2023

WATER AND WASTEWATER

BUDGET SUBMISSION

Cornwall
ONTARIO CANADA

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List of Abbreviations

After the first occurrence, abbreviations are used in this document in order to improve readability. This list is provided in case the reader is unfamiliar with these abbreviations.

AMI ..... Advanced Metering Infrastructure

AMP..... Asset Management Plan(s)

BAF ..... Biological Aerated Filters

BOSMP..... Biosolids, Organics and Septage Master Plan

CAP ..... Climate Action Plan

CCCP ..... Cross Connection Control Program

CSO..... Combined Sewer Overflow(s)

GHG ..... Greenhouse Gas

EA..... Environmental Assessment

IC&I ..... Industrial, Commercial, and Institutional

ECDMP..... Energy Conservation and Demand Management Plan

LCEF ..... Low Carbon Economy Fund

LOS ..... Level(s) of Service

LTFP..... Long-Term Financial Plan

MECP ..... Ministry of the Environment, Conservation, and Parks

PVC ..... Polyvinyl Chloride

RFP ..... Request for Proposal

RNG ..... Renewable Natural Gas

SDWA..... Safe Drinking Water Act

SSO..... Source Separated Organics

UV ..... Ultraviolet

WCSMP..... Water Conservation and Servicing Master Plan

WPP ..... Water Purification Plant

WWTP ..... Wastewater Treatment Plant

CITY OF CORNWALL – 2023 WATER AND WASTEWATER BUDGET

The City of Cornwall is responsible for water treatment and supply, wastewater collection and treatment, and stormwater management across the City. The Water and Wastewater budget supports these services.

The Water and Wastewater budget represents the requirement to provide for the operation and maintenance of the Water Purification Plant (WPP) and the water distribution system to ensure the sourcing and delivery of clean, safe, drinking water to the community. It also provides for storm water management, the operation and maintenance of the Wastewater Treatment Plant (WWTP), and the sewer collection system (sanitary and combined) to ensure safe transportation and disposal of sewage.

Each day, clean, safe water travels from the WPP through the City's watermains for use by residents and businesses. Similarly, wastewater flows through the City's sewer collection system to the WWTP for enhanced secondary treatment before it is released into the St. Lawrence River. Stormwater is conveyed, via storm sewers, directly or indirectly, to the St. Lawrence River.

Safe drinking water and effective wastewater collection and treatment are cornerstones of a sustainable and healthy community and environment. Because of their importance to the health of the public and the environment, these services operate with specific levels of service (LOS) and infrastructure standards, as well as financial frameworks. These services are highly regulated and are provided in accordance with Provincial regulations and guidelines.

The 2023 Water and Wastewater budget strives to provide funds to support the City's water and wastewater services by continuing to move towards financial sustainability (i.e. full cost recovery) in accordance with the Safe Drinking Water Act (SDWA), Municipal Drinking-Water Licence, Water and Wastewater Financial Plan Regulation, and the Sustainable Water and Sewage Systems Act. However, many challenges exist including replacement of aging infrastructure, critical repairs, backlogs, climate change impacts, funding gaps, and public awareness.

Mission Statement

Water and wastewater services are provided through the supply of quality drinking water and treatment of wastewater as a public service to protect public health, safety and property in an environmentally sustainable and a fiscally responsible manner.

Alignment to Strategic Plan

The Water and Wastewater budget aligns with the City's Strategic Plan in providing services that enable a financially and environmentally sustainable community which will care and provide for the needs and values of its residents. It continues to invest

in modern efficient water and wastewater infrastructure to ensure continuous safe drinking water and wastewater services.

The Strategic Plan prioritizes waters meters in its statement of "*Being leaders in sustainability and climate change impact"*. The Environmental Initiatives section of this book outlines the progress the City has made with the implementation of water meters for the community.

Conservation of natural resources is increasingly becoming more important. Conservation continuously focuses on the preservation of non-renewable resources and the proper management of renewable resources.

Regulatory Requirements and Best Practices

Ontario's Ministry of the Environment, Conservation, and Parks (MECP) provides a guide for municipal Councils to help them understand their responsibilities under the SDWA and provide them with information on how Ontario's drinking water is safeguarded. Through the Standard of Care provisions of Section 19 of the SDWA, Council has a statutory duty as the ultimate decision-making authority over municipal drinking water systems. This does not require technical oversight, but rather to be informed and vigilant.

Generally, the water and wastewater industry continues to experience increased legislative and regulatory reform. There are several requirements that steer how the municipality conducts water and wastewater treatment. As noted, water and wastewater are regulated services and must meet legislated requirements: Drinking Water Systems (Ontario Regulation 170/03); Ontario Drinking Water Quality Standards (Ontario Regulation 169/03); Drinking Water Testing Services (Ontario Regulation 248/03); Drinking Water Quality Management Standards; Ontario Water Resources Act, R.S.O 1990, C.O. 40; Wastewater Systems Effluent Regulations (SOR/2012-139); Water Works and Sewage Works (Ontario Regulation 435/93); Certification of Drinking Water System Operators and Water Quality Analyst (Ontario Regulation 128/04); Licensing of Sewage Works Operators (Ontario Regulation 129/04); and Asset Management Planning for Municipal Infrastructure (Ontario Regulation 588/17).

The purpose of the Acts and Licence are to protect human health through regulation to ensure safe drinking water is supplied and delivered to customers. It also regulates how a municipality is to conduct its wastewater treatment. Compliance must always be ensured as the minimum. Minimum LOS describe the minimum achievement the City must deliver through its water and wastewater treatment systems as directed by regulations.

At each new term of Council, the City invites the Walkerton Clean Water Centre to provide Standard of Care training for the Mayor, Councillors, and municipal staff with oversight responsibility for drinking water treatment and distribution systems. This training session will be planned for the first quarter of 2023.

Cornwall's Water and Wastewater Services at a glance

- Serves more than 47,800 residents, as well as business in Cornwall; approximately 17,300 residential, institutional, commercial and industrial (IC&I) properties.
- Water and wastewater services are funded through the water and wastewater billing revenue from approximately 18,000 flat rate customer accounts and approximately 275 metered accounts.
- No property tax dollars are used to fund water and wastewater operating and capital budgets.
- Operates 24 hours a day, 365 days per year.
- The services provided are grouped into four service areas:

    1. Water Supply and Distribution – The water system provides water for residential, and IC&I customers, as well as for fire protection. The system serves the City's population as well as some customers from outside the city limits. Treatment, storage, and distribution of over 30,300 cubic meters of potable water is delivered daily to industrial, commercial, institutional, and residential water users, to over 16,000 service connections.

        Staff strive to develop, maintain, and operate the facilities necessary to provide a plentiful supply of high-quality drinking water for our customers. The Department continually monitors regulatory changes and adapts to ensure compliance.

    2. Wastewater Collection and Treatment – The wastewater system collects wastewater from residential, and IC&I customers in the City and treats wastewater in accordance with the provincial and federal governments' environmental regulations and industry standards. Over 42,300 cubic meters of wastewater is collected and treated per day, from both residential and non-residential properties in Cornwall and returned as clean water to the St. Lawrence River.

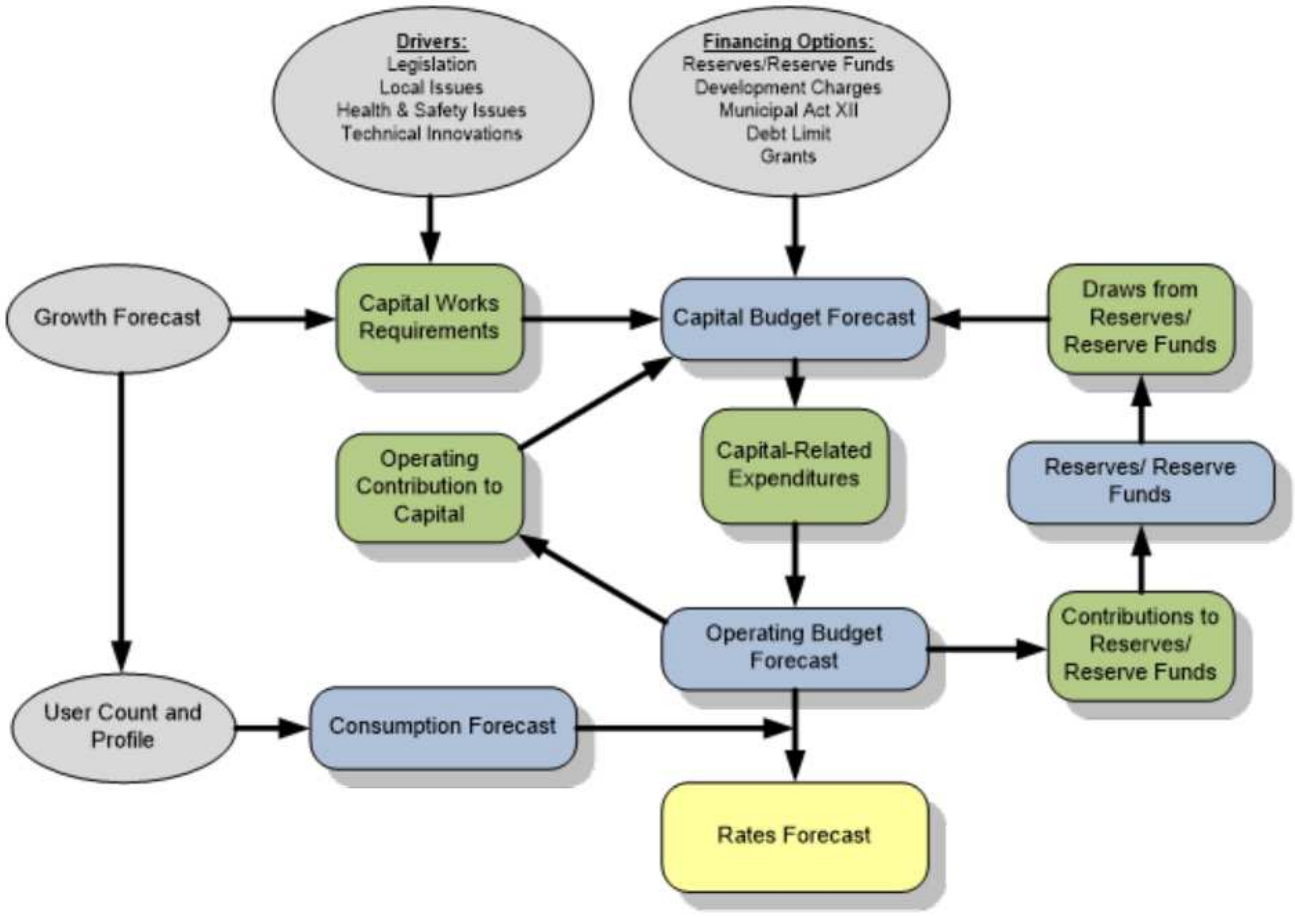
    3. Stormwater Collection and Flood Protection – The stormwater drainage system is designed to collect stormwater runoff from private and public properties which is generated from rainfall and melting snow in the City. The stormwater collection system is comprised of a network of storm sewers, culverts, roadside ditches, catch basins, manholes, drains, etc., which convey stormwater to local waterways. Additionally, the City also maintains stormwater management ponds, oil/grit separators, etc., which provide stormwater quantity and/or quality control.

4. Customer Service – Customer service has two elements:
    - Utility Billing – producing and collecting utility billings in an efficient, accurate, and timely manner.
    - Communications – being responsive to customer inquiries and needs.

Financial and Management Framework

The Water and Wastewater budget represents a component of the City's operations that are supported by user fees. The City charges water and wastewater fees to property owners based on fixtures (residential, small commercial) as well as water consumption (non-residential metered). The annual fees are intended to ensure that there is full cost recovery to the City for providing safe drinking water and maintaining the water and wastewater infrastructure.

The 2023 budget is based on a financial framework which provides a roadmap, endorsed by City Council, to proactively ensure the long-term integrity of these essential services.



The elements of the framework are based on the Water and Wastewater Financial Plan (Watson 2020), Water Purification Plant 10-Year Asset Management Plan (AECOM, 2020), Wastewater Treatment Plant 10-Year Asset Management Plan

(AECOM, 2020), Water Conversation and Servicing Master Plan (Watson, 2021), Asset Management Plan for Core Infrastructure Assets (GM BluePlan, 2022), and the Long-Term Financial Plan (KPMG, 2017).

Through the financial framework, the process is designed to address full cost principles and reflects the guiding principles toward sustainable financial planning.

Financially Sustainable Water and Wastewater Systems

Water and wastewater services continue to strive towards efficient and effective systems while achieving financial sustainability. Achieving financial sustainability requires long-term planning, securing sufficient revenue to recover system costs, safeguarding against unexpected circumstances, managing service debts, and saving for future capital needs. As experienced in other municipalities, this is challenged by a significant infrastructure backlog.

The Long-Term Financial Plan (LTFP) and the Water and Wastewater Financial Plan established a comprehensive revenue framework which seeks to sustain continued operations and infrastructure investment while ensuring healthy Water and Wastewater Reserve balances. The LTFP is reviewed and updated annually to compare revised key assumptions and to reflect changes to the financial operating environment.

The *Municipal Act, 2001* requires that all municipal user fees be established in a way that there is a transparent and direct relationship between the fees being charged and the full cost accounting of the service being provided. Revenue collected must be utilized to meet the needs of these services - and not other services.

Water and wastewater operational costs are fully funded through direct fees and service charges from water and wastewater billings. The water and wastewater billings fund both operating and capital expenditures. The City does not fund any costs associated with providing water or wastewater services from tax levies.

A detailed Water Financial Plan was endorsed by Council at the November 9, 2020 Council meeting. The Financial Plan is part of the required documentation to be submitted to the MECP and the Ministry of Municipal Affairs and Housing as part of the City’s renewal application for its Municipal Drinking Water Licence to operate the water system. The City's previous Financial Plans were filed with the Province in 2010 and 2015.

At its meeting of November 23, 2020, Council received an update of the 2019-2023 Energy Conservation and Demand Management Plan (ECDMP). A goal of the ECDMP is to continuously reduce the energy requirement of City facilities (including the WPP and the WWTP) in order to reduce our operating costs and our energy consumption. Initiatives of the ECDMP are included in the financial plan and the budget process.

Rate Overview

The water and wastewater rates are based on the recommendations of the Water Conservation and Servicing Master Plan (WCSMP). Through the plan, the water and wastewater rates have been forecasted such that they will be sufficient to fund the long-term capital needs of the systems by 2031, providing for the sustainable replacement of infrastructure and ongoing operation and maintenance of the systems. The flat (per fixture) rates have been forecasted to increase by 5% annually over the 2022-2024 period, while the metered (consumptive) rates have been forecasted to increase by 10% in 2022 and 2023 and 5.9% in 2024.

Water Conservation and Servicing Master Plan				
Flat Rates (per fixture)				
Sample Property	2022	2023	$ Inc	% Inc
1 bath, outside tap, no pool	$715.01	$750.76	$35.75	5.00%
1-1/2 bath, outside tap, no pool	$894.63	$939.36	$44.73	5.00%
2 full bath, outside tap, pool	$1,018.96	$1,069.91	$50.95	5.00%

Metered Rates (consumptive)				
Sample Property	2022	2023	$ Inc	% Inc
5,073 m3	$6,607.58	$7,268.34	$660.76	10.00%
10,000 m3	$13,025.00	$14,327.50	$1,302.50	10.00%
20,000 m3	$26,049.99	$28,654.99	$2,605.00	10.00%

Aligning the budget with the WCSMP addresses the existing inequity between the flat (per fixture) customers and the metered (consumptive) customers.

As reported to Council at its meeting on November 28, 2022 through the Third Quarter Financial Report, both the water and wastewater service will have a surplus in 2022. At year end, as per Policy, the surpluses will be transferred to the Water Works Reserve and the Wastewater Works Reserve respectively.

Administration is recommending that the City utilize funds from both reserves to decrease the rate increases planned for 2023.

The 2023 budget has been prepared with a contribution of $600,000 from the Waterworks Reserves and $600,000 from the Wastewater Works Reserve.

By utilizing reserves in 2023, flat (per fixture) customers would see a 2.99% increase. In the sample properties illustrated in this chart, the annual increase would range between $20.69 to $29.48 depending on the

2023 Budget Submission				
Flat Rates (per fixture)				
Sample Property	2022	2023	$ Inc	% Inc
1 bath, outside tap, no pool	$691.82	$712.51	$20.69	2.99%
1-1/2 bath, outside tap, no pool	$865.58	$891.47	$25.89	2.99%
2 full bath, outside tap, pool	$985.86	$1,015.34	$29.48	2.99%

Metered Rates (consumptive)				
Sample Property	2022	2023	$ Inc	% Inc
5,073 m3	$6,405.20	$6,910.88	$505.68	7.89%
10,000 m3	$12,810.40	$13,821.77	$1,011.37	7.89%
20,000 m3	$25,620.79	$27,643.53	$2,022.74	7.89%

number of fixtures. The average cost would increase by 7¢ per day from $2.33 to $2.40.

In 2023, metered customers would see a 7.89% increase. In the samples properties illustrated in the chart, the increase would range between $505.68 to $2,022.74 depending on volume consumed. Currently, metered customers pay 55.7¢ per cubic meter plus the sewer surcharge at 132.67%. Applying the new rate would increase the charge to 59.2¢ per cubic meter. The sewer surcharge is increasing to 136.14%.

If Council approves Administration's recommendation, water billings would increase by $177,119 or 2.01% and wastewater billings would increase by $521,788 or 4.68%. Overall, the utility billings would increase by $698,907 or a blended billing of 3.50%.

2022 Municipal Study

For over twenty years, BMA Management Consulting Inc. has annually completed a municipal comparative study on behalf of participating Ontario municipalities. This report brings together a group of indicators to give an overall snapshot for each municipality. Each year, the City of Cornwall participates in this study.

Currently, the completion of the 2022 Municipal Study is in draft format and currently being reviewed by the participating municipalities. The following information is from the draft 2022 Municipal Study.

In 2022, over 110 Ontario municipalities participated, representing in excess of 85% of the Province's population.

The draft 2022 Municipal Study indicates that annual user fees for water and wastewater services in Cornwall are among the lowest when compared to the other participating municipalities:

- Residential - Cornwall: $839; BMA average $1,236
- Commercial - Cornwall: $12,960; BMA average $40,842
- Industrial - Cornwall: $38,879; BMA average $118,006

Further comparative information can be found in Appendix A.

Asset Management Planning for Municipal Infrastructure

The Infrastructure for Jobs and Prosperity Act, 2015 (Act) in section 6(2) sets out principles for the provincial government to regulate asset management planning for the 444 municipalities in Ontario.

In January 2018, the Province of Ontario enacted Ontario Regulation 588/17 Asset Management Planning for Municipal Infrastructure. The regulation sets out minimum requirements/guidelines for municipal asset management planning and reporting for municipal Asset Management Plans (AMP) and policies. As part of this regulation, the Province mandated phased requirements for municipal AMP.

The phase-in schedule outlined in O. Reg. 588/17 states that each municipality must have an Asset Management Policy. The City's Strategic Asset Management Policy was approved by Council in July 2019. The document outlines the City's corporate commitment to the adoption of the asset management principles defined in the Infrastructure for Jobs and Prosperity Act, 2015. The Policy also illustrates how that in addition to the regulatory requirements, asset management is critical to supporting the City's Mission, Vision, and Values. This was the first step in a series of actions required under O. Reg. 588/17.

Phase 2 of the regulation mandated that each municipality have an approved AMP in place for core municipal infrastructure assets (water, wastewater and stormwater assets, roads, bridges, and culverts) that includes an analysis of asset performance and risks, as well as lifecycle and financial management strategies required to maintain current LOS.

The City's 2022 AMP for core infrastructure assets, prepared by GM BluePlan Engineering Ltd, is fully compliant with the requirements outlined in O. Reg. 588/17 and is in alignment with the City's Strategic Asset Management Policy. The AMP supports the City's plan to responsibly manage the majority of its core assets – a portfolio of over $1.25 Billion. At its October 11, 2022 meeting, Council endorsed the 2022 AMP for Core Assets, as presented by GM BluePlan Engineering Ltd.

Regulation Overview

Phase 1
July 2019
Finalize strategic asset management policy to outline commitments to best practices and continuous improvement.

Phase 2
July 2022
Have an AMP for core infrastructure assets that includes current levels of service and the cost of maintaining those services.

Phase 3
July 2024
Following the completion of the AMP for core infrastructure assets, the City will continue working on the AMP to incorporate all municipal infrastructure assets such as facilities, fleet, and equipment. The AMP for all municipal assets is to include current LOS and costs to maintain these levels.

Phase 4
July 2025
Builds on phase 3 where plans shift from current LOS to focus on proposed LOS and related lifecycle management and financial strategy for all assets, including consultation with the public. As part of Phase 4, Municipalities are also required to update their Asset Management Policy.

Ontario Regulation 588/17 also requires municipalities to discuss a process for aligning their asset management planning with their water financial plans prepared under the *Safe Drinking Water Act, 2002.*

Compliance with Ontario Regulation 588/17 is required for senior government capital funding programs like the Canada Community-Building Fund, formerly the Federal Gas Tax Fund.

Asset Management Planning

The City has an established asset management program which consists of asset management practices and integrated processes that work together to manage the assets that provide municipal services. These processes are in place to balance the lifecycle activities that need to be performed on assets to ensure that the City provides a LOS that meets public expectation.

Asset management is a process that involves continuous monitoring of assets' condition, costs, risks, age, performance, and estimated useful lives to systematically identify and prioritize the City's investment needs.

The objective of asset management planning is to maximize benefits, manage risk, and provide satisfactory LOS to the public in a sustainable manner. It also involves strategic financial planning and priority setting to ensure that the lifespan of existing infrastructure assets is maximized, and that long-term capital plans for the rehabilitation and replacement of assets align with projected available financial resources.

Asset management plans form the cornerstone of an effective asset management system. Asset management plans enable informed decisions regarding the building, operating, maintaining, renewing, replacing, and disposing of infrastructure assets.

The basic building blocks of the step-by-step methodology are founded upon the WERF (Water Environment Research Foundation) SIMPLE (Sustainable Infrastructure Management Program Learning Environment) process. The objective of SIMPLE is "*to drive a broad range of benefits to the industry by providing a systematic rationalization for determining where the most cost-effective investment in the asset portfolio is, over the lifecycle of the asset portfolio (that is, directing limited dollars toward the optimal application in any given budget cycle)*".

The five major, generally recognized components of an AMP include:

- Current State of Assets (perform an inventory and condition assessment of the system's assets);
- Defining LOS;
- Establishing lifecycle costs;

- Developing long-term funding strategies; and
- Implementation plan.

In future AMP, municipalities will provide the following for each year of the full 10-year period and/or 25-year period of the AMP: explain why the proposed LOS are appropriate, analyze lifecycle activities to consider the entire lifecycle and associated costs related to the assets, risks, and the financial viability, as well as, the funding available to support the plan.

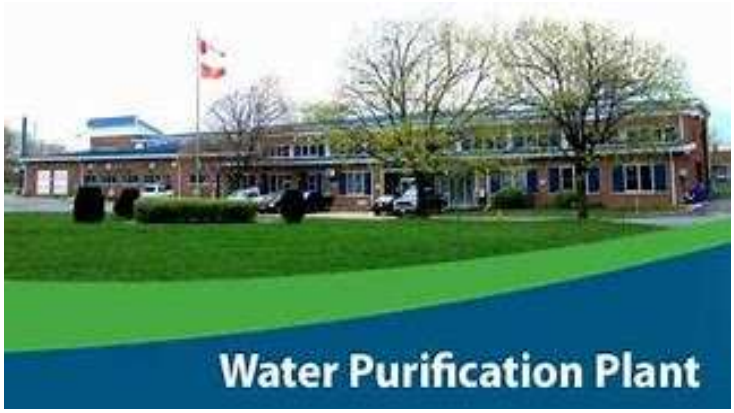
Improved municipal asset management planning is a vital step in Ontario's Municipal Infrastructure Strategy. Municipalities have been required to demonstrate a progressively greater commitment to asset management in order to request infrastructure funding as asset management guides municipalities in making informed infrastructure investment decisions for today and the future.

Environmental Services – Water

The primary objective in operating the water system is to provide a continuous supply of potable water to the residents and businesses of Cornwall. In doing so, all quality, quantity, and environmental standards put forth by City Council, and provincial and federal agencies must be adhered to.

The WPP draws water from the St. Lawrence River at the Robert Saunders Dam through a 3.7 km, 1,050 mm diameter reinforced concrete pipe running through the Riverdale area of Cornwall. To ensure redundancy of the raw water supply to the WPP, an Environmental Assessment (EA) to identify options for a second raw water intake was undertaken. One of the preferred alternatives from the EA, a new raw water intake at the King Street location, is undergoing supplementary studies (geotechnical, natural environment, archeological) to confirm its suitability as the best alternative. An alternative location was also identified as suitable through the EA process should the King Street option be determined no longer be preferable through further investigation.

The WPP uses chemically assisted coagulation and flocculation to remove particles suspended in the raw water. These particles clump together and are allowed to settle in tanks that are automatically cleaned at regular intervals. The water is then filtered through anthracite media and treated with ultraviolet (UV) light and chlorine to disinfect any of the remaining harmful pathogens.



The water distribution system (273 km) is maintained by the Municipal Works, Water Distribution Department. The City has completed an assessment of the water distribution system. The majority of pipes up until 1970 were primarily cast iron. Unlined cast iron watermains are problematic for a number of reasons including but not limited to: tuberculation build-up on the inside of these pipes which creates problems in maintaining minimum chlorine residual levels and reduces available fire flow and are prone to leakage and breaks due to reduced wall thickness and pipe integrity. From 1970 to 1990, ductile iron was the prevalent pipe material and beyond 1990, PVC became the preferred pipe material in most cases. The system is a complex network of pipes, storage facilities, valves, fire hydrants, reservoirs, and an elevated storage tank. In order to meet demands, sufficient pressure is maintained throughout the distribution system by pumps at the WPP and the Boundary Road Reservoir as well as static head pressure provided by the elevated water storage tank located on Tollgate Road East.

The Municipal Works Department has addressed an average of 47 watermain failures per year over the past five years (47 failures to date in 2022). When a watermain failure occurs, a repair can be lengthy and disruptive for the affected water customers, local traffic, and pedestrians. Through proactive asset renewal programs, priority areas can be identified, and steps taken to renew infrastructure to ensure a continued reliable service.

The operations of both the treatment and distributions systems are rigorously inspected annually and, in 2022, earned a 100% compliance rating from the MECP.

Per the recommendations of the 2021 WCSMP, the City retained a consulting firm through an RFP process to provide their expertise and project management services for the design, procurement, and installation of a universal water metering system and advanced metering infrastructure (AMI). Water treatment is a complicated and costly process. By collectively reducing the amount of water we use as a community, the City can save money by reducing treatment costs, reserving treatment plant capacity, extending life of underground infrastructure, and limiting opportunities for untreated or partially treated wastewater to be discharged back to the St. Lawrence River.

Environmental Services - Wastewater

The main objective of the wastewater system is to collect, treat, and dispose of effluents without danger to human health or unacceptable damage to the natural environment. The City strives to maintain high standards in wastewater treatment to ensure there is minimum effect on the environment of the St. Lawrence River.

At the WWTP, primary treatment consists of temporarily holding the sewage in a quiescent basin where heavy solids can settle to the bottom while oil, grease and lighter solids float to the surface. With the assistance of chemicals, solids are

separated from water in four settling tanks (clarifiers). The settled and floating materials are removed and the remaining liquid is discharged to secondary treatment. The water leaving the clarifiers is directed to Biological Aerated Filters (BAF) where secondary treatment occurs. The water leaving these filters is disinfected with UV radiation prior to discharge to the St. Lawrence River. The solids portion is sent to a thickening facility prior to digestion, dewatering, and disposal at the City's landfill.

A Biosolids, Organics and Septage Master Plan (BOSMP) is planned, which will address the long-term management of WWTP biosolids. The BOSMP is likely to recommend utilizing biosolids in a resource recovery process (i.e. to make fertilizer). This will provide multiple benefits, as it will save valuable space at the City's landfill and promote circular economy practices.

The wastewater collection system (416 km) is maintained by the Municipal Works, Wastewater Collection Department (storm, sanitary, and combined sewers) including associated appurtenances, such as: catch basins, maintenance holes and sewer laterals. This department is also responsible for lift stations, urban drainage maintenance, and flood control.

Municipal Works has addressed an average of 79 sewer lateral repairs per year over the past five years (80 repairs to date in 2022).

The stormwater management system functions to control flooding and help filter out sediments collected by stormwater flow before it reaches waterways.

Combined sewer systems are sewer pipe systems which accept both stormwater and sanitary sewage. Combined sewers are part of the original municipal sewage collection system and are typically found in the oldest sections of the City. When the opportunity arises through street reconstruction, combined sewers are separated by installing a second pipe in order to provide a dedicated pipe for stormwater collection and dedicated pipe for domestic sewage collection.

When combined sewer systems experience higher than normal flows, relief systems cause discharges containing human and industrial waste to flow untreated into the St. Lawrence River. These events are known as Combined Sewer Overflows (CSO). The City has experienced 19 CSO events to date in 2022 which has resulted in 188,246 cubic meters of diluted wastewater discharged directly to the St. Lawrence River.

Combined sewers can cause serious water pollution problems during CSO events when combined sewage and surface runoff flows exceed the treatment

capacity of the WWTP. Although it is acknowledged that CSO events are serious concerns which can cause both negative environmental and lifestyle consequences, it must be understood that in Cornwall, CSO only occur primarily as a result of heavy rainfall events and/or rapid snow melt occurrences when the wastewater collection system reaches storage capacity. As a result, the effluent discharged into the river is heavily diluted with stormwater. As further perspective, the WWTP treated 15,481,787 cubic meters of wastewater in 2021. During 2021, the WWTP experienced 11 CSO events comprised of a total volume of 40,174 cubic meters of effluent which represents approximately 0.26 percent of the total volume of wastewater treated. The MECP requires that each CSO event is reported to the MECP as well as made publicly available. Also, that between April 1 and October 31, all dry weather flow and 90 percent of wet weather flow is treated at the WWTP. The City met all MECP CSO requirements in 2022.

Environmental Initiatives

Biosolids, Organics, and Septage Master Plan

Ontario regulations will require that organics generated by IC&I and residential sources, as well as biosolids generated by the WWTP, be diverted from landfill disposal by 2025. The Ontario regulations align with the Landfill Financial Sustainability Report and Landfill Closure and Post Closure Liability Report that the City had completed in 2019, which concluded that the existing landfill could reach capacity by as early as 2032. In efforts to preserve the landfill life as well as promote a circular economy, the City hopes to divert biosolids and organics to resource recovery system(s).

The City has already invested substantial efforts into the diversion of organics, biosolids, and other waste from the landfill:

- In 2021, a Co-Digestion and Energy Generation Study was completed which analyzed the feasibility to transform the WWTP into a net zero resource recovery facility. A successful co-digestion program would see the existing anaerobic digesters at the WWTP intake source separated organics (SSO) and potentially achieving net zero energy by promoting organics diversion, production of carbon negative clean fuel such as renewable natural gas (RNG) and hydrogen.
- In 2021, a SSO Study was completed which analyzed the feasibility to implement a collection and processing program for SSO from Cornwall's residential waste stream. The SSO study reviewed GHG emissions reduction by diverting organics from landfill to co-digestion and energy production at the WWTP. The study also evaluated a potential processing facility at the WWTP, which could convert biosolids and septage into a fertilizer product which could be utilized in

agricultural applications while generating additional revenue for the City.

- The 2019 Landfill Reports recommends that the tipping fee for IC&I waste generators at the landfill be incrementally increased. Increasing the tipping fee will ensure that the City is recuperating the gross cost of disposal at the landfill from both an operational and closure/post-closure perspective. The increased tipping fee will also deflect some of the IC&I customers to alternative disposal locations that are more financially feasible for them, ultimately saving valuable landfill space in Cornwall. One of the largest IC&I waste generators at the landfill are the biosolids from the WWTP. Biosolids accounted for 15% of the total IC&I waste disposed of at the landfill in 2021. The increased tipping fees for biosolids will be analyzed in the BOSMP and provide further justification for an alternative disposal method. The first tipping fee increase was approved at the August 8, 2022 Council meeting, increasing the tipping fee for IC&I waste generators from $85 per tonne to $125 per tonne effective January 1, 2023. A second increase up to the full cost recovery of $164 per tonne will be recommended for Council approval at a later date in 2023. The tipping fees associated with the disposal of biosolids from the WWTP is paid through the Water and Wastewater Budget.

A septage receiving station is currently located on the landfill property, which accepts septage into the leachate collection system and is ultimately sent to the WWTP for treatment. Recent conversations with the MECP have concluded that this method of septage receiving is not acceptable moving forward and an alternate process to receive septage at a location outside of the landfill and leachate collection system must be implemented. The existing process of disposing septage at the landfill into the leachate collection system is not desirable for the City either and will potentially compromise the leachate collection system at the landfill as well as the sewer collection system downstream. The City is currently in the process of reviewing alternatives for receiving septage; however, it is most likely that a Septage Receiving Station will be implemented at the WWTP to provide service to the community while removing septage from the leachate collection system at the landfill. Upgrades to the WWTP will be required in order to accommodate septage receiving at the WWTP as well as a review of the impacts of septage receiving on the WWTP treatment process.

The BOSMP will build on the previously completed studies and efforts and determine the ultimate management solution for the three constituents. It must be noted that City Council did previously approve the co-digestion path, and funding to convert the existing anaerobic digesters at the WWTP to co-digestors has been submitted to the Environment and Climate Change Canada Low Carbon Economy Fund (LCEF). However, private processing facilities for biosolids, organics and septage have recently opened in close proximity to the City. The

Master Plan will assess the technical and financial feasibility of in-house processing options identified in the previous studies (such as co-digestion) against private processing facilities. The preferred management of BOSMP alternative will address the following short-term and long-term goals:

- Extend the overall operating lifespan of the landfill through diversion of biosolids, source separated organics and potential other waste stream materials;
- Reduce the overall amount of GHG emissions through diversion from landfill and potential utilization of resource recovery technologies;
- Flexibility to accommodate changes in waste stream feedstock composition/tonnage over time and processing adaptability to recover additional waste process products such that the solution is easily scalable;
- Optimize operational, financial and environmental benefits of biosolids, SSO and septage from collection phases to end use/disposal phases;
- Adhere to all required and relevant environmental legislation on local, provincial and federal levels, while also taking advantage of potential grants and funding opportunities; and
- Protect public health and the environment.

Water Conservation and Water Metering

In 2021, the City completed a WCSMP. The WCSMP assessed the impacts of utilizing water demand initiatives such as the implementation of City-wide water meters, rate structure alternatives, and rebate programs to promote water conservation. Council approved the recommendations set forth in the WCSMP at its September 21, 2021 meeting.

In 2022, the City began offering rebates of $50 towards the replacement of high-water-use toilets with high-efficiency WaterSense© labeled units (4.8 litres per flush or less). Rebates are only available for the installation of qualifying toilets in homes and businesses built prior to 1997, with a limit of two rebates per customer. This program is continuing into 2023 and the City has allocated $50,000 towards the toilet rebate program (i.e., replacement of 1,000 toilets per year). Moreover, the City has contracted the St. Lawrence River Institute to offer free residential water-use audits to identify water saving opportunities and specific retrofit opportunities to reduce water use. Audits address indoor and outdoor water use. The audit program recently launched in the Fall of 2022 and will carry into 2023.

Also in 2022, the City engaged the services of a consulting firm through a Request for Proposal (RFP) process to provide expertise and project management services for the design, procurement, and installation of a universal water metering system and AMI. The Consultant is currently conducting a

background review of the City's existing equipment, billing processes, staffing resources, goals, and objectives to develop a project plan and business case.

In 2023, the Consultant will enter the second phase of the project - contractor procurement. The Consultant will provide the framework for the City to tender the supply and installation of all components of the desired system. This allocation of funds will serve to hire the specialized contracting firm that will source and deploy all associated components of the system, including but not limited to, meters, meter reading equipment, software, data storage systems, and a customer information system.

Water metering will provide water conservation, fair and equitable billing for consumers, leak detection within the water distribution system, operational ease and cost savings at both the WPP and WWTP, capacity conservation at the WPP and WWTP, and increased government grant and funding opportunities that require water metering data as well as a system which promotes water conservation.

Water Purification Plant Secondary Raw Water Intake

In 2021, the City completed an EA for a redundant raw water supply. The EA identified solutions to address the risks associated with the City's single raw water intake infrastructure. Council received the report at its November 1, 2021 meeting. The EA included a 10-year plan the City should follow in order to see the successful completion of the project. The 10-year plan tasks have commenced, with the geotechnical study of the preferred site alternative (King Street location) currently underway. Pending those results, natural environment and archaeological studies at the King Street location will follow, as well as a financial plan to support the project, to be submitted for Council approval. Detailed design, funding applications, permits, approvals, tender and construction make up the remainder of the 10-year plan tasks.

Climate Action Plan

The City of Cornwall declared a climate emergency in 2021. Through this, it was recommended that the City adopt a GHG reduction target and proceed with developing a Climate Action Plan (CAP). At the June 27, 2022 Council meeting, through a RFP process, the CAP was awarded to a Consulting Firm and is currently underway. Once complete, the CAP will identify a path forward for a zero-carbon community that is resilient to climate change. The CAP will be a results-oriented policy document that will identify various projects and further policy initiatives that can be implemented to achieve climate change adaptation goals and overall GHG reductions. The CAP will also provide a guide to further develop green initiatives that already exist within the city. The CAP will provide a GHG reduction goal that the City can work efficiently towards. Targets will be clearly defined and will include a baseline year and a target year. GHG targets will be presented publicly; thus, providing transparency, accountability, and

credibility to the target setting process. The City will strategically implement the recommendations of the CAP, with Council approval, when available.

Reserves

The Water Works Reserve and the Wastewater Works Reserve were established to provide funding to mitigate the impact of significant increases or unforeseen issues in the rates charged to users and to fund any annual deficits. The effective use and management of these reserve funds is a critical aspect of the City's strategic financial plan and continued long-term financial sustainability.

The LTFP included a lifecycle costing model for the reserves in order to fund projects that are not typically funded by long-term financing. The reserves would be managed in a manner to ensure positive reserve balances during major capital spending years.

Staff have reviewed fund balances to identify potential applications of these funds to minimize debenture requirements and mitigate impacts on user rates. The following schedule illustrates the planned contributions to and from the Water Works and the Wastewater Works Reserves estimated to December 31, 2023.

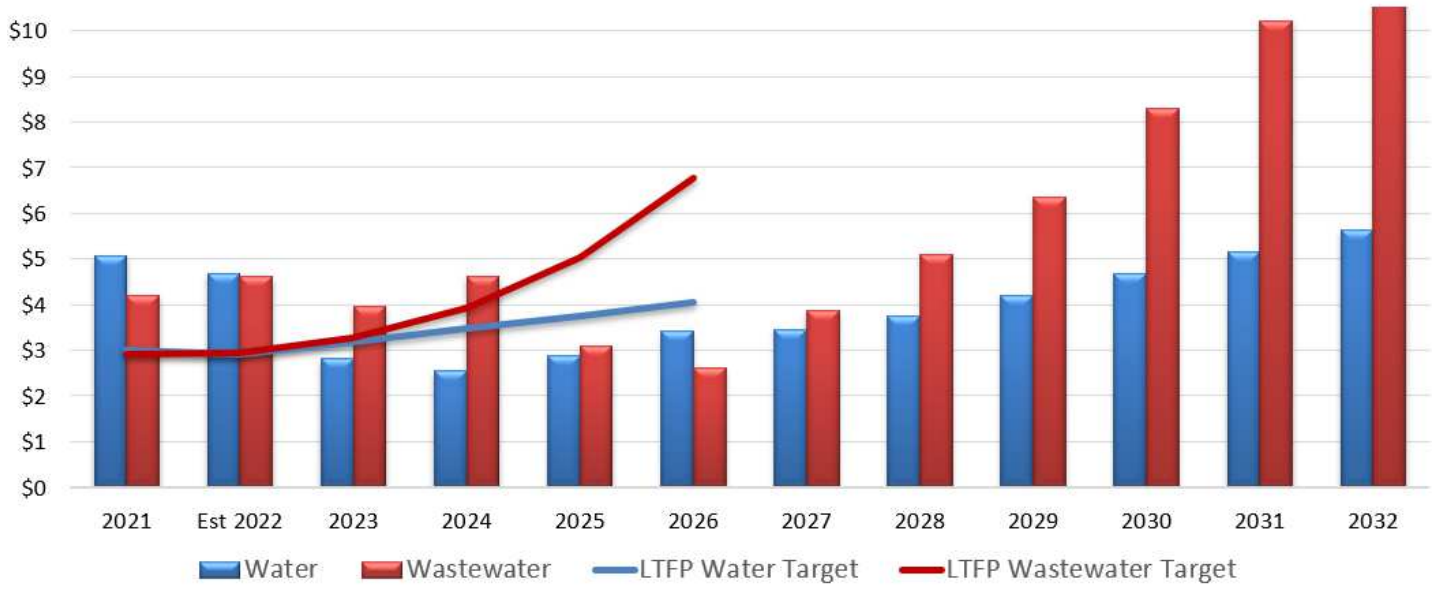
Currently, both the Water Works Reserve and the Wastewater Works Reserve are trending under the target balance based on the City's Reserve and Reserve Fund Policy. Maintaining a minimum reserve balance can help a municipality manage the costs of unplanned expenditures when they arise, can mitigate increases to user rates, and could eliminate (or reduce) the municipality's use of debt to pay for capital works. City Administration will continue to monitor the reserve balances to ensure that there is sufficient funding for capital projects that are budgeted to be funded through reserves.

2023 Detail of Reserves
Estimated December 31, 2023

	Opening Balance	Withdrawals	Additions	Balance	Target Balance at Dec 31/23
Water Works Reserve	$4,687,581				
Budgeted Contribution			$3,543,479		
Estimated Interest			$105,760		
Fund Asset Management Plan		($70,000)			
Fund Water Works Capital		($5,450,000)		$2,816,820	$3,858,249
Wastewater Works Reserve	$4,615,365				
Budgeted Contribution			$3,012,353		
Estimated Interest			$99,120		
Fund Asset Management Plan		($70,000)			
Fund Wastewater Works Capital		($3,694,500)		$3,962,338	$4,101,703

The following chart shows the ten–year (2023-2032) forecasted balance (shown in the millions) for the Water Works and the Wastewater Works Reserves based on the City's LTFP and updated requirements of the 10-year capital plan.

Reserve Balances (estimated 2023-2032)



(shown in the millions)

The lines on the chart illustrate the targeted reserve balances from the LTFP compared to the historic reserve balances from 2021 and the ten-year forecasted balances for the Water Works Reserve and the Wastewater Works Reserve. Based on the 10-year capital plan, it is expected that both the Water Works and the Wastewater Works Reserves will fall below targeted balances over the next several years.

As the City moves forward, financial sustainability must continue as one of the City's key priorities. Reserves are a critical component of the City's LTFP. Continued infrastructure renewal investment will ensure that water and wastewater services are sustainable in the future and meet the citizen's LOS expectations. Adequate reserves will position the City to be able to meet these future infrastructure requirements.

Long-Term Debt

Borrowing allows the City to spread out a capital cost over an asset's useful life and allows infrastructure costs to be paid not just by today's ratepayer, but by future users of the asset as well.

The City's LTFP recommends the types of projects the City should borrow for. One of the principles in the LTFP states that debt financing should be used where appropriate. More specifically, debt financing should only be considered for new, non-recurring infrastructure requirements, programs and facilities which are self-supporting and projects where the cost of deferring expenses exceeds debt servicing costs. The LTFP recommends that the City only borrow for assets where costs are greater than $2.5 million and have a useful life of more than 20 years.

Debt is an important part of the City's strategy for investment in assets. It is important to note that while debt is a funding source for capital, debt charges (principal and interest) have an impact on future operating budgets.

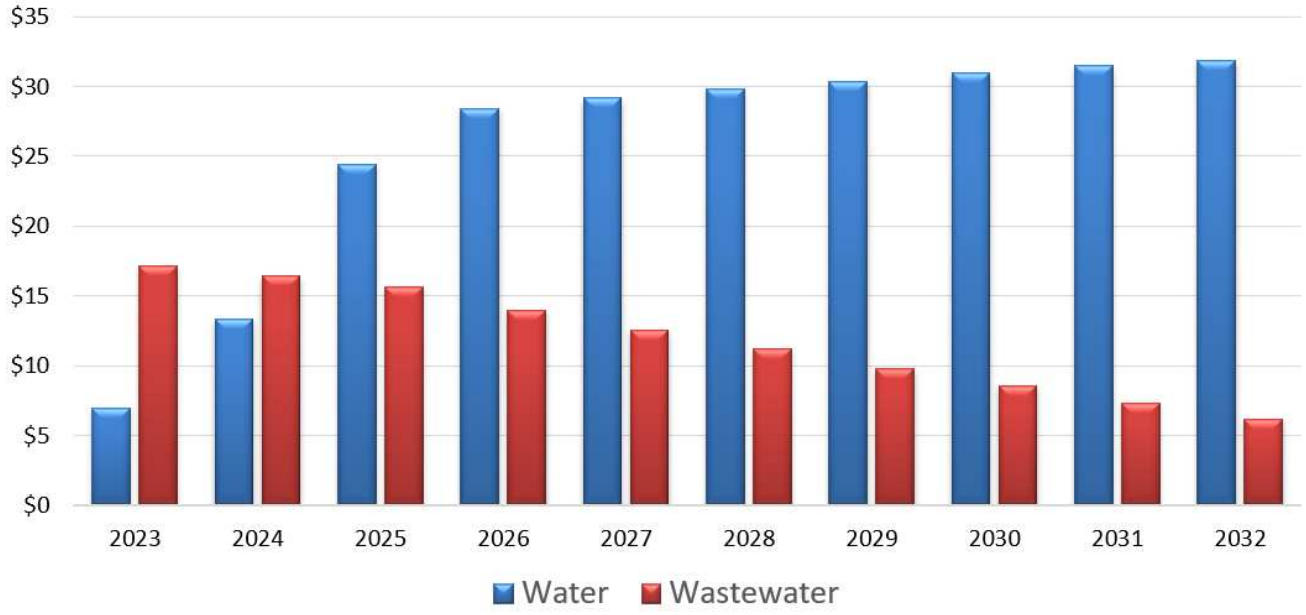
To support wastewater infrastructure needs, in prior years the City has borrowed for flood reduction initiatives, the Brookdale North Channel Bridge project, underground infrastructure during a road reconstruction project, and the Secondary WWTP.

The outstanding debt at the beginning of the 2023 fiscal year is estimated at $15.7 million, with an additional $6.3 million of approved financing not yet borrowed for infrastructure projects.

In the 2023 Water and Wastewater budget, it is proposed that reconstruction of Third Street from Cumberland St. to York St. be financed at $1.9 million and the water meter installation program be financed at $15.8 million.

The 10-year financial plan includes borrowing for various infrastructure projects. The following chart shows the ten–year (2023-2032) forecasted balance (shown in the millions) of long-term debt.

Long-Term Debt Balances (estimated 2023-2032)



(shown in the millions)

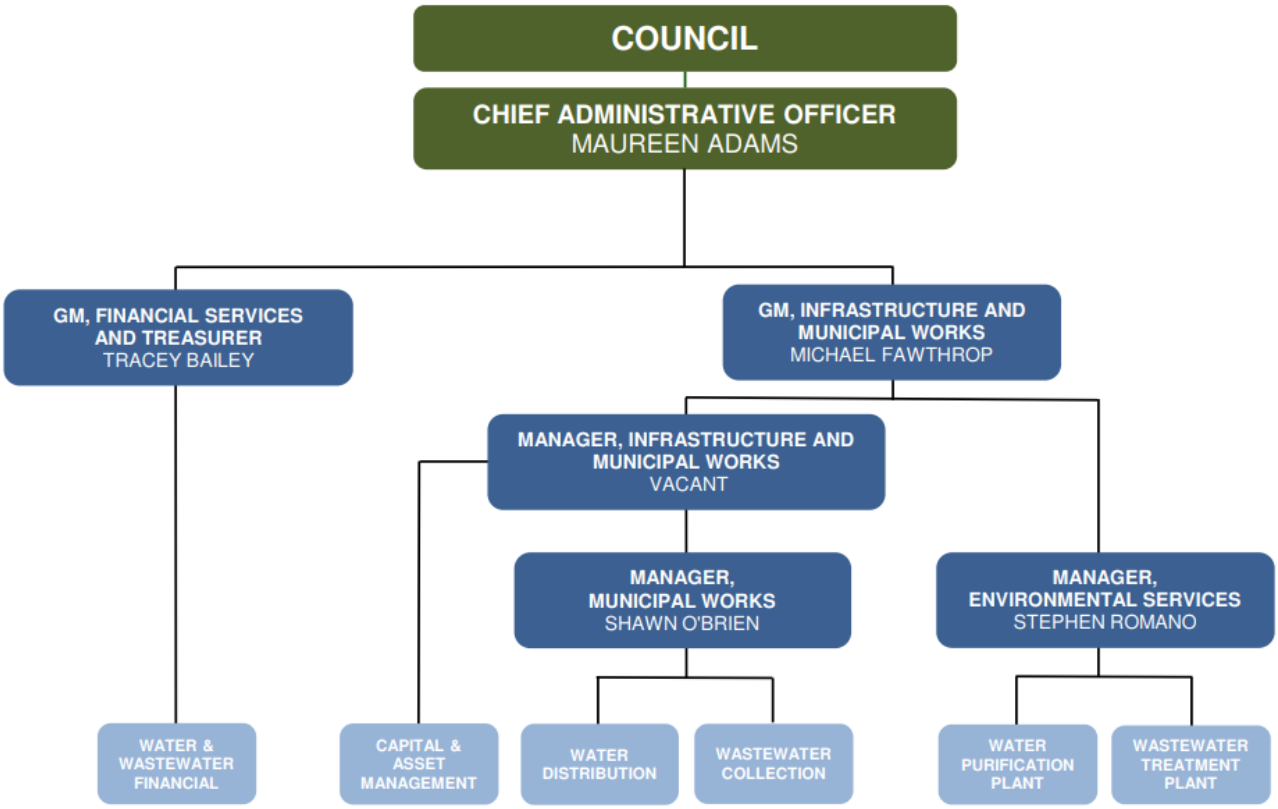
The 10-year capital plan includes two large water distribution projects. The estimated cost of the Pitt Street – Tollgate Road to Cornwall Centre Road project is $6 million, currently planned for 2023 and 2024. The estimated cost of Vincent Massey Drive – Tollgate Road to City Limits project is estimated at $10 million, currently planned for 2025 and 2026.

Both watermain projects are for the rehabilitation of large diameter trunk watermains which have been failing prematurely. Due to the size of the watermain, pipe material, etc., the cost to repair each break is very high.

Although the City would like to complete both projects soon, projects will require senior levels of government funding or financing in order to proceed. The City is proceeding with Phase 1 (of 2) of the Pitt Street North Watermain Relining project from Cornwall Centre Road to the McKenzie Street ($3 million) in 2023. The City received funding from senior levels of government for Phase 1 of the Pitt Street project through the ICIP Green Infrastructure funding program. It is hoped that the City will receive further grant funding to support the completion of both projects, but until funding is approved, we have included funding from debt financing in the 10-year financial plan.

The Raw Water Intake Redundancy capital project is estimated at $42.3 million. The municipal component of the project, assumed to be one third of eligible project costs, is included in the 10-year financial plan. Once the EA and preferred location is finalized, the City will begin the process to lobby for senior levels of government funding to support the completion of the project. As noted, the purpose of a secondary raw water intake would be to provide the necessary water system redundancy of raw water supply to the WPP.

Organizational Chart - Leadership



Staffing Complement

	Water Financial	Municipal Works		Environmental Services	
	Full Time	Full Time	Part Time	Full Time	Part Time
2022	2.0	25.5	4,400	22.6	0
2023	3.0	26.5	1,639	22.0	0
Change	1.0	1.0	-2,761	(0.6)	0

Operating and Capital Financial Summary

	2022 Budget	2023 Submission	$ Variance	% Variance	Plan 2024	Plan 2025	Plan 2026
EXPENDITURES							
Salaries and Benefits	$4,792,674	$4,921,060	$128,386	2.68%	$5,044,087	$5,170,189	$5,299,443
Purchase of Goods	$2,996,193	$3,151,987	$155,794	5.20%	$3,309,586	$3,475,066	$3,648,819
Services & Rent	$2,266,822	$2,539,750	$272,928	12.04%	$2,615,943	$2,694,421	$2,775,253
Financial	$351,441	$321,740	($29,701)	(8.45%)	$331,392	$341,334	$351,574
Contribution to Reserves	$6,223,643	$6,555,832	$332,189	5.34%	$7,906,112	$8,071,792	$8,720,000
Total Expenditures	**$16,630,773**	**$17,490,369**	**$859,596**	**5.17%**	**$19,207,120**	**$19,752,801**	**$20,795,090**
REVENUE							
User Fees & Misc Revenue	$295,575	$377,300	$81,725	27.65%	$377,300	$377,300	$377,300
Net Operating Expenditures	**$16,335,198**	**$17,113,069**	**$777,871**	**4.76%**	**$18,829,820**	**$19,375,501**	**$20,417,790**
Financing LTD Principal & Interest	2,225,627	2,109,160	($116,467)	(5.23%)	3,094,072	3,724,733	4,627,374
Corporate Costs	$1,118,419	$1,110,448	($7,971)	(0.71%)	$1,143,761	$1,178,074	$1,213,417
Insurance Premiums	$262,529	$308,003	$45,474	17.32%	$338,803	$372,684	$409,952
Operating Water & Wastewater Billings	**$19,941,773**	**$20,640,680**	**$698,907**	**3.50%**	**$23,406,457**	**$24,650,992**	**$26,668,532**
Gross Capital	$11,085,000	$29,200,000	$18,115,000	163.42%	$12,825,000	$17,300,000	$22,720,000
Capital Funding							
Government Grants	$350,000	$2,200,000	$1,850,000	528.57%	$2,300,000	$0	$4,000,000
Financing	$3,400,000	$17,700,000	$14,300,000	420.59%	$2,950,000	$7,950,000	$10,000,000
Development Charges	$29,400	$30,500	$1,100	3.74%	$0	$0	$0
Other Recoveries	$0	$125,000	$125,000		$0	$0	$0
Water Works Reserve	$3,005,600	$5,450,000	$2,444,400	81.33%	$4,250,000	$5,250,000	$4,850,000
Wastewater Works Reserve	$4,300,000	$3,694,500	($605,500)	(14.08%)	$3,325,000	$4,100,000	$3,870,000
Capital Water & Wastewater Billings	**$0**	**$0**	**$0**	**0.00%**	**$0**	**$0**	**$0**
WATER AND WASTEWATER BILLINGS	**$19,941,773**	**$20,640,680**	**$698,907**	**3.50%**	**$23,406,457**	**$24,650,992**	**$26,668,532**

The City currently budgets on an annual basis. However, over the past several years the City has adopted several long-term strategic plans. The annual budgeting process may no longer be sufficient for the City to achieve its long-term strategic priorities. Thus, a fully integrated multi-year budget may be an optimal way to better link longer-term plans and resources. Appendix B provides keys assumptions for years 2024-2026.

The table above details the 2023 operating budget of $17.5 million in gross expenditures and $29.2 million in capital works.

The 2023 budget submission is compared to the 2022 Council approved budget. Together, the Water and Wastewater budget increased by $698,907 or 3.5%.

2023 Operating Budget

The 2023 budget for operating expenditures was prepared with management's projections and cost estimates to deliver existing service levels to the ratepayers.

Salaries and Benefits: The increase in salaries and benefits of $128,386 or 2.68% is related to incremental and contractual increases for staff. A Water Conservation Coordinator is now budgeted in Water Financial. Municipal Works reduced part-time hours by 2,761 hours and added a full-time employee. Environmental Services transferred 0.6 of a full-time employee to its Waste Management division.

Purchase of Goods: The increase in purchase of goods of $155,794 or 5.20% is related to the increase costs in chemicals (liquid aluminium sulfate, coagulant, polymer). The City is seeing an increase of over 20% or $92,730 when compared to 2022. The budget also includes $18,000 for an education and public awareness program related to the benefits of prudent water usage and water conversation as the City continues the implementation of universal metering for the community.

Services and Rents: The increase in services and rents of $272,928 or 12.04% includes an increase of $167,680 for disposal costs. This is related to biosolids generated by the WWTP that is disposed of at the City's landfill. The budget also includes $94,649 in City Equipment rental. The City increased its internal rental charge by 2%. The Wastewater Collection division also brought into service its new Combination Sewer/Vacuum truck.

Financial: The decrease in Financial is $29,701 or 8.45%. The 2023 budget includes an increase of $28,194 for the replacement of laptops and a reallocation of fees from ITT Services. The toilet rebate and residential home water audits programs were decreased from a budget of $100,000 to a budget of $50,000. Through its continued conservation efforts, Administration believes there will be greater uptake in the years to come.

Contributions to Reserves: The increase in contributions to reserves of $332,189 or 5.34% is related to the City's continued journey in lifecycle costing for its assets. Contributing to reserves and using reserves to support the proper management of tangible capital assets and addressing depreciation over the course of an asset's useful life is done by setting aside funds for asset maintenance and continued operation as the asset is amortized. This approach will assist the City in being prepared for the inevitable repair or replacement of assets at end-of-life through the use of reserves.

It should be noted that although contributions to reserves have increased when compared to the 2022 budget, it is forecasted that the City will have less funds it its Water and Wastewater Reserves at the end of 2023 as the City is utilizing more reserve funding for capital investments.

The practice of planning through reserves will ensure that the City does not find itself in a situation in which it has limited funds available to address infrastructure requirements and is forced to borrow, increase billings, or reduce service levels.

Revenue: Revenue has increased by $81,725 or 27.65% as a customer is paying to use the City's sanitary sewer and wastewater treatment system until a private treatment system is in place.

Financing LTD Principal & Interest: The City's financing costs for principal and interest charges, related to the financing of capital projects, has decreased by $116,467 or 5.23%. This change is the net of taking on less debt and of debt maturing. In 2023, the City will borrow for its 2021 York Street joint infrastructure project and the Brookdale North Sewer project which will be complete.

Insurance Premiums: Insurance costs across the City will increase by approximately 20%. This is a further correction in the insurance industry. The increase for insurance for water and wastewater is $45,474 or 17.32%.

2023 Capital Budget and Plan

The 2023 capital budget includes the cost to purchase, construct, repair and renew assets that support service delivery. The 2023 gross capital budget is $29,200,000 (2022 - $11,085,000). It is important to note that the 2023 capital budget includes two large projects which provide improved LOS and are not related to asset replacement, Water Meter Installation Program ($15.8 million) and Backflow Prevention for Municipal Buildings ($125,000). As such, $13,275,000 of the total capital budget is allocated to asset replacement.

The City's long-term infrastructure requirements have been planned through a fully funded 10-year capital plan. The 2023-2032 10-year capital plan, updated annually, has been developed for the water and wastewater systems to address capital maintenance, replacement, and expansionary needs across the systems.

The 10-year capital budget is based on the City's AMPs which forms the foundation for prioritizing long-term capital project requirements. Capital priorities and spending are forecasted through the preparation of lifecycle management strategies, taking factors such as risk, condition, and service levels into account. This mirrors many of the decisions made when preparing a capital budget and long-term forecast each year as part of the budget process.

As in prior years, the 2023 capital budget is focused on the maintenance and replacement of current infrastructure and addressing the backlog. Major capital projects in 2023 include regular on-going watermain rehabilitation improvements, WPP upgrades, sewer network improvements, combined sewer separation, and WWTP system upgrades. The 2023 capital projects are summarized on page 36, followed by capital projects sheets describing each project in detail and its recommended funding source.

The proposed funding sources that are anticipated for water and wastewater capital needs include government grants ($2,200,000), financing ($17,700,000), other revenue, municipal facilities ($125,000), development charges ($30,500) and reserves ($9,144,500). The capital funding plan developed to fund long-term annual needs of water and wastewater systems took into consideration the anticipated debt assessed against the Provincial and City borrowing limits (25% and 10% of own-source revenues, respectively).

Rising inflation, and material and labour shortages have led to increases in construction costs. The City has seen increases in tender costs for certain types of work and purchases of goods, such as, architectural and engineering services, material, labour, and transportation. Current tenders are being closely monitored.

Capital works projects at the WPP and the WWTP are managed by the Environmental Services department and are determined by:

- A preventative maintenance program;
- Regulatory requirements for the Drinking Water Works Permit for the Treatment Section of the Cornwall Drinking Water System;
- Regulatory requirements for the Environmental Certificate of Approval at the WWTP;
- Maintaining effluent quality below Provincial effluent limits;
- Maintaining drinking water quality requirements of the Safe Drinking Water Act;
- Combined Sewer Overflow volume and time;
- Risk management through the DWQMS;
- Project management for capital improvement projects.

Linear capital works projects are managed by the Infrastructure Planning department and are determined by:

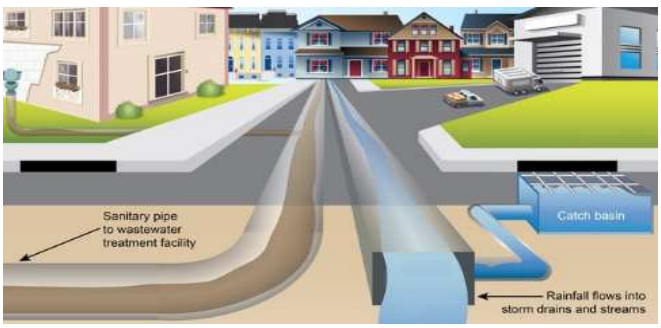
- Detailed designs for municipal infrastructure projects including road, streetscaping, watermain, sanitary and storm sewers, culverts, and bridges;
- Pre-engineering surveying services for detailed design projects;
- Project management and inspection services for the construction of approved capital projects;
- Cost estimates;
- Liaison with regulatory agencies and utilities to obtain permits and approvals and to coordinate design and construction activities;
- Review services for Ministry of the Environment approvals relating to the design and construction of watermains, sanitary sewers, and storm sewers.

Capital Assets to Deliver Services

The City's water and wastewater services has a stewardship of an inventory of capital assets valued at $1.25 billion (based on the City's 2022 AMP – replacement value).

WASTEWATER - $600.39 million

- Wastewater Treatment Plant
- 212 km of sanitary sewers
- 55 km of combined sewers
- 3,244 sewer access points
- 6 lift stations
- Approximately 15,000 sewer laterals



STORM SYSTEMS - $207.50 million

- 149 km of storm sewers
- 2,089 sewer access points
- 5,068 catch basins and ditch inlets
- 9 storm water retention ponds
- 15 oil and grit separators

WATER - $441.89 million

- Water Purification Plant
- 2 reservoirs and 1 elevated storage tank
- 273 km of distribution watermains
- 2,042 valves
- 1,316 hydrants
- More than 16,000 water laterals

As presented in the City's 2022 AMP for Core Assets, generally, the City's utility assets are in good condition. Although the majority of these assets are in good condition, expenditures are required for lifecycle strategies to address poor and very poor assets, prevent other assets from reaching poor condition, and maintaining service levels.

Effective and resilient water, storm, and wastewater infrastructure is critical to the public and the environment. Maintenance and proper asset management are crucial to maintaining and sustaining the services.

Asset Management for Core Infrastructure (addressing the backlog)

As part of the development of the 2022 AMP for Core Infrastructure Assets, various forecasting analyses were completed which provided insight on the City's spending needs with respect to asset renewals. The forecasting analyses included a backlog analysis for each asset class, where a backlog is considered to be the amount of immediate work that is required (not including additional work that may occur over the forecast periods) to meet LOS targets. The backlog analyses evaluated the cost to address all asset needs, including existing backlogs, assuming unlimited funding is available. These analyses assist the City in understanding infrastructure needs based on asset lifecycles.

The backlog analyses identified that although the City has made considerable progress in addressing various backlogs, additional investments will be required to meet established LOS targets.

The results of the backlog analyses for water and wastewater assets are summarized in the following tables. Each table summarizes replacement values, current backlogs and backlogs as a percentage of replacement values for each asset class.

Replacement Value and Backlog Summary – Wastewater

Asset Subservice	Replacement Value	Current Backlog	Backlog as % of Replacement Value
Sanitary Linear	$224,900,000	$7,300,000	3%
Sanitary Vertical	$8,500,000	$0	0%
Combined Linear	$197,000,000	$14,000,000	7%
Storm Linear	$204,500,000	$1,400,000	1%
Storm Vertical	$3,000,000	$16,000	1%
Total Wastewater	**$637,900,000**	**$22,716,000**	**4%**

Replacement Value and Backlog Summary – Water

Asset Subservice	Replacement Value	Current Backlog	Backlog as % of Replacement Value
Linear	$345,900,000	$51,600,000	15%
Total Water	**$345,900,000**	**$51,600,000**	**15%**

In recent years, the City has incrementally increased funding for water and wastewater renewal projects in each budget year to reach the recommended allocations indicated in the 2016 AMP for addressing backlogs over the long term. However, although progress in funding the renewal of water and wastewater assets has been made, further investments will be required to meet established LOS targets.

The 2022 AMP included updated recommendations to address backlogs for water and wastewater assets, as further described below.

Water Assets

Water Distribution

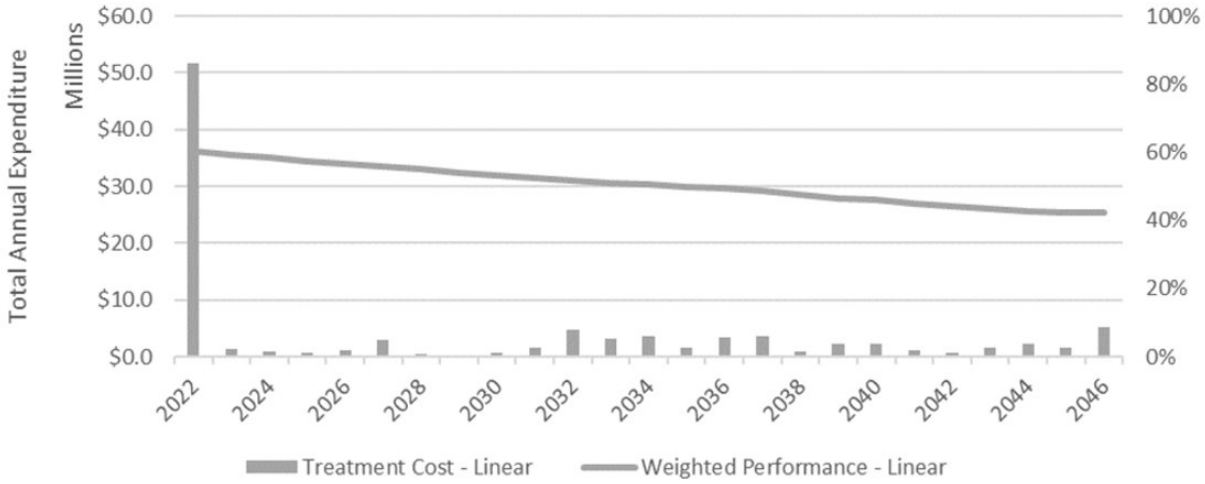
The City's goal is to provide a reliable, high quality, and safe water distribution network to all its residents and businesses. This is achieved by minimizing service disruptions, ensuring the water is safe for consumption by complying with water quality regulations, and being able to protect the communities with adequate fire flow. This corresponds with an established LOS target of 100% of assets in fair or better condition.

The backlog analysis indicated that currently, a 52 km ($51.6 million) backlog is present in Water Distribution assets. It also revealed that additional assets will require intervention over the 25-year forecast period. It should be noted that the City has succeeded in reducing the watermain backlog by 20 km over a six-year period, as a backlog of 72 km was indicated in the 2016 AMP.

The backlog analysis that was completed for the 2022 AMP for Water Network assets resulted in the expenditure distribution and average performance illustrated in the graph below.

Note that the following graph indicates that the weighted average performance decreases over time. Average performance is calculated as the average condition (performance) rating of all assets, weighted by replacement value. Average performance declines in this scenario due to the fact that the ratio of very good/good assets to fair assets is decreasing. More assets in fair condition will result in the average performance value declining, even though service levels are improving since poor and very poor assets are being replaced.

Water Distribution Backlog Analysis



- 2022 Watermain Rehabilitation Projects reflected only
- Next database update to be completed following conclusion of 2022 construction season
- Chart originally generated for 2022 Asset Management Plan for Core Infrastructure Assets

The results of the forecasting analyses indicate that the City's current planned budget will result in an improvement in service levels over the next 10 years. Nevertheless, to meet established LOS targets of 100% of assets in fair or better condition, the City will require additional investment over the 10 and 25-year forecast periods.

The recommendations included in the 2022 AMP indicate that the City should proceed with meeting established LOS targets over a 25-year period, which is an investment of $6.1 million annually (2023 Budget Submission - $5.43 million). This will ensure that service levels are sustained in both the medium and long-term. It will also address the backlog in the forecast period.

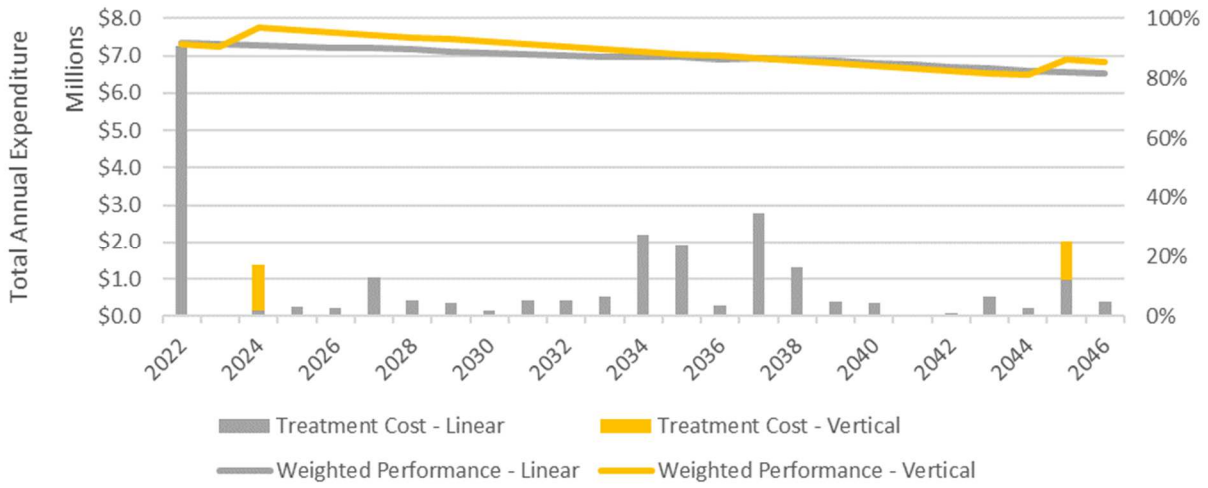
Wastewater Assets

Sanitary Sewer Collection:

The City's goal is to provide reliable, operational, and environmentally sustainable sanitary collection services to all its residents and businesses. This means ensuring minimal service disruptions, ensuring all assets remain in a state of good repair by performing regular maintenance, and minimizing environmental impacts on the St. Lawrence River, all while optimizing lifecycle costs. This corresponds with an established LOS target of 100% of assets in fair or better condition.

The backlog analysis indicated that a 7.0 km ($7.3 million) backlog is present for Sanitary Sewer Collection assets. It also revealed that additional assets will require intervention over the 25-year forecast period. The backlog analysis resulted in the expenditure distribution and average performance illustrated in the graph below.

Sanitary Sewer Collection Backlog Analysis



- 2022 Sanitary Sewer Projects reflected only
- Next database update to be completed following conclusion of 2022 construction season
- Chart originally generated for 2022 Asset Management Plan for Core Infrastructure Assets

The results of the forecasting analyses indicate that the City's current planned budget over the next 10 years is slightly lower than the budget needed to meet its proposed LOS target of 100% of assets in fair or better condition over the next 10-years. To meet established LOS targets of 100% of assets in fair or better condition, the City will require additional investment over the 10-year forecast period.

The recommendations included in the 2022 AMP indicate that the City should proceed with meeting established LOS targets over a 10-year period, which is an investment of $1.0 million, annually (2023 Budget Submission - $960,000). This will ensure that service levels are sustained in both the medium and long-term. It will also address the backlog in the forecast period.

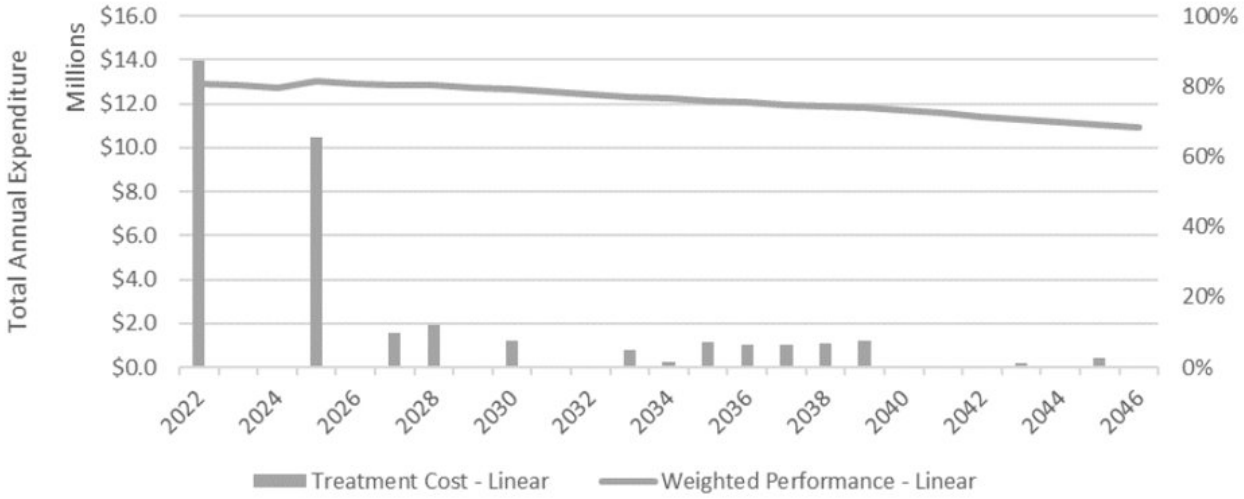
Combined Sewer Collection:

The City's goal is to provide fair or better wastewater collection services to all its residents and businesses. This is achieved by minimizing odours and sewer backups, ensuring all assets remain in a state of good repair by performing regular maintenance, and minimizing environmental impacts by meeting MECP requirements, all while optimizing lifecycle costs. This corresponds with established LOS targets of 100% of assets in fair or better condition and separating all combined sewers over the long term.

The City is generally working towards eliminating combined sewers, as they present some risks that are not present in a separated system. The main risks include increased chance of flooding during heavy precipitation events, as well as CSO which cause excess stormwater and sanitary flows to be discharged into water bodies.

The backlog analysis indicated that a 4.5 km ($14.0 million) backlog is present in Combined Sewer Collection assets. It also revealed that additional assets will require intervention over the 25-year forecast period. The backlog analysis resulted in the expenditure distribution and average performance illustrated in the graph below.

Combined Sewer Collection Backlog Analysis



- 2022 Combined Sewer Separation Projects reflected only
- Next database update to be completed following conclusion of 2022 construction season
- Chart originally generated for 2022 Asset Management Plan for Core Infrastructure Assets

The results of the forecasting analyses indicate that based on current anticipated budget forecasts, the City is projected to achieve the proposed LOS target of separating (i.e. eliminating) all combined sewers over a 56-year period. The equivalent annual costs increase drastically if the time required to meet these targets is accelerated to 10 or 25 years.

The recommendations included in the 2022 AMP indicate that the City should continue with its current planned spending of $1.5 million to separate combined sewers, which will allow the City to continue to separate combined sewers as part of its corridor replacement program.

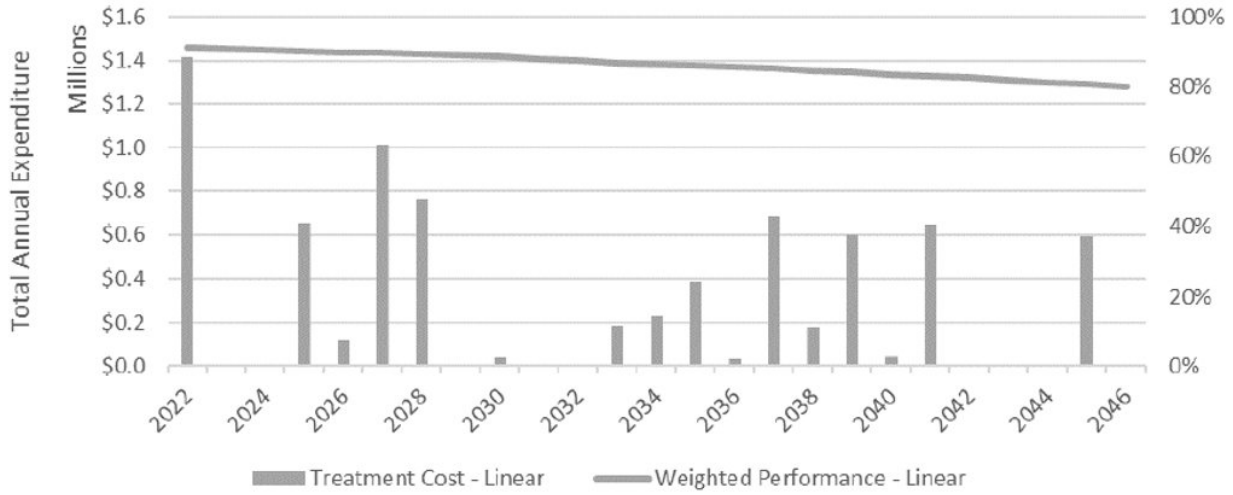
Storm Sewer Collection:

The City's goal is to provide a reliable, operational, and environmentally sustainable storm sewer collection system to all its residents and businesses. This means protecting all properties from flood waters, ensuring all assets remain in a state of good repair by performing regular maintenance, and minimizing environmental impacts, all while optimizing lifecycle costs. This corresponds with an established LOS target of 100% of assets in fair or better condition.

The backlog analysis indicated that a 1.5 km ($1.4 million) backlog is present for linear Storm Sewer Collection assets. It also revealed that additional assets will

require intervention over the 25-year forecast period. The backlog analysis resulted in the expenditure distribution and average performance illustrated in the graph below.

Storm Sewer Collection Backlog Analysis



- 2022 Storm Sewer Collection Projects reflected only
- Next database update to be completed following conclusion of 2022 construction season
- Chart originally generated for 2022 Asset Management Plan for Core Infrastructure Assets

The results of the forecasting analyses indicate that the City's current planned budget over the next 10 years is slightly lower than the budget needed to meet its proposed LOS target of 100% of assets in fair or better condition over the next 10-years. To meet established LOS targets of 100% of assets in fair or better condition, the City will require additional investment over the 10-year forecast period.

The recommendations included in the 2022 AMP indicate that the City should proceed with meeting established LOS targets over a 10-year period, which is an investment of $400K annually (2023 Budget Submission – $140,000). This will ensure that service levels are sustained in both the medium and long-term. It will also address the backlog in the forecast period.

Note that over time, storm sewer replacement will become a major part of the City's budget, as the proportion of combined sewers further decreases in favour of dedicated storm sewers. As a result, the portion of the City's budget currently committed to combined sewer separation will transfer to stormwater to address these anticipated increased needs.

2023 CAPITAL BUDGET SUMMARY

*Please note all figures are in 000s of dollars

DESCRIPTION	2022 GROSS BUDGET	2023 GROSS BUDGET	EXTERNAL FUNDING		OTHER REVENUE	RESERVES		
			GRANTS	FINANCING		DEV. CHARGES	WASTE WATER	WATER
WATER CAPITAL								
Water Distribution								
Watermain Rehabilitation	*2,350.0*	*1,650.0*						1,650.0
Watermain Rehabilitation - Pitt St.		*3,000.0*	2,200.0					800.0
System Growth - New Watermain	*500.0*	*350.0*						350.0
Backflow Prevention for Fire Protection Engineering Services		*125.0*			125.0			
Water Purification Plant								
Water Meter Installation Program	*1,300.0*	*15,800.0*		15,800.0				
Backwash System Redundancy		*100.0*						100.0
UV Disinfection System Replacement		*2,000.0*						2,000.0
Raw Water Intake Redundancy/Technical Studies	*100.0*	*50.0*						50.0
Raw Water Intake Pipe Wall Condition Assessment	*300.0*							
Backwash Pump Replacement	*350.0*							
Concrete Storage Tank Condition Assessment	*50.0*							
High Lift Pump Replacement	*250.0*							
WASTEWATER CAPITAL								
Sewer Collection Program								
Sewer Network Improvements	*1,050.0*	*1,100.0*					1,100.0	
Combined Sewer Separation	*700.0*	*725.0*				30.5	694.5	
2023 Projects								
Lawrence Av. - Montreal Rd. to Second St. ($190k)								
Easton Av. - Guy St. to Bellmont St. ($255k)								
Roy St. - Eleventh St. to Roy St. ($280k)								
2022 Projects								
Fifth St. West from York St. to Bedford St. ($60K)								
Race St. from Water St. East to Marlborough St. ($300K)								
Walton St. from Alice St. to Guy St. ($120K)								
First St. East from Marlborough St. to Lawrence Ave. ($120K)								
Guy St. from Easton Ave. to Walton St ($100K)								
Wastewater Treatment Plant								
Primary Header Expansion and Joint Rehabilitation		*300.0*					300.0	
Digester #1 Relining		*1,100.0*					1,100.0	
Odour Control System for Dewatering Facility	*400.0*							
Supply and Installation of Lifting Beams	*75.0*							
Waste Gas Compressor Lubrication System Replacement	*60.0*							
Security Fence for Future WWTP Expansion Area & Pump Station	*250.0*							
Resource Recovery Facility Design	*500.0*							
JOINT INFRASTRUCTURE CAPITAL								
2023 Projects								
Third St. - Cumberland St. to York St.		*1,900.0*		1,900.0				
Gloucester St. - Water St. to First St. E.		*1,000.0*					500.0	500.0
2022 Projects								
Sydney St. Reconstruction from Seventh St. E. to Ninth St. E.	*2,100.0*							
Aberdeen Ave. from Marlborough St. to Gloucester St.	*750.0*							
Water, Wastewater, and Joint Infrastructure Capital	11,085.0	29,200.0	2,200.0	17,700.0	125.0	30.5	3,694.5	5,450.0

COUNCIL APPROVED CAPITAL BUDGETS FROM PRIOR YEARS

DESCRIPTION	GROSS BUDGET	EXTERNAL FUNDING		RESERVES		BILLINGS/RESERVES	
		GRANTS	FINANCING	DEV. CHARGES	SPECIFIC RESERVE	WASTE WATER	WATER
2022 Council Approved Capital	11,085.0	350.0	3,400.0	29.4	-	3,005.6	4,300.0
2021 Council Approved Capital	9,120.0		1,100.0	500.0	1,020.0	3,200.0	3,300.0
2020 Council Approved Capital	8,825.0		1,600.0	550.0	100.0	3,275.0	3,300.0
2019 Council Approved Capital	8,547.0		1,384.0	250.0	704.0	2,964.0	3,245.0

Environmental Services - Water

Project Name: **Watermain Rehabilitation**

Funding: $2,450,000 Water Billings
$2,200,000 ICIP Green Infrastructure Funding Stream
$4,650,000

The objectives of the watermain rehabilitation program are to improve water quality and system reliability. Numerous cast iron unlined watermains throughout the City require improvements in order to maximize water quality in the distribution system. Tuberculation build-up on the inside of these pipes creates problems in maintaining minimum chlorine residual levels. It also reduces available fire flow because the inside diameter is reduced and has a rough texture which increases energy loss. In addition, some portions of the system are prone to leakage and breaks which, if reduced, will decrease operational costs.

The annual watermain rehabilitation program is aligned with the City's ongoing Infrastructure Strategy and linear Asset Management Plan and is an ongoing annual capital program.

The rehabilitation of the high-pressure concrete pipe watermain on Pitt Street from Cornwall Centre Road to Tollgate Road is a multi-year project that is scheduled to be completed in two separate phases. In Spring 2022, it was announced that the City's application to the Investing in Canada Infrastructure Program (ICIP) – *Green Infrastructure Funding Stream* for the rehabilitation of the watermain on Pitt Street from Cornwall Centre Road to McKenzie Street (Phase 1) was successful. The ICIP Green Infrastructure Funding program provides funding of up to 73.33% of the total project cost, with a maximum of $3M per project. The City was successful in receiving the maximum eligible funding available through the program; for the municipal contribution (26.67%) of the project is to be included as part of the 2023 watermain rehabilitation program.

The proposed Watermain Rehabilitation projects for 2023 are as follows:

- Pitt St - Phase 1 from Cornwall Centre Rd. to McKenzie St. ($3.0M)
- Sydney St. from Eleventh St. E. to Twelfth St. E. ($270K)
- Queen St. from Susan Av. to Wallrich Av. ($470K)
- Edythe Av. from Robertson Av. to Wallrich Av. ($180K)
- Guy St. from Easton Av. to Walton St. ($270K)
- Lawrence Av/ from Montreal Rd. to Second St. E. ($460K)
- Dover Rd. from Leonard Av. to the North Limits – Provisional
- Wallrich Av. from Edythe Av. to Queen St. – Provisional

Environmental Services - Water

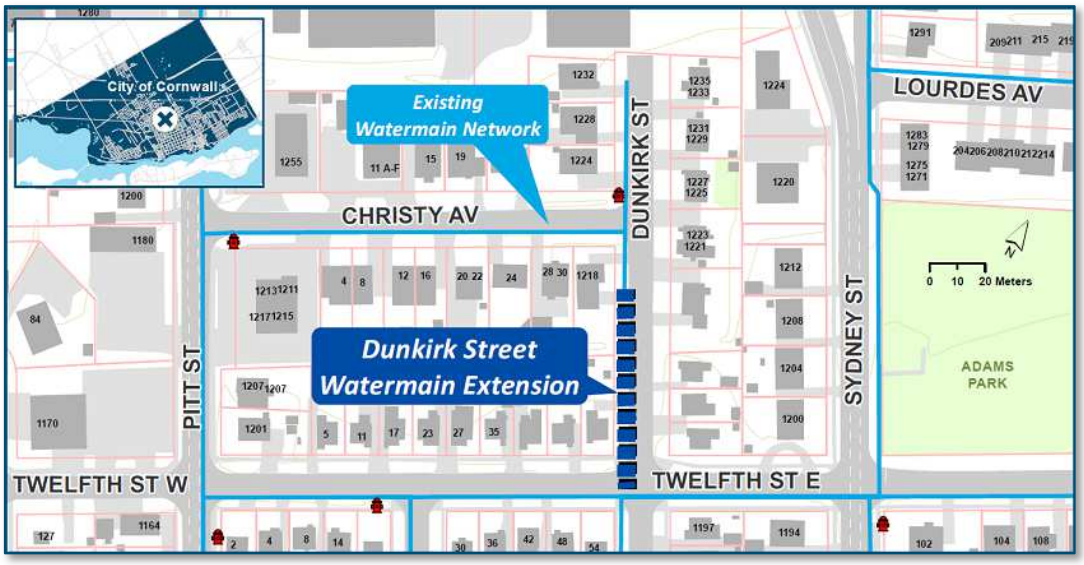
Project Name: **System Growth – New Watermain**

Funding: $350,000 Water Works Reserve

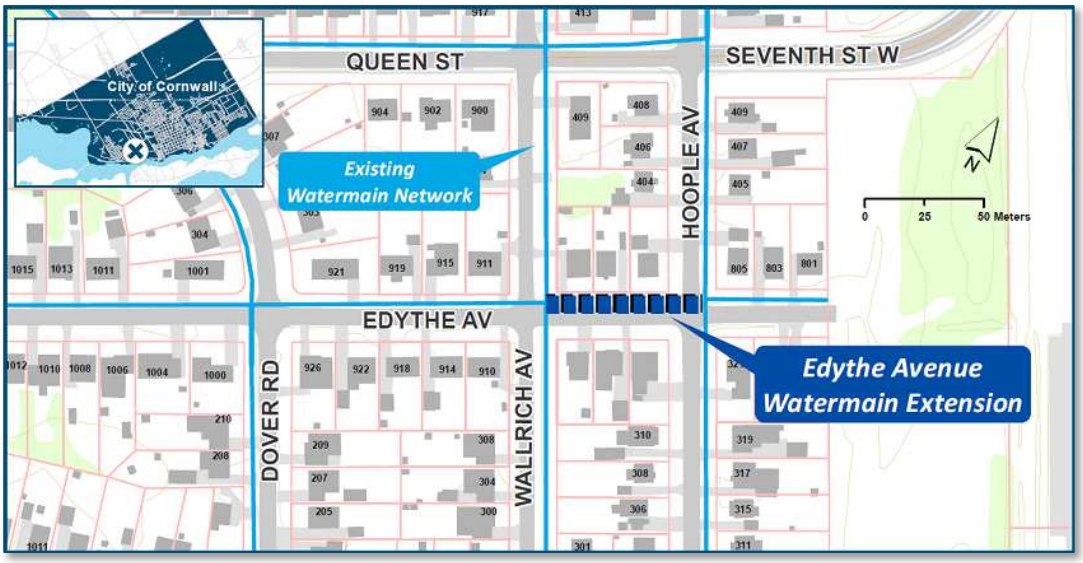
In order to provide the necessary system reliability and redundancy, all major watermains are required to be looped such that water can be supplied from two separate directions. In addition to increasing the flow rate, water network looping also ensures a reliable system by providing redundancy in the event of a watermain break or another problem. In the event of a break, a section of the watermain can be isolated for repair without interrupting the water supply and service for the majority of the service area. Additionally, water network looping is beneficial for fire protection as it provides greater water supply and pressure as well as ensures an adequate water supply can be provided in the event of a break.

Watermain network extensions for water system growth and security is an ongoing capital program. The watermain extension candidates for 2023 are as follows:

- Dunkirk Street from Christy Avenue to Twelfth Street ($170K)



- Edythe Avenue from Wallrich Avenue to Hoople Avenue ($180K)



Environmental Services - Water

Project Name: **Backflow Prevention for Fire Protection Engineering Services**

Funding: $125,000 Recoveries (City Departments)

The goal of the Cross Connection Control Program (CCCP) is to ensure the City of Cornwall's Water Distribution System is protected from contamination caused by back-pressure or back-siphoning of water from industrial, commercial, institutional, or multi-unit residential facilities. Contaminated water introduced into the City's Distribution System would pose a serious risk to the health and safety of our water consumers and would require the deployment of substantial resources to identify and correct.

The City is in the process of actively enforcing compliance of the CCCP By-Law (2016-019) at all government and privately-owned industrial, commercial, institutional, and residential facilities within the City of Cornwall, and as such, all municipal facilities should be made to comply with the By-Law in order to demonstrate our stewardship on the matter.

There are currently ten (10) municipally owned facilities which require the installation of backflow prevention devices on their respective fire protection/suppression systems:

• Cornwall Civic Complex	100 Water Street East
• Cornwall Transit Building	863 Second Street West
• Cornwall Justice Building	340 Pitt Street
• Glen-Stor-Dun Lodge	1900 Montreal Road
• Housing	330 Fourth Street East
• Housing – Augustus Court	24 Augustus Street
• Housing – Sunset Towers	120 Augustus Street
• Housing – Residence Edward	15 Edward Street
• Housing – Adolphus Court	540 Adolphus Street
• Housing	222 Sixth Street

This project involves the provision of all engineering and design services required to specify and properly install backflow prevention devices on the fire protection/suppression systems for the above mentioned facilities. Due to the exisitng limitations in space at many of the facilities mentioned, it is anticipated that architectual and mechanical modifications will be required to be performed in order to ensure that the devices can be properly fitted to the facilities and that no adverse effects are placed on the exisitng fire protection/suppression systems once the backflow preventors are installed.

Environmental Services - Water

Project Name: **Water Meter Installation Program**

Funding: $15,800,000 Financing

One of the City of Cornwall's 2019-2022 Strategic Priorities is to "be leaders in sustainability and climate change impact". One of the projects identified to help achieve this goal was water metering, as it will promote water conservation across the community. The efficient use of water provides social, economic, and environmental benefits. Using only the water we need helps foster a culture of sustainability and builds community vitality. It puts money back in our pockets as the amount of chemicals and energy required to treat and distribute the municipal water supply is reduced, and costly infrastructure upgrades are delayed. Fewer greenhouse gases are produced, and river health is improved- benefiting humans and wildlife alike. Water meters are an essential tool to encourage residents and businesses to be more mindful about the water they use. They will directly incentivize community members to be efficient water users and resolve the inequities in our current billing practices. The ability to measure where and how water is used in our community will allow the City to sustainably manage the water utility, detect leaks, and ensure that affordable water is available to meet community needs for generations to come. Moreover, many provincial and federal grants and funding programs require water metering data in order to be eligible to apply.

In 2021, a Water Conservation and Servicing Master plan was completed by Watson and Associates outlining an implementation plan for a universal water metering system with advanced metering infrastructure (AMI), as well as a proposed rate schedule to best serve the Cornwall community.

In 2022, following recommendations laid out in the Master Plan, the City engaged the services of a consulting firm *(Diameter Services)* through an RFP process to provide their expertise and project management services for the design, procurement, and installation of a universal water metering system and AMI. The Consultant is currently conducting a background review of the City's existing equipment, billing processes, staffing resources, goals, and objectives to develop a project plan and business case.

In 2023, the Consultant will enter the second phase of the project -- contractor procurement. Diameter Services will provide the framework for the City to tender the supply and installation of all components of the desired system. This allocation of funds will serve to hire the specialized contracting firm that will source and deploy all associated components of the system, including but not limited to, meters, meter reading equipment, software, data storage systems, and a customer information system. The City will only obtain the appropriate financing when the actual project costs are incurred.

Technicians installing SMART meters.

Example of a water monitoring

Example of a SMART

Environmental Services - Water

Project Name: **Backwash System Redundancy**

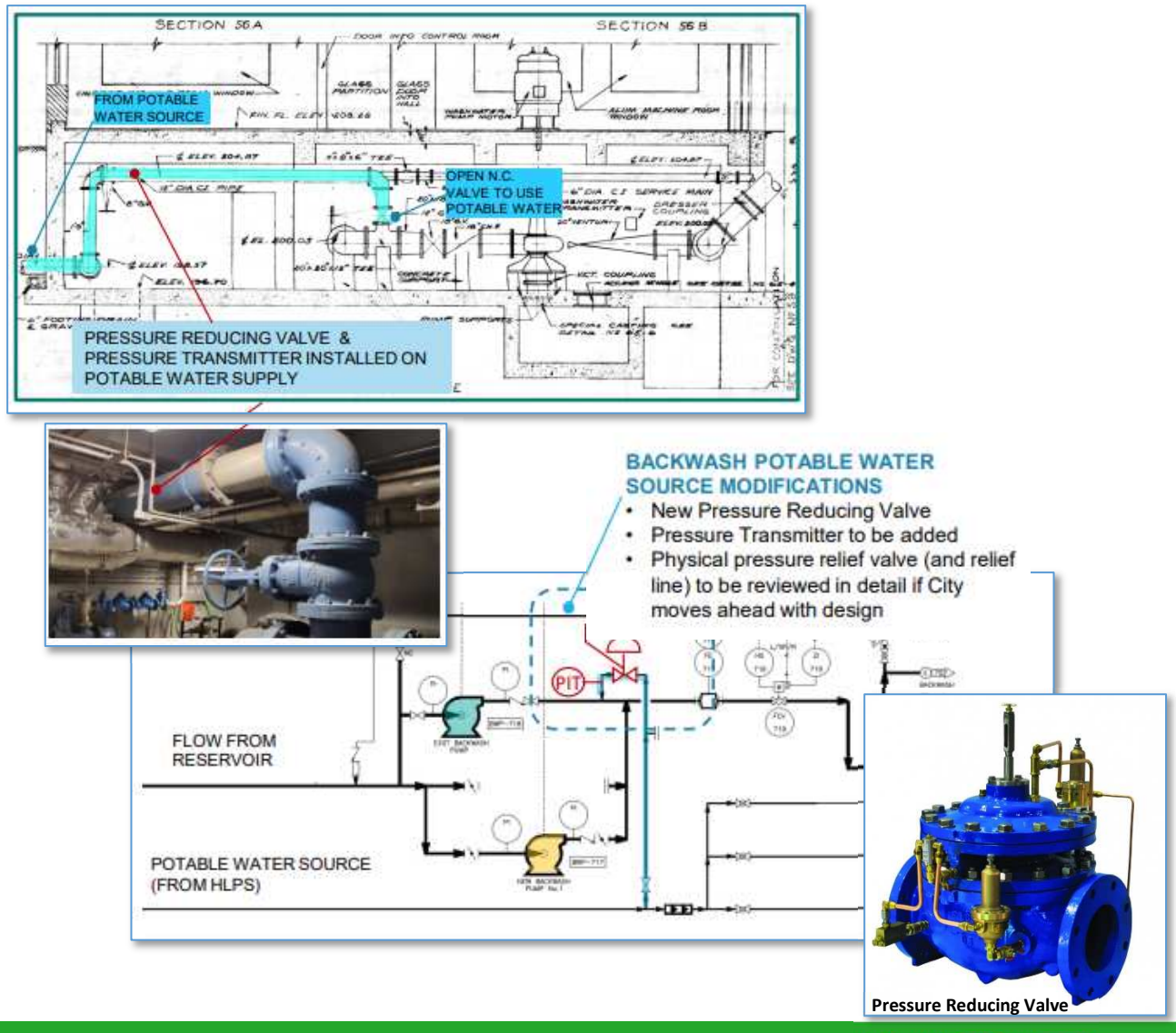
Funding: $100,000 Water Works Reserve

During a technical memorandum review of the backwash pump replacement project, it was noted that during the construction phase of this project the City would be relying on only one (1) backwash pump for an extended period. There would be no operational redundancy.

There is a potable water supply connection to the backwash piping; however, there is no pressure control on this connection. This lack of pressure control has the potential to cause major structural damage to the filter underdrain system if high pressure water is introduced to the backwash piping system too quickly.

To ensure adequate redundancy during the backwash pump replacement project as well as providing a permanent alternative for filter backwashing, the installation of a pressure reducing valve and a pressure transmitter on the potable water supply connection was recommended by the consultant.

This upgrade along with the backwash pump replacement project would provide the City with three (3) reliable options for filter backwashing to help ensure the continued production of potable water to all residents and business within the City.



Environmental Services - Water

Project Name: **UV Disinfection System Replacement**

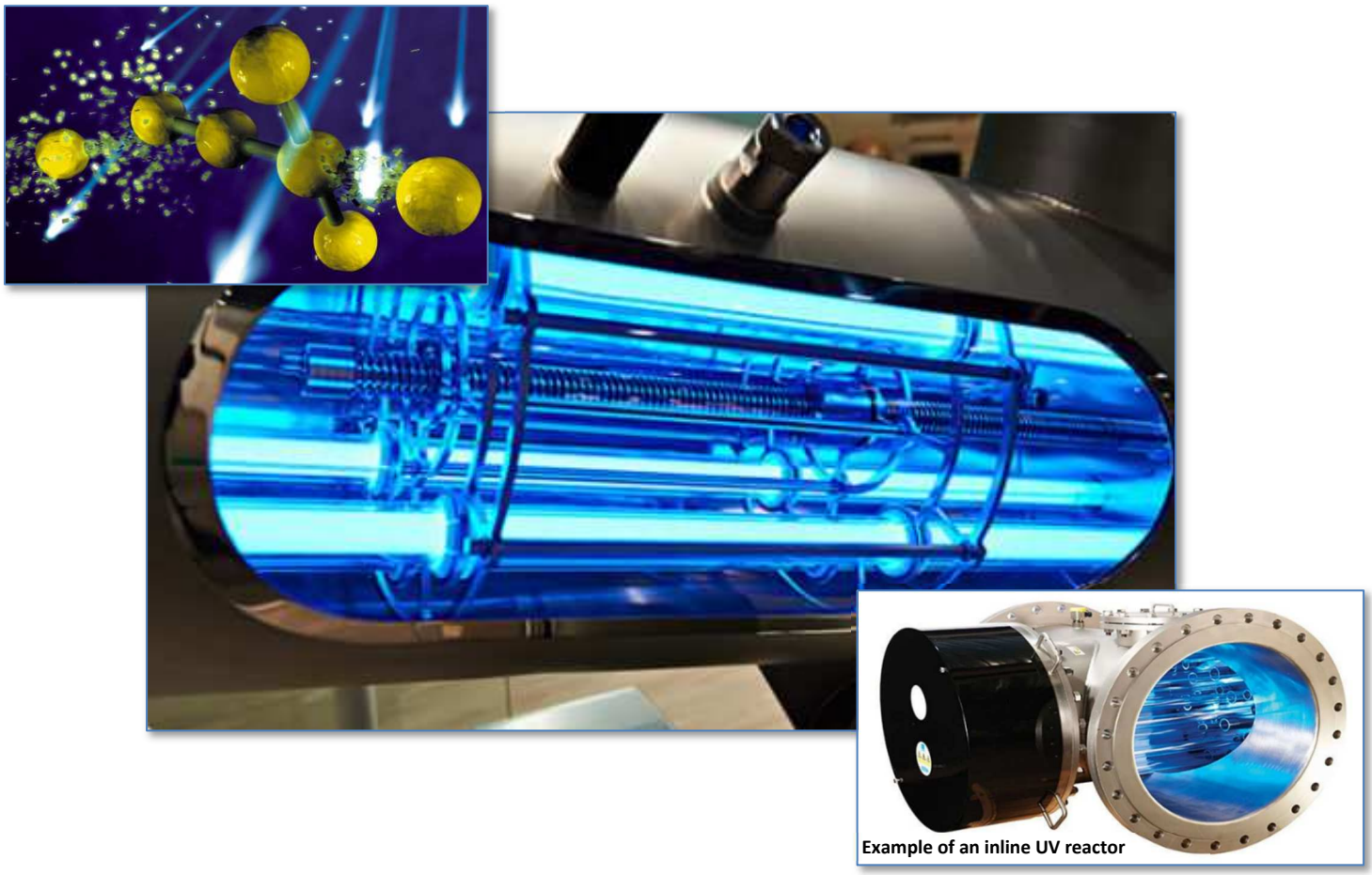
Funding: $2,000,000 Water Works Reserve

The Ultraviolet (UV) disinfection system is used for primary disinfection at the Water Purification Plant (WPP). The UV system destroys and inactivates harmful pathogens in the filtered water. The current UV system at the WPP has been in continuous service since 2005 and treats an average of 11,000,000 cubic metres of water per year.

In 2022, the City was advised via a manufacturer's technical bulletin that some replacement parts for the existing system would no longer be available for purchase. The lack of replacement parts coupled with the existing system reaching its end of life has prompted the need for this equipment replacement.

This project would see the complete replacement of the four (4) UV reactors and their associated control panels. The new UV system will feature advanced oxidation capabilities and will continue to provide the City with proven primary disinfection technology that will be well suited for the treatment of emerging contaminants.

As technologies have advanced over the years, newer UV systems are much more energy efficient which will lead to substantial utility cost savings as well as replacement part cost savings. The new UV system will help ensure that the City of Cornwall remains in compliance with the Safe Drinking Water Act (O. Reg. 170/03) providing clean and safe drinking water to residents and businesses for years to come.



Example of an inline UV reactor

Environmental Services - Water

Project Name: **Raw Water Intake Redundancy**

Funding: $50,000 Water Works Reserve

In 2020, EVB Engineering in collaboration with Jacobs Engineering were awarded RFP 20-P02 to undertake a Municipal Class Environmental Assessment for the determination and location of a secondary raw water intake supply for the Cornwall Drinking Water System. A long list of potential alternative solutions was developed as part of the Environmental Assessment process. These alternative solutions were screened to determine short listed alternative solutions for further evaluation using a multi-criteria analysis tool developed by the project steering committee.

The multi-criteria analysis yielded two preferred solutions for the project. A new intake near King Street and a new intake near the former Domtar site. Considering their similarities, both alternatives are recommended to move forward until supplementary studies have been undertaken and land acquisition is completed.

The Environmental Assessment included a 10-year plan the City should follow in order to see the successful completion of the project, as shown in figure below. The 2023 allocation of funds will be utilized to continue the 0–3 Year tasks *(with the exception of land acquisition)* of the 10-year plan. The geotechnical study of the King Street location is already underway, and pending those results, the natural environment and archaeological studies at the King Street location will follow.

Funding for the 3-10 year tasks have been allocated in the 10 year capital forecast, with the intent of applying for provincial and federal grants as applicable.

0 – 3 Years

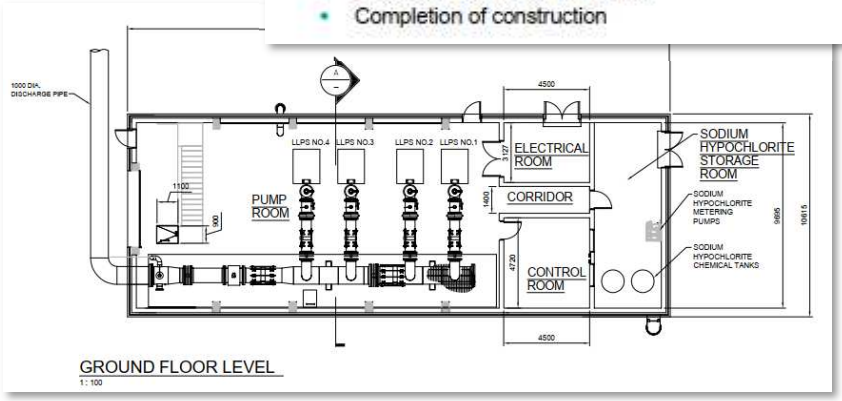
- Complete the environmental assessment process
- Complete supplementary studies for preferred sites (geotechnical, natural environmental inventory, archeological investigation, etc.)
- Confirm preferred solution and update construction cost estimate
- Prepare financial plan to support project and obtain Council approval
- Acquire property

3 – 5 Years

- Commission engineering consultant to prepare detailed design of the selected option
- Advocate for funding from senior levels of government
- Obtain permits, approvals, etc. as required

5 – 10 Years

- Complete design
- Issuance of construction tender
- Completion of construction



Environmental Services - Wastewater

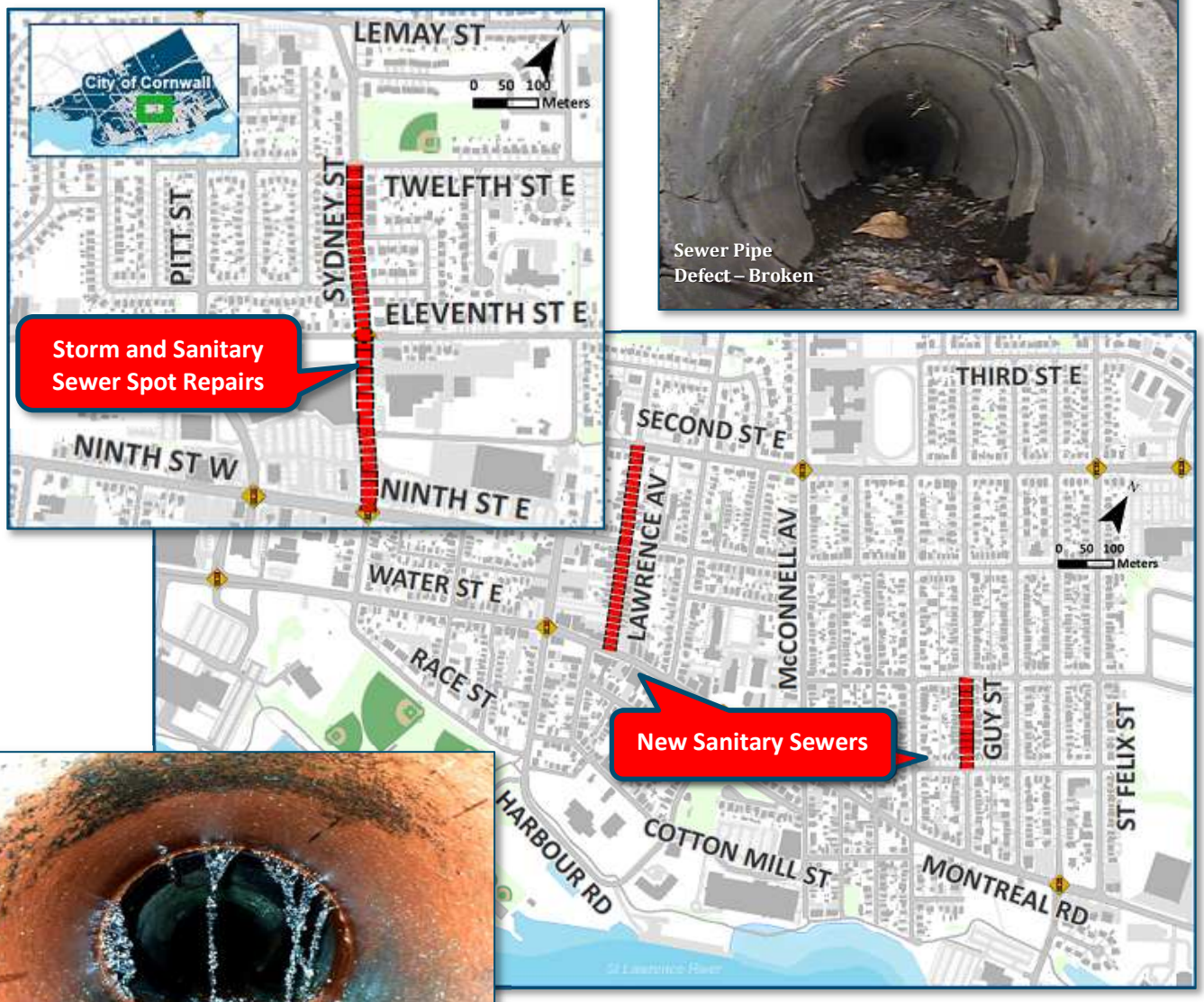
Project Name: **Sewer Network Improvements – Various Locations**

Funding: $1,100,000 Wastewater Works Reserve

The objectives of the annual Sanitary Sewer Network Improvements program is to replace/repair deficient storm and sanitary sewers in various locations throughout the City, which have been identified through closed circuit television (CCTV) sewer inspections, to have broken, collapsed or have other structural deficiencies.

The following Sewer Network Improvement projects are proposed for 2023:

1) Guy St. from Easton Ave. to Walton St. – New Sanitary Sewer ($350K)
2) Lawrence Ave. from Montreal Rd. to Second St. E. – New Sanitary Sewer ($470K)
3) Sydney St. from Ninth St. to Twelfth St. – Storm and Sanitary Sewer Spot Repairs ($180K)
4) Various Locations – Sewer Spot Repairs ($100K)



Environmental Services - Wastewater

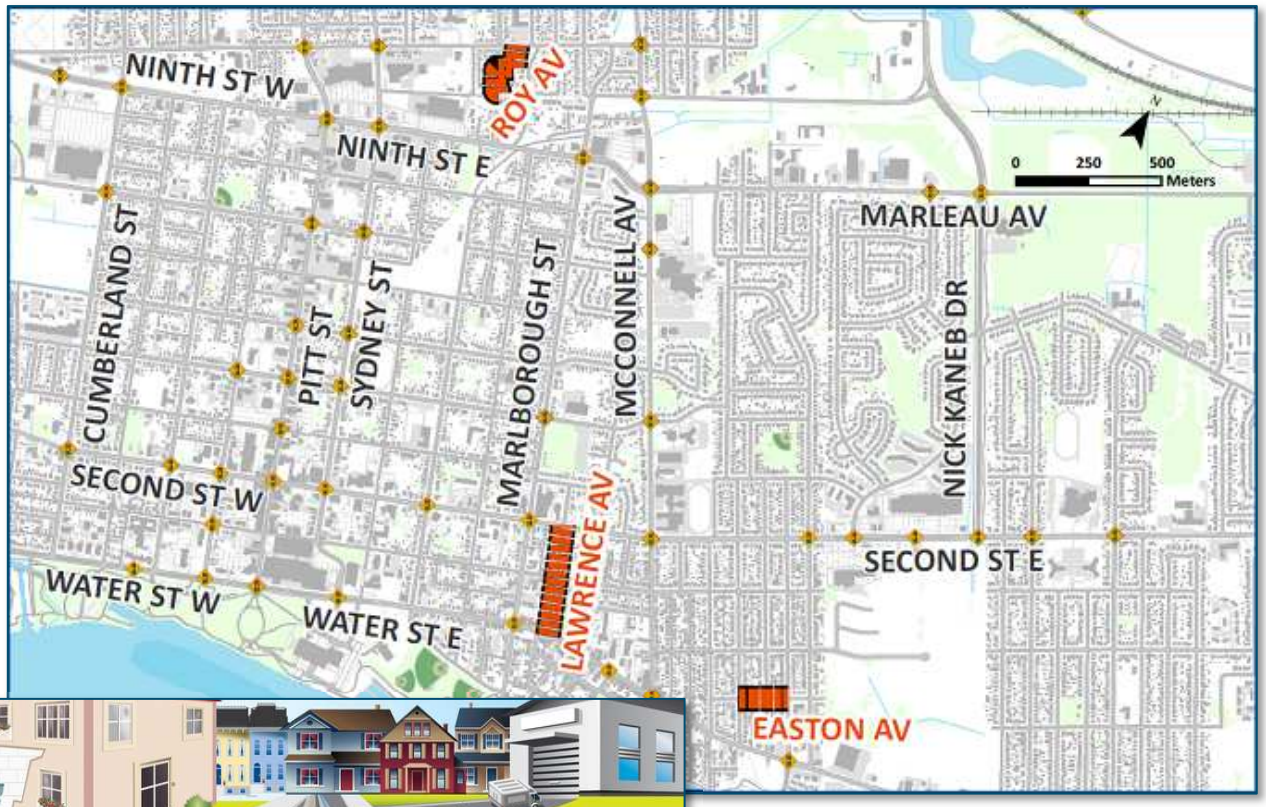
Project Name: **Combined Sewer Separation**

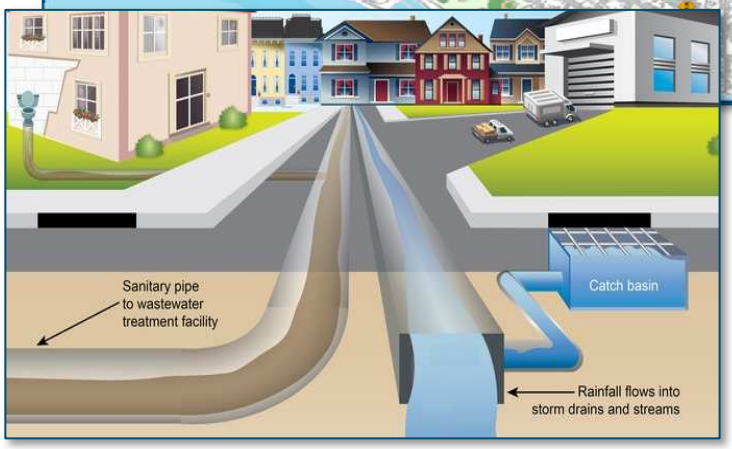
Funding: $694,500 Wastewater Works Reserve
$ 30,500 Development Charges
$725,000

The separation of combined sewers has the objective of reducing wet weather flows in the sewage system and to the Wastewater Treatment Plant. It reduces the potential for basement flooding because flows are lowered in the pipe that houses are directly connected to. Sewer separation also reduces Combined Sewer Overflow (CSO) volumes and the potential for bypasses from the Wastewater Treatment Plant to the St. Lawrence River. It is achieved by constructing new storm sewers so that the combined sewer can be converted into a sanitary sewer. Projects are prioritized based on the roadway surface condition so that the sewer works can be completed before resurfacing the roadway.

The following Combined Sewer Separation projects are proposed for 2023:

1) Lawrence Ave. from Montreal Rd. to Second St. E. – New Storm Sewer ($190K)
2) Easton Ave. from Guy St. to Bellmont St. – New Storm Sewer ($255K)
3) Roy Ave. from Eleventh St. E. to Tenth St. E. – New Storm Sewer ($280K)





Environmental Services - Wastewater

Project Name: **Primary Header Expansion Joint Rehabilitation**

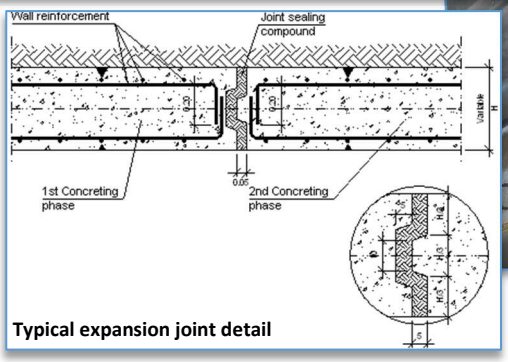
Funding: $300,000 Wastewater Works Reserve

In 1985, the Wastewater Treatment Plant underwent its first expansion and saw the addition of primary clarifiers #3 and #4. During construction, the existing primary clarifier structure was joined to the new concrete structure with an expansion joint. Concrete expands and contracts as it changes temperature and can also shift with the movement of the earth. Concrete expansion joints give the adjoining slabs room to move which helps prevent cracks and buckling. Without expansion joints, movement could create pressure and stress which eventually causes cracks or buckling. Expansion joints are used to relieve pressure and prevent damage.

Over the years, with the movement of the adjoining slabs, leaks have formed. Multiple localised crack injection repairs have been attempted, yet the expansion joint located in the primary header continues to leak. A complete failure of this joint would have catastrophic impacts on the treatment plant.

This project will see the hiring of a structural engineering consultant that will perform an inspection of the expansion joint and surrounding concrete and propose a repair strategy that will reinstate the structural integrity of the primary header. Since the primary header distributes wastewater to all four clarifiers, it is anticipated that to perform the repair, by-pass pumping capable of handling the plants maximum flow of 149,000m3/d will be required. This would involve the rental of multiple large high-capacity diesel pumps and the operation of the facility with staff on a 24-hour basis.

Expansion joint location in primary header



Typical expansion joint detail

Leaks from expansion joint viewed from inside tunnel

Environmental Services - Wastewater

Project Name: **Digester #1 Relining**

Funding: $1,100,000 Wastewater Works Reserve

At the core of our Wastewater Treatment Plant are two anerobic mesophilic digesters. The two digesters are critical to the treatment process and are original to the facility having been in continuous service since 1965. The digesters are internally lined with a coal tar epoxy coating. This coating serves to create a gas dome within the digester. Over time, this coal tar coating is attacked by the mixing action in the digesters and deteriorates leaving the inner concrete structure vulnerable to physical and chemical attack. In almost all cases of coal tar coated digesters in Ontario, a full replacement of the coating is required as the blisters formed in the coating become too numerous and too large for any kind of localized repair.

It is the intent to rehabilitate the internal coating of Digester #1 in 2023. Digester #2 will be budgeted and rehabilitated in 2024. To complete this work a consultant engineer, specialised in digester repair, will need to be engaged to create a set of drawings and specifications for the repair service. These drawings and specifications will serve as the template to repair each of the two digesters.

The next step in the process is the solids removal. The operations staff bring the level of solids down as low as the existing equipment allows. Once this is completed, a third-party dewatering team is required to remove the final solids for off site disposal. With the digester emptied and cleaned, the existing coating is removed and the concrete structure below is inspected by the consultant and repaired by the contractor. The inner structure is then re-lined, reinstating the gas dome, and once again protecting the concrete structure.

Dewatering a Digester for 10-year inspection.

Contractor installing an epoxy coating within a Digester.

Cornwall WWTP Digester #1

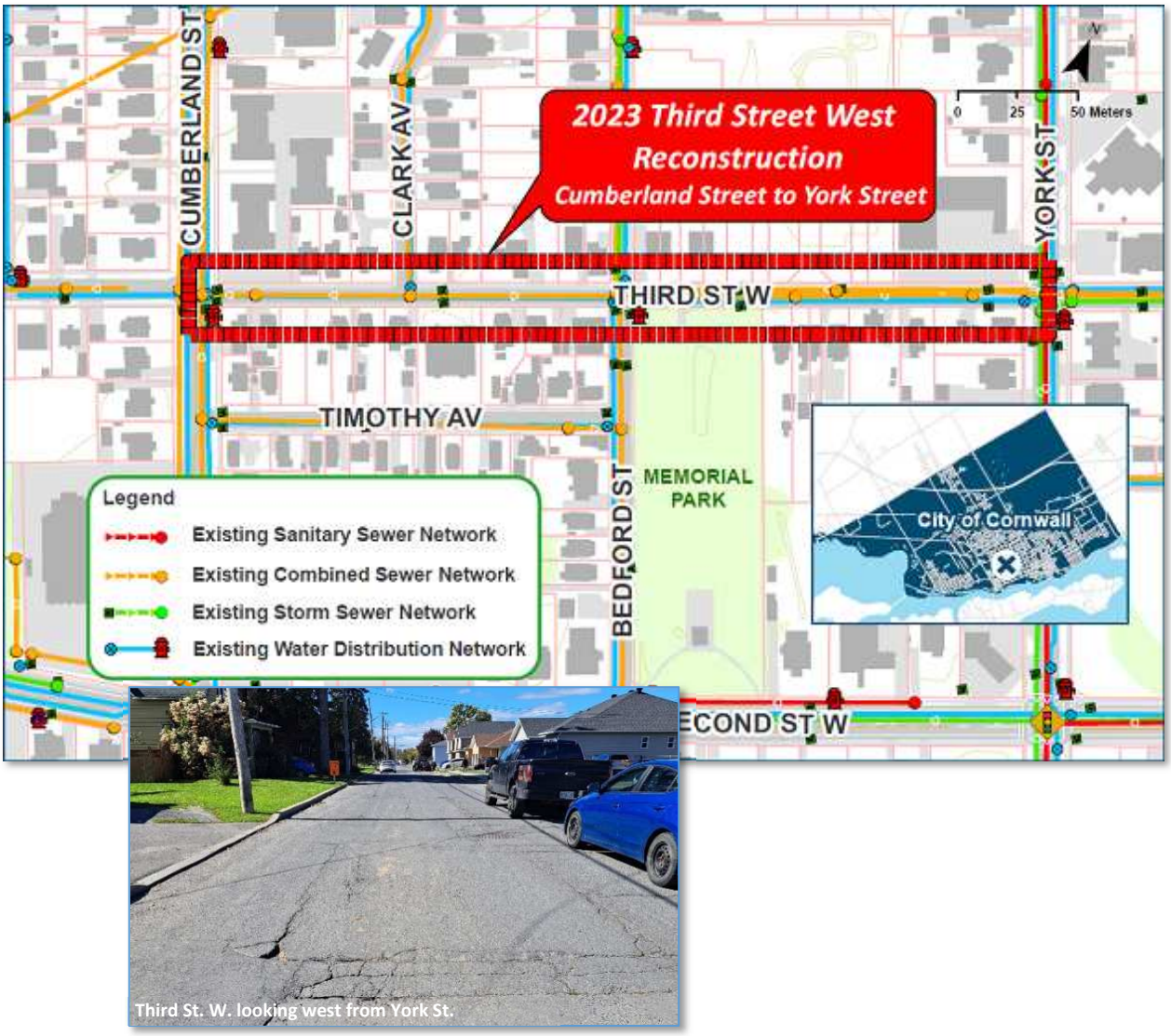
Environmental Services - Joint Infrastructure

Project Name: Joint Infrastructure – Third St. W. Reconstruction – Cumberland St. to York St.

Funding: $ 950,000 Water Works Financing
$ 950,000 Wastewater Works Financing
$1,900,000

Joint infrastructure projects typically include the rehabilitation of sewer, water and roadway infrastructure. Project candidates are selected based on the state of underground infrastructure; locations where sewer separation is required and watermain improvements are necessary are considered priorities. Project candidates are further narrowed based on locations where the road corridor is also in poor condition, as the roadway will be rehabilitated as part of the restoration works following the replacement of all buried infrastructure.

The reconstruction of Third St. W. from Cumberland St. to York St. is recommended as a joint infrastructure project as the underground infrastructure has reached the end of its service life and is in poor condition. The existing watermain was constructed in 1923 and is in need of replacement. The street is currently serviced with combined sewers which require separation through the installation of new dedicated storm and sanitary sewers as part of the City's long-term sewer separation plan. In addition, the road corridor has a pavement condition rating of 37 or "Very Poor" and requires rehabilitation.



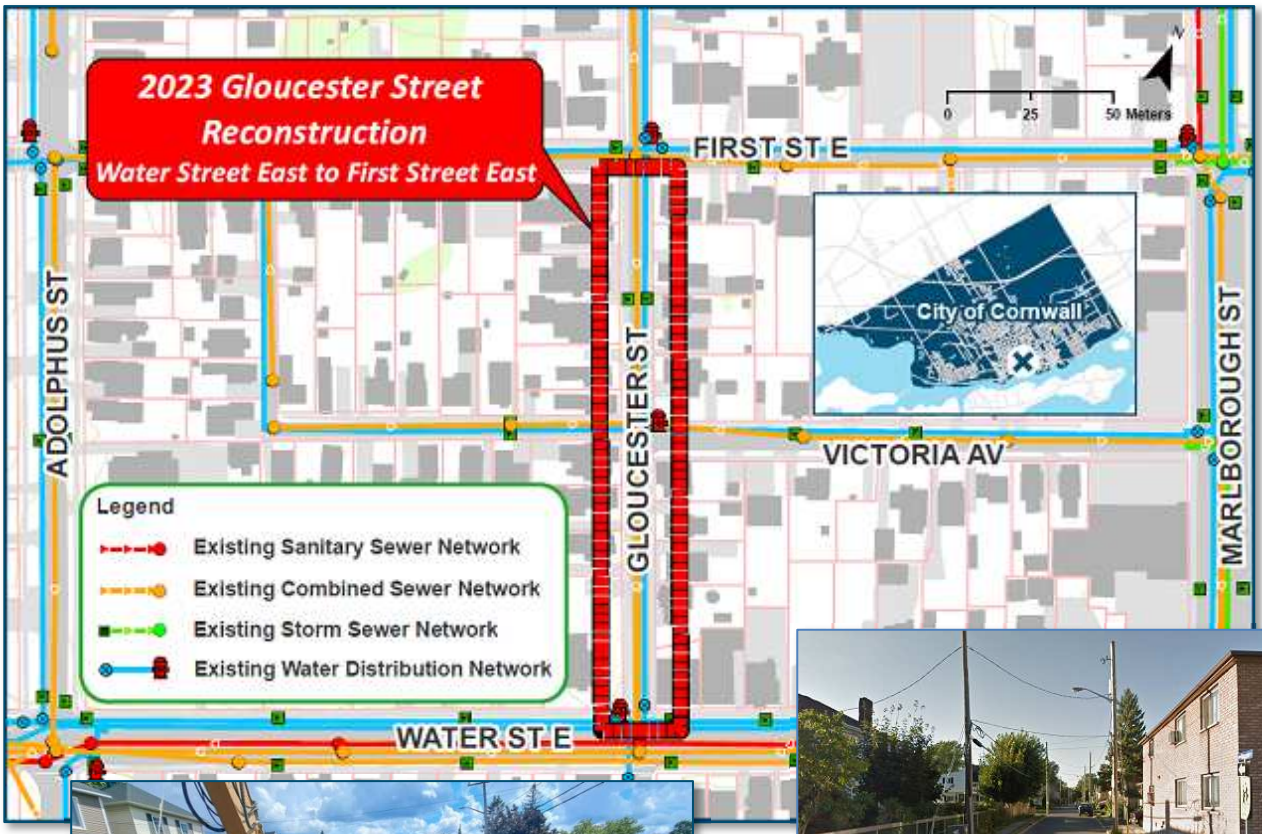
Environmental Services - Joint Infrastructure

Project Name: Joint Infrastructure – Gloucester St. from Water St. E. to First St. E.

Funding: $ 500,000 Water Works Reserve
$ 500,000 Wastewater Works Reserve
$1,000,000

Joint infrastructure projects typically include the rehabilitation of sewer, water and roadway infrastructure. Project candidates are selected based on the state of underground infrastructure; locations where sewer separation is required and watermain improvements are necessary are considered priorities. Project candidates are further narrowed based on locations where the road corridor is also in poor condition, as the roadway will be rehabilitated as part of the restoration works following the replacement of all buried infrastructure.

The reconstruction of Gloucester St. from First St. E. to Water St. is recommended as a joint infrastructure project as the underground infrastructure has reached the end of its service life and is in poor condition. The existing watermain was constructed in 1925 and is in need of replacement. The street is currently serviced with a combined sewer that was constructed in 1930 and requires separation through the installation of new dedicated storm and sanitary sewers as part of the City's long-term sewer separation plan. In addition, the road corridor has a pavement condition rating of 46 or "Poor" and is in need of rehabilitation.




Gloucester St. from Water St. E.


2022 Sydney St. Joint Infrastructure Project – Seventh St. E. to Ninth St. E.

2023 TEN YEAR CAPITAL FORECAST

CAPITAL FORECAST
FOR THE YEARS 2023 - 2032

WATER DISTRIBUTION

LOCATION	FROM	TO	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
WATER DISTRIBUTION												
Watermain Rehabilitation												
Improvements to system throughout the City			1,650	2,450	2,500	2,550	2,600	2,650	2,700	2,750	2,800	2,850
Pitt Street	Tollgate Road	Cornwall Centre Road	3,000	3,000								
Vincent Massey Drive	Tollgate Road	City Limits			5,000	5,000						
System Growth - New Watermain												
- Other System Growth/Projection Projects			350	500	500	500	500	500	500	500	500	500
Backflow Prevention for Fire Protection			125									
Engineering Services												
Total Capital			5,125	5,950	8,000	8,050	3,100	3,150	3,200	3,250	3,300	3,350

2023 TEN YEAR CAPITAL FORECAST

CAPITAL FORECAST
FOR THE YEARS 2023 - 2032

WATER PURIFICATION PLANT

LOCATION	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Water Meter Installation Program	15,800.0									
Intake Emergency Isolation Device			1,100.0							
Raw Water Intake Main Repair Engineering		50.0								
Concrete Storage Tanks Condition Assessment				50.0					150.0	
Backwash System Redundancy	100.0									
High Lift Pump Replacement		400.0		400.0		400.0		400.0		
UV Disinfection System Replacement	2,000.0									
Raw Water Intake Redundancy	50.0	150.0	150.0	6,000.0	6,000.0	6,000.0	6,000.0	6,000.0	6,000.0	6,000.0
Replacement of Chemical Storage Tanks									150.0	
Removal of Hydrogen Peroxide System									300.0	
Clearwell Sluice Gate Replacement					150.0					
Boundary Road Booster Pump Replacements			150.0	150.0	150.0					
Submersible Filter Backwash Pump and Valve Replacement			400.0							
Filter 3 &4 Media Replacements					600.0					
Filter 1 & 2 Media Replacements				600.0						
SCADA Equipment				100.0		300.0	500.0		150.0	
Tower Coating Rehabilitation						400.0			250.0	
Instrumentation (Flow Meters/Actuators/Pressure Transmitters)			200.0	100.0	150.0				150.0	
Building Exterior Brickwork							800.0			
Expansion Joint Repairs						400.0				
Valve Replacement Program			200.0		250.0			250.0	250.0	
Concrete Rehabilitation/Renewal				200.0	200.0	200.0		200.0		
Roof Repairs				150.0				500.0		
Intake Structure Engineering and Rehabilitation										700.0
Electrical System Upgrades										700.0
Building and Grounds Project			50.0	50.0	50.0	50.0				
Total Capital	17,950.0	600.0	2,250.0	7,800.0	7,550.0	7,750.0	7,300.0	7,350.0	7,400.0	7,400.0

2023 TEN YEAR CAPITAL FORECAST

CAPITAL FORECAST
FOR THE YEARS 2023 - 2032

WASTEWATER COLLECTION

LOCATION	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Wastewater Collection Program										
Sewer Network Improvements Guy St. Lawrence Ave. Sydney St. Various Spot Repair Locations	1,100	1,125	1,150	1,175	1,200	1,225	1,250	1,275	1,275	1,300
Storm & Combined Sewer Separation *See page 53 for a street listing*	725	750	750	770	790	810	830	850	850	875
Total Capital	1,825	1,875	1,900	1,945	1,990	2,035	2,080	2,125	2,125	2,175

2023 TEN YEAR CAPITAL FORECAST

CAPITAL FORECAST
FOR THE YEARS 2023 - 2032

WASTEWATER COLLECTION

LOCATION	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Storm and Combined Sewer Separation at Various Locations										
Lawrence Av. - Montreal Rd. to Second St.	190									
Easton Av. - Guy St. to Bellmont St.	255									
Roy St. - Eleventh St. E. to Tenth St. , E.	280									
Bedford St. - Water St. to Second St.		380								
Yates Av. - Second St. to Third St.		370								
Seymour St. - Water St. to Second St.			270							
Anthony St. - Easton Av. to Montreal Rd.			190							
Bedford St. - First St. W to Second St. W.			150							
Victoria Av. - Gloucester St. to Marlborough St.			140							
First St. - McConnell Av. To Alice St.				360						
Sixth St E - Gloucester St. to Marlborough St.				340						
First St. - Baldwin Av. To McConnell Av.				70						
Sewer Separation TBD Locations					790	810	830	850	850	875
Total Capital	725	750	750	770	790	810	830	850	850	875

2023 TEN YEAR CAPITAL FORECAST

CAPITAL FORECAST
FOR THE YEARS 2023 - 2032

WASTEWATER TREATMENT PLANT

LOCATION	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Primary Header Expansion Joint Repair and Engineering	300									
Digester #1 Relining	1,100									
Digester #2 Relining		1,100								
Obsolete MCC/VFD Replacements			50	50	50	50	50	50		
BAF Cells Conversion to Duostyr				600						
BAF Backwash Header Modifications				75						
Pumphouse Spare Forcemain to Main Plant and Engineering									1,550	
WWTP Outfall Rehabilitation		150	1,650							
Primary Clarifiers 1&2, Header Rehabilitation, & Engineering					1,700					
Primary Clarifiers 3&4, Header Rehabilitation, & Engineering						1,750				
Pumphouse Suction, Discharge Header Rehabilitation, & Engineering							1,800			
Brookdale Gate Replacement and Engineering				1,000						
Roof Replacement for all Buildings		200		200	225	70		110		350
Exterior Building Rehabilitation and Engineering									550	
UV System Replacement								1,600		1,600
Waste Gas Burner & Gas Train			500							
Total Capital	1,400	1,450	2,200	1,925	1,975	1,870	1,850	1,760	2,100	1,950

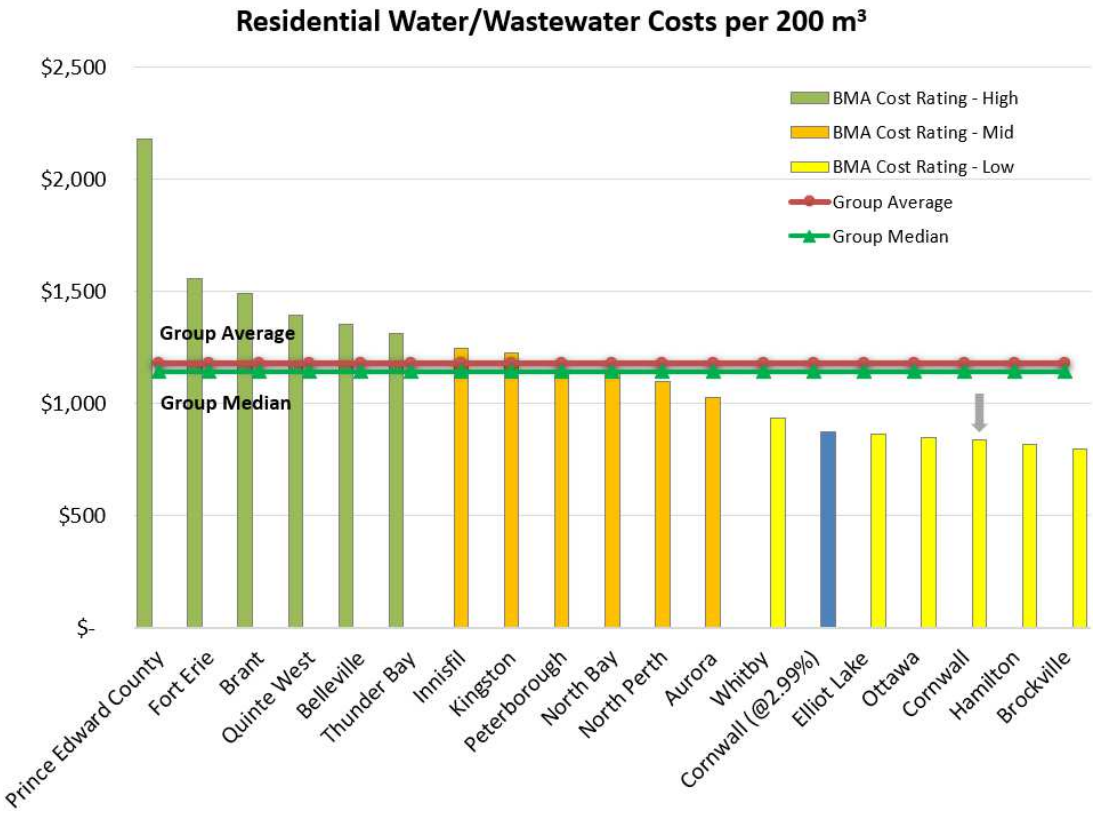
2023 TEN YEAR CAPITAL FORECAST

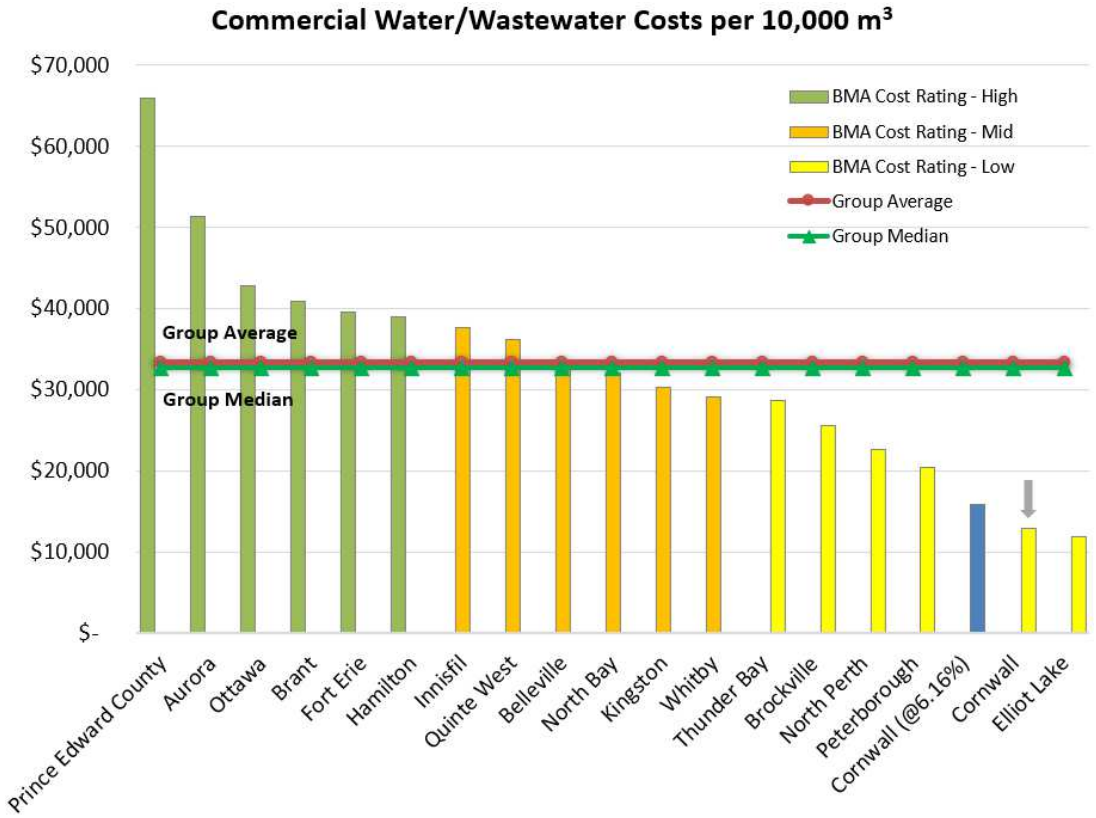
CAPITAL FORECAST
FOR THE YEARS 2023 - 2032

JOINT INFRASTRUCTURE PROJECTS - (WATER / WASTEWATER)

LOCATION	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Third St. - Cumberland St. to York St.	1,900									
Gloucester St - Water St. E. to First St. E.	1,000									
Bedford St. - Fourth St. to Sixth St.		1,600								
Lauber Ave. - Bedford St. to Cumberland St.		1,350								
Adolphus St. - Fourth St. to Fifth St.			2,950							
Eighth St. - Adolphus St. to Marlborough St.				3,000						
Eighth St. - Sydney St. to Adolphus St.					3,000					
Sixth St. - Augustus St. to Sydney St.						1,300				
Gloucester St. - Second St. to Aberdeen Ave.						1,000				
Timothy Av. - Cumberland St. to Bedford St.						750				
Future Projects							3,050	3,100	3,100	3,150
Total Capital	2,900	2,950	2,950	3,000	3,000	3,050	3,050	3,100	3,100	3,150

Municipal Comparators





Source: 2022 Draft BMA Municipal Study (based on 2021 FIRs)

Comparison of Water/Wastewater Costs – Residential (sorted lowest to highest)

Volume Meter Size	Residential 200 m^3 5/8"	Residential 200 m^3 Ranking
Caledon	$ 625	Low
Mississauga	$ 625	Low
Brampton	$ 625	Low
Brockville	$ 796	Low
Hamilton	$ 820	Low
Cornwall	$ 839	Low
Ottawa	$ 847	Low
Toronto	$ 852	Low
Hanover	$ 860	Low
Elliot Lake	$ 863	Low
Markham	$ 923	Low
Stratford	$ 923	Low
Tillsonburg	$ 930	Low
Ajax	$ 937	Low
Scugog	$ 937	Low
Whitby	$ 937	Low
Clarington	$ 937	Low
Oshawa	$ 937	Low
Pickering	$ 937	Low
Brock	$ 937	Low
New Tecumseth	$ 940	Low
Oakville	$ 952	Low
Halton Hills	$ 952	Low
Milton	$ 952	Low
Burlington	$ 952	Low
Aylmer	$ 956	Low
Sault Ste. Marie	$ 957	Low
London	$ 967	Low
Waterloo	$ 968	Low
Vaughan	$ 971	Low
Brantford	$ 981	Low
Guelph	$ 981	Low
Pelham	$ 1,026	Low
Aurora	$ 1,028	Low
Timmins	$ 1,032	Low
Orillia	$ 1,036	Low

Volume Meter Size	Residential 200 m^3 5/8"	Residential 200 m^3 Ranking
Niagara Falls	$ 1,039	Mid
St. Catharines	$ 1,050	Mid
Collingwood	$ 1,052	Mid
Whitchurch-Stouffville	$ 1,062	Mid
Haldimand	$ 1,064	Mid
Sarnia	$ 1,065	Mid
Orangeville	$ 1,071	Mid
Kincardine	$ 1,077	Mid
Essex	$ 1,098	Mid
The Blue Mountains	$ 1,101	Mid
North Perth	$ 1,101	Mid
St. Thomas	$ 1,105	Mid
Lincoln	$ 1,107	Mid
North Bay	$ 1,135	Mid
Kitchener	$ 1,149	Mid
Peterborough	$ 1,150	Mid
Barrie	$ 1,150	Mid
Lakeshore	$ 1,154	Mid
North Dumfries	$ 1,174	Mid
Ingersoll	$ 1,183	Mid
Espanola	$ 1,199	Mid
Cambridge	$ 1,199	Mid
Strathroy-Caradoc	$ 1,208	Mid
Chatham-Kent	$ 1,216	Mid
Niagara-on-the-Lake	$ 1,219	Mid
Thorold	$ 1,221	Mid
Wilmot	$ 1,223	Mid
Georgina	$ 1,226	Mid
Kingston	$ 1,229	Mid
Innisfil	$ 1,246	Mid
West Lincoln	$ 1,263	Mid
Wellington North	$ 1,265	Mid
Woolwich	$ 1,276	Mid
Gravenhurst	$ 1,290	Mid
Huntsville	$ 1,290	Mid
Bracebridge	$ 1,290	Mid
Newmarket	$ 1,314	Mid
Thunder Bay	$ 1,315	Mid

Volume Meter Size	Residential 200 m^3 5/8"	Residential 200 m^3 Ranking
Saugeen Shores	$ 1,317	High
Windsor	$ 1,334	High
Tay	$ 1,346	High
Wellesley	$ 1,346	High
Centre Wellington	$ 1,352	High
Belleville	$ 1,356	High
Welland	$ 1,383	High
Port Hope	$ 1,390	High
Quinte West	$ 1,394	High
Owen Sound	$ 1,408	High
Amherstburg	$ 1,438	High
East Gwillimbury	$ 1,446	High
Southgate	$ 1,453	High
Greater Sudbury	$ 1,470	High
Brant	$ 1,493	High
Guelph-Eramosa	$ 1,530	High
Springwater	$ 1,536	High
West Grey	$ 1,538	High
Norfolk	$ 1,539	High
Fort Erie	$ 1,556	High
Grey Highlands	$ 1,560	High
King	$ 1,574	High
Dryden	$ 1,591	High
Mapleton	$ 1,624	High
Port Colborne	$ 1,644	High
Minto	$ 1,695	High
Lambton Shores	$ 1,744	High
Middlesex Centre	$ 1,775	High
North Middlesex	$ 1,791	High
Kenora	$ 1,817	High
Parry Sound	$ 1,978	High
Central Elgin	$ 2,036	High
South Bruce Peninsula	$ 2,045	High
Meaford	$ 2,111	High
Prince Edward County	$ 2,178	High
North Grenville	$ 2,844	High

Average	**$ 1,236**
Median	**$ 1,178**

Comparison of Water/Wastewater Costs - Commercial (sorted lowest to highest)

Volume Meter Size	Commercial 10,000 m³ 2"	Commercial 10,000 m³ Ranking
Elliot Lake	$ 11,857	Low
Cornwall	$ 12,960	Low
Espanola	$ 15,848	Low
Collingwood	$ 19,731	Low
Peterborough	$ 20,481	Low
West Grey	$ 22,236	Low
North Perth	$ 22,607	Low
Kincardine	$ 22,742	Low
Sarnia	$ 22,872	Low
Grey Highlands	$ 24,404	Low
Tillsonburg	$ 25,506	Low
Brockville	$ 25,625	Low
Hanover	$ 26,051	Low
Ingersoll	$ 26,223	Low
London	$ 28,330	Low
Thunder Bay	$ 28,681	Low
Stratford	$ 28,994	Low
Chatham-Kent	$ 29,144	Low
Clarington	$ 29,170	Low
Whitby	$ 29,170	Low
Ajax	$ 29,170	Low
Scugog	$ 29,170	Low
Oshawa	$ 29,170	Low
Brock	$ 29,170	Low
Pickering	$ 29,170	Low
St. Thomas	$ 29,522	Low
Niagara Falls	$ 29,946	Low
Essex	$ 30,204	Low
Kingston	$ 30,272	Low
Mapleton	$ 30,480	Low
Niagara-on-the-Lake	$ 30,558	Low
Brampton	$ 31,269	Low
Caledon	$ 31,269	Low
Mississauga	$ 31,269	Low
Haldimand	$ 31,876	Low
North Bay	$ 32,096	Low
Oakville	$ 32,179	Mid
Halton Hills	$ 32,179	Mid
Burlington	$ 32,179	Mid
Milton	$ 32,179	Mid
Pelham	$ 32,264	Mid
Lakeshore	$ 32,906	Mid
Belleville	$ 33,244	Mid
Saugeen Shores	$ 35,010	Mid
Thorold	$ 35,677	Mid
Port Colborne	$ 35,942	Mid
Kenora	$ 36,167	Mid
Quinte West	$ 36,188	Mid
Toronto	$ 36,198	Mid
St. Catharines	$ 36,684	Mid
Southgate	$ 36,996	Mid
Sault Ste. Marie	$ 37,322	Mid
Innisfil	$ 37,663	Mid
Orillia	$ 37,796	Mid
Amherstburg	$ 38,155	Mid
Aylmer	$ 38,909	Mid
West Lincoln	$ 39,004	Mid
Hamilton	$ 39,048	Mid
Fort Erie	$ 39,611	Mid
Guelph	$ 40,429	Mid
Brant	$ 40,902	Mid
Owen Sound	$ 41,001	Mid
Windsor	$ 41,236	Mid
Timmins	$ 42,532	Mid
Ottawa	$ 42,781	Mid
Orangeville	$ 42,995	Mid
Brantford	$ 43,636	Mid
Barrie	$ 44,235	Mid
Norfolk	$ 44,872	Mid
Dryden	$ 44,930	Mid
Minto	$ 44,943	Mid
Strathroy-Caradoc	$ 45,742	Mid
Markham	$ 46,163	Mid
Gravenhurst	$ 46,301	High
Huntsville	$ 46,301	High
Bracebridge	$ 46,301	High
The Blue Mountains	$ 46,352	High
Lincoln	$ 46,820	High
Waterloo	$ 46,868	High
New Tecumseth	$ 47,000	High
Greater Sudbury	$ 47,246	High
Newmarket	$ 47,294	High
Wellington North	$ 47,917	High
Vaughan	$ 48,558	High
Welland	$ 48,978	High
North Dumfries	$ 49,292	High
Woolwich	$ 49,712	High
Wilmot	$ 50,805	High
Cambridge	$ 51,174	High
Aurora	$ 51,400	High
South Bruce Peninsula	$ 52,276	High
Whitchurch-Stouffville	$ 53,099	High
Centre Wellington	$ 54,514	High
Wellesley	$ 56,128	High
Georgina	$ 57,086	High
Kitchener	$ 57,447	High
Springwater	$ 58,348	High
East Gwillimbury	$ 59,239	High
Meaford	$ 59,839	High
Central Elgin	$ 62,827	High
Guelph-Eramosa	$ 62,878	High
Port Hope	$ 63,739	High
Parry Sound	$ 64,093	High
Prince Edward County	$ 65,879	High
Tay	$ 67,300	High
King	$ 68,964	High
Lambton Shores	$ 69,780	High
Middlesex Centre	$ 70,725	High
North Middlesex	$ 74,013	High
North Grenville	$ 108,936	High

Average	**$ 40,842**
Median	**$ 38,532**

Key Financial Assumptions

Following the key assumptions outlined for the City's LTFP, the financial forecast for the years 2024-2026 (multi-year budget) encompasses a number of key assumptions that are used to project the City's anticipated financial performance, including the following:

Operating expenses

Salary and benefit related costs are projected to increase at an average rate of 2.5% per year based upon our financial model. This reflects settlements under the City's collective bargaining agreements, corresponding increases for non-union personnel, and increases in benefit costs and other staffing adjustments.

Costs for materials and goods are projected to increase at a rate of 5.0% per year, which represents the assumed an increase due to inflation and the impact of saving initiatives undertaken by the City.

Other operating expenses are projected to increase at a rate of 3.0% per year, which represents the assumed general rate of increase in operating costs due to inflation and the impact of regulatory changes.

Insurance is projected to increase by 10% per year.

Capital

Projected capital expenditures and associated funding (based on financial policy recommendations) for the years 2024 to 2032 are based on the City's AMP, which is reviewed annually.

Appendix C

City of Cornwall

State of Infrastructure Report Cards

City of Cornwall

State of Infrastructure Report Card

Service: Utilities

Sanitary Sewer Collection System

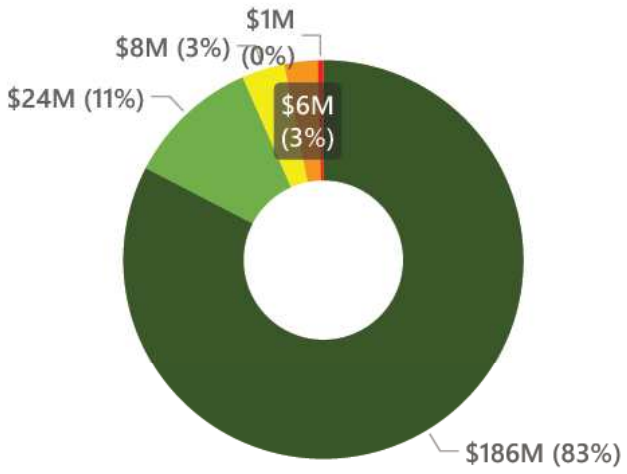
Linear

Asset Inventory:

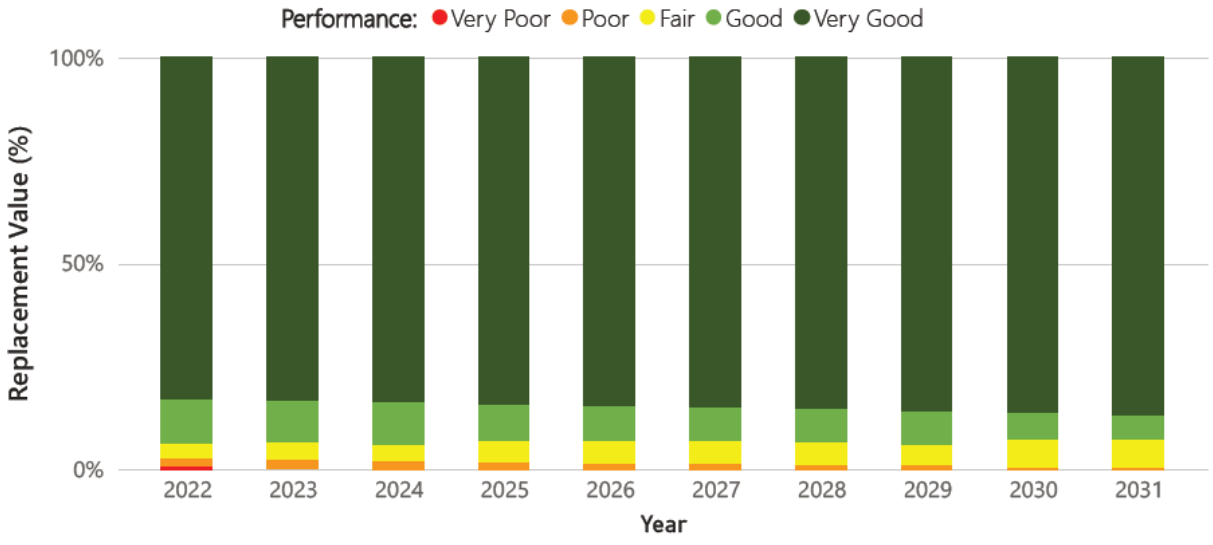
Asset Class	Inventory	Unit
Forcemains	4.92	KM
Sanitary Sewers	199.50	KM

Replacement Cost:	$224.94M
Overall Condition:	**Very Good**
Annual Average Funding:	$946K
Annual Funding required to meet Target Performance:	$1.02M

Current Condition by Replacement Cost ($)



Performance Forecast with Anticipated Budget



City of Cornwall
State of Infrastructure Report Card
Service: Utilities

Sanitary Sewer Collection System

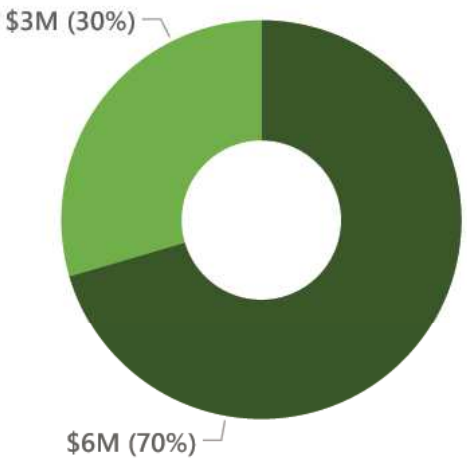
Vertical

Asset Inventory:

Asset Class	Inventory	Unit
Sanitary Pumping Stations	6.00	Structures

Replacement Cost:	$8.47M
Overall Condition:	**Very Good**
Annual Average Funding:	$0
Annual Funding required to meet Target Performance:	$0

Current Condition by Replacement Cost ($)



Performance Forecast with Anticipated Budget

City of Cornwall

State of Infrastructure Report Card

Service: Utilities

Combined Sewer Collection System

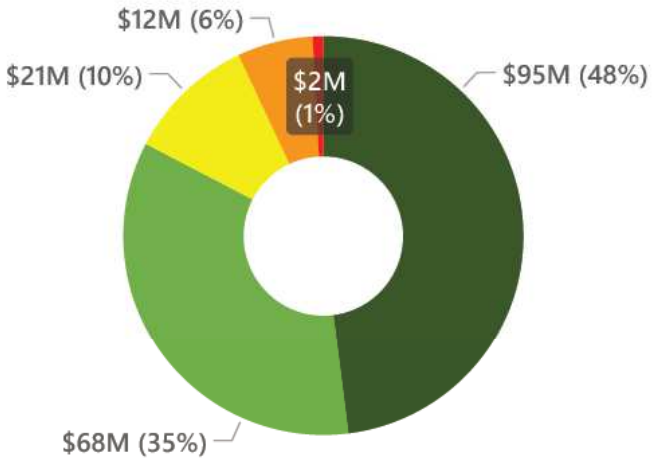
Linear

Asset Inventory:

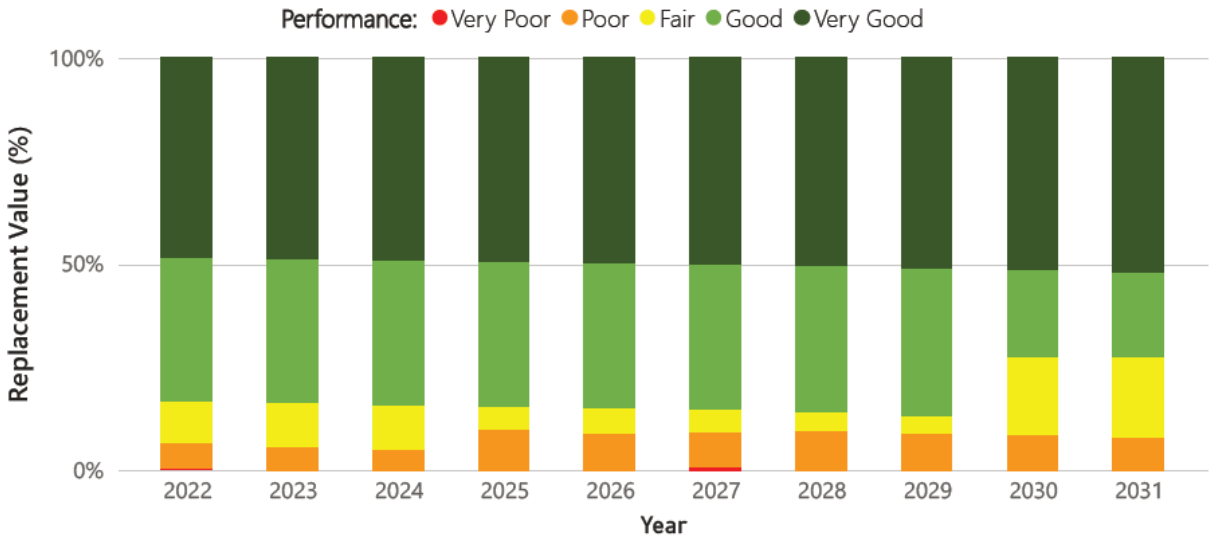
Asset Class	Inventory	Unit
Combined Sewers	56.40	KM

Replacement Cost:	$196.98M
Overall Condition:	Good
Annual Average Funding:	$1.52M
Annual Funding required to meet Target Performance:	$1.5M

Current Condition by Replacement Cost ($)



Performance Forecast with Anticipated Budget



City of Cornwall
State of Infrastructure Report Card
Service: Utilities

Storm Sewer Collection System

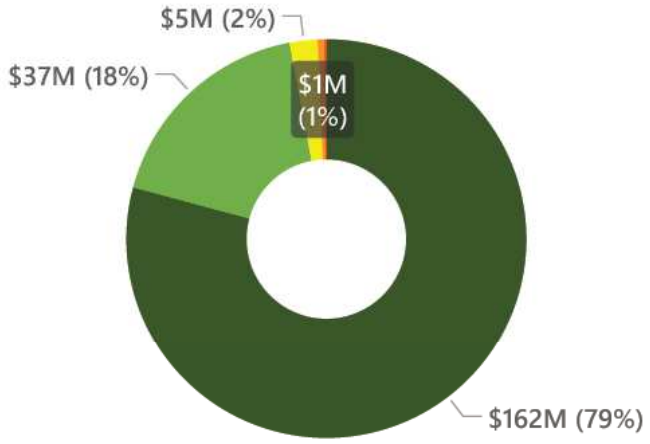
Linear

Asset Inventory:

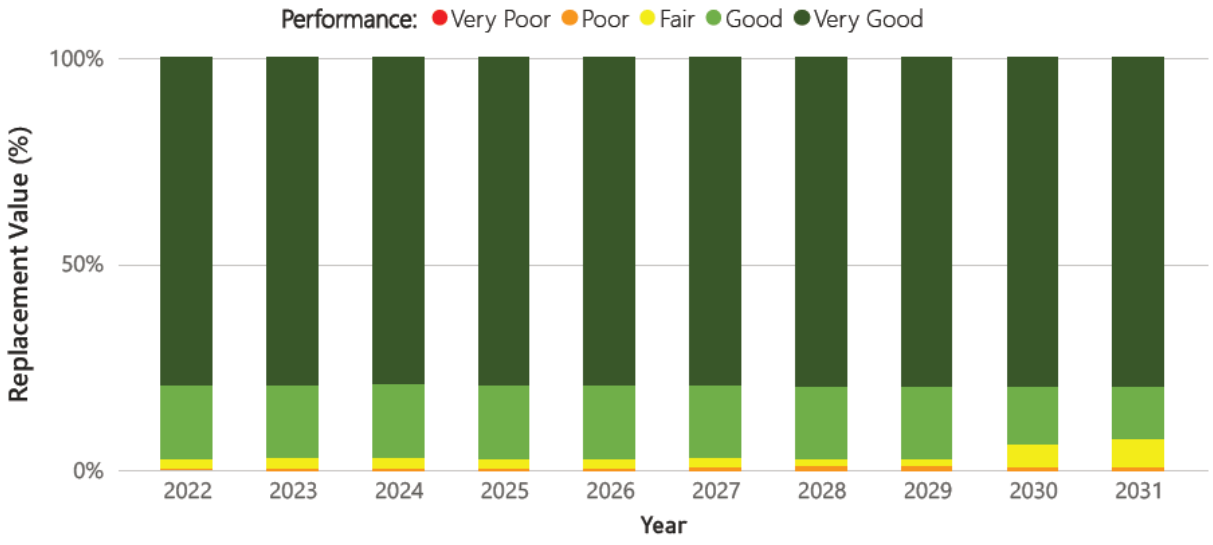
Asset Class	Inventory	Unit
Storm Sewers	145.58	KM

Replacement Cost:	$204.53M
Overall Condition:	**Very Good**
Annual Average Funding:	$251.3K
Annual Funding required to meet Target Performance:	$416.29K

Current Condition by Replacement Cost ($)



Performance Forecast with Anticipated Budget



City of Cornwall
State of Infrastructure Report Card
Service: Utilities

Storm Sewer Collection System

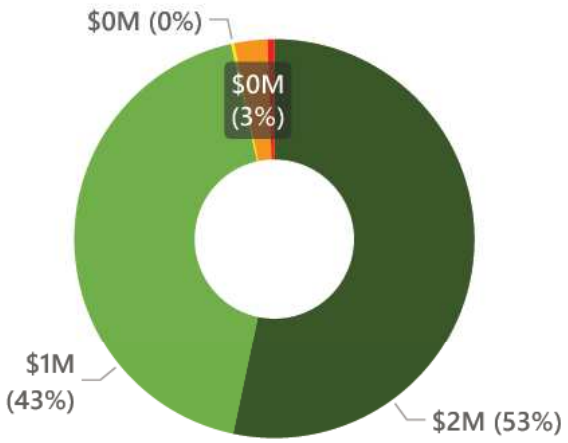
Vertical

Asset Inventory:

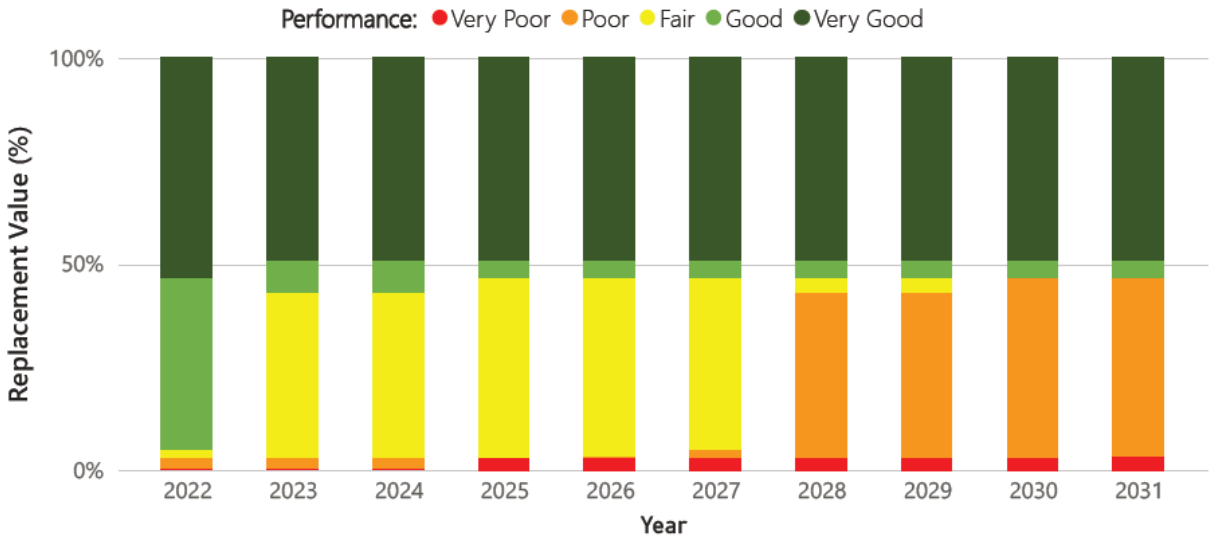
Asset Class	Inventory	Unit
Oil Grit Separators	15.00	Structures
Stormwater Retention Ponds	9.00	Structures

Replacement Cost:	$2.96M
Overall Condition:	Good
Annual Average Funding:	$0
Annual Funding required to meet Target Performance:	$11.76K

Current Condition by Replacement Cost ($)



Performance Forecast with Anticipated Budget



City of Cornwall
State of Infrastructure Report Card
Service: Utilities

Water Distribution Network

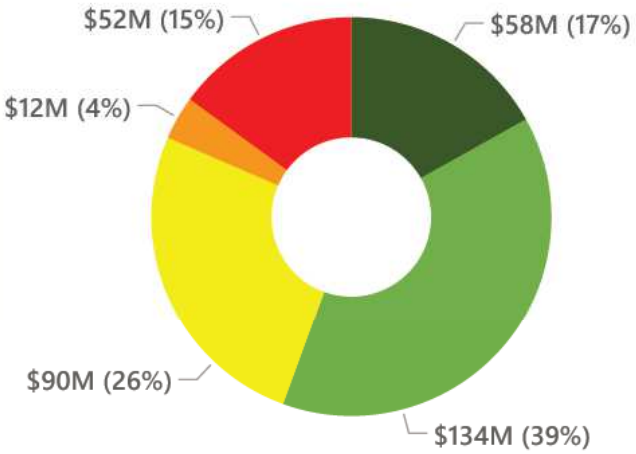
Linear

Asset Inventory:

Asset Class	Inventory	Unit
Watermains	271.47	KM

Replacement Cost:	$345.87M
Overall Condition:	Fair
Annual Average Funding:	$3.76M
Annual Funding required to meet Target Performance:	$9.21M

Current Condition by Replacement Cost ($)



Performance Forecast with Anticipated Budget