Infrastructure Master Plan 2023

A Growth-focused plan for Ottawa's Water Resources Systems

Display Boards for Online Engagement

June 14 - July 7, 2023

Introduction

- This information is part of the final Online Engagement for the 2023 Infrastructure Master Plan (IMP) project. The information is intended to provide a summary of the draft 2023 IMP for the public's review.
- A new City of Ottawa Official Plan (OP) was approved in 2022 to guide growth and development of the city until 2046, when the city's population is expected to reach 1.4 million.
- Infrastructure planning for new communities is required to ensure the availability, reliability and resiliency of water resource system infrastructure to support planned growth.
- The Infrastructure Master Plan (IMP) is a strategic document that sets growth-related policies, objectives, and priorities for municipal infrastructure related to water and wastewater servicing and stormwater management, supporting the City's new Official Plan.

Details of how to provide feedback are provided on the City's project website: https://engage.ottawa.ca/infrastructure-master-plan

The City is welcoming feedback on the information presented from **June 14, 2023 until July 7, 2023.**

Please identify any comments or questions and provide those to the City by completing the feedback form on the project website.

Your input is important to the success of the IMP!

You can also contact the City's project manager at:

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Tel: 613-580-2424 ext. 27785

Land Acknowledgement

Ottawa is located on unceded territory of the Algonquin Anishinabe Host Nation:

- The peoples of the Algonquin Anishinabe Host Nation have lived on this territory for millennia.
- Today, Ottawa is home to approximately 40,000 First Nations, Inuit and Métis people.
- Ottawa's Indigenous Community is diverse, representing many nations, languages and customs.
- The City honours the land of the First Peoples, as well as all First Nations, Inuit and Métis in Ottawa and their valuable past and present contributions to this land.

Display Board Guidance

These **Display Boards** are organized according to the following contents:

- IMP Background (Boards 5-17)
- IMP Policies (Board 18)
- Water and Wastewater Master Plans (Boards 19-28)
- Tewin Development (Boards 29-31)
- Summary of Costs (Boards 32 & 33)
- Water and Wastewater Treatment Plans (Boards 34 & 35)
- Stormwater Management Strategy (Boards 36-42)
- Rural Servicing (Boards 43 & 44)
- Intensification (Boards 45-65)
  - Program 1 – "On-site Stormwater Management" (Boards 53 & 54)
  - Program 2 – "Infrastructure Capacity Management" (Boards 61-64)
- IMP Implementation (Boards 66-68)

The following **Cross-cutting Themes** are referenced throughout the Display Boards and are key considerations of the 2023 IMP:


Climate Change


Sustainability


Extension of Services


Affordability


Intensification

IMP Purpose & Objectives

The purpose of the IMP is to ensure that appropriate service levels related to water supply, wastewater collection, and stormwater management are available in growth areas and are maintained in existing areas across the city.

Problem and Opportunity

A key strategic objective of infrastructure planning is to ensure that **backbone system capacity** is available when needed to support planned development.

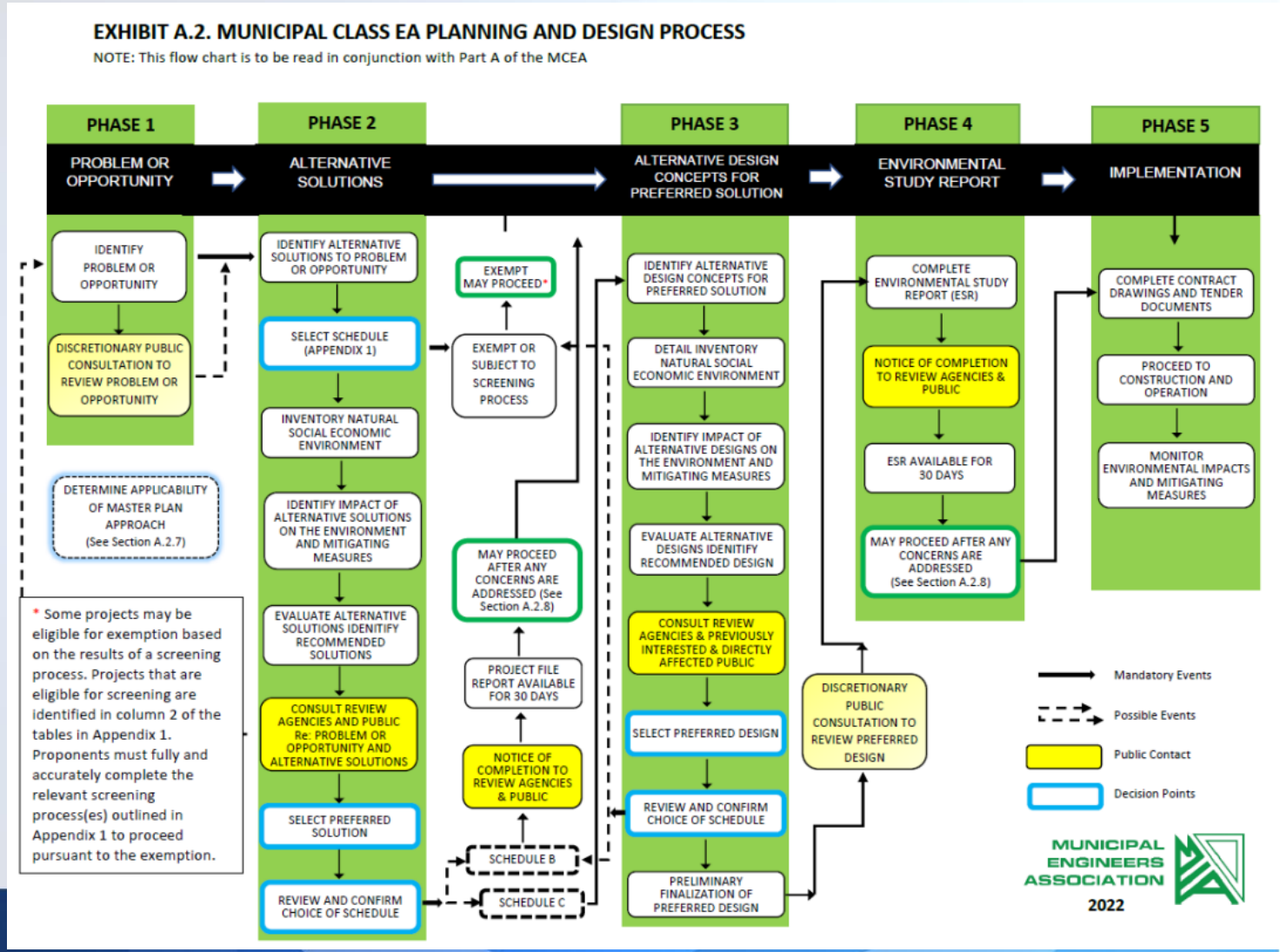
Another major objective is to establish programs to ensure that there is sufficient **local system capacities** to meet the needs of intensification in existing neighbourhoods.

A secondary objective of the plan is to ensure that **sufficient baseline information and clear infrastructure policies** are available to guide the preparation of master studies, such as Master Servicing Studies and Environmental Management Plans, which are normally prepared by the development industry.

***Note**: The IMP is about water resources systems. If you are interested in transportation infrastructure, you may wish to learn more about the Transportation Master Plan: https://engage.ottawa.ca/transportation-master-plan*

Environmental Assessment and Council Approval Process

- The 2023 IMP is being conducted in accordance with the *Master Planning Process*, following "Approach 1" which completes the requirements of Phases 1 and 2 of the Municipal Class Environmental Assessment, which is an approved process under the *Environmental Assessment Act*.
- A Notice of Commencement for the project was issued on November 1, 2019.
- Any comments received will be collected under the Act and, with the exception of personal information, will become part of the public record.
- The draft final IMP will be presented to the City's Planning and Housing Committee, Environment and Climate Change Committee, and Council for approval. The IMP will then be posted for public review for 30 days, after which point it will be approved.



Consultation Activities

Stakeholder input has occurred throughout the IMP process and includes:

- Consultation on preliminary policies and program recommendations
- Meetings with Community Associations and industry stakeholders
- City website for the project: https://engage.ottawa.ca/infrastructure-master-plan
- Master mailing list to receive updates on the project by request
- 30-day public review period following approval by Committee and Council

Schedule

2019 – Project Commencement

2020 – Background research and development of climate change framework

2021 – Policy development

2022 – Public consultation on preliminary policies and program recommendations

Ministry of Municipal Affairs and Housing approval of New Official Plan

2023 – Public consultation on proposed projects and refined policy and program recommendations

Committee and Council Consideration

What We've Heard So Far from Stakeholders

Climate Change: Infrastructure planning must consider climate change risks, address specific criteria and be based on a clear long-term vision for future development. The plan also needs to consider the cumulative impacts of intensification and climate change and be supported by shorter terms plans that respond to monitoring of actual conditions and trends. The plan should consider both mitigation and prevention. Minimum requirements and recommendations for the management of stormwater should align with current national standards.

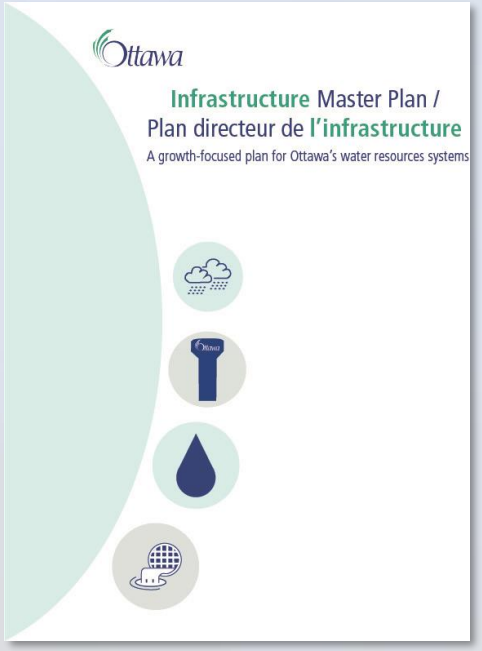
Affordability: To support its housing affordability and intensification goals, the City needs to consider the overall impact of development and servicing costs. The proposed on-site stormwater management program will add to significant infill housing costs and have a negative impact on housing affordability, and the economic viability of residential construction projects.

Intensification: Local communities generally support proposed new on-site stormwater management and infrastructure capacity management programs to mitigate the impacts of intensification. There is a need for flexibility and alternative approaches to addressing stormwater management requirements, and a holistic, rather than a permit-by-permit approach to addressing impacts. There is apparent degradation in the existing levels of service in some local area due to these impacts, especially in ditch-serviced neighbourhoods. Infill development appears to be approved without sufficient regard to policies and by-laws. Infrastructure upgrades are needed in existing urban areas to support intensification. The City should consider capacity increases through infrastructure renewal as community-wide benefit.

Infrastructure Sustainability: There is a need encourage intensification over greenfield development and to implement more sustainable stormwater management practices that consider impacts on watercourses and constraints associated with sensitive marine clays.

Key Components of the IMP

These key components make up the draft 2023 IMP. These key components are further expanded upon in these Display Boards. The Backbone System Master Plan includes 4 distinct Master Plans.



- Infrastructure Policy
- Backbone System Master Plan
  - ✓ **Water Master Plan**
  - ✓ **Wastewater Master Plan**
  - ✓ **Water Purification Master Plan**
  - ✓ **Wastewater Treatment Master Plan**
- Tewin Servicing
- Stormwater Management Strategy
- Rural Servicing
- Intensification Servicing Programs
- Plan Implementation

Infrastructure Planning Context

Roles

Both the City and development industry have important roles to play in the growth of the city and the provision of infrastructure.

The City applies provincial, OP and other local policies, as well as City design guidelines and standards in the approval of private development plans and applications. The City is also responsible for preparing and implementing Master Plans for major infrastructure projects needed to support growth. These are typically “off site” projects that are essential to the delivery of adequate service to both existing and future residents over large areas.

The development industry is generally responsible for “on site” projects that are needed for service at the local level.

Related Initiatives

The 2023 IMP will inform the City’s Development Charge By-law update in 2024.

The IMP includes new program recommendations to support intensification. The City’s update of the Comprehensive Zoning Bylaw is being prepared in coordination with the development of these programs.

The IMP aligns with the City’s Comprehensive Asset Management (CAM) program. The CAM program takes an integrated business approach involving the disciplines of planning, finance, engineering, maintenance and operations to effectively manage existing and new infrastructure.

Affordability Context

Funding Growth
The initial capital costs of new greenfield infrastructure are typically fully funded by development. However, financing for Development Charge (DC) funded infrastructure can put pressure on City budgets, particularly when these projects include either some benefits to existing development, or “post period capacity” that exceeds what is required to meet growth needs to the OP horizon and is therefore not fully eligible for DC funding.

Asset Management Plans
Like the vast majority of North American municipalities, the City of Ottawa is managing an infrastructure renewal funding gap and will need to review funding strategies to address the gap going forward.

Any strategy that successfully aligns upgrades required for growth with end-of-life renewal can minimize potential impacts to the renewal deficit.

Long Range Financial Plan
The IMP is not a financial document, so it is critical that the Plan’s recommendations be reflected in the City’s annual capital and operating budgets, as well as the Long-Range Financial Plan (LRFP). The LRFP normally provides a 10-year forecast of expenditures whereas the annual budget provides refined estimates of budget needs over a 4-year horizon, with detailed budget requests for the first year.

When the annual budget and LRFP are prepared, capital cost estimates for IMP projects and programs are updated based on the most current information available. Typically, detailed studies and design work has been completed to support Class A, B, or C capital estimates for short term projects, whereas the estimates for longer term projects rely on the Class D estimates provided in the IMP.

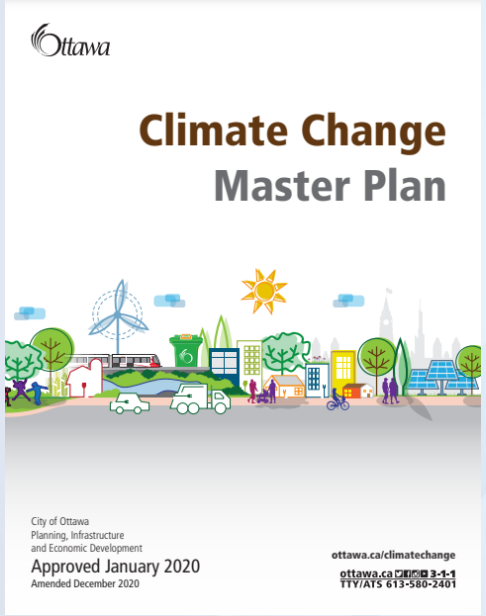
The affordability of the IMP will be reviewed before it is brought to Council for approval.

Climate Change Lens

A key goal of infrastructure planning is to identify preferred servicing strategies and solutions that meet system performance objectives in a changing climate.

Climate Change Master Plan

Through the Climate Emergency declaration in 2019, Council directed staff to embed climate change across all elements of City business. The Climate Change Master Plan (CCMP) is a framework for how Ottawa will mitigate and adapt to climate change over the next three decades. One priority of the CCMP is the application of a climate change lens to the OP and its supporting documents, asset management and capital planning. A high-level climate lens framework developed for the City's various master plans outlines considerations both for mitigation (GHG emissions reductions) and adaptation (climate change resiliency).



Climate Change Vulnerability and Risk Assessment

A Climate Change Vulnerability and Risk Assessment (CCVRA) (2022) was prepared for the City's three water services to inform IMP and future updates to the City's Asset Management Plans. In the context of the IMP, the climate lens has focused primarily on the opportunities for water resource systems to adapt to our changing climate, due to limited opportunity for direct GHG emissions reductions in the planning and design of infrastructure.

How does the IMP Consider Climate Change?

A key goal of the IMP is to address any additional impacts caused by growth in a changing climate while aligning with other city climate change actions and strategies. Infrastructure upgrades, studies, and design guideline reviews that follow this IMP will consider climate change. Strategies need to be reviewed as refined climate change projections become available in the future.

Infrastructure System Planning

When storm sewer and sanitary sewer systems are designed, they are sized and “stress-tested” using computer modelling under numerous wet weather scenarios including historical extreme events and future climate change. The water system is analyzed for increased risk of power failure, to confirm stand-by system capacity and resiliency. Water distribution infrastructure is planned in consideration of major failures, power outages, and high outdoor water use under drought conditions.

Solutions that Build Resilience

The IMP incorporates and recommends solutions that help build system wet weather resilience through: mapping of floodplains in extreme events; planning and servicing studies; stormwater retrofit planning, and major backbone infrastructure improvements.

Intensification

The IMP also includes recommendations for intensification servicing that help maintain and increase wet weather resilience.
A key recommendation is improved and more frequent monitoring, modelling and assessment of system capacity, which enables consideration of climate change.

Planning Horizons and Projections (Part 1)

Planning Horizons
The IMP identifies infrastructure needs and related study requirements to support development to the year 2046. This aligns with the planning period for the OP.

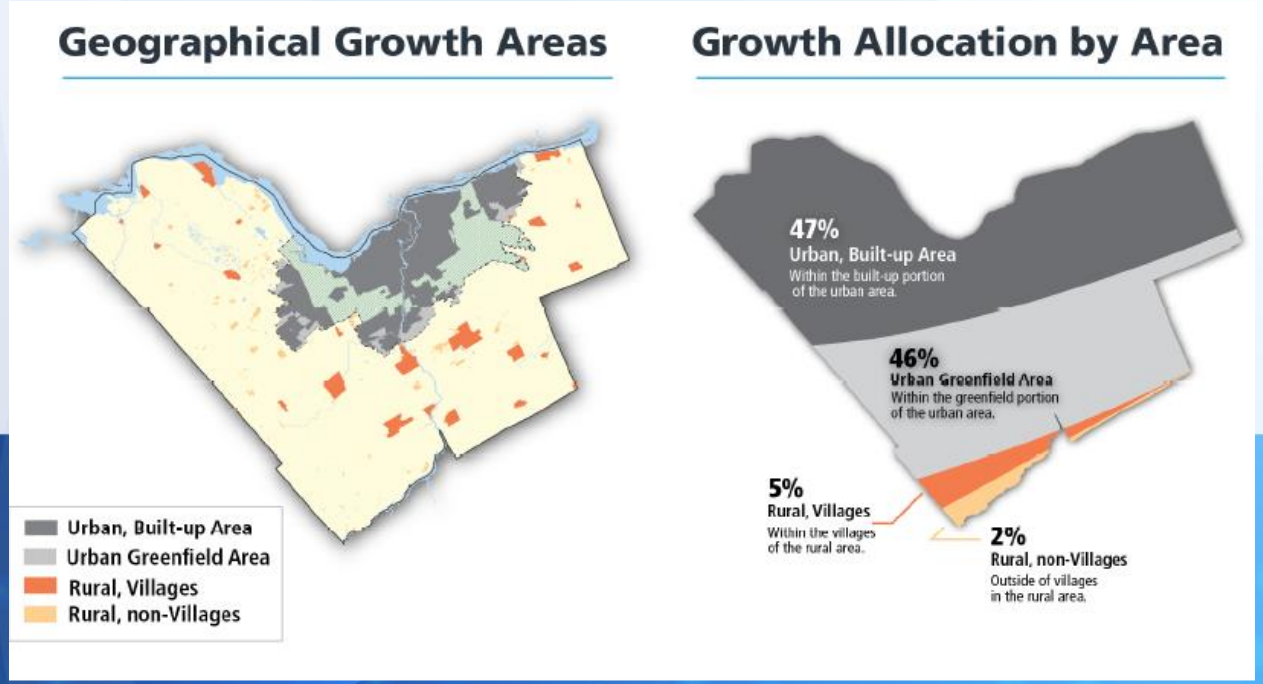
It is also critical that the planning of major infrastructure consider potential continued growth that extends beyond the OP horizon. To support this longer-term view, projections to the year 2101 have also been developed for the IMP.

The focus of this 2023 IMP is on projects serving growth during the period 2024-2046.

PROJECTED POPULATION, HOUSEHOLDS AND EMPLOYMENT, CITY OF OTTAWA, 2021 TO 2046

POPULATION	2021	1,064,000
	2026	1,142,000
	2031	1,219,000
	2036	1,292,000
	2041	1,355,000
	2046	1,410,000
HOUSEHOLDS	2021	429,000
	2026	468,000
	2031	505,000
	2036	537,000
	2041	565,000
	2046	591,000
EMPLOYMENT	2021	662,000
	2026	698,000
	2031	732,000
	2036	764,000
	2041	797,000
	2046	827,000

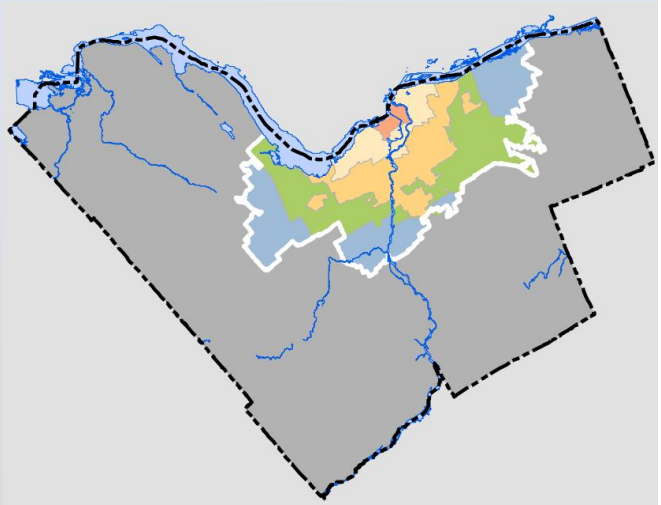
1. Population and households are adjusted for Census undercounting. Population includes institutional residents; households exclude institutional residences and vacant dwellings.

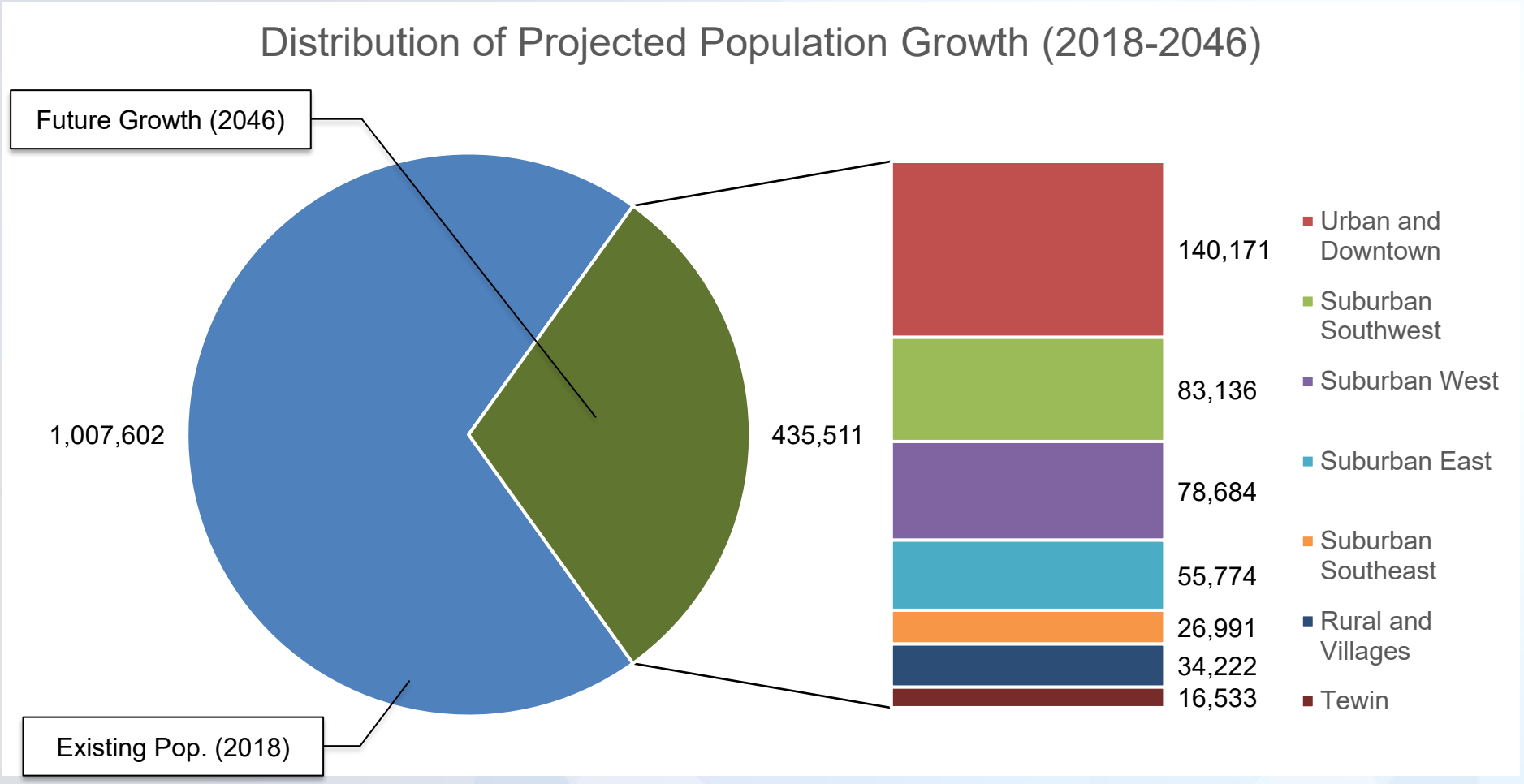


Planning Horizons and Projections (Part 2)

TRANSECT POLICY AREAS / SECTEURS STRATÉGIQUES DU TRANSECT

- Downtown Core / Centre-ville
- Inner Urban / Urbain intérieur
- Outer Urban / Urbain extérieur
- Greenbelt / Ceinture de verdure
- Suburban / Suburbain
- Rural / Rural





Urban Expansion and Public Service Areas

The growth management strategy in the OP adopted a balanced approach to meeting housing needs to the 2046 planning horizon, through a combination of growth by intensification in existing neighbourhoods, and greenfield development in urban expansion areas.

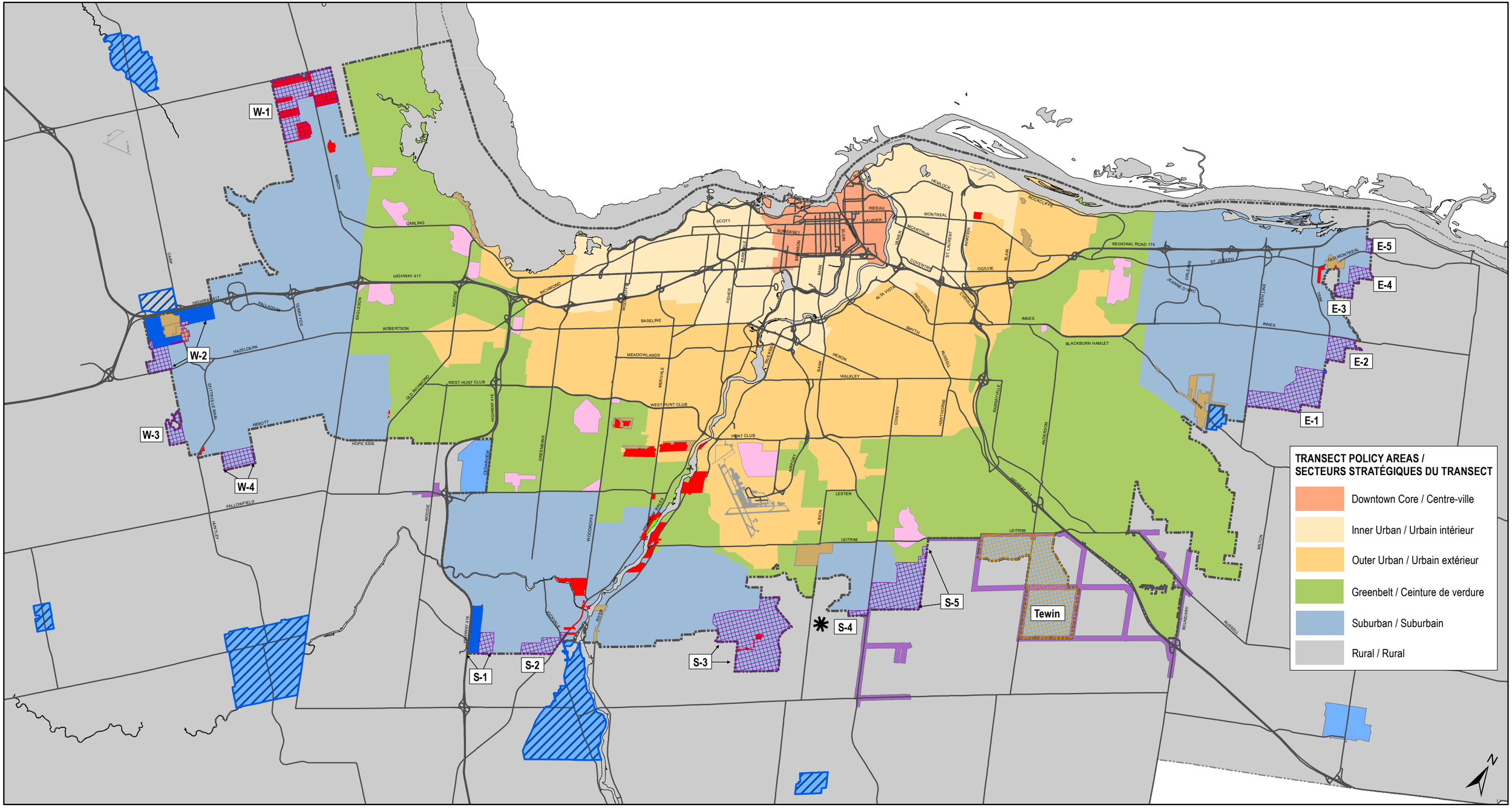
Public Service Areas (PSAs) are areas where the City **may** provide public water and wastewater services. The majority of the population of Ottawa is serviced by central water and wastewater facilities that are provided inside the urban boundary. Central facilities also service Federal properties inside the Greenbelt, various villages, and select rural areas where services have been extended to resolve public health concerns, or areas that have historical development approvals based on public services.

In addition to the central facilities, all, or parts of the Villages of Manotick, Carp, Greely, Richmond, Vars and Munster are serviced by communal water and/or wastewater systems.

The purpose of identifying these areas in the Infrastructure Master Plan is to ensure understanding and orderly planning in these areas. Complete references regarding the terms of service provision in these areas is detailed in separate municipal by-laws, legal, and servicing agreements.

Areas provided with public services are shown on the following board, with OP-approved urban expansion areas. It should be noted that within the urban area, there are a limited number of small communities that remain serviced by private wells and/or private waste disposal systems.

These areas have either become surrounded by serviced lands or have been encompassed by expanding urban boundaries. There are mechanisms under the Municipal Act for residents of these areas to apply for the extension of services at their own cost.



TRANSECT POLICY AREAS / SECTEURS STRATÉGIQUES DU TRANSECT

- Downtown Core / Centre-ville
- Inner Urban / Urbain intérieur
- Outer Urban / Urbain extérieur
- Greenbelt / Ceinture de verdure
- Suburban / Suburbain
- Rural / Rural

URBAN EXPANSION AREAS / ZONES D'EXPANSION URBAINE

- Category 1 - Future Neighbourhood Overlay / Catégorie 1 - Zone sous-jacente de quartier futur
- Category 2 - Future Neighbourhood Overlay - New Tewin Community / Catégorie 2 - Zone sous-jacente de quartier futur - Nouvelle communauté de Tewin
- Industrial and Logistics / Industrie et Logistique

PUBLIC SERVICE AREAS /

- Serviced Greenbelt Facilities / Installations de la Ceinture de verdure desservies
- Public Service Area - Water (outside the Urban Boundary) / Zone de services publics – Plans d'eau (hors du périmètre urbain)
- Public Service Area - Water (outside the Urban Boundary - limited connection capacity/availability) / Zone de services publics – Plans d'eau (hors du périmètre urbain – capacité/disponibilité limitée du raccordement)
- Public Service Area - Wastewater (outside the Urban Boundary) / Zone de services publics – Eaux usées (hors du périmètre urbain)
- Public Service Area - Water and Wastewater (outside the Urban Boundary) / Zone de services publics – Aqueduc et égout (hors du périmètre urbain)
- ✱ Rideau Carleton Raceway Casino public supplied water and wastewater through private systems / Casino hippodrome Rideau Carleton : alimentation en eau et aqueduc dans le cadre de réseaux privés

* All lands within the urban boundary that are not designated as Greenbelt or identified as a specific Service Area type are to be considered Public Service Area /
* Tous les terrains à l'intérieur des limites urbaines qui ne sont pas désignés comme Ceinture de verdure ou identifiés en tant que type de zone de service spécifique doivent être considérés comme zone de service public

PRIVATE SERVICES ENCLAVES IN THE URBAN AREA / ENCLAVES DE SERVICES PRIVÉS DANS LA ZONE URBAINE

- Private Wells and Wastewater Systems / Puits privés, Systèmes d'eaux usées privés
- Expansion Areas - Private Wells and Wastewater Systems / Puits privés, Systèmes d'eaux usées privés
- Private Wells and Public Wastewater Systems / Puits privés, Système d'eaux usées public
- Public Water and Private Wastewater Systems / Système d'aqueduc public, Systèmes d'eaux usées privés

Note: Private Wells and Wastewater Systems are shown where there are 5 or more clustered parcels.
There are many other individual lots with private services that are not shown on this plan. /
Remarque : Les puits privés et les systèmes d'eaux usées sont indiqués lorsqu'il y a 5 parcelles regroupées ou plus.
Il existe de nombreux autres lots individuels avec services privés qui ne sont pas représentés sur ce plan.

URBAN EXPANSION AND PUBLIC SERVICE AREAS / SECTEURS DE L'EXPANSION URBAINE ET ZONES DE SERVICES PUBLICS

Ottawa

Planning, Infrastructure and Economic Development Department,
Geospatial Analytics, Technology and Solutions
Services de la planification, de l'infrastructure et du développement économique,
Analyse géospatiale, technologie et solutions

Return to Display Board Guidance

Draft Infrastructure Policies

The 2023 IMP builds on the general policies in the OP to provide more detailed policies intended to guide the provision of water resources systems infrastructure for new development. New policies will be included in the 2023 IMP to address the following topics:

Level of Service	Master Servicing Studies	Groundwater Resource Protection	Public Service Areas
Intensification	Low Impact Development	Capacity Planning	Legal Stormwater Outlets
Monitoring, Modelling & Forecasting	Greenfield Infrastructure Planning & Design	Riverine Flood Hazards	Affordability & Financing

To learn more about the proposed policies, please consult the draft Infrastructure Policies document at the City project website: [Infrastructure Master Plan | Engage Ottawa]

Water and Wastewater Master Plans

Purpose and Scope of the Master Plans

The City's central systems provide cost-effective servicing allowing for high urban densities and intensification rates as projected in the Official Plan.

The main purpose of the Water and Wastewater Master Plans is to identify the key "**system backbone**" projects needed to support both greenfield and intensification growth, such as: water transmission mains, trunk sewers, water storage facilities, and pump stations.

The solutions identified in the plans aim to provide the necessary servicing capacity for 2046 growth demands, with a focus on optimizing the capacity of the existing system and avoiding solutions which rely solely on a single infrastructure component and restrict future servicing flexibility.

Potential capacity issues and upgrade needs for **local watermains and sewers** are addressed by the proposed new Intensification Servicing Program 2: ICM (Infrastructure Capacity Management).

Key Considerations

The following key considerations have informed the development of the Water and Wastewater Master Plans:

- Review of design criteria and level of service against previous works and industry best practices.
- Assessment of demand trends including pandemic impacts.
- Evaluation of system performance under existing, 2046 and potential longer-term conditions.
- Testing performance under different scenarios, including: typical daily operation, peak demand / extreme weather conditions, and potential major failures.
- Addressing the impacts of climate change.

Projects, costs, and timing as presented are preliminary and subject to review before Council approval of the IMP.

Water and Wastewater Project Funding

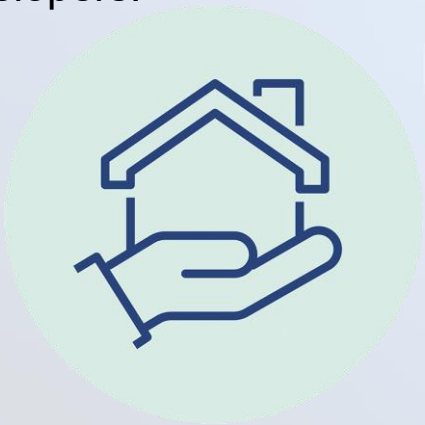
Infrastructure projects in Ottawa are funded through two sources: Development Charges and the City's Rate Budget.

What is the difference between them?

Development Charges

Every IMP project is driven by growth. The majority of costs for growth projects are funded through Development Charges (DC). DC funding is regulated by the Development Charges Act. Local servicing guidelines established by the City are used to determine which projects are DC eligible, and which projects only provide a local benefit and are to be paid for directly by the benefitting developers.

Every 5 years, a comprehensive review of DCs is completed through a DC Background Study. This study establishes a complete list of DC eligible projects and informs an amendment to the City's DC By-law. An updated By-law is to be passed by Council by May 2024.



Rate Budget

Every DC project is assessed as to whether there is a benefit to the operation of the existing systems or an improvement to the level of service provided to existing residents. If a "Benefit to Existing" (BTE) applies, then a portion of the project is funded by the City. For water, wastewater, and stormwater projects, BTE is funded through the City's rate budget. (The rate budget is funded through payments from residents to cover the cost of water, wastewater, and stormwater services.)

Projects supporting intensification tend to have higher BTE. The City establishes standard methods for calculating BTE for capital projects. These methods have recently been updated and have been applied to determine the BTE for each project identified in the IMP. BTE is subject to adjustment based on consultation with the development industry before the IMP is approved by Council.

Water Master Plan

The following are the key components of the existing water supply system:

- Source water for the City's central system comes from Ottawa River
- Water Treatment at Lemieux Island and Britannia Water Purification Plants
- 250 km of transmission mains and feedermains
- 3,000 km of local distribution piping
- The central system is divided into 11 pressure zones to provide water within accepted pressure ranges across the entire City
- The central system includes many facilities in addition to the treatment plants, including:
  - 17 pumping stations
  - 5 at-grade storage reservoirs
  - 4 elevated water storage tanks

The Water Master Plan identifies major future water projects. These consist of projects identified in the 2013 IMP, but have yet to be implemented, as well as new projects identified in the 2023 Water Master Plan.

The 2023 Water Master Plan has identified the need to create a new pressure zone in Stittsville. This is needed service higher elevation areas in the expansion areas on the west side of Stittsville. The new pressure zone will include some existing development areas, and pressures in these areas will improve as a result. To service this new pressure zone, a new booster PS is required, in addition to a new feedermain to augment supply to the area.

No improvements to the backbone of the system are required specifically to address intensification needs. Upgrades to small diameter local watermains that will be needed to support intensification will be identified through the proposed Intensification Servicing Program 2: ICM (Infrastructure Capacity Management).

Water Master Plan – Capital Program (Part 1)

The following table lists all projects recommended in the Water Master Plan (except for the Tewin area), including the benefitting area, the required timeframe for implementation, total capital cost, and the portion of costs to be funded by Development Charges. The list of projects continue to the following board.

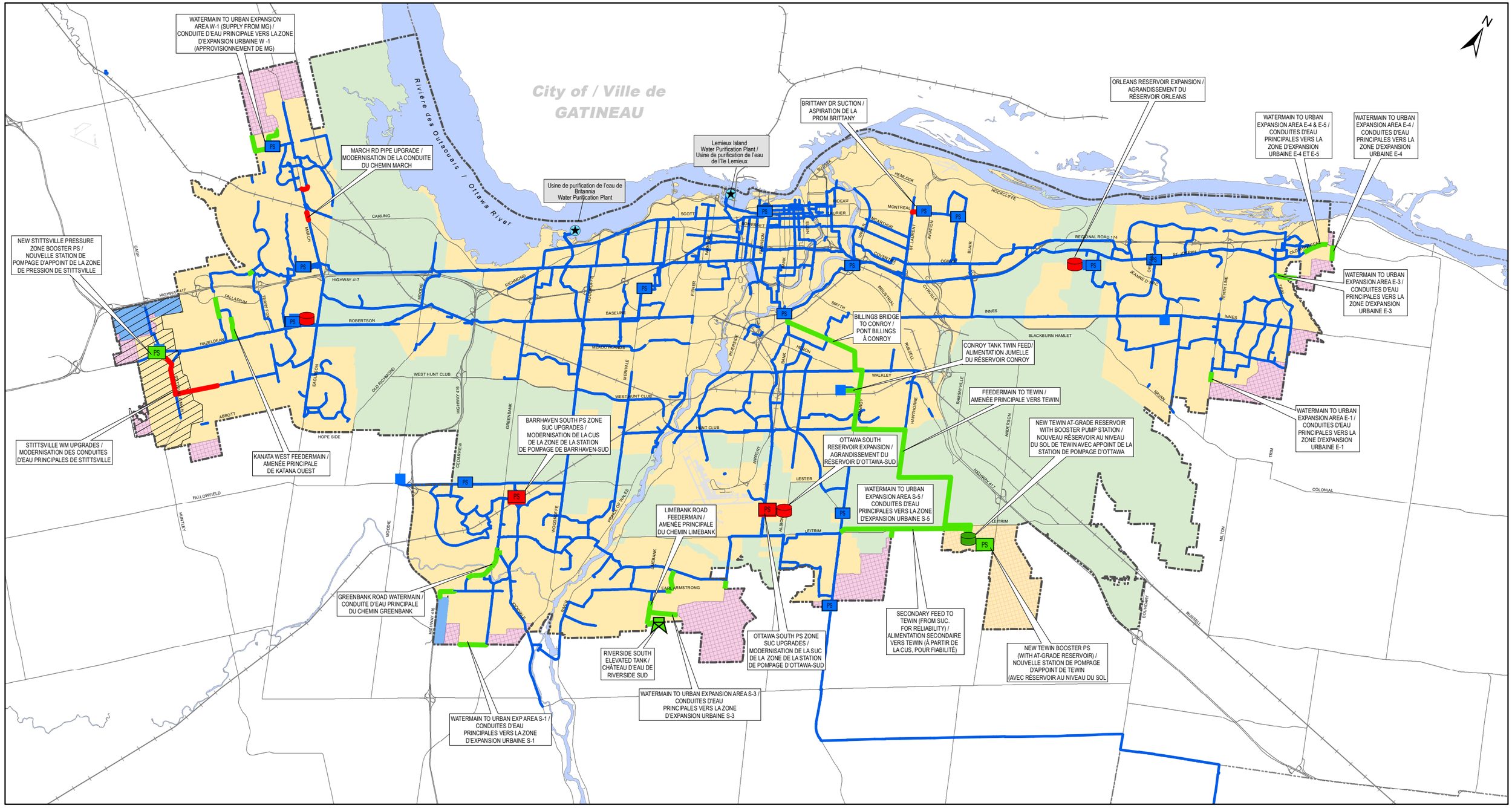
Project Name	Area	Identified in 2013 Master Plan	Timing	Total Capital Cost Estimate	% DC-funded
Barrhaven PS Upgrade	Suburban southwest	Yes	2024-2029	$1.2M	90%
Glen Cairn Storage Upgrade	Suburban west	Yes	2029-2034	$87.7M	100%
Kanata West Feedermain	Suburban west	No	2029-2034	$16.3M	90%
March Rd Upgrades	Suburban west	No	2024-2029	$5.0M	90%
New Stittsville PS	Suburban west	No	2039-2044	$16.2M	80%
Stittsville WM Upgrades	Suburban west	No	2039-2044	$23.3M	95%
New Watermains for Urban Expansion Area W-1	Suburban west	No	2039-2044	$15.5M	100%
Orleans Storage Upgrade	Suburban east	Yes	2029-2034	$147.7M	100%
New Watermain for Urban Expansion Area E-1	Suburban east	No	2039-2044	$2.8M	100%
New Watermain for Urban Expansion Area E-3	Suburban east	No	2039-2044	$5.9M	100%
New Watermain for Urban Expansion Area E-4 & E-5	Suburban east	No	2039-2044	$6.7M	100%
New Watermain for Urban Expansion Area E-4	Suburban east	No	2039-2044	$4.3M	100%

Projects, costs, and timing as presented are preliminary and subject to review before Council approval of the IMP.

Water Master Plan – Capital Program (Part 2)

Project Name	Area	Identified in 2013 Master Plan	Timing	Total Capital Cost Estimate	% DC-funded
New Watermain for Urban Expansion Area S-5	Suburban southeast	No	2039-2044	$2.9M	100%
Ottawa South PS Upgrade	Suburban southeast	Yes	2029-2034	$6.3M	100%
Ottawa South Storage Upgrade	Suburban southeast	Yes	2034-2039	$53.3M	90%
SUC Pumping Upgrades	Suburban southeast	No	2034-2039	$6.3M	100%
SUC Pumping Upgrades	Suburban southeast	No	2039-2044	$8.7M	100%
New Riverside South Elevated Tank	Suburban southwest	Yes	2039-2044	$33.8M	90%
Limebank Feedermain	Suburban southwest	No	2029-2034	$20.8M	90%
Greenbank Watermain	Suburban southwest	No	2029-2034	$11.3M	90%
New Watermain for Urban Expansion Area S-1	Suburban southwest	No	2039-2044	$13.4M	100%
New Watermains for Urban Expansion Area S-3	Suburban southwest	No	2039-2044	$15.5M	100%
Brittany Dr Suction Upgrade	Urban and downtown	Yes	2039-2044	$3.0M	50%

Projects, costs, and timing as presented are preliminary and subject to review before Council approval of the IMP.



EXISTING / EXISTANT

- Treatment Plant / Usine de traitement
- Existing Pump Station / Existant station de pompage
- Water Storage Facility / Réservoirs d'eau
- Watermains (No upgrades; diameter ≥400mm) / Conduites d'eau principales (pas de travaux de modernisation; diamètre de ≥400 mm)

PS RECOMMENDATIONS / STATION DE POMPAGE : RECOMMANDATIONS

- New PS (New Project) / Nouvelle station de pompage (nouveau projet)
- Existing PS Expansion (New Project) / Agrandissement de la station de pompage existante (nouveau projet)

STORAGE RECOMMENDATIONS / STOCKAGE : RECOMMANDATIONS

- New Elevated Tank / Nouveau château d'eau
- New Reservoir (New Project) / Nouveau réservoir (nouveau projet)
- Existing Reservoir Expansion (New Project) / Agrandissement du réservoir existant (nouveau projet)

WATERMAIN RECOMMENDATIONS / CONDUITE D'EAU PRINCIPALE : RECOMMANDATIONS

- New Watermain / Nouvelles conduites d'eau principales
- Watermain Upgrades / Modernisation des conduites d'eau principales
- Future Pressure Zone / Zone de pression projetée

URBAN EXPANSION AREAS / ZONES D'EXPANSION URBAINE

- Category 1 - Future Neighbourhood Overlay / Catégorie 1 - Zone sous-jacente de quartier futur
- Category 2 - Future Neighbourhood Overlay - New Tewin Community / Catégorie 2 - Zone sous-jacente de quartier futur - Nouvelle communauté de Tewin
- Industrial and Logistics / Industrie et Logistique
- Urban Boundary / Périmètre d'urbanisation
- Greenbelt / Ceinture de verdure
- Public Service Area / Zone de desserte

EXISTING AND PROPOSED WATER SYSTEM / RÉSEAU D'AQUEDUC EXISTANT ET PROPOSÉ

Planning, Infrastructure and Economic Development Department, Geospatial Analytics, Technology and Solutions
Services de la planification, de l'infrastructure et du développement économique, Analyse géospatiale, technologie et solutions

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Wastewater Master Plan

The catchment area of the wastewater collection system covers approximately 3,000 km^2, servicing a current population of approximately 1 Million. The following are the key components of the system:

- Robert O. Pickard Environmental Centre (ROPEC) wastewater treatment plant.
- More than 3,000 km of gravity sanitary sewers.
- 55 pumping stations and more than 90 km of forcemains.
- The City's combined sewage system including:
  - More than 100 km of combined sewers.
  - Measures to minimize combined sewage overflows to the Ottawa River including the Combined Sewage Storage Tunnel and a real time control system.

The Wastewater Master Plan identifies major future wastewater projects. These consist of projects identified in the 2013 IMP, but have yet to be implemented, as well as new projects identified in the 2023 Wastewater Master Plan.

The Plan includes eight new projects that will support intensification. Five of these projects involve the diversion of sanitary sewage from trunk sewers with limited available capacity to trunk sewers with significant excess capacity. This will create capacity where it is needed to support intensification.

It is expected that additional projects will be needed to support intensification, involving upgrades to small diameter local sewers. These needs will be addressed through the proposed Intensification Servicing Program 2: ICM (Infrastructure Capacity Management).

Wastewater Master Plan – Capital Program (Part 1)

The following table lists all projects recommended in the Wastewater Master Plan (except for the Tewin area), including the benefitting area, the required timeframe for implementation, total capital cost, and the portion of costs to be funded by Development Charges. The list of projects continues to the following board.

Project Name	Area	Identified in 2013 Master Plan	Timing	Total Capital Cost Estimate	% DC-funded
Carp PS Capacity Upgrade and Forcemain	Rural	Yes	2029-2034	$31.1M	45
Richmond PS Forcemain Twinning Stage 3	Rural	Yes	2024-2029	$33.8M	75
King Street Trunk Sewer Upgrade	Rural	No	2024-2039	$6.0M	75
Manotick Main PS Capacity Upgrade (interim)	Rural	Yes	2024-2029	$2.3M	100
Manotick Main PS Capacity Upgrade (ultimate)	Rural	Yes	2044-2046	$4.0M	100
Mahogany PS Capacity Upgrade	Rural	No	2029-2034	$2.4M	100
March PS Capacity Upgrade	Suburban west	Yes	2039-2044	$3.0M	70
Signature Ridge PS Forcemain	Suburban west	Yes	2029-2034	$10.5M	100
Penfield Trunk Collector Upgrade	Suburban west	No	2029-2034	$8.0M	95
Stittsville PS Decommissioning and Gravity Sewer	Suburban west	Yes	2024-2029	$6.4M	30
Shea Road PS Capacity Upgrade	Suburban west	Yes	2029-2034	$0.7M	100
Acres PS Capacity Upgrade Phase 2	Suburban west	Yes	2024-2029	$23.3M	48
Acres PS Capacity Upgrade Phase 3	Suburban west	Yes	2029-2034	$31.3M	39
Acres PS Overflow	Suburban west	Yes	2034-2039	$24.4M	90

Projects, costs, and timing as presented are preliminary and subject to review before Council approval of the IMP.

Wastewater Master Plan – Capital Program (Part 2)

Project Name	Area	Identified in 2013 Master Plan	Timing	Total Capital Cost Estimate	% DC-funded
Kanata West Diversion and Oversizing	Suburban west	No	2029-2034	$3.9M	97*
Spratt Road Collector Upgrade	Suburban southwest	No	2029-2034	$15.5M	95
Conroy Road Trunk Collector Upgrade	Suburban southeast	No	2029-2034	$27.5M	95
Forrest Valley PS Upgrade (interim)	Suburban east	Yes	2029-2034	$2.4M	100
Forrest Valley PS Upgrade (ultimate)	Suburban east	Yes	2034-2039	$2.8M	100
Tenth Line PS Capacity Upgrade	Suburban east	No	2034-2039	$1.8M	100
Merivale South Sewer Extension	Urban and downtown	No	2024-2029	$5.3M	100
Merivale North Diversion and Sewer Oversizing	Urban and downtown	No	2024-2029	$6.2M	25
Baseline Road Trunk Collector Oversizing	Urban and downtown	No	2029-2034	$4.0M	5
Pinecrest Trunk Collector Upgrade	Urban and downtown	No	2029-2034	$10.8M	80*
Crystal Beach PS and Forcemain	Urban and downtown	No	2029-2034	$36.2M	60
Woodroffe PS and Forcemain	Urban and downtown	No	2029-2034	$30.4M	60
Prince of Wales Diversion Sewer	Urban and downtown	No	2039-2044	$4.7M	60
Airport Parkway Diversion Sewer	Urban and downtown	No	2024-2029	$9.3M	95

*Project currently not DC eligible based on local servicing guidelines. Growth projections and flow rates to be confirmed.

Projects, costs, and timing as presented are preliminary and subject to review before Council approval of the IMP.

City of / Ville de
GATINEAU

CARP PS CAPACITY UPGRADE/ AUGMENTATION DE LA CAPACITÉ DE LA SP DE CARP

CARP FORCEMAIN / CONDUITE DE REFOULEMENT DE CARP

SIGNATURE RIDGE PS FORCEMAIN / CONDUITE DE REFOULEMENT DE LA SP DE SIGNATURE RIDGE

KANATA WEST DIVERSION SEWER AND OVERSIZING / ÉGOUT DE DÉCHARGE ET SURDIMENSIONNEMENT DE KANATA-OUEST

STITTSVILLE PS DECOMMISSIONING AND GRAVITY SEWER / MISE HORS SERVICE DE LA SP DE STITTSVILLE ET ÉGOUT GRAVITAIRE

SHEA ROAD PS CAPACITY UPGRADE / AUGMENTATION DE LA CAPACITÉ DE LA SP DU CHEMIN SHEA

RICHMOND KING STREET TRUNK SEWER UPGRADE / MODERNISATION DU GRAND COLLECTEUR DE LA RUE KING À RICHMOND

MARCH PS CAPACITY UPGRADE / AUGMENTATION DE LA CAPACITÉ DE LA SP DU CHEMIN MARCH

PENFIELD DRIVE TRUNK COLLECTOR UPGRADE / MODERNISATION DU GRAND COLLECTEUR DE LA PROMENADE PENFIELD

RICHMOND PS FORCEMAIN TWINNING STAGE 3 / ÉTAPE 3 DU JUMELAGE DE LA CONDUITE DE LA SP DE RICHMOND

ACRES PS CAPACITY UPGRADE AND OVERFLOW / MODERNISATION DE LA CAPACITÉ DE LA SP DU CHEMIN ACRES ET SURVERSE

CRYSTAL BEACH DIVERSION PS UPGRADE AND FORCEMAIN / CONDUITE DE REFOULEMENT ET MODERNISATION DE LA SP POUR LE DÉTOURNEMENT DES EAUX USÉES DE LA PLAGE CRYSTAL

PINECREST TRUNK COLLECTOR UPGRADE / MODERNISATION DU GRAND COLLECTEUR DE PINECREST

BASELINE ROAD TRUNK COLLECTOR OVERSIZING / SURDIMENSIONNEMENT DU GRAND COLLECTEUR DU CHEMIN

WOODROFFE DIVERSION PS UPGRADE AND FORCEMAIN / CONDUITE DE REFOULEMENT ET MODERNISATION DE LA SP POUR LE DÉTOURNEMENT DES EAUX USÉES DE WOODROFFE

MERIVALE ROAD NORTH DIVERSION SEWER AND OVERSIZING / ÉGOUT DE DÉCHARGE NORD DU CHEMIN MERIVALE ET SURDIMENSIONNEMENT

MERIVALE ROAD SOUTH SEWER EXTENSION / PROLONGEMENT DE L'ÉGOUT SUD DU CHEMIN MERIVALE

BORDEN SIDE ROAD DIVERSION SEWER/ ÉGOUT DE DÉCHARGE DE LA CHEMIN BORDEN

AIRPORT PARKWAY DIVERSION SEWER / ÉGOUT DE DÉCHARGE DE LA PROMENADE DE L'AÉROPORT

CONROY ROAD TRUNK COLLECTOR UPGRADE / MODERNISATION DU GRAND COLLECTEUR DU CHEMIN CONROY

SPRATT ROAD COLLECTOR UPGRADE / MODERNISATION DU COLLECTEUR DU CHEMIN SPRATT

MANOTICK MAIN PS CAPACITY UPGRADE / AUGMENTATION DE LA CAPACITÉ DE LA SP DE MANOTICK MAIN

MAHOGANY PS CAPACITY UPGRADE / AUGMENTATION DE LA CAPACITÉ DE LA SP DE MAHOGANY

Centre environnemental R.O. Pickard Environmental Centre (ROPEC) / Centre environnemental Robert-O.-Pickard (CEROP)

TEWIN COLLECTOR / COLLECTEUR DE TEWIN

FORREST VALLEY PS CAPACITY UPGRADE / AUGMENTATION DE LA CAPACITÉ DE LA SP DE FORREST VALLEY

TENTH LINE PS CAPACITY AND FORCEMAIN UPGRADE / MODERNISATION DE LA CONDUITE DE REFOULEMENT ET AUGMENTATION DE LA CAPACITÉ DE LA SP DU CHEMIN TENTH LINE

Rivière des Outaouais / Ottawa River

NEW PROJECTS / DE NOUVEAUX PROJETS

- New Diversion Sewer / Nouvel égout de décharge
- New Sewer Upgrade / Nouvelle modernisation de l'égout
- New Forcemain / Nouvelle conduite de refoulement
- New Sanitary Sewer / Nouvel égout sanitaire
- Wastewater Pump Station Upgrade / Modernisation de la station de pompage des eaux usées
- Diversion Pump Station Upgrade / Modernisation de la station de pompage de détournement

EXISTING INFRASTRUCTURE / INFRASTRUCTURES EXISTANTES

- Combined Sewage Storage Tunnel / Tunnel de stockage des égouts unitaires
- Combined Trunk Sewer / Égout unitaire collecteur
- Sanitary Trunk Sewer / Égout sanitaire collecteur
- Forcemain / Conduite de refoulement
- Chamber / Chambre
- Storage Tank / Réservoir de stockage
- Treatment Plant / Usine de traitement
- Main Pump Station / Station de pompage principale
- Local Pump Station / Station de pompage locale

URBAN EXPANSION AREAS / ZONES D'EXPANSION URBAINE

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EXISTING AND PROPOSED WASTEWATER SYSTEM / RÉSEAU D'ÉGOUT EXISTANT ET PROPOSÉ

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Infrastructure Serving Tewin

At 445 hectares, the Tewin Development is the largest urban expansion area approved through the 2022 Official Plan. It is unique in that it is not contiguous to the existing urban area and will require major infrastructure extensions in order to service this area in the southeast of Ottawa.

Key Considerations

- These major investments require consideration of potential growth of the Tewin area beyond 2046.
- The majority of infrastructure needed to support Tewin will be needed before the first home is occupied. This means that there will be very little demand on high-capacity infrastructure in the initial years of development. This creates significant operational challenges that require both capital and operational solutions.

Infrastructure Solutions

Major extensions of trunk water and wastewater infrastructure will be needed over a distance of 8 to 10 km, crossing the NCC Greenbelt. The Water and Wastewater Master Planning process has determined that the following major infrastructure is needed to service Tewin:

- New major feeder watermains
- New water booster pumping station
- New water reservoir
- New major sanitary collection sewers

Additional project information including mapping and costs are provided on the following boards.

Note: Studies of Bear Brook and Ramsay Creek will be needed to support the preparation of an Environmental Management Plan and Master Servicing Study for Tewin. As for other expansion areas, these documents will determine stormwater management requirements and any works needed within the downstream watercourses. As the Bear Brook system includes Municipal Drains, Drainage Act approvals will also be required.

Infrastructure Servicing Tewin

Costs, Funding, and Project Timing

Most of the infrastructure required to serve Tewin will serve future Tewin residents but provides no benefit to existing residents or other planned developments. However, the reinforcement of the City's feedermain system between Billings Bridge and the Conroy Elevated Tank will improve water pressures for existing residents in this general area and will be partially funded by the City's rate budget. In addition to this infrastructure, capacity upgrades to the City's water purification and wastewater treatment plants will need to account for Tewin. Funding mechanisms for Tewin are yet to be confirmed.

Projects	2024-2029		2029-2034		2034-2039		2039-2044		2044-2046		2024-2046		
	Capital Cost (M)	BTE (M)	Capital Cost (M)	BTE (M)	Capital Cost (M)	BTE (M)	Capital Cost (M)	BTE (M)	Capital Cost (M)	BTE (M)	**Capital Cost (M)**	**BTE (M)**	**% BTE**
Primary Water Feed			$183.2	$0							**$183.2**	**-**	**0**
Secondary Water Feed					$52.7	$0					**$52.7**	**-**	**0**
Billings Bridge to Conroy Feed					$85.0	$17.0					**$85.0**	**$17.0**	**20**
Pump Station & Reservoir			$42.2	$0							**$42.2**	**-**	**0**
Conroy Tank Feed					$12.4	$2.5					**$12.4**	**$2.5**	**20**
Trunk Sewer			$123.2	0							**$123.2**	**0**	**0**
Total			**$348.6**		**$150.1**	**$19.5**					$498.7	$19.5	

Projects, costs, and timing as presented are preliminary and subject to review before Council approval of the IMP.

Tewin Servicing

This map shows the off-site drinking water and sanitary infrastructure needed to service Tewin.

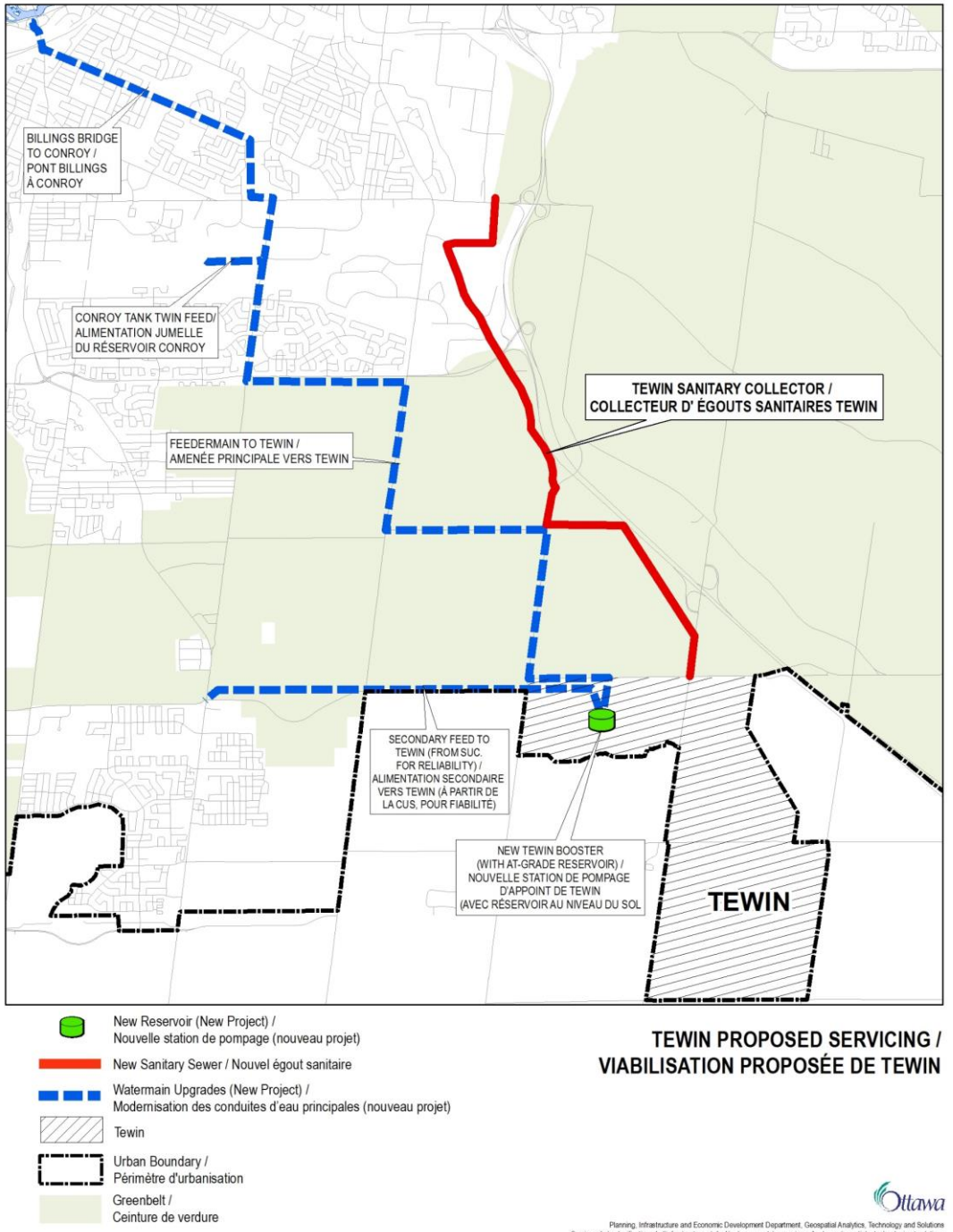
The mapping identifies:

Water Projects

- A primary water feedermain extending NW 11 km to the Conroy elevated tank.
- A secondary feedermain extending west 5 km to the Leitrim area.
- A 7.5 ML on-site reservoir and pumping station.
- Upgrades to the existing water feedermain system between Billings Bridge and the Conroy tank.

Wastewater

- A trunk sanitary sewer extending north 8.0 km to the South Ottawa Tunnel.



Overall Water and Wastewater Master Plan Costs (Part 1)

Costs, Funding, and Project Timing

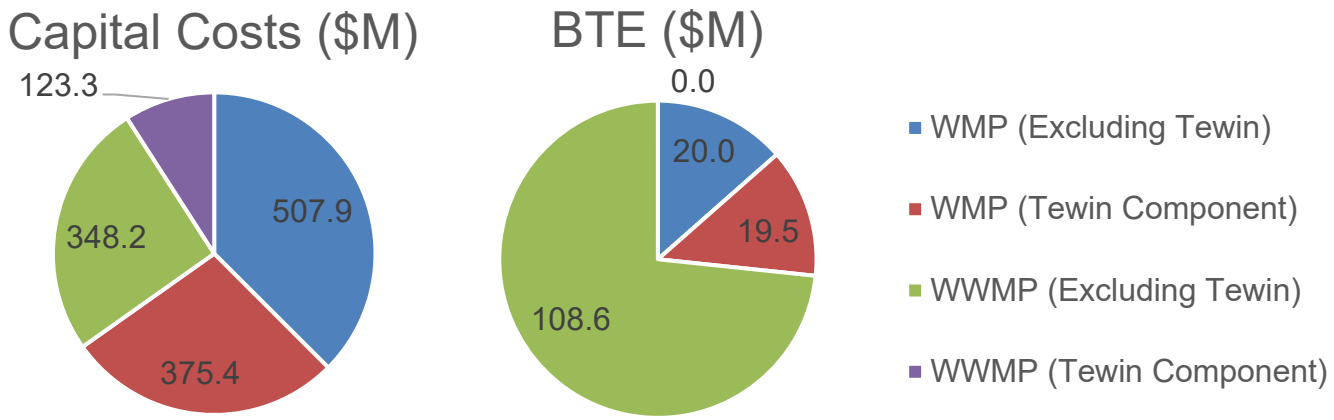
The following is a summary of costs per 5-year interval between now and the 2046 planning horizon. Timing is approximate and will depend on several factors including: affordability analysis to be completed before Council approval of IMP; collection of Development Charges in benefiting area; and project-specific funding agreements. The projects are mainly funded by Development Charges but many projects do provide a benefit to the performance of the existing water and wastewater systems and will therefore be partially funded by the City's rate budgets. This table excludes projects needed at the City's water purification and wastewater treatment plants.

Projects	2024-2029		2029-2034		2034-2039		2039-2044		2044-2046		2024-2046		
	Capital Cost (M)	BTE (M)	Capital Cost (M)	BTE (M)	Capital Cost (M)	BTE (M)	Capital Cost (M)	BTE (M)	Capital Cost (M)	BTE (M)	**Capital Cost (M)**	**BTE (M)**	**% BTE**
Water Master Plan*	$6.2	$0.6	$290.1	$4.8	$59.6	$5.3	$152.0	$9.3	$0	$0	**$507.9**	**$20.1**	**4**
Wastewater Master Plan*	$92.9	$31.8	$214.6	$71.6	$26.2	$2.4	$10.6	$2.8	$4.0	0	**$348.2**	**$108.6**	**31.2**
Tewin – Water**			$225.4	$0	$150	$19.5					**$375.4**	**$19.5**	**5**
Tewin – Wastewater**			$123.3	$0							**$123.3**	**0**	**0**
Total	$99.1	$32.4	$853.4	$76.4	$235.8	$27.2	$162.6	$12.1	$4.0	$0	**$1,354.8**	**$148**	**11**

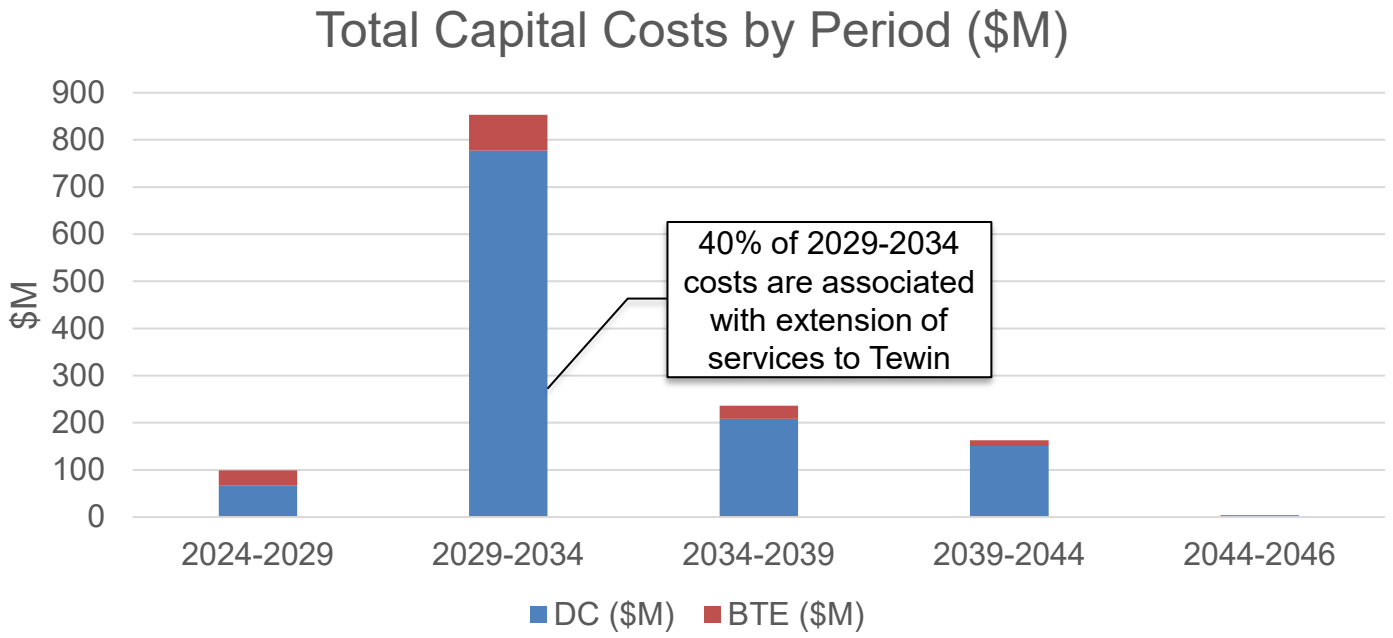
*** Excludes Tewin** **** Funding mechanism to be determined (may not involve use of Development Charges)**

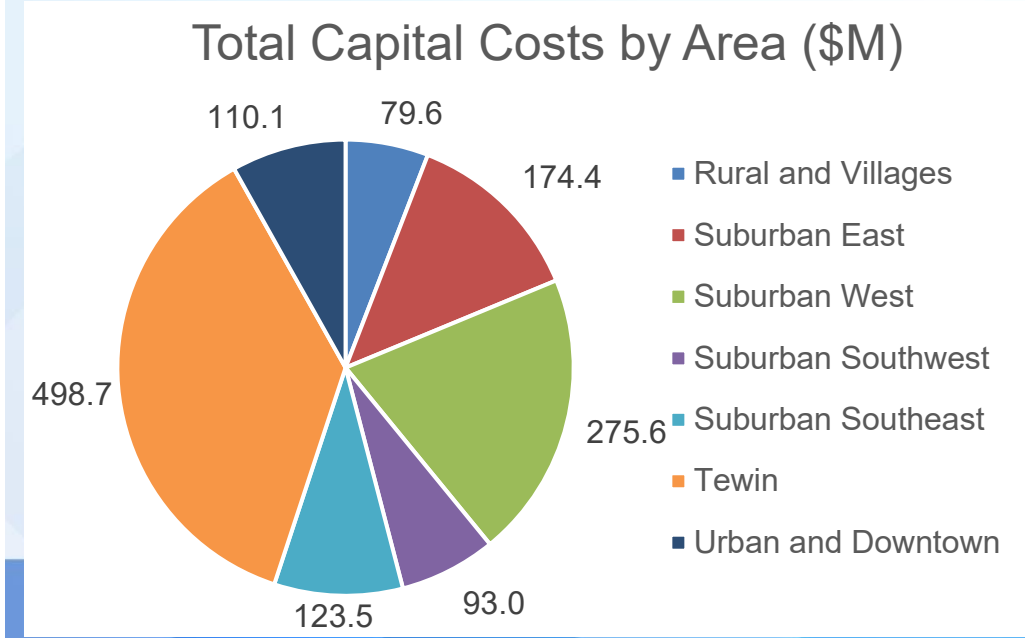
Projects, costs, and timing as presented are preliminary and subject to review before Council approval of the IMP.

Overall Water and Wastewater Master Plan Costs (Part 2)



These charts are a graphical representation of the information on the previous board. Costs by geographical area are also presented in the pie chart below.





Water Purification and Wastewater Treatment Master Plans (Part 1)

Master Plans for the City's two water purification plants (Lemieux Island and Britannia) and the City's wastewater treatment plant (Robert O Pickard Environmental Centre – ROPEC) are being prepared as separate initiatives, based on the 2046 and longer-term growth projections. Growth-related projects are being identified at the Lemieux Island plant and at ROPEC, and this information will inform the 2024 Development Charges By-law Update. The IMP will report on the status of these initiatives at the time of publication.

Robert O Pickard Environmental Centre Master Plan

ROPEC Plant treats all sanitary sewage generated in the City's central sewage collection system, serving a population of ~1 Million. The Plant has an average day flow capacity of 545 Megaliters per Day (MLD), and a peak flow capacity of 1,362 MLD. Some of the treatment processes have sufficient capacity to meet 2046 demands, but capacity bottlenecks will arise before the planning horizon. These will need to be addressed through a prioritized series of capital projects. The Master Plan will address a broad range of non-growth issues such as physical condition of existing assets, climate change adaptation, and energy efficiency. The plan is expected to be completed by January 2024. Capacity upgrades are anticipated for the Raw Wastewater Pumping, Screen and De-grit, Primary clarifier, Digestion, and Biosolids Dewater facilities, as well as the Plant outfall.

Water Purification and Wastewater Treatment Master Plans (Part 2)

Water Purification Plants Master Plan

The Lemieux Island and Britannia Water Purification Plants draw water from the Ottawa River and supply a population of a ~1 Million. The plants supply residents directly via the City's central water distribution system, or indirectly via storage facilities located across the City. The rated capacities of the plants are 400 Megaliters per Day *(*MLD) at Lemieux and 360 MLD at Britannia. However, under winter (cold water) conditions, the effective treatment capacities are only 250 MLD and 320 MLD, respectively.

Based on the 2046 projections and planned water storage projects (see Water Master Plan), capacity expansion is not required at either plant within the planning horizon to meet future peak summer demands under normal operating conditions. However, capacity upgrades at Lemieux Island are required to provide sufficient capacity to meet future demands under winter conditions when the Britannia plant is out of service. The need for this project was first identified in the 2014 DC By-law. Based on the updated master plan, the timing and cost for the project is as follows:

Project Name	Area	Identified in 2013 Master Plan	Timing	Total Capital Cost Estimate	% Growth
Lemieux Island Winter Capacity Upgrade	City-wide	Yes	2029-2034	$28.2	75

Stormwater Management Strategy

Purpose of the Strategy

The main purpose of the Strategy is to provide high-level guidance on the management of stormwater to protect watercourses against the impacts of development and to protect properties from flooding. The guidance includes a stormwater management planning framework for Future Neighbourhood areas, and recommendations regarding climate change, floodplain mapping, Low Impact Development (LID), and retrofits to existing stormwater systems.

Key Considerations

- Stormwater infrastructure planning objectives build from the Provincial Policy Statement (2020) and the OP which provide policy direction and sets the framework for regulating land use planning and development.
- New provincial requirements for runoff volume control.
- Council approved Pinecrest/Westboro and Eastern Subwatersheds Retrofit Studies.

Key Recommendations

- Expand scope of climate change considerations in the planning and design stormwater infrastructure through the review of City design guidelines.
- Update floodplain mapping or create new mapping for Future Neighbourhood areas.
- Adopt master planning requirements for each Future Neighbourhood area.
- Plan future retrofit studies based on updated priorities under the Stormwater Retrofit Program.
- Provide streamlined direction on LID to support development.

The following boards elaborate on some of the above recommendations.

Intensification development impacts on stormwater infrastructure is addressed by proposed new Infrastructure Servicing Programs.

Floodplain Mapping Program

The objective of the **Floodplain mapping program** is to identify flood hazard limits and inform planning and decision making such that riverine flooding risks to people and property are minimized. Floodplain mapping is produced and updated by local Conservation Authorities (CAs) in partnership with the City for watercourses throughout the city.

Regulatory Floodplain Mapping

For Eastern Ontario, the 1 in 100-year flood event is the regulatory standard for floodplain mapping. Development is generally prohibited in the 1 in 100-year floodplain. Requirements for floodplain studies, in support of development applications will be identified in consultation with the City and the appropriate CA.

City and CA staff have reviewed the planned growth areas and identified priority watercourses for updates to mapping or new mapping between 2023 and 2028.

Priority areas include watercourses within and downstream of planned Urban Expansion Areas as well as urban watercourses where significant intensification is expected within the subwatershed.

Climate Change (1 in 350-year) Floodplain Mapping

To reduce the risks associated with climate change, OP policy defines the climate change flood vulnerable area as area between the 1 in 100-year floodplain and the 1 in 350-year floodplain. Development will not be prohibited or limited in these areas. However, development will be required to assess riverine flood risks and include mitigation measures to reduce or avoid identified flood risks where an approval under the Planning Act is required to permit the development.

Note: Floodplain mapping updates are provided on the City's interactive map web page:
Flood Plain Mapping and Climate Change | City of Ottawa

Master Planning Requirement for Future Neighbourhoods

Development applications will generally be supported by an approved Concept Plan or a Community Design Plan, depending on scale, context and existing available information. The stormwater management planning process will generally require approved Subwatershed Studies (SWSs), Environmental Management Plans (EMPs), Master Servicing Studies (MSSs), updated Floodplain Mapping, and updated Drainage Act by-law, where applicable.

- SWSs are to establish stormwater management objectives and criteria.
- EMPs are guided by the criteria and recommendations provided by SWSs, where applicable. In areas where an SWS is not available, the Terms of Reference for EMPs will identify watershed-scale studies to be completed to establish SWM objectives and criteria.
- MSSs are to detail servicing requirements to implement EMPs recommendations.

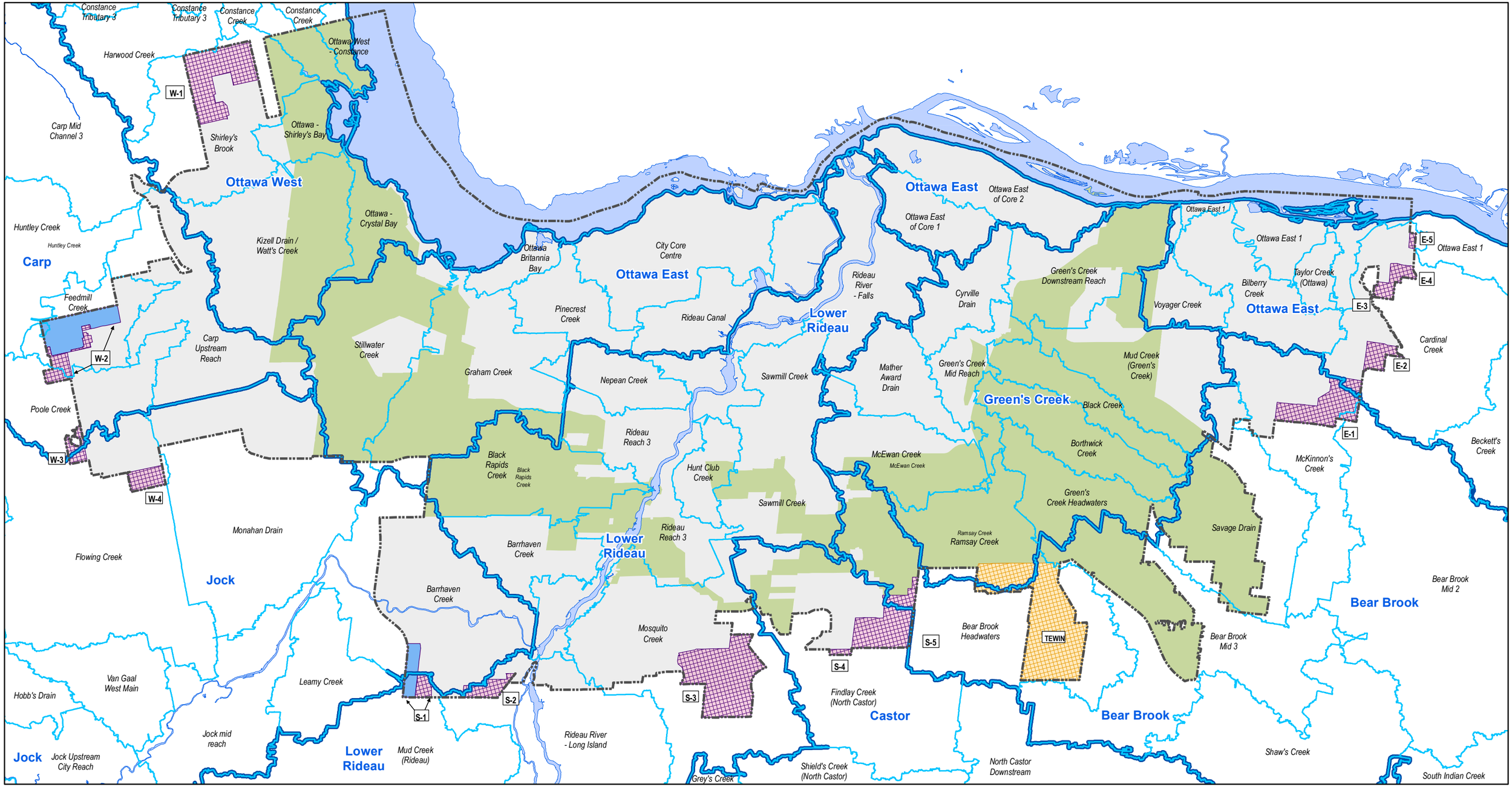
Future Neighbourhoods are presented within the context of existing watersheds and subwatersheds on the next board.

Terms of Reference (ToR) for MSSs and EMPs will be prepared for each urban expansion area and approved by the City. The ToR will describe the scope of work required for the specific study areas.

- Guidelines for preparing ToRs for a MSS will be appended in the draft final IMP.
- Standard ToR for EMPs will be made public through a separate process.

Direction on LID will generally be provided through subwatershed level studies and/or EMPs, where area-specific runoff volume control targets are defined for greenfield developments.

- A water budget assessment is required to support all SWSs, EMPs and MSSs. This assessment is a critical step in defining runoff volume control objectives and stormwater management criteria.
- Water budget standard ToR will be made public through a separate process.



URBAN EXPANSION AREAS / ZONES D'EXPANSION URBAINE

- Category 1 - Future Neighbourhood Overlay / Catégorie 1 - Zone sous-jacente de quartier futur
- Category 2 - Future Neighbourhood Overlay - New Twin Community / Catégorie 2 - Zone sous-jacente de quartier futur - Nouvelle communauté de Twin
- Industrial and Logistics / Industrie et Logistique
- Subwatershed / Sous-Basin hydrograqhiques
- Minor Watersheds / Bassin hydrographiques mineur
- Urban Boundary / Périmètre d'urbanisation
- Greenbelt / Ceinture de verdure

URBAN EXPANSION AREAS WITH WATERSHED MAPPING / SECTEURS DE L'EXPANSION URBAINE ET CARTOGRAPHIE DU BASSIN VERSANT

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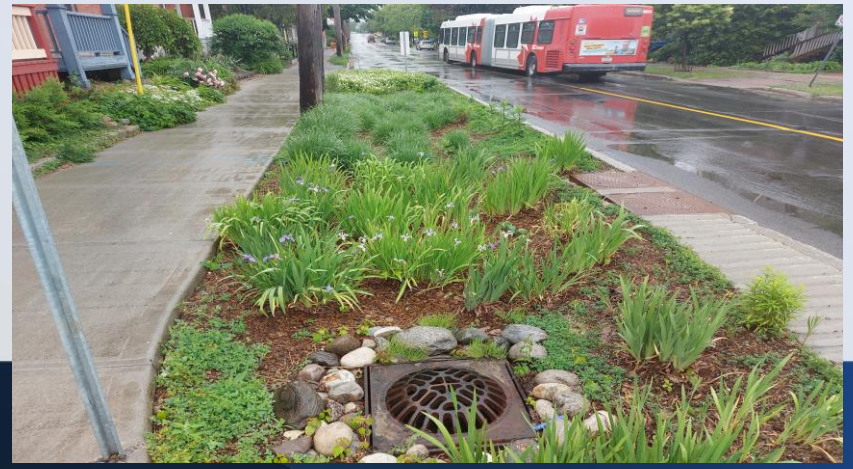
Stormwater Retrofit Program

The **Stormwater Retrofit Program** involves:

- the study of older built-up urban areas with little or no stormwater management function; and
- implementation of measures intended to improve water quality and erosion conditions in receiving watercourses and reduce the risk of beach closures due to microbial contamination of surface water.

Area-specific studies have been completed for two major areas:

- Pinecrest-Westboro
- Eastern Subwatersheds



Implementation of Existing Retrofit Program

Completed studies have recommended specific projects, program and other initiatives such as:

- Integration of LID measures as part of road renewal projects (Photos: Sunnyside Ave. bioretention facilities).
- Stormwater management facilities such as the Baseline-Woodroffe pond (under construction).
- Microbial Source Tracking studies to identify sources of fecal pollution within the Eastern Subwatersheds watercourses.
- Rain Ready Ottawa: This stormwater retrofit incentive program encourages and supports residents to take action on their property to reduce the harmful impacts of rainwater runoff. A successful pilot of this program is nearing completion. Recommendations on the future of this program will be made through a separate report to Council.

Stormwater Retrofit Program – Future Direction

The Strategy recommends the following new direction for the **Stormwater Retrofit Program**:

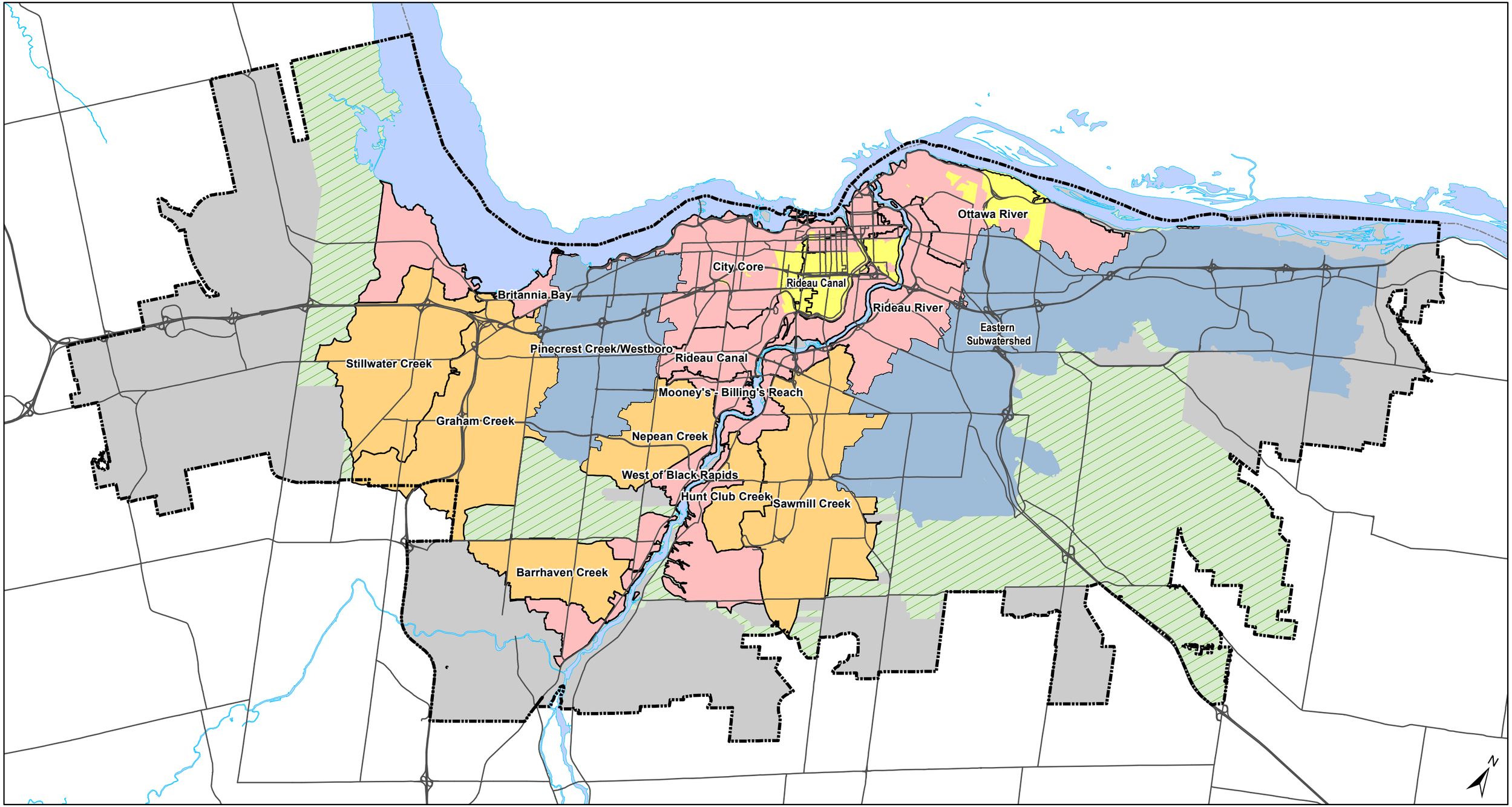
- Prioritized future retrofit study areas based on stormwater receiving system types.
- **Priority 1 areas** involve stormwater discharge to local watercourses before reaching the Ottawa or Rideau River. Retrofits will provide direct benefit to local watercourses and downstream beaches.

Priority 1 Areas	Priority
Graham Creek	1
Hunt Club Creek	2
Sawmill Creek	3
Nepean Creek	4
Barrhaven Creek	5
Stillwater Creek	6

Future Retrofit Study Areas are presented on the next board.

- **Priority 2 areas** mainly involve stormwater discharge from existing sewers directly to the Ottawa or Rideau River, and the anticipated benefits from a retrofit program are somewhat less than for the Priority 1 areas.
- The general scope of future retrofit studies has been established and will include evaluation of:
  - Impacts of climate change and intensification.
  - Suitability of expanding the Rain Ready Ottawa program to future retrofit study areas.
  - Identify LID opportunities through renewal.
- The future retrofit studies are expected to be completed by 2028.

- **Direction on LID** will generally be provided through completed and future retrofit studies, where area-specific runoff volume control targets are defined in the context of retrofit of existing systems as well as new systems supporting development.



RETROFIT STUDY AREAS / AIRES DE L'ÉTUDE DES TRAVAUX DE RÉAMÉNAGEMENT

- Priority 1: Open watercourse / Priorité 1 : Cours d'eau ouvert
- Priority 2: Directly/Indirectly through storm sewers to Ottawa/Rideau River / Priorité 2 : Écoulement direct ou indirect dans la rivière des Outaouais et la rivière Rideau en passant par les égouts pluviaux
- Completed Retrofit Studies / Études de réaménagement achevées
- Areas largely built or to be built with modern stormwater management systems / Zones bâties avec des systèmes modernes de gestion des eaux pluviales
- Combined Sewer / Égouts unitaires
- Urban Boundary / Périmètre d'urbanisation
- Greenbelt / Cienture de verdure

STORMWATER MANAGEMENT RETROFIT STUDY AREA / AIRE DE L'ÉTUDE DU RÉAMÉNAGEMENT DE LA GESTION DES EAUX PLUVIALES

Ottawa

Planning, Infrastructure and Economic Development Department, Geospatial Analytics, Technology and Solutions
Services de la planification, de l'infrastructure et du développement économique, Analyse géospatiale, technologie et solutions

Return to Display Board Guidance

Rural Servicing

Key Considerations

- A key OP policy which guides rural development requires that development *"be adequately serviced and not create any risk that cannot be adequately mitigated, to the quality and quantity of groundwater for the surrounding area".*
- There are 26 villages in rural Ottawa. Villages are identified as the focus for future rural growth.
- Villages range in terms of size, groundwater conditions, servicing types, and growth potential. Most villages rely on private well and septic systems.
- Most of the village growth is directed to where municipal services exist or are planned, in the villages of Richmond, Manotick, Greely, and Carp.
- City-provided services are categorized as either **centralized** (connected to central facilities); or **decentralized** (connected to remote communal facilities)

Existing Rural Servicing Infrastructure

- 18 villages operate fully on private servicing.
- 8 villages operate with partial or full City-provided services as noted below:

Village	Centralized		Decentralized	
	Water	Wastewater	Water	Wastewater
Carp		X	X	
Manotick	part	part		
Richmond		most parts	part	
Greely			part	part
Munster			X	X
Notre-Dames-des-Champs	X			
Vars			X	
Carlsbad Springs			*	

**Trickle feed system*

Proposed Rural Servicing Projects

Planned Rural Servicing Projects

Rural servicing projects to support growth in serviced villages could involve construction of new, or upgrade of existing infrastructure involving either:

- decentralized facilities; and/or
- extension of centralized services.

Decentralized facilities are identified through Village Master Servicing Studies, rather than the IMP.

There are five (5) centralized wastewater system projects planned to take place in the villages of Carp, Manotick and Richmond to support growth. There are no identified centralized water system projects to be included as part of the IMP.

All rural growth-related centralized wastewater projects are identified in the Wastewater Master Plan.

There are on-going Master Servicing Study updates for the villages of Richmond and Carp. Both studies are considering options to extend drinking water services from the central system and are expected to be completed following Council approval of the IMP.

Extension of sanitary services to the Village of Notre-Dames-des-Champs is also anticipated to support a proposed subdivision through a separate servicing study. This project provides an opportunity for existing residents to connect to public wastewater services through a Local Improvement process.

Intensification Servicing Programs: Introduction

The Official Plan anticipates intensification rates increasing from 40% of total development to 60% by 2046. An additional 140,000 persons are expected to be added to intensification areas in the City.

High density residential intensification growth is expected to be concentrated in specific geographic areas (intensification hubs), along key transit corridors, and where properties apply for a change in zoning. Lower density residential intensification, by contrast, is expected to occur throughout the existing serviced area, particularly in older neighbourhoods.

As part of the IMP process, the City has reviewed trunk infrastructure capacity and the impact of growth within the existing serviced areas of the City.

However, specific development applications and their impacts on local infrastructure are hard to forecast. Two-thirds of current applications involve only one dwelling unit and 97% involve 3 units or less. Exactly where, when, and in what form these developments will occur is dependent on developer decisions and market conditions.

Intensification-focused support programs are required to address the servicing of these properties with existing infrastructure systems while maintaining levels of service. These programs will also help the City respond to new provincial housing targets (in excess of Official Plan projections) and new permissions under Bill 23 allowing up the 3 dwelling units per lot.

Key Intensification Challenges

1. Maintaining existing levels of service for **urban drainage** as intensification proceeds.
2. Managing **infrastructure capacity** of the system as intensification proceeds.
3. Managing the impacts of **climate change** and flooding as intensification proceeds.

Staff recommend that these challenges be addressed by **two new intensification servicing programs.**

Impacts of Intensification on Urban Drainage

All drainage systems have a finite capacity. Incremental increases in impervious (hard) surfaces create more runoff and greater risk of flooding for small and large events.

Residents tend to increase hard surfaces on their properties over time through home improvement projects. Surface drainage can also be altered when changes are made to property grading, driveways, ditches, and structures. These changes usually happen gradually over long periods of time.

Residential intensification magnifies this problem through:

- Increases in hard surfaces on individual lots through additions and full re-development.
- Reducing space available for overland drainage on and between properties.
- Reducing space for pervious surfaces and trees which reduce runoff by absorption and evapotranspiration of rainfall.

Significant cumulative effects can result from the net increase in impervious area at the neighbourhood scale as individual lots intensify. These effects include an increased risk of flooding on the lot, on adjacent properties, and on the road. These effects can be exacerbated by climate change, which is tending to increase rainfall volume and the frequency of both small and large storms.

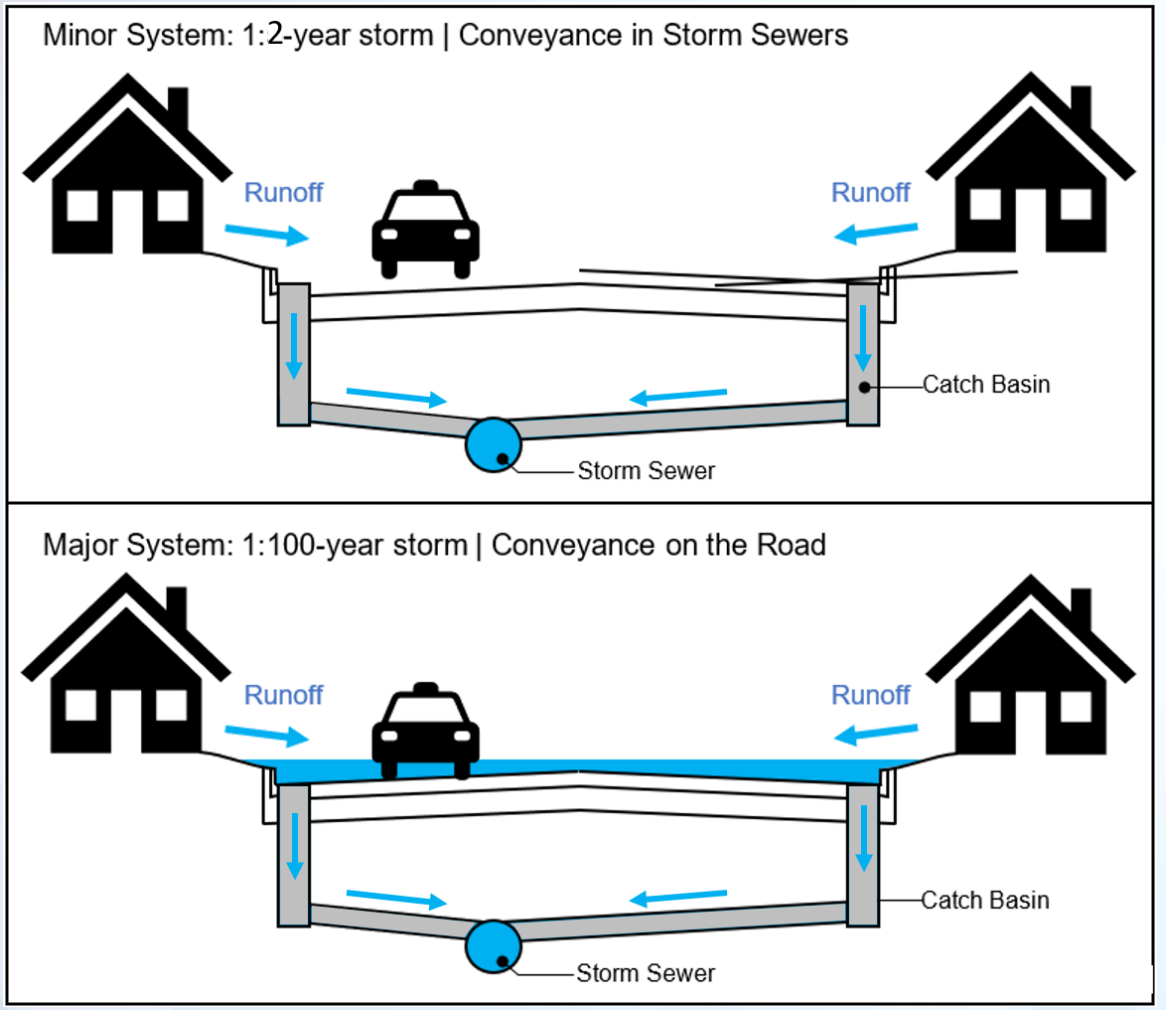
Challenges with Increasing Urban Drainage System Capacity (Part 1)

Two Connected Systems of Drainage

Storm sewer systems and ditches are designed for small storm events only. In larger storm events that exceed the capacity of the storm sewer system, the excess runoff will drain overland through the road network or accumulate in low points in the road until it can drain into a sewer.

New neighbourhoods are designed so that excess runoff from larger storm events can reach a watercourse via the road network with minimal risks to private property. This second system (the “major” system) also has a finite capacity. Any hard surfaces that were not considered in the original design will contribute to increased flood risk in the “major” system.

Older neighbourhoods did not consider excess runoff in their design. Some homes in these neighbourhoods have already experienced overland flooding. It is very difficult to fix overland flow problems because of the presence of homes, driveways, and roads that cannot be moved, and very limited opportunities to adjust grading at a neighbourhood scale.



Challenges with Increasing Urban Drainage System Capacity (Part 2)

Private Property Constraints

Private property characteristics such as surface grading and the amount of hard surfaces tend to change over time. The City has limited ability to monitor and control these changes and based on existing by-laws and enforcement mechanisms.

Rear yard drainage is often designed during original subdivision development as an integrated system that drains multiple private properties.

Restoration or improvement of drainage capacity in these systems, cannot usually be accomplished by the City because it does not own the properties, easements may not exist, and/or there is insufficient access for construction equipment.

Public Infrastructure

The City needs to maintain the condition and capacity of its drainage infrastructure, according to how it was originally designed.

End-of-life renewal of existing roads and other infrastructure provides cost-effective opportunities to improve the capacity of city-owned drainage infrastructure in many cases.

Upgrading infrastructure in advance of end-of-life renewal is a far more costly and challenging way of increasing capacity to support intensification.

Furthermore, opportunities to improve the overland drainage system with city infrastructure are very limited.

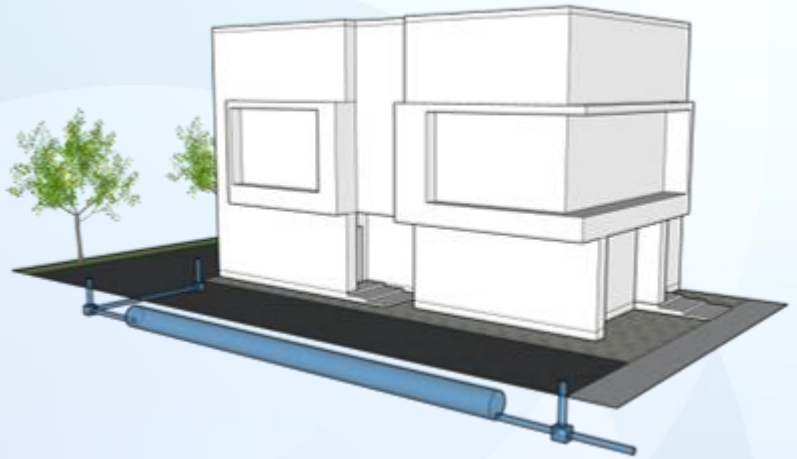
Urban Drainage and On-Site Stormwater Management

An alternative to increasing urban drainage system capacity directly is to mitigate the impacts of new hard surfaces and make more effective use of the capacity that already exists.

On-Site Stormwater Management (On-Site SWM) is a current requirement for development projects subject to Site Plan Control.

On-Site SWM is designed to mitigate the impact of new hard surfaces added to a property through redevelopment. This mitigation occurs before the runoff leaves the site. It involves the capture and storage of stormwater on the property. The stormwater is slowly released from storage into the City's drainage systems to match the peak rates of runoff that occurred prior to redevelopment.

On-Site SWM avoids the need to upgrade sewers or overland drainage systems in advance of development. On-Site SWM can also improve rear yard drainage systems on private property by collecting and controlling the runoff on each property that undergoes development.



Options to Mitigate Impacts of Intensification on Urban Drainage

Options for addressing the cumulative impact of more hard surfaces as a result of intensification include:

1) "Do nothing"

- Developments that are subject to Site Plan Control would continue to require On-Site SWM where the development involves a net increase in hard surfaces.
- Developments that are not subject to Site Plan Control (including recent provincial legislation exemptions) would continue to be exempt from On-Site SWM.
- The result would be a reduction in drainage system performance and increase in flooding risks as intensification proceeds.

2) Municipal Drainage System Upgrades

- On-Site SWM requirement would be as per Option 1.
- Studies would be prioritized to identify drainage system upgrades involving upsizing of existing sewer systems and adjustments to overland flow systems if and where feasible.
- Local intensification projects would exacerbate municipal drainage issues where approved in advance of local drainage system upgrades.

3) On-site Stormwater Management (On-Site SWM)

- Developments that are subject to Site Plan Control continue to require On-Site SWM.
- Developments that were previously subject to site plan control would once again require On-Site SWM.
- Developments never previously subject to site plan control would additionally require On-Site SWM.
- Net impacts of intensification would be mitigated.

Evaluation of Options to Mitigate Impacts of Intensification on Urban Drainage

Criteria	1. Do Nothing	2. Municipal Upgrades	3. On-Site SWM
Impacts to Level of Service	Flood risk increases as intensification proceeds.	Flood risk increases until future upgrades partially mitigate the increased risks.	Flood risk generally maintained as intensification proceeds; rear yard flood risk decreases.
Effectiveness	Ineffective at controlling runoff from any development not subject to site plan control.	Does not address rear-yard flooding. Sewer sizing based on best guesses of the extent and timing of new hard surfaces.	Effective. Sizing based on the specific details of the development proposal. Solution will mitigate rear-yard flooding.
Cost	Increased flooding costs borne by residents.	Extremely high cost borne by development industry and residents.	Additional cost to developments not previously subject to site plan control.
Construction Impacts	None.	Extensive across the city.	Limited to the development itself.
Construction Delay	Not applicable. Status quo.	Implementation period in the order of 100 years.	Implemented “just in time” to mitigate impacts for each proposed development.
Program Implementation	Not applicable. However, this option further burdens the City’s efforts in flood mitigation.	Significant challenges including staff and funding resources to carry out local studies; identify, prioritize, plan, and implement projects.	Requires an approval process for developments not subject to Site Plan Control. New guidance and tools required to minimize approval timelines and ensure consistent implementation.
Legal issues	City, developers, and new property owners potentially liable for flooding impacts.	Legal mechanism needed to collect fair cost contribution from development industry.	Requires a new regulatory enforcement mechanism for developments not subject to Site Plan Control.

Recommended Option to Mitigate Impacts of Intensification on Urban Drainage

On-Site Stormwater Management (On-Site SWM) is the recommended solution to mitigate the impacts of intensification on urban drainage systems. This solution has many benefits in terms of supporting intensification and maintaining the level of service in existing neighbourhoods:

- Housing supply can continue to increase through intensification without increasing flood risk.
- On-Site SWM is sized for hard surfaces not housing units. Cost per dwelling unit decreases as number of units increase per property and therefore the approach encourages projects that increase population density.
- On-Site SWM does not require estimation of future build-out conditions. On-Site SWM would be sized correctly for each development as it occurs when precise information about the project is known.
- On-Site SWM does not require system capacity assessment for each individual development application.
- On-Site SWM occurs only when and where needed: no lengthy development delays for planning, design, and implementation of extensive storm sewer upgrades.
- Development not restricted by urban drainage system capacity.
- Developers have flexibility to meet On-Site SWM requirements using various methods.
- On-Site SWM addresses rear yard drainage one lot at a time. Rear-yard catchbasins can reduce flooding in rear yards by directing the runoff to the storm sewer instead.
- On-Site SWM avoids extensive construction impacts to public roads.

Intensification Servicing Program 1: On-Site Stormwater Management (Part 1)

Program Objective

The objective of Program 1 is to meet the intensification goals of the Official Plan while not increasing flood risk to existing properties.

Program Description

This program is an extension of On-Site SWM requirements currently imposed on redeveloping properties that are subject to Site Plan Control. Under Program 1, this requirement will also apply to low-rise residential intensification projects that only require a building permit, where the project involves a net increase in imperviousness. The program is intended to improve on-site and rear yard drainage as well as control flows from the property to the municipal drainage system. Options for on-site control include:

- Surface, underground, or rooftop storage
- Low Impact Development (LID) measures; or
- A combination thereof

The requirements will apply within the urban or a village boundary to all “tear down” projects (new residential building replaces the existing structure) and coach houses. Depending on the increase in imperviousness, nominal SWM requirements may apply to additions to existing residential buildings or accessory structures with a footprint exceeding 55 m^2 or closer than 1.2m to the property line.

Intensification Servicing Program 1: On-Site Stormwater Management (Part 2)

Implementation

The City is in the process of developing design tools, standards, guidelines, specifications, pre-approved products, and sample drawings to ensure consistent and effective On-Site SWM systems.

Key challenges for the successful implementation of this program involves the development of a new regulatory enforcement mechanism and a new streamlined approval process for developments not subject to Site Plan Control to ensure that delays in the building permit approval process are avoided.

The City is currently reviewing various regulatory tools. Preliminary recommendations include use of the City's Zoning By-law (considered "applicable law" under the Ontario Building Code), as well as a new by-law under the Municipal Act to address various aspects of enforcement. Refundable securities will be needed to facilitate compliance.

The approval process is expected to involve integration with the current building permit grading plan review.

Resource Requirements

The City is currently assessing staffing resources and development fees needed to support the program. Estimates will be provided at the time of Council approval of the IMP.

Complementary Actions

In addition to Program 1, the City will continue to employ a range of other actions to improve levels of service in neighbourhoods and reduce flood risk under current and future climate conditions. These include:

- ✓ Sewer upgrades and strategic re-grading at the time of end-of-life renewal.
- ✓ Backwater valve and sump pump program to protect basements from sewer surcharge.
- ✓ Improvements to existing ditch systems in urban areas
- ✓ Securing easements to protect existing overland flow. paths through private property through the development approvals process.

Impacts of Intensification on Local Infrastructure

Capacity is available in existing infrastructure to accommodate intensification. This reduces the cost of intensification projects, and the cost per resident for operating and maintaining the infrastructure.

However, all infrastructure systems have a finite capacity. These capacities vary across the City, and each local area can accommodate a different amount of intensification before upgrades are needed. Upgrades to trunk water and wastewater systems to accommodate intensification to 2046 are identified in the Water and Wastewater Master Plans. However, these plans do not address potential limitations in the local pipe networks that connect to the trunk systems.

***Trunk systems**: infrastructure capable of conveying high flows and serving large areas (large diameter pipes, pumping stations, water storage facilities).*
***Local systems**: infrastructure serving individual streets and small neighbourhood areas (small diameter pipes, low-capacity pumping stations).*

Historical rates of intensification have generally not triggered the need for capacity upgrades because:

- Infrastructure design has been based on very conservative estimates of per capita water consumption.
- Per capita water consumption as declined over the last several decades.
- Redevelopment of properties has created opportunities to disconnect foundation and roof drains from older sanitary systems that allowed for these connections when originally designed.
- On-Site SWM has been a requirement for projects subject to Site Plan Control.

With higher projected rates of intensification, the City can no longer rely on these factors to avoid local system capacity upgrades in some situations. Impacts are already being observed, in ditch-drained areas where low-rise residential intensification projects not subject to Site Plan Control is generating more runoff.

Intensification Challenges (Part 1)

Accuracy of Local Development Projections

Specific development applications and their impacts are difficult to forecast accurately. The 2046 population projections are sufficient for trunk infrastructure planning because any differences between the projections and actual future development at a local scale tend to even out at large scales.

Local scale differences between projected and actual development can, however, have a big impact on local infrastructure upgrade requirements. Individual development projects and the cumulative impact of these projects in a local area can trigger the need for capacity upgrades to the local infrastructure system.

Therefore, local area planning and engineering studies that are responsive to current development interests are needed to identify what upgrades are needed. Planning and implementation of these upgrades will be needed on short timelines in order to address these interests.

Infrastructure Funding

Another key challenge is how to fund capacity upgrades to local infrastructure. End-of-life renewal of infrastructure provides an opportunity to upsize this infrastructure at limited extra cost, and most of the project costs can therefore be absorbed by rate-funded renewal programs.

However, upgrading infrastructure in advance of end-of-life renewal is a far more costly way of increasing capacity to support intensification. Based on a “growth pays for growth” policy, the majority of these costs must be absorbed bythe development industry. Unless an individual developer (or developer group) is willing to directly fund an upgrade to existing infrastructure, new connection fees or development charges will need to be established.

Intensification Challenges (Part 2)

Existing Approval Processes

The Site Plan Control process provides the opportunity to verify that sufficient capacity is available in the existing local water and sanitary system for an individual development application. However, there is no existing process or legal mechanism currently in place to verify capacity for small projects that are not subject to Site Plan Control. This challenge has only increased as a result of the recent enactment of Bill 23. Under this legislation, developments of 10 dwelling units and less are now exempt from the Site Plan Control process.

Storm Drainage Infrastructure and Existing Development

As described on this board, storm sewers are only designed for small events. Runoff from large events must be conveyed overland to a suitable drainage outlet such as a watercourse. In very large events in many older parts of the City, overland drainage will exceed the capacity of the roadway and spill onto private property, which may sometimes lead to basement flooding in some local areas.

Building elevations are a key factor affecting resilience to flooding:

- Buildings that are close to the road elevation are more likely to flood when runoff accumulates and overtops the curb.
- Deep basements are closer to the groundwater table and are at greater risk of flooding as rainfall infiltrates into the ground.
- Basements that are close to the sewer elevation are more likely to flood if the sewer surcharges in an extreme event.
- Driveways that slope towards the building can funnel runoff from the road towards building creating a risk of flooding.

Existing topographic and development constraints presents major challenges to improving overland drainage and reducing the risk of basement flooding.

Intensification Challenges (Part 3)

Water Infrastructure

Local water distribution systems are sized based on fire fighting needs. As intensification takes place, structure size, separation between structures, building materials and occupancy factors generally yield an increase in potential water demands for fire fighting.

The increase in normal water demands that occurs as a result of intensification is not significant compared to available capacities in existing watermains to fight fires. In some situations, the increase in flow through local watermains that results from intensification can be beneficial because it reduces or eliminates flushing requirements to maintain water quality standards.

Wastewater Infrastructure

In older neighbourhoods, foundation and roof drain were connected to the sanitary sewer at the time of construction. The contribution of flow from these sources would exceed the sanitary sewage flows. Many roof drains have been disconnected to reduce peak demand on sanitary capacity in wet weather conditions. Foundation drains are much more difficult to disconnect and requires the cooperation of the property owner.

Wet weather conditions can result in sewer surcharge due to leaks in the pipe network as well as foundation and roof drain connections. This generates a risk of basement flooding.

Infrastructure Capacity Management (Part 1)

Current Practice

A range of practices are currently employed to manage infrastructure capacity. The City has a program to study existing local systems that have existing performance issue to identify where upgrades are needed. This program is generally driven by complaints about surface or basement flooding, or unsatisfactory water pressure. The City also has a program to identify and prioritize end-of-life renewal of existing infrastructure to ensure that it is maintained in a state of good repair. Renewal of infrastructure provides opportunities to improve infrastructure performance through changes in design, rather than “like for like” replacement. It also provides opportunities to upsize existing infrastructure to accommodate projected intensification.

Limitations of Current Practice

Engineering staff are available to verify that sufficient capacity is available for individual development applications, but only those subject to Site Plan Control.

There is no existing program that pro-actively studies local areas to identify the cumulative impacts of intensification and implement upgrades needed to support intensification.

If a developer submits an application for a project for which there is insufficient local capacity, then it is the responsibility of the developer to directly fund any infrastructure upgrades that may be needed, and the project will be delayed. (This is more likely to occur in the case of a high-rise residential project.) Depending on the nature of these upgrades, subsequent development projects may be able to take advantage of the additional capacity provided without contributing to the cost or may find that the upgrade was insufficient to meet their needs.

There also potential service level risks that could arise in some situations as a result of the cumulative impact of intensification projects that are not subject to a Site Plan Control approval.

Infrastructure Capacity Management (Part 2)

A new **Infrastructure Capacity Management Program** is considered necessary to:

- Support intensification
- Identify the most appropriate intensification-driven upgrades to local systems that will meet long-term needs
- Ensure adequate capacity is available for individual projects regardless of the number of dwelling units
- Manage risks to level of service due to intensification and climate change
- Ensure appropriate project funding and a fair allocation of costs

In the absence of such a program:

- More development projects will be stalled due to lack of local infrastructure capacity and/or be faced with major off-site costs
- There will not be a fair allocation of costs to those who benefit from projects that increase local capacity.
- Performance of existing local systems may deteriorate, potentially resulting in reductions in level of service
- Projects will not be optimized to meet long-term needs

Intensification Servicing Program 2: Infrastructure Capacity Management (Part 1)

Program Objective – The main objective of **Program 2** is to ensure that adequate servicing capacity is available meet the intensification goals of the Official Plan and that an appropriate level of service is maintained in existing development areas.

Program Description – This program (Program 2) involves the following key components:

- **Local Intensification Planning and Servicing Studies**
  - Similar to greenfield development, servicing studies are needed for existing local development areas where significant levels of intensification are anticipated. These studies must be supported by detailed planning studies in collaboration with developer stakeholders and in consultation with local communities. This work should be completed as part Secondary Planning processes where applicable and would normally be carried out by the City.
- **Project Scoping and Delivery**
  - Projects identified by servicing studies must be scoped to identify the detail needed for design and construction. In addition to creating capacity for intensification, these projects may also be leveraged to improve level of service to existing residents (reduce flooding and fire risks). Scoping would normally be completed by the City whereas design and construction could be carried out by the City or a developer through a legal agreement.
- **Project Funding and Financing**
  - Funding sources and financing plans for projects identified through this program will need to be established based on a fair allocation of costs. This component of the program is discussed further on this board.
- **Study and Project Prioritization:**
  - Studies and capital projects will need to be prioritized based on development activity, industry consultation, areas of known capacity limitations, and funding availability.

Intensification Servicing Program 2: Infrastructure Capacity Management (Part 2)

Program 2 Description (continued)

- **Development Application Capacity Assessments**
  - Per draft IMP policies, City staff will be responsible for completing capacity assessments of existing water and sanitary systems to confirm availability of capacity for specific development applications. Following the enactment of Bill 23, a new regulatory mechanism and process is required for projects involving 10 units and less.
- **Flow monitoring, Modelling, and Capacity Tracking**
  - To inform servicing studies, optimize servicing solutions and avoid unnecessary projects, it is critical that the City improve its understanding of capacity utilization throughout its sewage collection systems. This requires strategic flow monitoring, calibration of local area models, and tracking of the allocation of capacity to individual development projects.
- **Flow Removal**
  - Significant wet weather flow contributions can sometimes be removed to create sanitary capacity and avoid a costly construction project. Such work has been completed in the past and most opportunities going forward will arise through redevelopment of individual properties.
- **Flood protection for redeveloped properties**
  - Surface drainage models maintained by the City will inform minimum construction elevations and the need for easements to maintain existing drainage across the property. Flood risks can also be reduced at the time of development through the installation of backwater valves and elimination of depressed driveways.

Intensification Servicing Program 2: Infrastructure Capacity Management (Part 3)

Program 2 Description (continued)

- **Fire risk mitigation**
  - Risk associated with increases in potential water demands for fire fighting will be addressed through the following strategies:
    - Strategic intensification-driven upgrade of existing watermains and/or addition of hydrants
    - Updates to area-specific fire fighting response models based on area-specific risk information
    - On-Site fire risk reduction measures imposed as part of development approvals process
    - Zoning provisions to manage intensification in specific areas based on fire risks
- **Water loss reduction and water demand management**
  - Increased efforts to reduce drinking water losses in the water distribution and to manage water demand will help meet intensification needs while minimizing infrastructure upgrades. This work involves:
    - Identifying and eliminating illegal water removal from the distribution system
    - Investigations to identify locations of excessive leakage for repair
    - Public communications campaigns to create awareness about the importance of conserving water during periods of high demand

Intensification Servicing Program 2: Infrastructure Capacity Management (Part 4)

Intensification Capacity Management Project Funding and Financing

Intensification Capacity Management projects will be needed to support the collective needs of developers operating in existing areas. Funding and financing may vary depending on the scale of the project, the benefit that the project provides to existing development, and the desired project timing. Larger projects with longer lead times (such as those identified in the Wastewater Master Plan) may be funded mainly through Development Charges. Upgrades to local systems will generally not meet the criteria to be eligible for project-based Development Charges funding. Various options for funding growth-driven upgrades to local systems are being considered including:

- A Municipal Act Charge
- A program-based Development Charge
- Direct funding by benefiting developer or property owners' group

A City-wide Municipal Act or program-based Development Charge that would apply to infill or intensification development would shorten implementation times compared to a project-based Development Charge. It is proposed that the charge be based on the net increase of dwelling units (or equivalent) on a property. The City does not currently have sufficient information to support a per unit charge value. An initial rate would be determined in the early stages of program implementation and be reassessed periodically. Direct funding by developer will remain an option for developers when project timing is critical to them.

Intensification Servicing Program 2: Intensification Capacity Management (Part 5)

Implementation

The main implementation challenge will be to establish funding mechanisms for capital projects identified under the program, and establishing a new business unit that will be responsible for the program.

Other key challenges for the successful implementation of this program include information management and coordination between community planning, infrastructure planning, development approvals, the City's renewal program, and design & construction.

Program implementation will need to balance the need to address priority upgrades and the need to establish a well coordinated program and the data needed to inform cost-effective projects.

The City leverages the Site Plan Control process to verify that sufficient capacity is available in existing local infrastructure to accommodate individual development projects. Bill 23 has exempted developments of 10 dwelling units and less from this process. Staff are currently proposing use of the Zoning By-law and a new process to verify capacity prior to issuing a building permit. Details associated with these changes are expected to be brought forward to Council for approval as part of the IMP process.

Resource Requirements

The City is currently assessing staffing resources and development fees needed to support the program. Estimates will be provided at the time of Council approval of the IMP.

Complementary Actions

In addition to Program 2, the City will continue to employ a range of other actions to improve levels of service in neighbourhoods and reduce flood risk under current and future climate conditions. These actions are similar to those described for Program 1 and include:

- ✓ Backwater valve and sump pump program to protect basements from sewer surcharge
- ✓ Improvements to existing ditch systems in urban areas
- ✓ Securing easements to protect existing overland flow paths through private property

Summary of Recommended Intensification Servicing Programs

Intensification Servicing Programs

Program 1:
On-Site Stormwater Management

- Developer installs stormwater management to maintain pre-development runoff.
- Developer responsible for integrating with their site design and other requirements.
- City determines neighbourhood drainage challenges.
- City provides guidance, tools, streamlined approvals, and standards.

Program 2:
Infrastructure Capacity Management

- City tracks and manages capacity of infrastructure systems.
- City upgrades infrastructure capacity for future growth and flood resilience.
- Project costs are shared between development industry and existing ratepayers depending on benefit to each.

IMP Implementation

Following Council approval, IMP implementation will involve the efforts of numerous City business areas as well as the development industry. These efforts will include:

- Project-specific studies to confirm the scope, location, and alignment of projects identified in the Water and Wastewater Master Plans.
- Project-specific Environmental Assessment studies where needed.
- Project design and construction.
- Preparation of draft urban expansion area studies by development industry for City approval.
- Preparation of remaining studies under Stormwater Retrofit program and continue implementation of recommendations from previous studies.
- Development and Implementation of Intensification Servicing Programs, including:
  - Design tools, guidelines and standards.
  - By-law amendments to support new On-Site Stormwater Management program.
  - New funding mechanism for local projects supporting intensification.

A subsequent report to Council will identify recommended improvements and any additional resource needs for the Intensification Servicing Programs based on monitoring and evaluation.

Subsequent updates to the IMP will be prepared in coordination with future Official Plan reviews based on updated projections and provincial housing targets.

Council Approval of IMP

Preliminary Recommendations to be included in the staff report seeking approval of the 2023 IMP are to direct staff to:

- Include the projects and associated funding recommendations in the 2024 DC (Development Charges) By-law.
- Finalize and implement changes to business processes in support of Infrastructure Servicing Programs.
- Direct staff to seek approval through the 2024 budget for new permanent positions in support of Intensification Servicing Programs.
- Adjust planning fees to fund new Intensification Servicing Programs.
- Prepare and/or amend By-laws to support proposed On-Site SWM program.
- Prepare guidelines and standards for On-Site SWM program .
- Develop, implement on-site SWM public awareness program.
- Develop and implement new development or connection charge to support Infrastructure Capacity Management program.
- Evaluate the new programs, including long-term resourcing needs, and report back to Council .

Next Steps

Following this opportunity for stakeholder input, the study team will review everyone's feedback and finalize the IMP and present it to Committee. Following Committee and Council approval, the IMP will be finalized and posted for 30-day public review.

Additional information on the project can be found on the City's website at:
https://engage.ottawa.ca/infrastructure-master-plan

Please identify any comments or questions and provide those to the City by completing the feedback form on the project website from June 14, 2023 until July 7, 2023.

You can also contact the City's project manager at:

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Planning, Real Estate and Economic Development Department, City of Ottawa
Email: imp-pdi@ottawa.ca
Tel: 613-580-2424 ext. 27785

Your feedback is important to the success of this study.

Thank you for your participation!