincial policy changes. It evaluates alternate

growth scenarios and selects the High Growth Scenario as the preferred planning basis to ensure resiliency and adaptability. The amendment updates hydraulic modeling, confirms servicing capacity for intensification and greenfield development, and identifies associated capital programs and cost implications to inform the City's Development Charges By-law and long-term financial planning.

The key objectives of the 2025 MSP Amendment are as follows:

- Review and confirm servicing capacity under revised growth scenarios, selecting the High Growth Scenario as the preferred planning basis;
- Update and refine water and wastewater servicing strategies to reflect higher density targets and provincial policy direction.
- Consider and incorporate proposed water, wastewater, and stormwater infrastructure needs to support the full buildout lands within the new municipal boundary beyond 2051;
- Maintain level of service objectives while optimizing infrastructure and minimizing under-sizing risks;
- Complete the MSP in accordance with the MEA Class EA process (further described in **Volume II**);
- Address key servicing considerations as part of the development and evaluation of servicing strategies including:
    - Level of service to existing users and approved growth
    - Operational flexibility and security of supply
    - Mitigation of impacts to natural, social, and economic environments
    - Opportunity to meet policy, policy statements, regulations and technical criteria
    - Opportunity to optimize existing infrastructure and servicing strategies
    - Ensuring the strategies are cost effective
- Consider and develop sustainable servicing solutions;
- Utilize updated industry trends and more detailed information from relevant City studies and projects to provide better capital cost estimates;
- Identify and prioritize capital projects with updated Class 4 cost estimates and escalation factors to ensure financial accuracy;
- Utilize recently completed and on-going projects to update infrastructure status, capacity and cost estimates;
- Provide a framework for implementation and integration with other master plans, including the Transportation Master Plan;
- Incorporate updated hydraulic modelling and system calibrations based on recent monitoring and data collection; Align the capital program with the upcoming Development Charges Background Study (2026) and the City's 10-year capital forecast; and

- Continue to support sustainable servicing solutions and resiliency in response to climate growth pressures.

1.5. Master Servicing Plan Documentation Layout

The 2025 MSP Amendment, including all supporting volumes, is the documentation placed on public record for the prescribed review period. This documentation, in its entirety, describes all required phases of the planning process and incorporates the procedure considered essential for compliance with the **Environmental Assessment Act** and fulfill the municipal master servicing plan requirement.

The 2025 MSP Amendment is organized into six volumes as described below.

Volume I – Executive Summary

Volume I provides a brief overview of the 2025 MSP Amendment. It summarizes the information contained in **Volume II**, **III**, **IV**, **V** and **VI**, including problem statement, purpose of the study, significant planning, environmental and technical considerations, description of the analysis performed and final solution and recommendations.

Volume II – Plan & Policy

Volume II details the master planning process; including the Master Plan Class EA process, related studies, legislative, and policy planning context, water, wastewater, and stormwater servicing principles and policies, population and employment growth forecasts, existing environmental and servicing conditions, evaluation methodology, and future considerations.

The appendices in this volume contain relevant baseline and planning information including:

Appendix A – Traffic Zone Population and Employment Projections

Appendix B – Principles, Policies, and Level of Service

Appendix C – Unit Rates

Volume III – Water Master Plan

Volume III consists of the principal document summarizing the study objectives, approach, methodologies, technical analyses, evaluation and selection of the preferred water servicing strategy. This volume outlines the water policies, design criteria and level of service needed to be achieved by the water network. In addition, **Volume III** identifies the existing water network and describes the hydraulic modelling tool used for the analysis. Further **Volume III** outlines the detailed evaluation and decision-making process as well as the preferred servicing strategy and associated capital program and implementation plan.

A significant amount of technical background information has been compiled, which is critical to the development of the Water Master Servicing Plan. This information is included as appendices in **Volume III**. The technical appendices contain relevant project, implementation, and technical analysis information including:

- Appendix A – Water System Schematic

- Appendix B – Traffic Zone Demand
- Appendix C – Expansion Lands Concepts
- Appendix D – Water Treatment Plant Concepts
- Appendix E – Evaluation Tables
- Appendix F – Capital Program Project Sheets
- Appendix G – Treatment Capacity Technical Memorandum

Volume IV – Wastewater Master Plan

Volume IV consists of the principal document summarizing the study objectives, approach, methodologies, technical analyses, evaluation and selection of the preferred wastewater servicing strategy. This volume outlines the wastewater policies, design criteria and level of service needed to be achieved by the wastewater network. In addition, **Volume IV** identifies the existing wastewater network and describes the hydraulic modelling tool used for the analysis. Further in **Volume IV** is the detailed evaluation and decision-making as well as the preferred servicing strategy and associated capital program and implementation plan.

A significant amount of technical background information has been compiled, which is critical to the development of the Wastewater Master Servicing Plan. This information is included as appendices in **Volume IV**.

The technical appendices contain relevant project, implementation, and technical analysis information including:

- Appendix A – Wastewater System Schematic
- Appendix B – Traffic Zone Flows
- Appendix C – Expansion Lands Concepts
- Appendix D – Wastewater Treatment Plant Concepts
- Appendix E – Evaluation Tables
- Appendix F – Capital Program Project Sheets

Volume V and Volume VI were part of the 2020 MSP. The 2025 MSP Amendment did not complete any Stormwater updates or additional Public Consultation; therefore these volumes are not part of this 2025 Amendment Document package. The content of the Volumes as they appeared in the 2020 MSP is outlined below.

Volume V – Stormwater Master Plan

Volume V consists of the principal document summarizing the study objectives, approach, methodologies, technical analyses, evaluation and selection of the preferred stormwater servicing strategy. This volume outlines the stormwater policies, design criteria and level of service needed to be achieved by the stormwater network. In addition, Volume V identifies the existing stormwater network and describes the hydraulic modelling tool used for the analysis. Further, **Volume V** outlines the detailed evaluation and decision-making as well as the preferred servicing strategy and associated capital program and implementation plan. The Stormwater

Master Plan will be updated during the 2030 MSP update. Therefore, this volume was not updated as part of the 2025 MSP Amendment.

A significant amount of technical background information has been compiled, which is critical to the development of the Stormwater Master Servicing Plan. This information is included as appendices in **Volume V**. The technical appendices contain relevant project, implementation, and technical analysis information including:

- Appendix A – Key Existing Stormwater Infrastructure Facility Details
- Appendix B – Expansion Lands Subwatershed Study
- Appendix C – Evaluation Tables
- Appendix D – Implementation Plan Detailed Study Overview Sheets
- Appendix E – Capital Program Project Sheets

Volume VI – Public and Agency Consultation

No additional consultation activities were undertaken for the 2025 Amendment; refer to Volume VI of the 2021 MSP Update for consultation documentation.

2. Master Planning Process

A Master Plan is typically subject to approval by the municipality but does not normally require approval under the Environmental Assessment Act (EAA); however, any specific project within a Master Plan must fulfill the Class Environmental Assessment (EA) requirements. At a minimum, Master Plans address Phases 1 and 2 of the Class EA process. This Master Servicing Plan Amendment represents an update within the framework of the approved Master Plan and does not constitute a new undertaking under the Environmental Assessment Act. The amendment builds upon the existing Class EA process completed for the Master Plan and does not, in itself, trigger a new or separate Class Environmental Assessment.

This section describes the class environmental assessment process and the specific requirements for the preparation of Master Plans.

2.1. Class Environmental Assessment Process

Ontario's EAA was passed in 1975 and was proclaimed in 1976. The EAA requires proponents to examine and document the environmental effects that could result from major projects or activities and their alternatives. Municipal undertakings became subject to the EAA in 1981.

The EAA's comprehensive definition of the environment is:

- Air, land or water;
- Plant and animal life, including human life;
- The social, economic and cultural conditions that influence the life of humans or a community;
- Any building, structure, machine or other device or thing made by humans;
- Any solid, liquid, gas, odour, heat, sound, vibration, or radiation resulting directly or indirectly from human activities; and,
- Any part of a combination of the foregoing and the interrelationships between any two or more of them, in or of Ontario.

The purpose of the EAA is the betterment of the people of the whole or any part of Ontario by providing for the protection, conservation and wise management of the environment in Ontario (RSO1990, c.18, s.2). It is the objective of EAA proponents to ensure that decisions result from a rational, objective, transparent, replicable, and impartial planning process.

As set out in Section 6.1(2) of the EAA, an EA document must include the following:

- A description of the purpose of the undertaking;
- A description of and a statement of the rationale for,
    - The undertaking;
    - The alternative methods of carrying out the undertaking; and,
    - Alternatives to the undertaking.

The EA document must also include a description of:

- The environment that will be affected or that might reasonably be expected to be affected, directly or indirectly, by the undertaking or alternatives to the undertaking;
- The effects that will be caused or that might reasonably be expected to be caused to the environment by the undertaking or alternatives to the undertaking;
- The actions necessary or that may reasonably be expected to be necessary to prevent, change, mitigate or remedy the effects upon or the effects that might reasonably be expected upon the environment by the undertaking or alternatives to the undertaking;
- An evaluation of the advantages and disadvantages to the environment of the undertaking, the alternative methods of carrying out the undertaking and the alternatives to the undertaking (RSO1990, c.18, s.2); and,
- A description of any consultation about the undertaking by the proponent and the results of the consultation.

2.2. The Principles of Environmental Planning

The EAA sets a framework for a systematic, rational and replicable environmental planning process that is based on five key principles, as follows:

- Consultation with affected parties. Consultation with the public and government review agencies is an integral part of the planning process. Consultation allows the proponent to identify and address concerns cooperatively before final decisions are made. Consultation should begin as early as possible in the planning process.
- Consideration of a reasonable range of alternatives. Alternatives include functionally different solutions, “alternatives to” the proposed undertaking and “alternative methods” of implementing the preferred solution. The “Do Nothing” alternative must also be considered.
- Identification and consideration of the effects of each alternative on all aspects of the environment. This includes the natural, social, cultural, technical, and economic environments.
- Systematic evaluation of alternatives in terms of their advantages and disadvantages, to determine their net environmental effects. The evaluation shall increase in the level of detail as the study moves from the evaluation of “alternatives to” to the evaluation of “alternative methods”.
- Provision of clean and complete documentation of the planning process followed, to allow “traceability” of decision-making with respect to the project. The planning process must be documented in such a way that it may be repeated with similar results.

2.3. Class Environmental Assessment

"Class" Environmental Assessments (Class EAs) were approved by the Minister of the Environment in 1987 for municipal projects having predictable and mitigable impacts. The Municipal Class EA process was revised and updated in 1993, 2000, 2007, 2011, 2015, 2021, 2023 and 2024. The Class EA approach streamlines the planning and approvals process for municipal projects that are:

- Recurring;
- Similar in nature;
- Usually limited in scale;
- Predictable in the range of environmental impacts; and,
- Responsive to mitigation.

The Municipal Class Environmental Assessment, prepared by the Municipal Engineers Association (MEA), outlines the planning and procedures for municipal infrastructure projects, including roads water, wastewater, stormwater management and transit projects. The current version incorporates amendments approved in March 2023 and February 2024 to align with modernization of Ontario's Environmental Assessment Act, including a transition towards a project-list approach.

The process includes five phases:

- Phase 1: Identification of the Problem or Opportunity;
- Phase 2: Identification and Evaluation of Alternative Solutions to determine a Preferred Solution while taking input from the public and other stakeholders into consideration;
- Phase 3: Examination of Alternative Methods of implementation of the Preferred Solution based on the existing conditions and anticipated environmental effects, while taking input from the public and other stakeholders into consideration;
- Phase 4: Documentation of the Class EA process in the form of an Environmental Study Report (ESR) for public review; and,
- Phase 5: Implementation and Monitoring.

Municipal infrastructure projects subject to the Municipal Class EA are classified as Schedule B or Schedule C projects, depending on the scale of the project and the potential for environmental effects.

Typical projects that fall in this category are within existing road allowance, and utility corridors. **Schedule B** projects are projects with the potential for some adverse environmental effects. These projects are subject to a screening-type assessment and must complete Phases 1 and 2 of the Municipal Class EA process. Proponents are required to consult with the public, Indigenous communities and relevant review agencies. Upon completion of Phase 2 and resolution of issues, Schedule B projects may proceed directly to implementation, unless a request is made under Section 16 of the Environmental Assessment Act to require a higher level of assessment.

Schedule C projects are projects with the potential for significant environmental effects and are subject to the full Municipal Class EA process. These projects have the potential for greater environmental impacts. Schedule C projects must complete all five phases, including the evaluation of alternative design concepts (Phase 3) and the preparation and filing of an Environmental Study Report (ESR) for public review (Phase 4). Provided no significant impacts are identified and no Section 16 order is issued by the Minister, Schedule C projects are then approved and may proceed directly to implementation.

Figure 1 illustrates the Municipal Class EA planning and design process with the phases required for each schedule.

Schedule A and Schedule A+ activities are exempt from the Municipal Class EA process under current regulations. These activities generally include routine operational, maintenance, or low-risk works; however, proponents may still undertake notification and environmental best-practice measures, as appropriate.

Requests to elevate a Schedule B or Schedule C project to a comprehensive environmental assessment are addressed under Section 16 of the Environmental Assessment Act and are focused on potential adverse impacts to constitutionally protected Aboriginal or treaty rights, consistent with recent amendments to the Act.

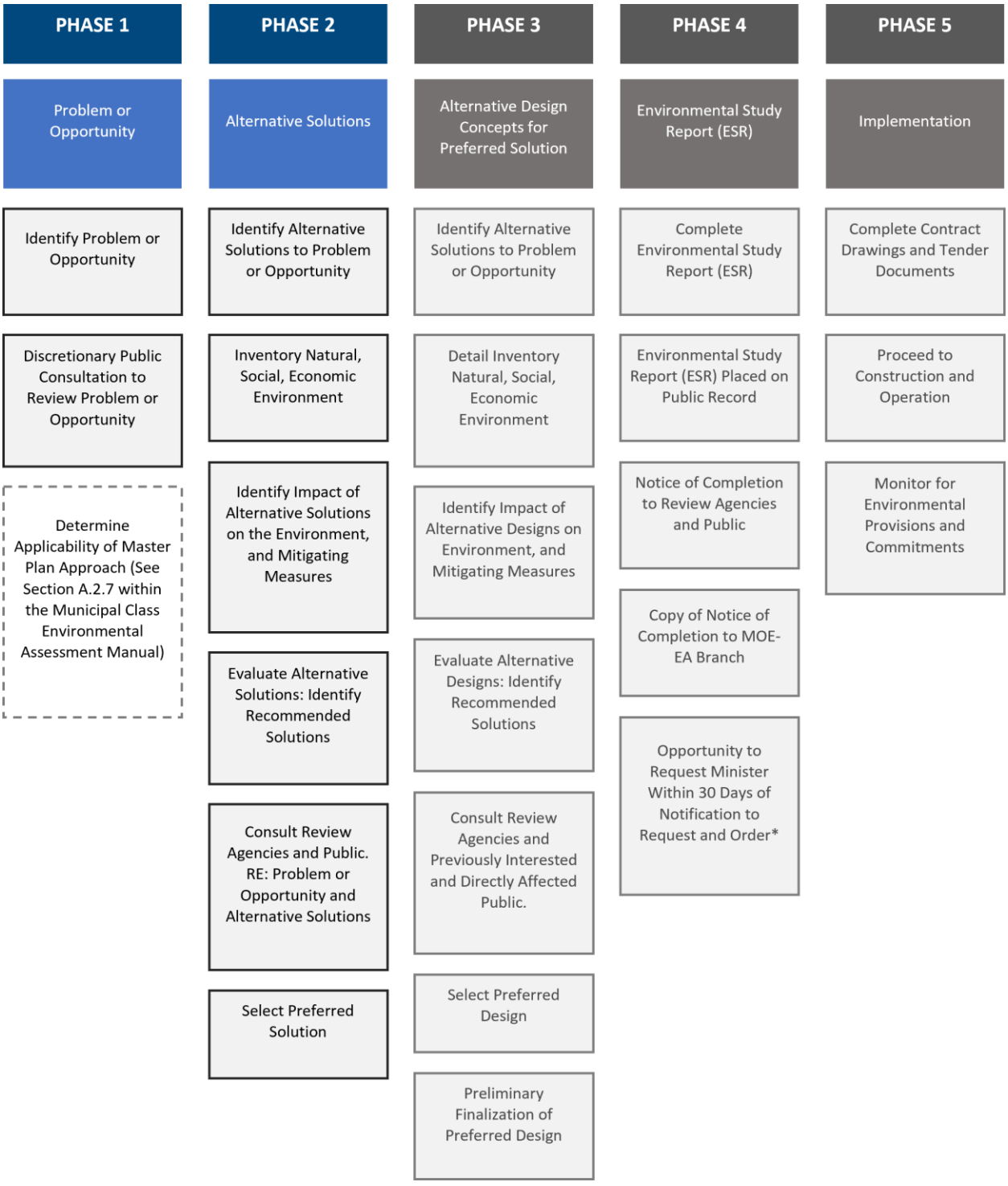


Figure 1: Municipal Class EA Planning and Design Process

2.4. Master Planning Process

Municipalities recognize the benefits of comprehensive, long-range planning exercises that examine problems and solutions for an overall system of municipal services. The Municipal Class EA for water and wastewater (including stormwater) projects recognizes the importance of master plans as the basis for sound environmental planning. The Class EA defines master plans as:

> "Long range plans which integrate infrastructure requirements for existing and future land use with environmental assessment planning principles. These plans examine an infrastructure system(s) or group of related projects in order to outline a framework for planning for subsequent projects and/or developments."

Master plans are distinguished from project-specific studies by their broader scope and systems-based focus. Key characteristics of master plans include:

- An emphasis on evaluating an overall infrastructure system or service area rather than individual projects;
- The identification of a range of potential projects distributed geographically across the study area;
- Recognition that implementation of individual projects may occur incrementally over an extended planning horizon.

In accordance with the Municipal Class EA, a Master Plan must at least satisfy the requirements of Phases 1 and 2 of the Class EA process and incorporate the five key principles of environmental planning. The Master Plan must document public, Indigenous communities and review agency consultation at each phase of the process and a reasonable range of alternative solutions must be identified and systematically evaluated.

The approach for the Master Plan is to confirm existing planned projects and where applicable, evaluate and develop any new components. This approach would also be scrutinized through a public and agency consultation process and be fully documented.

Where a Master Plan is completed at this planning level (Phases 1 and 2), individual projects identified through the plan are subsequently classified as Schedule B or Schedule C projects and are subject to further project-specific Class EA requirements prior to implementation.

In some cases, a Master Plan may also complete Phase 3 and Phase 4 of the Class EA process for specific projects, provided that sufficient detail is included to satisfy the applicable Class EA requirements. Projects addressed to this level of detail may proceed toward implementation, subject to resolution of issues and the absence of a Section 16 order under the Environmental Assessment Act.

This study provides an amendment to a Master Plan that was originally completed at a planning level consistent with completion of Phases 1 and 2 of the approved Municipal Class EA process. Individual projects identified through the Master Plan will be subject to further Class EA requirements, as applicable, prior to implementation.

2.5. Public Consultation

Public and agency consultation are integral to the Class EA planning process. The public consultation process is essential for informing and obtaining input from potentially interested and affected parties during the study process.

Objectives of Phase 1 of the MEA Municipal Class EA process with respect to public consultation are as follows:

- Present clear and concise information to stakeholders at key stages of the study process;
- Solicit community, regulatory, Indigenous and Municipal staff input;
- Meet Municipal Class EA consultation requirements;
- To fulfill the consultation requirements of the MEA Municipal Class EA document:
    - Build on past communication protocols and consultation plans from previous Class EA and municipal planning initiatives, to ensure consistency and continuity.
    - Meet public, Indigenous and agency notification and consultation requirements for Phases 1 and 2 of the MEA Municipal Class EA; and
    - Complete additional tasks to enhance the proposed consultation program and overall Class EA process.

These objectives were fulfilled as part of the 2021 MSP. Consultation throughout this amendment was limited to City staff.

This Master Servicing Plan Amendment represents an update within the framework of the approved Master Plan and does not constitute a new undertaking under the Environmental Assessment Act. The amendment builds upon the existing Class EA process completed for the Master Plan and does not, in itself, trigger a new or separate Class Environmental Assessment.

As part of the 2021 MSP project, a communication and consultation plan was developed. The main objective of the plan was to proactively engage the community, Indigenous communities, regulatory agencies, and City staff. More specifically, the plan was designed to:

- Ensure the general public, Municipal Councillors, stakeholders, Indigenous communities, external agencies (including federal and provincial) and special interest groups had an opportunity to participate in the study process;
- Ensure that factual information was provided to interested and affected stakeholders early and often throughout the study process; and
- Contact external agencies to obtain legislative or regulatory approvals, or to collect pertinent technical information.

The complete public and agency consultation process is documented in the 2021 MSP's **Volume VI – Public and Agency Consultation.**

3. Relevant Studies and Background Information

The following completed studies have been reviewed and considered throughout the master planning process and selection of preferred servicing strategies.

3.1. Transportation Master Plan

The Transportation Master Plan (TMP) Update was completed alongside the 2021 MSP Amendment as the outcomes and recommendations directly relate to the updated planning growth projections and new Official Plan. The TMP considered strategies for the existing and future transportation networks.

3.2. Official Plan Update

Following the completion of the updated planning growth projections, the City of Brantford adopted a new Official Plan entitled Envisioning Our City. The Official Plan was adopted by City Council in March 2021, approved by the Ministry of Municipal Affairs and Housing in August 2021, and has since been amended. The current office consolidation of the Official Plan is dated August 2025 (see **Section 1.2**).

Section 6.1 outlines the Provincial Policy Statement which outlines the growth projection increase and is the driver of this amendment.

4. Problem and Opportunity Statement

Through the Municipal Class EA process, Phase 1 requires the identification of a problem or opportunity statement that guides the development and evaluation of alternative strategies to address the deficiencies identified in the water, wastewater, and stormwater systems.

The 2021 MSP Update was initiated to:

- Review and integrate the servicing needs to support buildout of the new urban land within the 2017 Boundary Adjustment Lands;
- Review planning forecasts to 2051 and determine the impacts on servicing needs for the City's water, wastewater and stormwater infrastructure;
- Re-evaluate growth needs and water supply and wastewater treatment capacities;
- Review approach and ability to support responsible development and coordinate integrated solutions with growth areas;
- Plan for Buildout that includes flexibility in servicing strategy and understanding of servicing impacts and costs; and,
- Update the long-term financial planning that includes a capital forecast to service existing and support growth and can be used as basis for development charges and rate updates.

The 2025 MSP Amendment builds upon the 2020 and 2021 updates to address new challenges and opportunities arising from higher density targets, revised growth forecasts, and provincial policy changes. It was initiated to:

- Update water and wastewater servicing strategies to reflect intensification and compact development policies;
- Assess and confirm servicing capacity under revised growth scenarios, selecting the High Growth Scenario as the preferred planning basis;
- Incorporate updated hydraulic modelling and system calibrations based on recent monitoring and data;
- Identify and prioritize capital projects with updated Class 4 cost estimates and escalation factors;
- Align the capital program with the upcoming Development Charges Background Study (2026) and the City's 10-year capital forecast;
- Maintain level of service objectives while optimizing infrastructure and minimizing under-sizing risks; and
- Provide a framework for implantation and integration with other master plans.

4.1. 2025 MSP Amendment Vision and Problem and Opportunity Statement

Through the Municipal Class EA process, Phase 1 requires the identification of the problem and opportunity statement that guides the process of establishing preferred strategies to address the deficiencies observed in the water, wastewater, and stormwater systems, the last of which is excluded from this amendment. The following vision statement continues to guide the MSP

Amendment, where problems and opportunities are clearly identified through the desire to provide an adequate level of service to users and improve system performance under both current and future conditions.

The Problem and Opportunity Statement is as follows:

Supporting a Strong and Growing Brantford

"To establish a preferred servicing plan for the City's water, wastewater, and stormwater systems that, meets current needs, supports growth and expansion of the City's urban boundary, maintains or improves service levels, considers priority areas of climate change, infrastructure optimization and renewal, and system resiliency."

5. Study Area

The City of Brantford is located in southwestern Ontario, 40 km from the City of Hamilton and 120 km from the City of Toronto. The City is situated in the west portion of the Greater Golden Horseshoe, as shown in **Figure 2**.

The City of Brantford is strategically connected to Cambridge to the north and Simcoe to the south by Highway 24, and to Woodstock in the west and Hamilton to the east by Highway 403. The City is well situated with respect to the industrialized portions of Southern Ontario and the large agricultural industry.

The City of Brantford has a total area of 102.5 km^2, including the Boundary Adjustment Lands, with a population of 103,596 people and 36,993 jobs in 2021. The study area covers the water, wastewater, and stormwater systems within the limits of the City.

The water, wastewater, and stormwater study areas, including limits of existing infrastructure, are shown in **Figure 3**, **Figure 4**, and **Figure 5** respectively.

5.1. Tutela Heights Existing Water and Wastewater System

Existing residents within the Tutela Heights area are now integrated into the City of Brantford's existing water system. To support the anticipated intensification and growth in the area, it is proposed to upsize the existing watermains on Conklin Road, Mount Pleasant Road, and Tutela Heights Road, and to construct new distribution watermains on Davern Road and the planned Collector Road.

Existing residents within Tutela Heights are serviced by private on lot septic systems. New growth within the Tutela Heights area will need to be serviced by the municipal wastewater system via an extension of the City's existing wastewater system. The existing septic areas can continue to remain as such; however, the sizing of any existing wastewater infrastructure should consider the future servicing of these septic areas.



General Features

- Expressway / Highway
- Arterial and Collector Roads
- Local Roads
- Railway
- Six Nations of the Grand River Territory
- Current City Municipal Boundary
- 2016 Municipal Boundary
- Outside Municipalities
- Parks
- Waterbody and Watercourses

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

1 2 km

Figure 2
Study Area

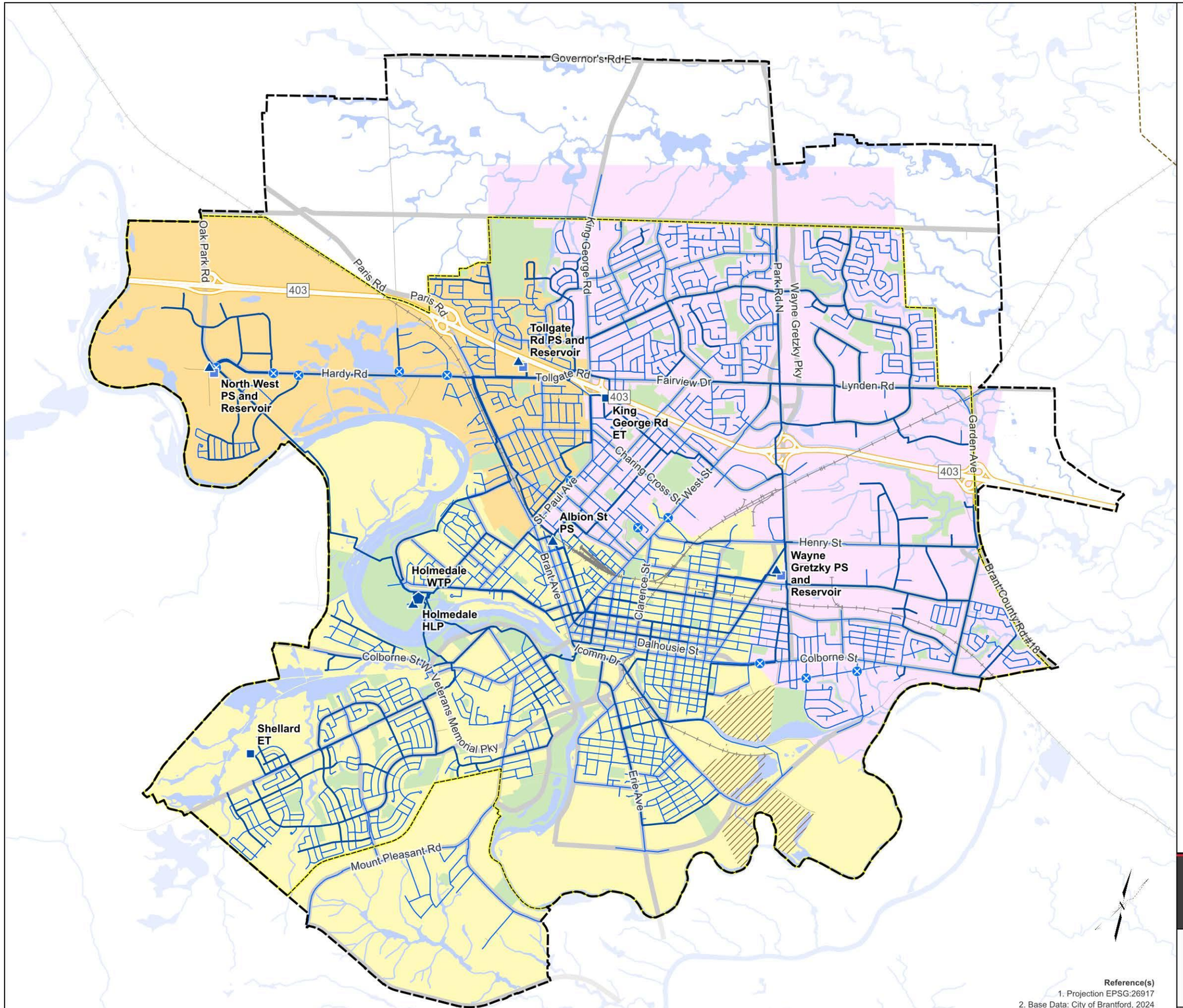
Project Name:
Water and Wastewater Master Servicing Plan – Development Charges Update 2025 Amendment

Client Name:
City of Brantford
(Ontario, Canada)

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Water Network

- Water Treatment Plant (WTP)
- Pumping Station (PS)
- Elevated Tank (ET) / Reservoir
- Pressure Reducing Valve (PRVs)
- Transmission Watermains (>250 mm)
- Watermains (≤250 mm)

Water Pressure Districts

- Pressure District 1
- Pressure District 2/3
- Pressure District 4

General Features

- Expressway / Highway
- Arterial and Collector Roads
- Local Roads
- Railway
- Six Nations of the Grand River Territory
- Current City Municipal Boundary
- 2016 Municipal Boundary
- Outside Municipalities
- Parks
- Waterbody and Watercourses

Figure 3
Existing Water System

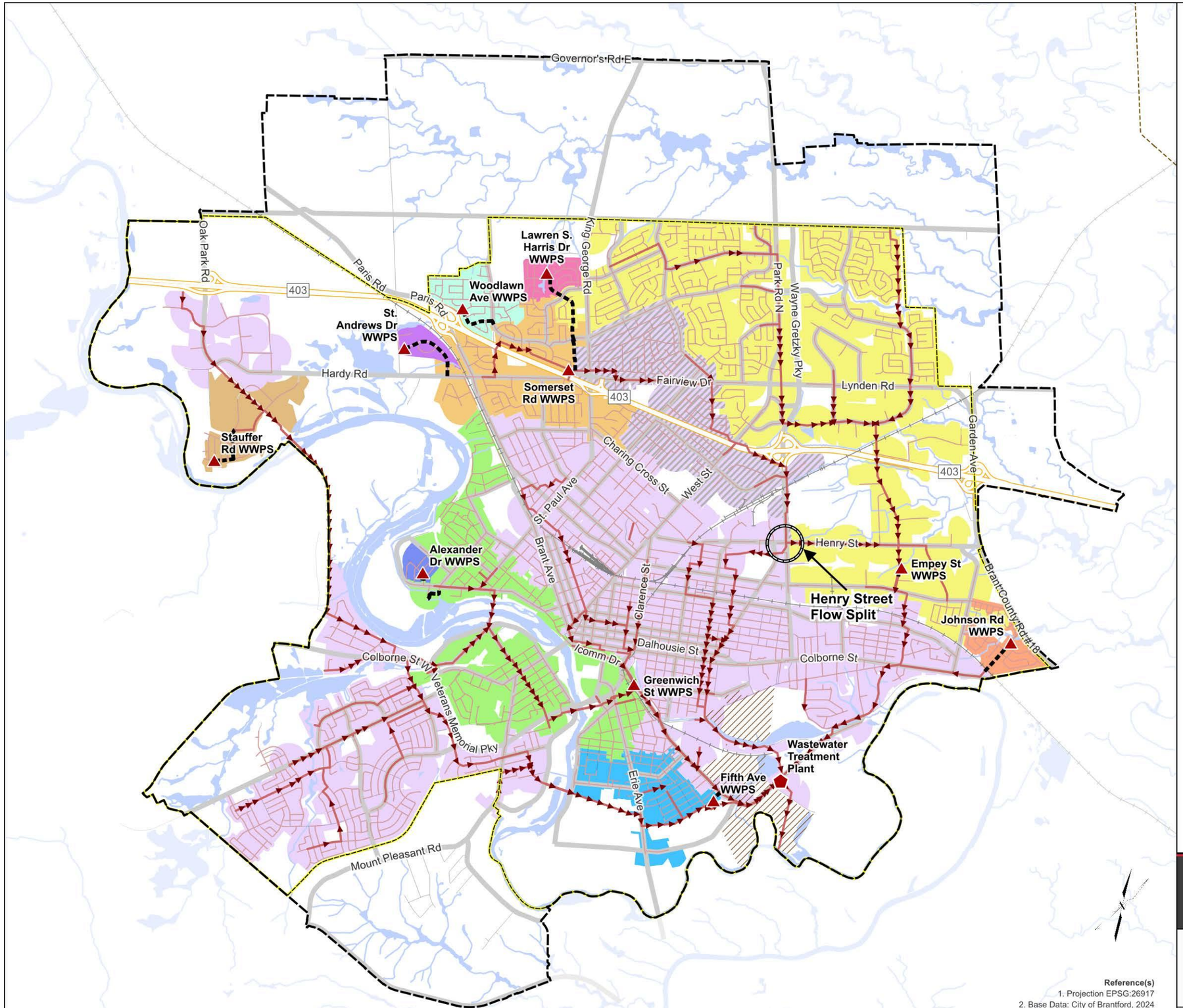
Project Name:
Water and Wastewater Master Servicing Plan – Development Charges Update 2025 Amendment

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Wastewater Network

- Wastewater Treatment Plant (WWTP)
- Wastewater Pumping Station (WWPS)
- Forcemains
- Trunk Mains (>300 mm)
- Gravity Mains (≤300 mm)

WWPS Catchment

- Alexander Dr WWPS
- Empey St WWPS
- Fifth Ave WWPS
- Greenwich St WWPS
- Johnson Rd WWPS
- Lawren S. Harris Dr WWPS
- Somerset Rd WWPS
- St.Andrew's Ave WWPS
- Woodlawn Rd WWPS
- Upstream of Henry Street Flow Split
- WWTP
- Stauffer Rd WWPS

General Features

- Expressway / Highway
- Arterial and Collector Roads
- Local Roads
- Railway
- Six Nations of the Grand River Territory
- Current City Municipal Boundary
- 2016 Municipal Boundary
- Outside Municipalities
- Waterbody and Watercourses

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

1 2 km

Figure 4
Existing Wastewater System

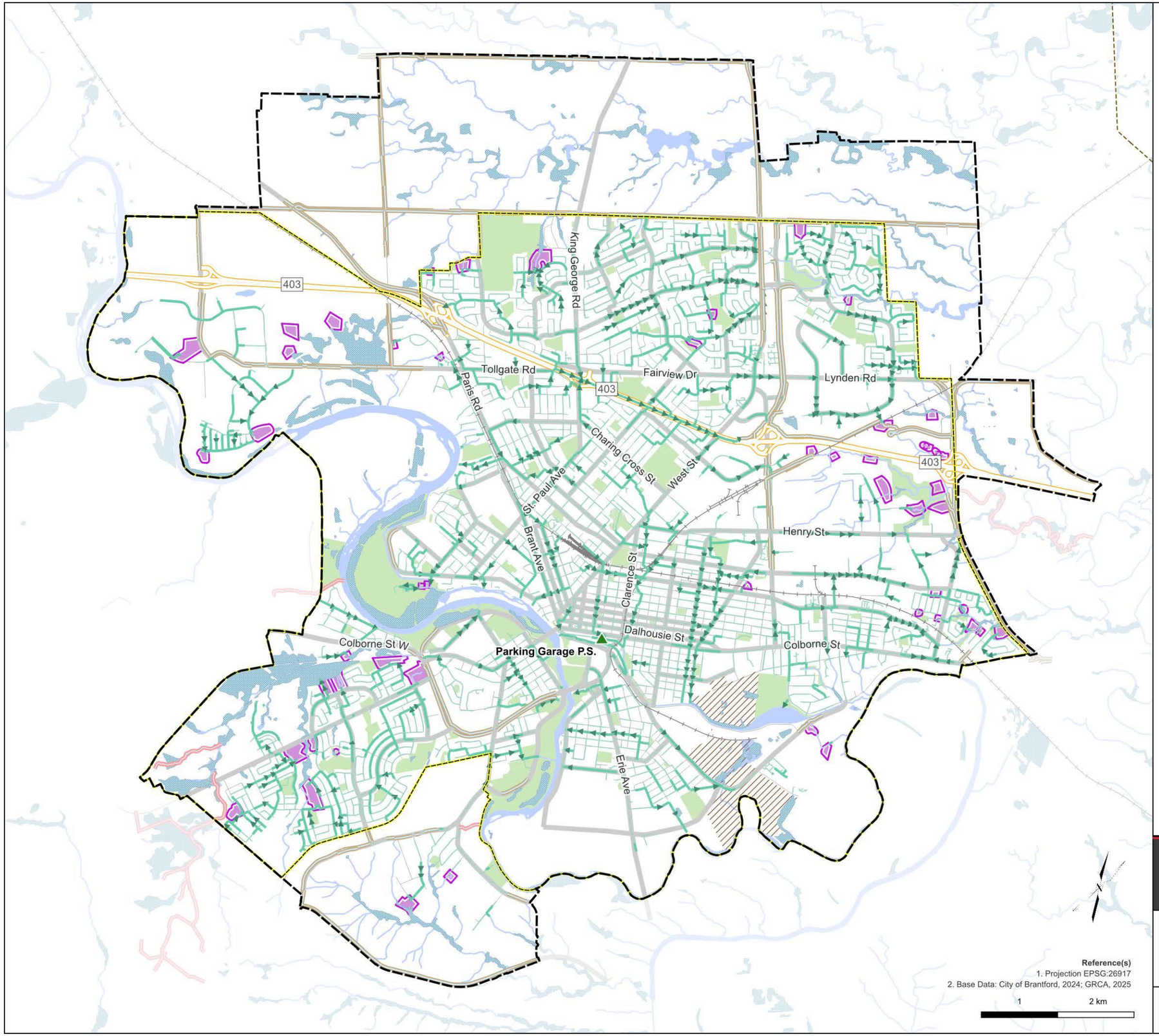
Project Name:
Water and Wastewater Master Servicing Plan – Development Charges Update 2025 Amendment

Client Name:
City of Brantford
(Ontario, Canada)

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Last Updated: June 2026
Document ID: 2404322-WW-001

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Stormwater Network

- Pumping Station
- Stormwater Pipes (>=450 mm)
- Stormwater Pipes (<450 mm)
- Ditches
- Municipal Drain
- Detention Ponds

General Features

- Expressway / Highway
- Arterial and Collector Roads
- Local Roads
- Railway
- Six Nations of the Grand River Territory
- Current City Municipal Boundary
- 2016 Municipal Boundary
- Outside Municipalities
- Wetlands (GRCA)
- Waterbody and Watercourses

Figure 5
Existing Stormwater System

Project Name:
Water and Wastewater Master Servicing Plan – Development Charges Update 2025 Amendment

Client Name:
City of Brantford
(Ontario, Canada)

GEI

Last Updated: June 2026
Document ID: 2404322-SW-001

Document Path: B:\Working\BRANTFORD ON, CITY OF\2404322 Master Servicing Plan - 2025 Development Charges Update\05_GIS\6_Final Report\2404322-SW-001.qgz

6. Planning Context

6.1. Provincial and Federal Legislation and Policy Context

6.1.1. Provincial Policy Statement

The Provincial Policy Statement sets the policy foundation for land use planning and development in Ontario. The Provincial Policy Statement provides guidance and support for appropriate land use planning and development while protecting resources of provincial interest, public health and safety, and the quality of the natural and built environment.

The Provincial Policy Statement applies to land use planning decisions made under the Planning Act by provincial ministers, municipal councils, local boards and planning boards, among other approval authorities. All municipal decisions affecting planning matters shall be consistent with the policies outlined in the Provincial Policy Statement.

The Provincial Policy Statement contains policies relevant to water, wastewater, and stormwater infrastructure planning included, but not limited to:

- Requirement that infrastructure be provided in a coordinated, efficient and cost-effective manner with considerations to climate change.
- Planning for infrastructure should be financially viable over their lifecycle and available to meet current and projected needs.
- Optimization of the use of existing infrastructure and public service facilities before developing new infrastructure.

More specifically, the Provincial Policy Statement recommends that water, wastewater, and stormwater services should:

- Direct and accommodate expected growth in a manner that promotes the efficient use and optimization of existing municipal water and wastewater services.
- Ensure that these systems are provided in a manner that:
    - Can be sustained by the water resources upon which such services rely;
    - Is feasible, financially viable and complies with all regulatory requirements; and
    - Protects human health and the natural environment.
- Promote water conservation and water-use efficiency.
- Integrate servicing and land use considerations at all stages of the planning process.

6.1.2. A Place to Grow

Ontario's A Place to Grow: Growth Plan for the Greater Golden Horseshoe (2006) provides a 25-year framework for implementing the Province's vision for managing growth. The plan was prepared under the Province's Place to Grow Act (2005) and has the following guiding principles:

- Build compact, vibrant and complete communities;
- Plan and manage growth to support a strong and competitive economy;

- Protect, conserve, enhance and wisely use the valuable natural resources of land, air and water for current and future generations;
- Optimize the use of existing and new infrastructure to support growth in a compact, efficient form;
- Provide for different approaches to managing growth that recognize the diversity of communities in the Greater Golden Horseshoe; and,
- Promote collaboration among all sectors – government, private and non-profit – and residents to achieve the vision.

The Growth Plan was updated in 2016 with a final release in 2017. The 2021 update extended the Growth Plan's vision, policies and population and employment forecasts to 2051 to help communities across the region better plan for growth and development in a sustainable way.

6.1.3. More Homes Built Faster Act (Bill 23) (2022)

On November 28, 2022, the *More Homes Built Faster Act* received Royal Assent. The aim of the Act is to advance the province's goal to increase housing supply in Ontario; the goal is to have 1.5 million new homes built over the next 10 years. It builds on the province's early More Homes, More Choice Plan and the More Homes for Everyone Plan, and sets of framework for growth by:

- Reducing the bureaucratic costs and red tape that are delaying construction and pushing home prices even higher;
- Promoting building up near transit and reforming zoning to create more "gentle density; and
- Protecting homebuyers and utilizing provincial lands to build more attainable homes.

The Act amends various statutes to achieve the goal of increasing housing supply in Ontario, including the following:

- Planning Act: The *Planning Act* and Provincial Planning Statement are described in Section 6.1.1 and 6.1.4. Key amendments to the *Planning Act* include changes to existing zoning by-laws, third party appeal processes to the Ontario Land Tribunal, site plan controls and parkland requirements.
- Growth Plan for the Greater Horseshoe and Related Land Use Plans: To accommodate the expected growth and support the building of more homes, the Growth Plan for the Greater Golden Horseshoe was amended in 202 to reflect changes in population and employment forecasts, the horizon for planning and other policies to increase housing supply, great jobs, attract business investments and better align with infrastructure, This plan was later repealed and amalgamated into the PPS (2024) to form a single land use policy document, under O. Reg. 328/24 and Bill 97, Helping Homebuyers, *Protecting Tenants Act* (2023).
- Conservation Authority Act: Regulatory and policy changes under the *Conservation Authorities Act* were made in 2022 to improve conservation authority governance, oversight, transparency, and accountability. The amendments do not remove the

mandate of Conservation Authorities over watershed management but change their roles with respect to approvals and appeal rights. Individual municipalities have regulatory responsibility under the *Planning Act,* and the Minister of Natural Resources now has the authority to determine permit applications in place of the Conservation Authorities.

6.1.4. Planning Reform Act

The Planning Act establishes the rules for land use planning in Ontario. It describes how land uses may be controlled in communities. Changes to the planning system were introduced in 2006 by the Planning and Conservation Land Statute Law Amendment Act. Key changes are as follows:

- Municipalities must now update their official plan every ten years or every five years after an update done through an amendment to the plan, followed by an update of the accompanying zoning by-law within three years after the new official plan is in effect;
- There are more opportunities for public input before local decisions are made;
- Municipalities have enhanced ability to plan for a range and mix of housing types and densities; and,
- Municipalities have additional ability to have the final say on whether designated employment lands can be changed to other uses.

6.1.5. Bill 13, Sustainable Water and Wastewater Systems Improvement and Maintenance Act, 2010

This Bill enacts the Sustainable Water and Wastewater Systems Improvement and Maintenance Act, 2010 and repeals the Sustainable Water and Sewage Systems Act, 2002. The Bill had its first reading on March 23rd, 2010. Key points of the Bill are as follows:

- Sets out the purposes of the Act, which include ensuring that public ownership of water services and wastewater services is maintained;
- Establishes the Ontario Water Board as an agent of the Crown and sets out the Board's objectives, powers and duties which relate to the regulation of water services and wastewater services;
- Sets out the responsibilities of municipalities or groups of municipalities that are designated as regulated entities by regulation; and,
- Regulated entities must prepare business plans for the provision of water services or wastewater services. The plan must contain, among other things, an assessment of the full cost of providing water services or wastewater services to the public and a description of how the regulated entity intends to pay this full cost.

6.1.6. Water Opportunities and Conservation Act

The Ontario Government passed the Water Opportunities and Conservation Act in 2010. The purposes of the Act are as follows:

- To foster innovative water, wastewater, and stormwater technologies, services and practices;
- To create opportunities for economic development and clean-technology jobs in Ontario; and,
- To conserve and sustain water resources for present and future generations.

To further the purposes of the Act, the Minister of the Environment, Conservation, and Parks may establish aspirational targets in respect of the conservation of water and other matters.

The Act requires certain municipalities, persons and entities to prepare, approve and submit to the Minister of the Environment, Conservation, and Parks municipal water sustainability plans for municipal water services, municipal wastewater services and municipal storm water services under their jurisdiction. The Minister may establish performance indicators and targets for these services. The Act also authorizes the making of regulations requiring public agencies to prepare water conservation plans, achieve water conservation targets, and consider technologies, services and practices that promote the efficient use of water and reduce negative impacts on Ontario's water resources.

6.1.7. Safe Drinking Water Act

The Safe Drinking Water Act was adopted in 2002. The Act provides for the protection of human health and the prevention of drinking water hazards through the control and regulation of drinking water systems and drinking water testing. Key features of the Act include the following:

- Legally binding standards for contaminants in drinking water;
- Requirement to use licensed laboratories for drinking water testing;
- Requirement to report any results that do not meet the standards to the Ministry of the Environment, Conservation, and Parks and the local Medical Officer of Health and to undertake corrective action;
- All operators of municipal drinking water systems must be trained and certified;
- Establishment of a licensing regime for drinking water systems; and,
- Inspections and enforcement to determine compliance with the Act.

6.1.8. Clean Water Act

The Clean Water Act was adopted in 2006 with the objective to protect existing and future sources of drinking water including rivers, lakes, and underground aquifers. The Act requires the following:

- That local communities assess existing and potential threats to their water, and that they set out and implement the actions needed to reduce or eliminate these threats;
- Empowers communities to take action to prevent threats from becoming significant;
- Public participation on every local source protection plan – the planning process for source protection is open to anyone in the community; and,
- That all plans and actions be based on sound science.

6.1.8.1. Source Water Protection

- Under the Clean Water Act, O. Reg. 287/07, on-site sewage systems and sewage works may be considered a threat to drinking water. These activities may be deemed significant under certain conditions. The applicable source protection plan policies have been considered throughout this Master Servicing Plan Update.
- Source Water Protection (SWP) Plans were prepared for the 19 watershed-based Source Protection Regions (SPR) across Ontario to protect existing and future sources and to identify areas of significant drinking water threats. The City of Brantford falls within the Lake Erie Source Protection Area.

The Source Water Protection Plans identify vulnerable areas that have been delineated under the Clean Water Act including Wellhead Protection Areas (WHPA), Intake Protection Zones (IPZ), Highly Vulnerable Aquifers (HVA), Significant Groundwater Recharge Areas (SGRA), and Vulnerable Scoring Areas for Groundwater and Surface Water (VSA) as well as water quantity vulnerable areas. According to the Source Protection Plan;

- WHPAs are areas on the land around a municipal well, the size of which is determined by how quickly water travels underground to the well, measured in years.
- IPZs are the areas on the water and land surrounding a municipal surface water intake.
- SGRAs are areas characterized by porous soils that allow the water to seep easily into the ground and flow to an aquifer.
- HVAs are aquifers that can be easily changed or affected by contamination from both human activities and natural processes as a result of (a) its intrinsic susceptibility, as a function of the thickness and permeability of overlaying layers, or (b) by preferential pathways to the aquifer.

As the City of Branford's water supply is from the Grand River, it is located within an IPZ.

6.1.9. CCME Strategic Vision for Water

In 2009, the Canadian Council of Ministers of the Environment (CCME) provided a framework for future actions and activities related to water through the development of a vision and action plan, such that Canadians have access to clean, safe and sufficient water to meet their needs in ways that also maintain the integrity of ecosystems. The goals and rationale developed as part of the vision includes the following:

Goal 1: Aquatic ecosystems are protected on a sustainable watershed basis.

- Rationale: Enhance understanding and application of Integrated Water Resource Management to improve ecosystem health.

Goal 2: The conservation and wise use of water is promoted.

- Rationale: Improve understanding of the full value of water to achieve behavioral change.

Goal 3: Water quality and water quantity management is improved, benefitting human and ecosystem health.

- Rationale: Promote nationally consistent approaches to water quality and quantity monitoring, guidelines and multi-jurisdictional public reporting. Encourage research and networks to enhance knowledge and understanding of ground and surface waters.

Goal 4: Climate change impacts are reduced through adaptive strategies.

- Rationale: Enhance water quality and quantity monitoring networks to support water and adaptation needs.

Goal 5: Knowledge about Canada's water is developed and shared.

- Rationale: Help to spearhead value added information on water quality and quantity by supporting jurisdictional reporting efforts to Canadians in a systematic and consistent fashion.

6.1.10. Canada-wide Strategy for the Management of Municipal Wastewater Effluent

This 2009 Strategy was developed by the CCME and it requires that all facilities achieve minimum National Performance Standards and develop and manage site-specific Effluent Discharge Objectives. The Strategy requires that overflow frequencies for sanitary sewers not increase due to development or redevelopment. The same applies for combined sewers, unless occurring as part of an approved combined sewer overflow management plan. Neither should occur during dry weather, except during spring thaw and emergencies. Source control of pollutants is recommended, and monitoring and reporting on effluent quality required. The 2014 Progress Report outlined the progress made by signatory federal, provincial and territorial jurisdictions on the commitments made in the 2009 Strategy.

6.1.11. CCME Wastewater Systems Effluent Regulations

The proposed CCME Wastewater System Effluent Regulations were published in March 2010, with the final Regulations published on June 29, 2012 and was amended January 2015. These Regulations are the primary instrument that Environment Canada is using to implement the CCME Canada-wide Strategy for the Management of Municipal Wastewater Effluent.

The proposed Regulations apply to any wastewater system that has a capacity to deposit a daily volume of effluent of 100 m^3 or more from its final discharge point. The effluent from the applicable wastewater systems would be compared against "national effluent quality standards", which are as follows:

- Average carbonaceous biochemical oxygen demand (cBOD) due to the quantity of BOD matter in the effluent of less than or equal to 25 mg/L;
- Average concentration of suspended solids in the effluent of less than or equal to 25 mg/L;
- Average concentration of total residual chlorine in the effluent of less than or equal to 0.02 mg/L; and,

- Maximum concentration of un-ionized ammonia in the effluent of less than 1.25 mg/L, expressed as nitrogen, at 15°C ± 1°C.

6.1.12. Canadian Environmental Protection Act – Inorganic Chloramines and Chlorinated Wastewater Effluents in Municipal Wastewater Effluent

The Canadian Environmental Protection Act (CEPA) required the elimination of toxic chlorine residuals from municipal wastewater effluent. All owners and operators of wastewater systems with daily volumes greater than 5,000 m^3 of effluent were required to lower their total residual chlorine (TRC) levels to less than 0.02 mg/L or lower by December 15, 2009.

6.1.13. Ministry of the Environment, Conservation, and Parks Procedure F-5-1

Procedure F-5-1 outlines the treatment requirements for municipal and private sewage treatment works discharging to surface waters. Effluent requirements are established on a case-by-case basis considering the characteristics of the receiving water body. All sewage treatment works shall provide secondary treatment or equivalent as the "normal" level of treatment, unless individual receiving water assessment studies indicate the need for higher levels of treatment. Existing works not complying with the guideline are required to upgrade as soon as possible. The Procedure stipulates effluent design objectives for biological oxygen demand (BOD), suspended solids, total phosphorus and ammonia and provides guidelines for BOD and suspended solids. It is the responsibility of the City to ensure sewage treatment works are designed according to the guidelines and should be able to meet the objectives on an average annual basis and not exceed the guidelines.

6.2. Conservation Authority Regulation and Policy

The legislative mandate of the Conservation Authority, as set out in Section 20 of the Conservation Authorities Act (1990, amended in 2024), is to establish and undertake programs designed to further the conservation, restoration, development and management of natural resources.

Conservation Authorities are local agencies that protect and manage water and other natural resources at the watershed level. These agencies have a number of responsibilities and functions in the land use planning and development process.

The study area falls entirely within the boundaries of Grand River Conservation Authority (GRCA). GRCA is a commenting agency on development applications under the Planning Act based on regulations approved by their Board of Directors and the province. These Conservation Authorities have agreements with partnering municipalities to provide technical services regarding matters associated with natural heritage protection, hazardous land management and water resources (e.g., stormwater management).

In addition, Conservation Authorities have the delegated responsibility from the Ministries of Natural Resources and Forestry and the Ministry of Municipal Affairs and Housing to implement

Section 3.1 (Natural Hazards) of the Provincial Policy Statement (2014), consistent with the Provincial one-window planning initiative.

The GRCA also administers Ontario Regulation 41.24, formerly O. Reg. 150/6, under Section 28 of the Conservation Authorities Act. In general, these regulations prohibit altering a watercourse, wetland, or shoreline and prohibit development in areas adjacent to river and stream valleys, hazardous lands and wetlands, without the prior written approval from the Conservation Authority (i.e., issuance of a permit).

6.3. City of Brantford Legislation and Policy

6.3.1. Land Swap

A Place to Grow is a growth plan for the Greater Golden Horseshoe within Ontario. It is a 25-year plan, released in 2006, that has the following aims:

- Promote economic growth;
- Prioritize intensification in strategic growth areas;
- Increase housing supply;
- Improve integration of land use planning with planning and investment in infrastructure and public service facilities;
- Protect and enhance natural heritage, hydrologic and landform systems, features and functions;
- Create jobs; and
- Build communities that make life easier, healthier and more affordable for people of all ages.

Amendment 2 to the Province's Growth Plan came into effect on June 17, 2013. This amendment updated Schedule 3 population and employment forecasts to 2031 and extended forecasts to a 2041 horizon and subsequently a 2051 horizon. As such, to accommodate increased growth needs and population densities forecasted through this plan to the City, additional lands were necessary to acquire.

Provincial growth planning policy has since evolved, and A Place to Grow has been replaced by the Provincial Planning Statement, 2024, which came into effect on October 20, 2024.

Through a Municipal Boundary Adjustment Agreement between the City of Brantford and the County of Brant, 2,719 hectares of lands was transferred from the County to the City effective January 1, 2017. These lands are known as the Boundary Adjustment Lands.

6.3.2. Municipal Comprehensive Review

In 2016, the municipal boundary between the City of Brantford and the County of Brant was adjusted in order to secure additional lands in the City for future growth. The boundary adjustment brought new lands into Brantford's municipal boundary. At the time, to determine the extent that the Settlement Area can be expanded, the City was required to undertake an

MCR as input into their new or amended Official Plan. Once completed, the new or amended Official Plan can designate urban land uses within the expanded Settlement Area boundary.

The MCR identified both growth and intensification targets as well as Settlement Area boundary expansion needs. The Settlement Area Boundary Expansion Lands are further subdivided into the North Expansion Lands, the East Expansion Lands, and Tutela Heights.

Both the East Expansion Lands and Tutela Heights include lands previously within the Settlement Area boundary of the County of Brant and through the boundary adjustment became part of the City's Settlement Area; however, as these areas require municipal servicing infrastructure, they are included as part of the three expansion sub-areas listed above.

The proposed land use designations, as shown in **Figure 6**, for the Settlement Area boundary expansion areas are presented in Schedule 4: Designated Greenfield Area Structure of the Official Plan and generally include a variation of residential, intensification, and employment areas. Portions of the Settlement Area Boundary Expansion are within the Grand River Conservation Authority (GRCA) floodplain and Natural Heritage System; as such, urban development is not permitted in these portions of the new urban land uses due to their environmental sensitivity and the importance of maintaining existing land uses. Additionally, beyond the Settlement Area Boundary Expansion are Lands Outside Settlement Boundary (LOSB), which are lands held for future Settlement Area expansion following substantial development of the current proposed Settlement Area Boundary Expansion areas.

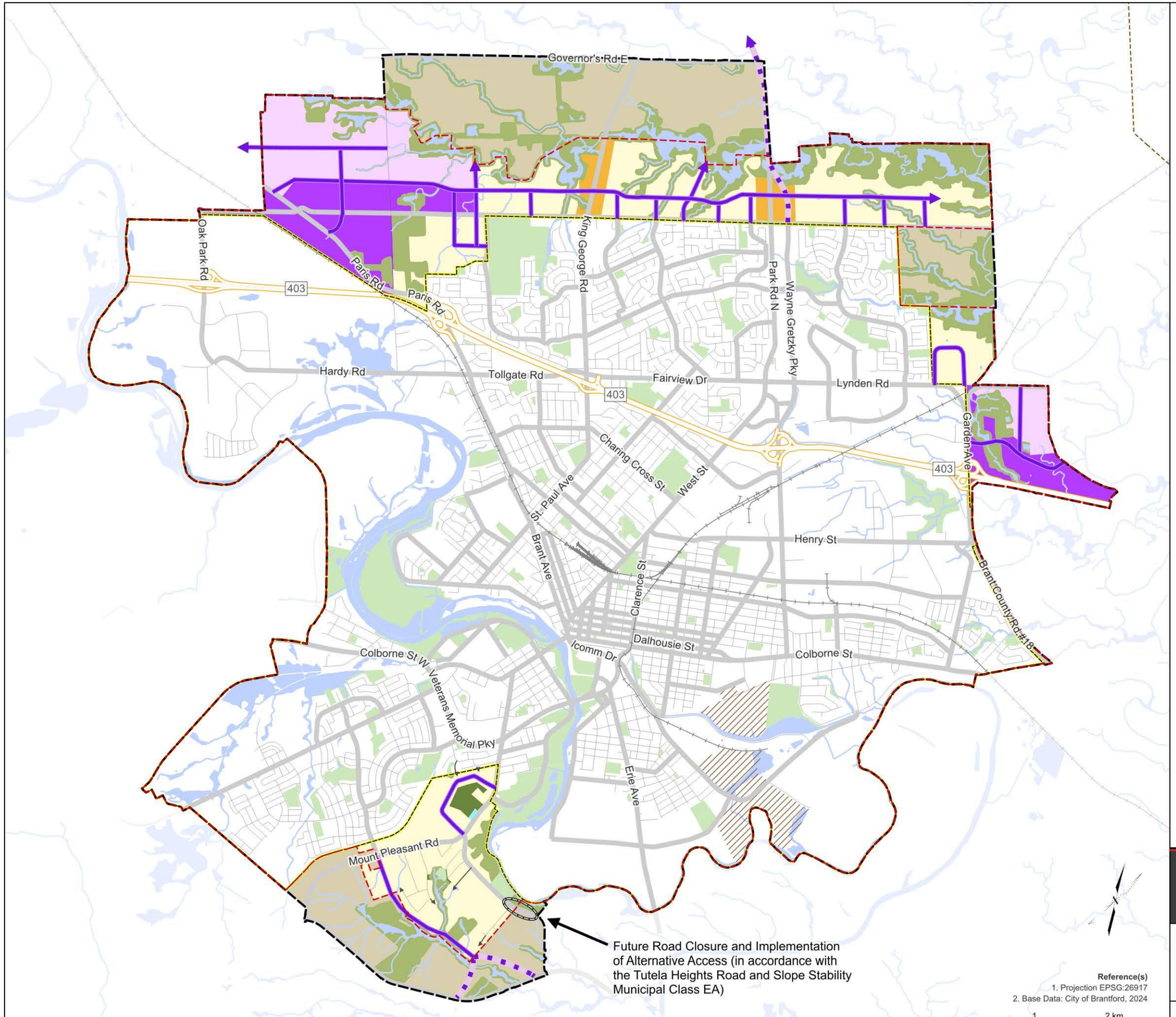
The population projections to 2051 for the Expansion Lands within the Settlement Area Boundary are provided in Table 6-1.

Table 6-1: Expansion Lands within Settlement Area Boundary Population Projections

Settlement Area Boundary Expansion Lands	Area (ha)	Population		
		Residential[(1)]	Employment[(2)]	Total
North Expansion Lands	1,883	52,816	26,794	79,613
East Expansion Lands	240	4,421	3,496	7,916
Tutela Heights	581	25,461	834	26,294

[(1)] Inclusion of 3% undercount and secondary suite residential population growth distributed within the expansion lands

[(2)] Inclusion of employment with no fixed place of work and work from home employment growth distributed within the expansion lands



Proposed Preferred Road Options

- Collector Roads
- Major Arterial Roads
- Controlled Access Major Arterial

Proposed Preferred Land Use Options

- Agricultural Designation
- Core Natural Areas Designation
- Downtown Urban Growth Centre Designation
- General Employment Designation
- Intensification Corridor Designation
- Major Commercial Centre Designation
- Major Institutional Designation
- Parks and Open Space Designation
- Prestige Employment Designation
- Residential Designation

General Features

- Expressway / Highway
- Arterial and Collector Roads
- Local Roads
- Railway
- Six Nations of the Grand River Territory
- Current City Municipal Boundary
- 2016 Municipal Boundary
- Settlement Area Boundary
- Outside Municipalities
- Parks
- Waterbody and Watercourses

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

1 2 km

Figure 6
Preferred Land Uses

Project Name:
Water and Wastewater Master Servicing Plan – Development Charges Update 2025 Amendment

Client Name:
City of Brantford
(Ontario, Canada)

GEI Consultants Canada

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6.3.3. County Agreements

As part of the 2016 Boundary Adjustment Agreement, the City committed to allowing the County to connect to the City's servicing infrastructure for areas referred to as the Airport Lands and the Cainsville Lands. The services to be connected were wastewater for the Airport Lands and water and wastewater for the Cainsville Lands. This was subject to a number of terms and conditions including that the City would provide adequate capacity to service the areas based on the City's design criteria and subject to both parties entering into a Servicing Agreement.

Under the 2016 Boundary Adjustment Agreement, the County would be responsible for constructing the infrastructure to connect to the City's water and wastewater system.

The existing Cainsville water system is currently supplied by the City through an existing 300 mm watermain while the existing wastewater system is serviced by an existing collection and treatment system owned and operated by the County.

The County of Brant undertook a review to evaluate the infrastructure required to service the Airport and Cainsville Lands in line with the 2016 Boundary Adjustment Agreement. The results of the study were presented at the August 14, 2018 County of Brant Public Works Committee meeting (PW-18-69 – Airport and Cainsville Servicing Strategy). The study recommendations were as follows:

- Connecting the Airport lands to the City's wastewater system will be costly and is not recommended over the next 5-10 years
- To connect the Cainsville wastewater system to the City's existing 675mm trunk sewer on Colborne Street.
- There are two potential options to support the expansion of the Cainsville water system consisting of:
    - Maintaining the existing single connection on Colborne Street, and construction of a new elevated tank; or
    - Securing a second connection to the City of Brantford system.

As per the County report Phase 1 of the Cainsville Service Area was identified as the first priority for the County. This involves connecting Cainsville wastewater to the City's collection and treatment system and ensuring that the existing water connection to the City's distribution system is adequate. The Airport connection phases were identified as a lower priority.

6.4. Planning Forecasts in 2021 MSP Amendment

Growth projections for the City of Brantford were provided by SGL and subsequently updated by long-range planning at the City based on the City's Official Plan, as per the Growth Plan. SGL distributed the population and employment forecasts and allocated the projections based on Traffic Survey Zone distribution, factoring projected detailed planning information within designated Greenfield Areas, Intensification Corridors, and the Settlement Area Boundary Expansion Lands. **Table 6-2** and **Table 6-3** present the population and employment breakdowns

and **Table 6-4** outlines the 2016 and 2051 totals as per the Growth Plan forecast and as distributed to the Traffic Zones. Variation between the overall forecast and its distribution to the Traffic Zones is due primarily to the allocation of 2016 and growth, 2051 populations by the Traffic Zone data. The MSP considers existing and growth populations by the Traffic Zone data for its analysis. **Appendix A** provides a detailed breakdown of 2021 and 2051 population and employment projections by Traffic Zone.

Table 6-2: Growth Population Estimates

Land Use Type	2051 Population
In existing 2016 units	84,598
In new units in built up and intensification areas	26,151
In new greenfield units in existing urban area	16,503
In new greenfield units in expansion area(1)	30,541
In secondary suites	2,000
Total population	159,794
Existing 2016 population	**97,110**
Total population +3% undercount	**164,736**
Growth population	**67,626**

(1) Exclusion of secondary suite residential population distributed within the expansion lands.

Table 6-3: Growth Employment Estimates

Land Use Type	2051 Employment
Existing 2016 employment(1)	37,158
Vacant employment lands in existing urban area	8,738
Additional employment in intensification areas	10,534
Vacant employment lands in existing greenfield areas	603
Employment in expansion area(1)	12,311
No fixed place of work	10,067
Work from home	3,954
Existing 2016 employment(2)	**37,158**
Total employment	**83,365**
Growth employment	**46,207**

(1) Exclusion of no fixed place of work and work from home employment growth distributed within the expansion lands

(2) Existing employment undercounted due to StatsCan employment suppression

Table 6-4: Population and Employment Estimates

Growth Scenario		2016	2051
Growth Plan	Population	101,700	165,000
	Employment	44,890	80,000
	Total	**146,590**	**245,000**
Traffic Zone Data	Population	97,110	164,736
	Employment	37,158[(1)]	83,365
	Total	**134,268**	**248,100**

[(1)] Existing employment undercounted due to StatsCan employment suppression.

6.4.1. Updated Growth Projections

Since the completion of the 2020 MSP Update and the 2021 Amendment, comprehensive block planning and provincial policy changes have resulted in higher density targets and revised growth assumptions. The 2025 MSP Amendment incorporates these changes through a sensitivity analysis of three growth scenarios - Low, Medium, and High - to evaluate infrastructure needs under varying conditions. The High Growth Scenario was selected as the preferred planning basis to ensure resiliency and minimize under-sizing risks.

Table 6-5: New Density Targets

Area	Density (people or jobs/ha)		
	Low	Medium	High
Expansion Lands, Greenfield - Res	60	75	90
Expansion Lands, Greenfield - Emp	25	25	30
Tutela Heights	50	65	75
Intensification Corridors	60	80	100
Downtown Core	150	200	250

Table 6-6: Growth Scenario Analysis

Total MSP Growth	Population [(1)]	Employment [(1)]	Total [(1)]	Growth from 2021[(1)]	Additional Growth in LOSB
2021	103,596	36,993	140,589	-	-
2051 (2021 MSP)	164,736	83,365	248,098	107,509	-
2051 - Low	166,684	83,585	250,268	109,679	35,623
2051 – Med	181,651	88,350	270,001	129,413	35,623
2051 – High	196,044	96,792	292,836	152,247	35,623

[(1)] Not including LOSB

This analysis confirmed that higher density development accelerates infrastructure triggers and increases capital program requirements. Updated hydraulic modeling and servicing strategies were developed to accommodate these projections.

The updated growth process includes revised intensification areas, employment expansion lands, and residential expansion lands as shown in **Figure 7** below:

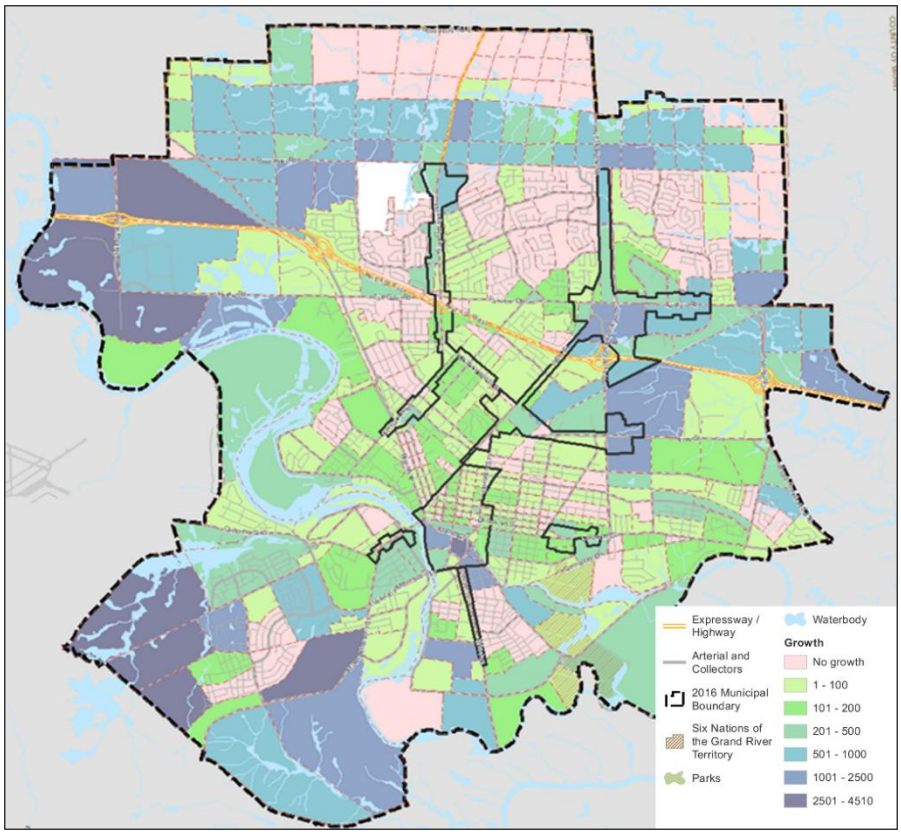


Figure 7: Revised Intensification and Expansion Land Areas

7. Servicing Principles and Policy

Execution of reasonable Policies and Level of Service (LOS) objectives are essential in ensuring that the proper planning and design principles are followed in the development of detailed servicing strategies, implementation of system capital program, and operations and maintenance practices.

In the context of the 2021 MSP Update, these Policies and LOS objectives provide guidelines and direction to the master planning process, in addition to ensuring demands and flows are adequately representative to support the decision making for sizing and timing of future infrastructure.

Through the 2021 MSP Update, draft Policies and LOS objectives were established and used to guide future investment in the water, wastewater, and stormwater systems. The 2025 MSP Update Policies and LOS objectives and recommendations are included in **Appendix B**.

7.1. Servicing Principles and Policies

Specific servicing principles and policies have been developed to guide the development of water, wastewater, and stormwater servicing strategies. In general, the City of Brantford is looking to build and maintain efficient, reliable, sustainable, and well-managed infrastructure systems that provide a high level of service to the public. The servicing policies which impact the water, wastewater, and stormwater servicing are summarized in **Appendix B**.

7.2. Design Criteria and Hydraulic Performance Criteria

A guiding principle of design criteria is to ensure that the demand and flows projections are adequately predicted with an appropriate factor of safety and risk management. This overall principle also ensures that infrastructure has sufficient capacity to meet the growing needs of the City and does not impede the approved/planned growth.

The design criteria was previously reviewed as part of the 2021 MSP Update and has been reviewed as a part of the 2025 MSP Amendment to ensure that they are accurate and will support sizing and timing of future infrastructure.

8. Environment Existing Conditions

8.1. Natural Environment Policy Context

The Official Plan of the City of Brantford includes a set of policies to protect and enhance Brantford's natural heritage resources. Within the City, there exists a system of natural areas of varying significance. Development is carefully controlled in these areas to ensure that the various significant features are protected.

The City of Brantford's diverse natural features perform numerous ecological functions essential to life processes, including the conservation of biological diversity. These functions include: maintaining and improving air and water quality; controlling and mitigating the effects or erosion; and providing habitat for a variety of plant and animal species. Natural features also provide many recreational, aesthetic, and economic benefits to our human communities.

Significant natural features in the City of Brantford include wetlands, ravines, forests and rare or high-quality plant or wildlife communities. When making decisions concerning the environment, various components are considered. Factors such as the environment, social aspects, and the economy are all discussed in order to make fully informed decisions.

The City of Brantford's natural heritage system is shown in **Figure 8**.

8.1.1. Environmental Protection Policy Area

Environmental Protection Policy Areas have the highest level of protection. To receive this designation, the area must have been identified as significant. Some examples of areas that would receive this classification are: land with natural or scientific interest, habitats for endangered and threatened species, provincially significant savannah or wetland, ravines with watercourses, and significantly forested areas. Specifically, the vegetative buffer zone for Grand River is one important area that has been delineated as an Environmental Protection Policy Area.

8.1.2. Environmental Control Policy Area

Environmental Control Policy Areas contain sensitive natural features. This includes steep slopes, streams, wetlands, areas of groundwater discharge, and areas with representative tree cover. The areas are given this designation if the land is being comprised of fish habitat, significant woodlands, significant wildlife habitat, significant Areas of Natural and Scientific Interest, natural linkages, or locally significant prairies and savannahs.

Development may be permitted on these lands, but only if it is demonstrated in an Impact Assessment that there will be no negative impact on natural features or ecological functions.

8.1.3. Adjacent Lands

Adjacent lands refer to all areas within 50 m of an Environmental Protection Policy Area or Environmental Control Policy Area (except for fish habitat where all areas within 30 m are

adjacent lands, and provincially significant wetlands where distance varies). Development in these areas must first be evaluated to ensure that there will be no negative impact on the natural features, ecological functions, or groundwater quality and quantity.

8.1.4. Wetlands

Lands containing a wetland area, or that drain into any abutting lands which contain a wetland area, must be evaluated to determine its wetland classification prior to development. The Province, City, and Grand River Conservation Authority must all approve the evaluation of the wetland to ensure that there will be no negative impact on the natural features or on their ecological function.

8.1.5. Mineral Resource Areas

Mineral Resource Areas are licensed by the Province and have the potential for extraction of mineral resources. The licensing of new Mineral Resource Areas or expansion of existing licenses, however, require an amendment of the Zoning By-law. Concurrent to the resource extraction, progressive rehabilitation will also be encouraged. Development in the Mineral Resource Areas is controlled so as not to impact existing or future extraction.

8.1.6. Watersheds

The Grand River watershed is the largest watershed in southern Ontario and is of great importance to the natural environment. The Grand River is the predominant feature within Brantford, flowing from the northwest portion of the City in a southeasterly direction. The Grand River is a dendritic river (tree shape) with many tributaries or branches that join along the way. D'Aubigny Creek is the tributary that runs through Brantford. It has been identified as significant for various reasons including its cold-water fishery.

8.2. Cultural Heritage and Archaeology

The City of Brantford encourages and supports heritage preservation. The City's atmosphere has a great sense of continuity between the past and the present as defined by its cultural heritage resources, which include: built heritage resources, cultural heritage landscapes, and archaeological resources. The Grand River in particular is important as it has played a central role in the history of both First Nations and Euro-Canadian people.

The City of Brantford has a strong belief that heritage conservation is a wise investment for the future as it makes neighborhoods even more attractive which in return increases its value. The City has therefore established additional policies to conserve its cultural heritage. For any matters relating to the heritage resources of the municipality, the Brantford Heritage Committee must be consulted to ensure the best conservation for the resources.

8.2.1. Built Heritage Resources and Cultural Heritage Landscapes

The Ontario Heritage Act gives municipal council the authority to designate heritage properties that have cultural heritage value or interest based on their historical, contextual, and/or architectural significance in the community. Under the Act, designated heritage properties are protected from demolition and a Heritage Permit is required to make changes to a designated property. There are over 200 designated heritage properties in Brantford.

The Brantford Heritage Committee is a citizen volunteer committee that meets monthly to advise Council on heritage matters in the City. In accordance with the Ontario Heritage Act, Council must consult with the Committee before designating a property. The Committee is also responsible for identifying properties that warrant designation for Council's consideration, and for reviewing Heritage Permit applications and Heritage Grant applications.

8.2.2. The Grand River as a Canadian Heritage River

The Grand River watershed has a very important cultural heritage landscape and has been granted Canadian Heritage River status.

8.2.3. Archaeology Resources

Before approving land development project regulated by legislation, the City – like all Ontario municipalities – is required to undertake an archaeological assessment of all lands that are part of the project. Assessments are required when the land is known to have an archaeological site on it or has the potential to have archaeological resources.

Public development projects such as highway or road construction, or sewer construction require an archaeological assessment under the Environmental Assessment Act directly or through a Class Environmental Assessment. In many cases, an Environmental Assessment determines the need for an archaeological assessment, which is completed as part of the overall environmental assessment process. Upon completion, the archaeological assessment must be sent to the Ministry of Citizenship and Multiculturalism for review to ensure the terms and conditions of the archaeological assessment were met and that any archaeological sites found were properly conserved.



General Features

- Expressway / Highway
- Arterial and Collector Roads
- Local Roads
- Railway
- Six Nations of the Grand River Territory
- Current City Municipal Boundary
- 2016 Municipal Boundary
- Outside Municipalities
- Parks
- Waterbody and Watercourses
- Core Natural Areas Designation

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

1 2 km

Figure 8
Natural Heritage System

Project Name:
Water and Wastewater Master Servicing Plan – Development Charges Update 2025 Amendment

Client Name:
City of Brantford
(Ontario, Canada)

GEI

Last Updated: June 2026
Document ID: 2404322-G-001

Document Path: B:\Working\BRANTFORD ON\CITY OF\2404322 Master Servicing Plan - 2025 Development Charges Update\05_GIS\6_Final Report\2404322-G-001.mxd

9. Evaluation Methodology

The development and evaluation of alternatives, with the ultimate goal of determining the recommended servicing strategy, generally follows the approach outlined below for each infrastructure group:

1. Define opportunities and constraints within the study area, by evaluating existing and future system performance and facility needs, such that high-level servicing concepts are developed. These high-level servicing concepts address key system deficiencies and servicing considerations to best satisfy the previously defined principles, policies, and levels of service. The appropriateness and feasibility of these servicing concepts will be assessed through consultation with the City staff and a high-level evaluation to determine which servicing concepts will be carried forward.
2. Determine the servicing alternatives, through the refinement of the high-level servicing concepts, which fully detail necessary projects, impacts, and costing. These servicing alternatives will undergo detailed evaluation using criteria and process defined in the following sections. The intent of the detailed evaluation is to objectively assess and compare each alternative such that the recommended strategy exhibits the most positive benefits while minimizing its negative impacts.

The following sections detail the process and criteria which will be used to evaluate both the high-level concepts and the detailed alternatives. This is applicable for water, wastewater, and stormwater infrastructure.

9.1. Evaluation Process

The evaluation process, undertaken for the development and selection of a preferred servicing strategy, is outlined in **Figure 9**.

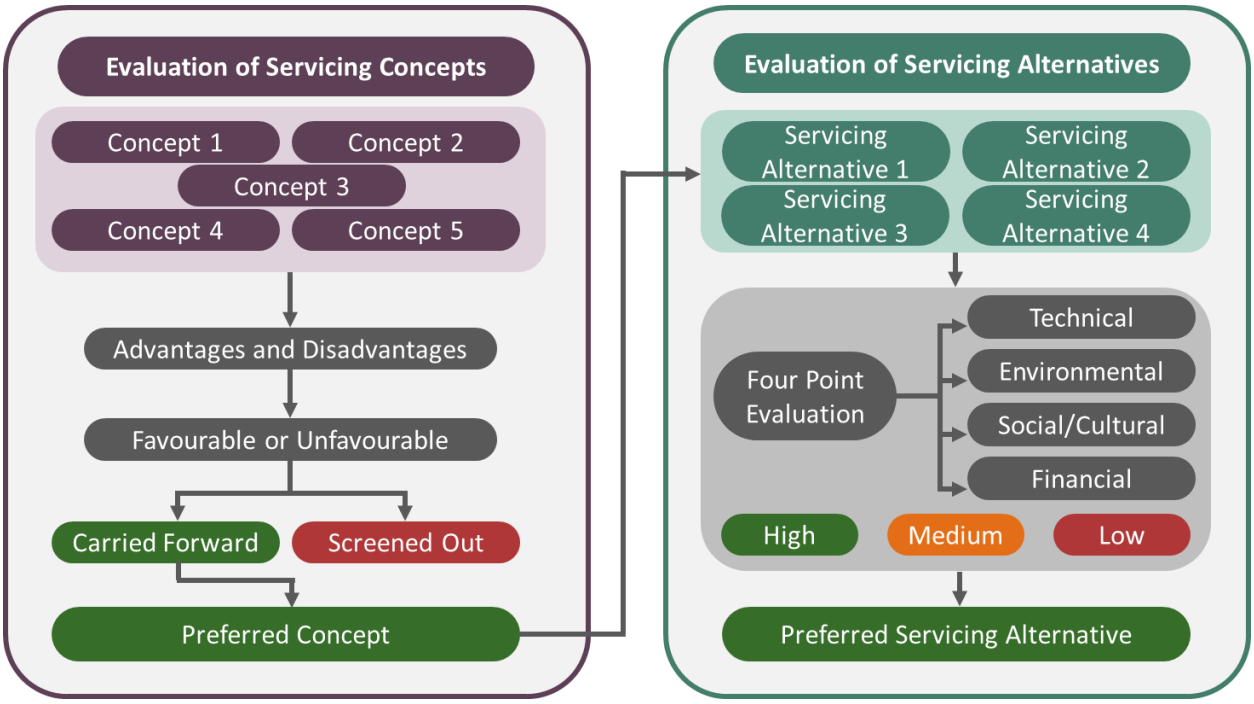


Figure 9: Evaluation Methodology Flow Diagram

9.1.1. Evaluation of Servicing Concepts

The first step in determining the preferred servicing strategy is to determine the feasibility of the high-level servicing concepts. The overall advantages and disadvantages of these concepts will define which concepts are "favourable" vs. "unfavourable" to subsequently screen out concepts which are deemed unfavourable. The favourable concepts will be carried forward and further refined into servicing alternatives and undergo a more stringent evaluation. Further, it should be noted that all servicing concepts were presented to City staff to confirm the further refinement and evaluation.

9.1.2. Evaluation of Servicing Alternatives

The second step in determining the preferred servicing solution is to evaluate the detailed servicing alternatives. This process uses the reasoned argument approach to provide a clear and thorough rationale of trade-offs among each alternative based on the anticipated impacts caused by the evaluation criteria. The basis of this approach is to qualitatively evaluate the relative advantages, disadvantages, and impacts of each alternative against the established criteria.

Further to the qualitative evaluation, the following criteria score will be assigned to each criteria for each servicing alternative:

- "High" concepts generate beneficial impacts and/or has no substantial technical challenges; these are depicted in green within the evaluation tables.

- "Medium" concepts present a mix of positive and negative elements with some impacts; these are depicted in yellow within the evaluation tables.
- "Low" concepts present negative impacts and/or presents significant technical challenges; these are depicted in red within the evaluation tables.

This process is intended to highlight the preferred alternative through the evaluation of technical, environmental, social/cultural, and financial categories.

9.2. Evaluation Criteria

The evaluation matrices, which outline both the qualitative reasoning and score for each servicing alternative, will be used in selecting the preferred servicing strategy. The servicing alternatives will be subject to a four-point evaluation which includes technical, environmental, social/cultural, and financial impacts categories. The detailed criteria within each category are outlined in **Table 9-1**.

Table 9-1: Evaluation Categories and Criteria

Category	Criteria	Description
Technical Impacts	Meets existing and future servicing needs	To assess the alternative's ability to satisfy the project problem and opportunity statements and to achieve the desired system technical level of service objectives. This includes capacity to meet existing level of service and capacity to support future growth.
	Provides a reliable service	To assess the overall system configuration's ability to: support flexibility in system operations, provide system redundancy, minimize the risk related to single element failure, perform under power outage, and adapt to the potential impacts of climate change. Includes the feasibility, maintenance, and flexibility of the alternative's implementation (i.e., length of linear needs associated operation and maintenance, additional pumping due to hydraulic conditions, or regular maintenance requirements).
	Minimizes and manages construction risk	To assess the alternative's constructability including scope of infrastructure upgrades including maximizing existing infrastructure, environmental significance, time required to complete construction, and impact on existing utilities. This also includes assessing the timing and technical suitability of project implementation with the aim of improving the overall flexibility in project phasing and reducing the number of critically dependent components.
	Supports phased expansion of the system	To assess whether the proposed servicing strategy minimizes the total system upgrades, maximizing the capacity/use of existing facilities, and provides flexibility in servicing of growth areas.
	Operational Complexity	To assess whether the proposed servicing strategy will result in a system which is difficult to operate and maintain.
	Resiliency to climate change	To assess the alternative's resiliency to maintain the desired system level of service objectives due to climate changes impacts. This includes assessment of system resiliency and/or the facility and network vulnerability to climate related failures such as flooding.
Environmental Impacts	Protects environment features	To assess, monitor and ensure the preservation and protection of aquatic resources and other natural features. This includes minimizing any impact to wetlands (Locally or Provincially Significant, identified by Conservation Authority and Province), wildlife habitat, or valley lands, which may be identified by Conservation Authorities, Municipalities, or Province.
	Protects wildlife and species at risk	To assess any potential species at risk. The implementation should maintain the function of habitat for locally significant wildlife, including endangered or threatened species.
	Minimizes climate change impacts	Uses technology and practices, where applicable, to minimize climate change impacts and reduce greenhouse gas contributions. This includes consideration during the construction process, day to day operations, and future maintenance requirements.
Social and Cultural Impacts	Protects resident quality of life	To assess the proposed alternative's ability to maintain or improve upon the existing level of service. Further, to assess any impacts to existing residents due to the long-term operation of any new/modified linear infrastructure and/or facilities including aesthetic impacts.
	Manages and minimizes construction impacts	To assess any impact to existing built up areas (residents, businesses) due to construction activities, including creating noise/dust/vibrations, traffic and traffic flow, limiting access to properties (temporary), or other. This also includes identifying needs to alter timing and scope of the construction practices to minimize impacts.
	Protects cultural heritage and archeological features	To assess impacts to a structure, property or district which has been previously identified to be of cultural heritage or archeological value or interest. Impacts may be deemed as temporary (i.e., site access) or permanent (i.e., altering the existing conditions).
Financial Impacts	Capital and life-cycle costs	To minimize the capital and lifecycle costs of the new/upgraded infrastructure and maximizes use of existing infrastructure. Outlines costs required for phasing of growth.
	Operation and maintenance costs	To minimize the operational costs of the new infrastructure and impacts on existing operational and maintenance cost of the existing infrastructure. Life cycle costing to consider greenhouse gas emissions and carbon pricing.
	Aligns with approval and permitting process	To assess the impact any required property/approvals may have on the implementation process (expropriation of land/land purchase, temporary/permanent easements, or land leasing fees) and compatibility with surrounding land use.

10. Project Costing

The cost estimation approach used for the 2025 MSP Amendment uses a classification system to categorize different cost estimate classes. These classes represent different phases of planning and design, and subsequently different methods of cost estimation and levels of accuracy. This framework complements the generic approach developed by the Association of Advancement in Cost Estimating (AACE) International and has similarities to the Government of Canada (GOC) approach. For the purposes of the 2025 MSP Amendment it is expected that all the cost estimates will follow a Class 4 estimate; however, it is important to establish the level of accuracy that can be expected and as the project matures through planning to design, how the higher-class estimates refine the costs. Each of the key components is described below, including:

- Cost Estimate Classes
- Project Complexity
- Area Condition
- Estimate Accuracy Range
- Construction and Project Contingency
- Construction Provisional and Allowance
- Additional Costs

The unit costs and all the above components are contained in the 2025 MSP Amendment Capital Program spreadsheets which also include standard project details sheets. The spreadsheets are the working tool that brings all the cost components together to create a project cost estimate and are include in **Volume III**, **Volume IV,** and **Volume V** for each program area.

10.1. Unit Rates

Suggested unit rates, detailed in **Appendix C**, are based on supplier material costs, tender analysis, and historic project costs from multiple municipalities across southern Ontario. The unit rates from the 2021 MSP Update were carried forward with construction cost indexing (inflation) applied where required to reflect 2025 dollars. Indexing was based on the most currently available Building Construction Price Index for the Toronto area from Statistics Canada. In this case the indexing was provided up to mid-2024. In this recommended approach the unit rates are the starting point or base for a cost estimate. Many other factors and criteria are applied to the unit rates. As such, caution is advised when comparing recommended unit rates in isolation with those used for previous studies. Only full and complete costs estimates should be compared.

10.2. Cost Estimate Classes

Table 10-1 provides a description of the proposed estimate classes and their end usage or deliverables.

Table 10-1: Cost Estimation Classes

Estimate Class	Estimate Class Description	End Usage / Major Deliverables
Class 4	Planning Cost Estimate	Infrastructure Planning/Master Planning. Justification for project planning funding. Minimum information requirements.
Class 3	Concept Design Cost Estimate	Basis for budgeting and approvals.
Class 2	Preliminary Design Cost Estimate	Used for project cost control during design; initial detailed estimate.
Class 1	Detailed Design Cost Estimate	Final cost review in preparation for construction; tender ready.

10.3. Project Complexity

Table 10-2 provides a general definition of project complexity.

Table 10-2: Project Complexity Descriptions

Project Complexity	Complexity Description
High Complexity	Projects with high cost, broad scope of work, multiple alternatives/alignments, etc.
Medium Complexity	Projects with various elements that can fit both High and Low complexity categories.
Low Complexity	Projects with low cost, defined scope of work, few if any alternatives

10.4. Area Condition

Area Condition provides an allowance for the increased cost of constructing in built-up areas, applied to the base construction cost. **Table 10-3** below provides a general definition and the construction uplift cost percentage of the area condition.

Table 10-3: Area Condition Descriptions

Construction Environment	Environment Description	Construction Cost Uplift %
Rural	Greenfield construction with no environmental constraints	0%
Suburban	Developed built up environment	10%
Urban	Heavily developed built up environment – downtown area	20%

10.5. Estimated Accuracy Range

The accuracy range is defined by the cost estimate class and the project complexity. **Figure 10** shows how the estimate varies based on the two input criteria. The accuracy percentage applies to the total base cost plus all allowances and contingencies.

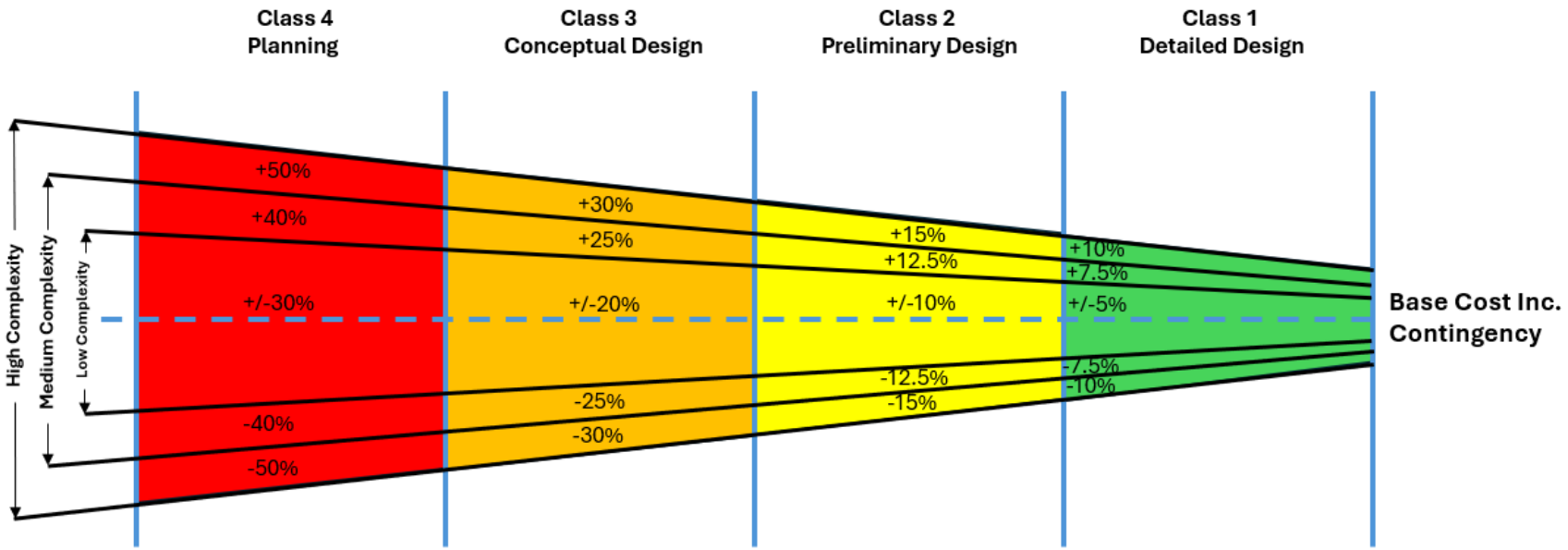


Figure 10: Cost Estimate Accuracy Ranges

An accuracy range is an acknowledgment that even with a formal cost estimation framework, and appropriate contingencies, actual costs may still vary because of 'unknown unknowns', such as changes in the economy or new future innovative technologies. These unknowns can just as easily result in a lower final cost as a higher one, even with the application of an appropriate contingency. A recent example is the value of the Canadian dollar. In 2013, the Canadian dollar was at par with the American dollar, and in 2025 it was $0.72. If an American supplier is being used for the project, a final cost in 2025 will significantly vary from that estimated in 2013. This variance should not be associated with the contingency amount.

The accuracy range is not an additional contingency and should not be used for budgeting or funding purposes but rather be a representation of the level of confidence or vulnerability associated with a cost estimate (base + contingency). The concept of an accuracy range is that after the inclusion of an appropriate contingency, it is just as likely that the final cost will be below the estimate as above and it is therefore expected that the long-term aggregate of cost estimates (base + contingency), within each class, will balance out.

The accuracy range for each class is comprised of a high and low value to provide flexibility with respect to the project complexity and corresponding levels of cost estimating confidence.

In summary, as the class and project details increase (left to right in **Figure 10**), or as the project complexity decreases (top to bottom in **Figure 10**), the cost estimate is less vulnerable to 'unknown unknowns' and therefore the extent of the accuracy range will be narrower.

10.5.1. Construction and Project Contingency

There is a certain amount of risk and uncertainty associated with each class of cost estimation. The associated risk and uncertainty are minimized with the addition of a contingency. Contingencies are an allowance for risks that are known or anticipated at early stages of the project definition, i.e., they represent probable events that are 'known unknowns' and experience has shown are likely to occur. They cannot be attributed to specific items in the base estimate but need to be considered in addition to the base cost. It should be noted that a project contingency does not cover changes in scope, which are dealt with on their own and should be defined in the project management plan.

Two types of contingencies are recommended for use; construction contingency and project contingency.

10.5.2. Construction Contingency

Construction contingency is a percentage contingency amount applied to the base construction costs. It accounts for any additional construction costs not included in the unit rates, valves, and crossings. It includes Mobilization/Demobilization, connections, inspection, hydrants, signage, traffic management, bonding, and insurance. Construction contingency changes with project complexity, as follows:

- Low Complexity Construction Contingency: 10%
- Medium Complexity Construction Contingency: 15%
- High Complexity Construction Contingency: 20%

10.5.3. Project Contingency

Project contingency is a percentage applied to the entire project cost inclusive of all soft costs and fees. It accounts for any additional cost associated to any part of the project including soft cost such as consultant engineering and design, geotechnical and property costs. As such the project contingency changes with project complexity as well as project estimate class, as shown in **Figure 11**.

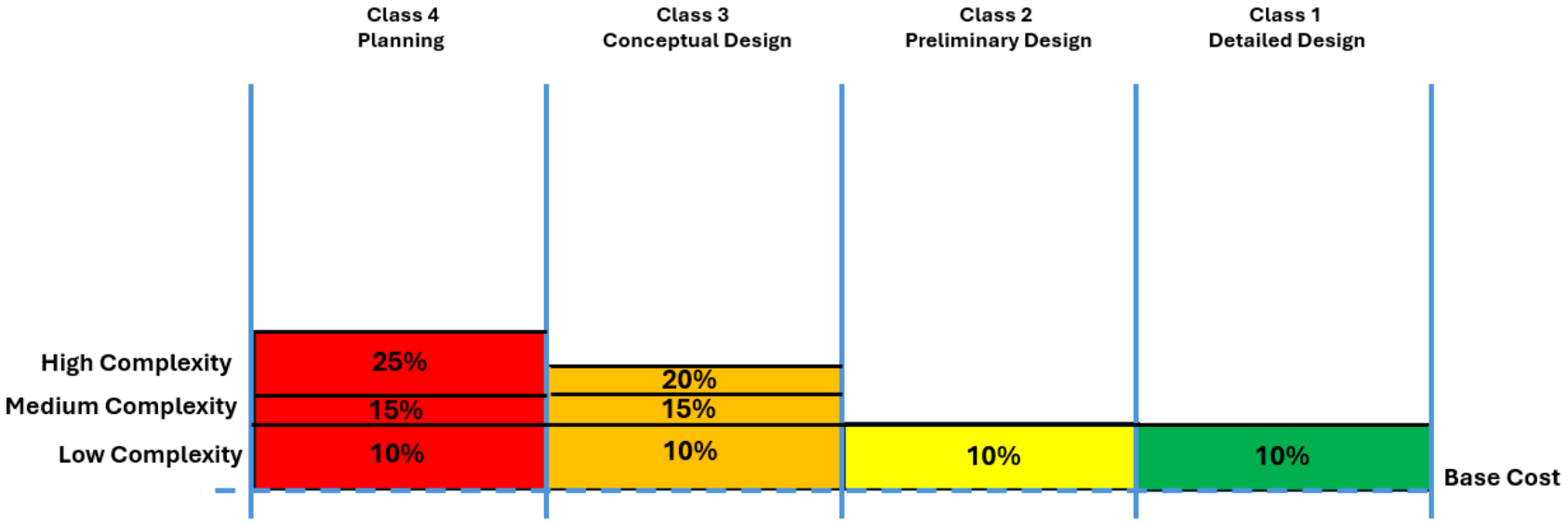


Figure 11: Cost Estimate Contingency Amounts

10.6. Construction Provisional and Allowance

It is recommended that a provisional amount be applied to the base construction costs in the event of increased construction labour and or material costs. Provisional Project Costs remain separate from the primary project cost but must be included for budgeting purposes. Regardless of estimate class or project complexity it is recommended that 10% of the base construction cost is applied as a Provisional Allowance.

10.7. Additional Costs

Additional Costs capture all soft costs associated with the project. If available, actual quoted costs should be used. In the absence of actual costs, percentage amounts, applied to the base construction costs, are recommended. Such costs are related to project complexity and total project cost, as such percentages vary accordingly. **Table 10-4** shows the percentages to be applied for high and low complexity and different value projects.

Table 10-4: Additional Cost Components

Cost Component		High Complexity	Medium Complexity	Low Complexity
Geotechnical / Hydrogeological / Materials		2% of construction cost	1% of construction cost	0.5% of construction cost
Property Requirements (including property acquisition)		2% of construction cost	1.5% of construction cost	1% of construction cost
Consultant Engineering/Design	Total Construction Cost <$10M	15% of construction cost		
	Total Construction Cost $10M to $50M	12% of construction cost		
	Total Construction Cost >$50M	10% of construction cost		
In House Labour/Engineering/ Wages/CA	Total Construction Cost <$10M	8% of construction cost		
	Total Construction Cost $10M to $50M	6% of construction cost		
	Total Construction Cost >$50M	4% of construction cost		
Non-refundable HST		1.76% of Total costs		