



BROCKVILLE
CITY OF THE 1000 ISLANDS

CITY OF BROCKVILLE ASSET MANAGEMENT PLAN

June, 2017




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ENGINEERS • ARCHITECTS • PLANNERS

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CITY OF BROCKVILLE ASSET MANAGEMENT PLAN

June 2017
(Original Version Prepared:
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Prepared for:

CITY OF BROCKVILLE

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1.0 EXECUTIVE SUMMARY

1.1 Problem and Opportunity

In order to properly allocate the resources required to achieve various acceptable levels of municipal servicing, managers, councils and ratepayers need access to up-to-date and accurate information. This information is typically provided within an Asset Management Plan. Asset management is essentially an information tool intended to allow Municipalities to make informed decisions with the objective of optimizing the useful life expectancy of their municipal assets and achieving good overall value.

The Ontario Ministry of Infrastructure's "Building Together: Guide for Municipal Asset Management Plans" has been utilized as a template in developing the City of Brockville Asset Management Plan (AMP) and the City's Strategic Plan has also been considered within this Asset Management Plan. This Asset Management Plan covers a ten (10) year planning period and has been structured as a "living document" that can be updated as required. The scope of this AMP includes the following municipal asset categories:

- Water System
- Wastewater System
- Stormwater System
- Roads
- Bridges and Culverts
- Facilities
- Fleet
- Parks and Recreation
- Solid Waste

It should be noted that the City's original AMP was developed in December 2013 and has been subsequently updated with additional and new information. It is recommended that the AMP continue to be revisited, re-evaluated and updated on an as required basis and as information and conditions inevitably change over time.

1.2 Local Infrastructure Big Picture

Current replacement valuation of the City of Brockville's water, wastewater, stormwater, roads, bridges & culverts, facilities, fleet, parks & recreation and solid waste is approximately \$543 Million. The current value of this infrastructure is estimated at approximately \$103 Million. Presently, the City maintains an average level of service for these major asset categories.

Currently, much of the City's infrastructure is approximately halfway through its ideal useful life. To date, the City has been proactive in completing condition assessments and planning management strategies to ensure that budget allowances are known well in advance of repairs, rehabilitation and eventual replacement and renewal of these assets.

As these assets age, preventative maintenance will extend their useful life. Annual maintenance costs will, however, gradually increase over time as these assets approach their end-of-life cycle. The City must be diligent in monitoring these annual maintenance costs so

that staff and Council can make informed decisions with respect to the timing of various inevitable capital projects for needed rehabilitation or replacement of infrastructure.

1.3 Asset Condition and Rating

In general, the City has a good understanding of the condition of their assets and how they are performing. All management decisions regarding maintenance, rehabilitation and renewal revolve around these two key indicators.

Asset condition reflects the physical state of the asset, which may or may not necessarily affect its performance. The performance of the asset is the ability to provide the desired level of service to customers. Generally, this can be measured in terms of reliability, availability, capacity, and meeting customer demands and needs. All of this is critical information for determining the remaining useful life of an asset, and more importantly, the timing for possible intervention steps to bring levels of service back to the desired standard.









Aside from the physical condition of an asset, there are other “intangible” factors that also need to be considered to determine overall condition and remaining useful life. These factors might include:

- Technical advances that might make the asset obsolete.
- Compliance – to what extent does the asset meet design and operational requirements?
- Functionality – does the asset have the ability/capacity to meet community expectations/growth/service levels?
- Economic life – the cost of continuing to operate/maintain/repair/rehabilitate the asset versus its full replacement.

A widely recognized approach for condition assessments focuses on collecting performance data in order to manage the risks associated with critical assets. Once an asset’s baseline performance data has been established, it is monitored to determine how that asset is operating. Condition grading standards can be adopted using this approach.

The City is committed to collecting asset performance data as part of annual operations and maintenance or as part of special investigation and condition assessment projects. Staff has adopted a practical holistic Asset Condition Rating System for the AMP which includes Poor, Fair, Average, Good and Excellent condition ratings.

1.4 City of Brockville Infrastructure Report Card

Asset Category	% of Total Replacement Valuation (\$543M)	Priority	Condition Rating 2015	Comments	Trend 2026
Water System					
Water Transmission Mains	1%	Increased	Fair	Water treatment and distribution system assets are being maintained at an appropriate level of service. Water transmission mains and the distribution system is buried, under pressure and difficult to access. The City is employing the latest no dig technologies to enhance condition assessment of large diameter, high risk water mains. These pipes are generally in Fair to Average condition, however, significant increases in asset replacement/rehabilitation will be required over the next 20-30 years as these underground assets age. Building reserve funds for renewal/rehabilitation over the next 10-20 years should be a priority. Water meters are in good condition, the City is actively replacing and should be finished by end of 2018.	
Water Distribution Pipes	7%	Normal	Average		
Hydrants	1%	Normal	Average		
Meters	0.3%	Normal	Good		
Water Treatment Plant	8%	Normal	Average		
Pump Booster Stations	0.3%	Normal	Average		
Water Storage Reservoirs	1%	Normal	Average		
Wastewater Systems					
Wastewater Trunks	1%	Increased	Average	Wastewater system assets are being maintained at an appropriate level of service. Overall, the wastewater system is in Average condition. The condition of underground trunks and sewer collection pipes should to be closely monitored including the Main Pumping Stations forcemain and pipes made of vitrified clay and asbestos concrete. The condition of the forcemain at the Main Sewage Pumping Station is unknown. The Main Sewage Pumping Station is in poor condition and approaching the forth quarter of its Ideal Useful Life. The City is focused on significant improvements to improve operational concerns, reliability, reduce risks, renew aging components and address code and legislative requirements. Building reserve funds for renewal/rehabilitation of the City's wastewater trunk and collection pipes over the next 10-20 years should be a priority.	
Sanitary Sewer Collection Pipes	5%	Normal	Average		
Main Sewage Pumping Station	1%	High	Poor		
Remote Sewage Pumping Stations	1%	Normal	Average		
Sanitary Manholes	2%	Normal	Average		
Wastewater Treatment Plant	16%	Normal	Excellent		
Stormwater System					
Storm Sewers	6%	Normal	Average	Storm sewer system assets are being maintained at an appropriate level of service. Overall, the stormwater system is in Average condition. The condition of underground storm sewer collection pipes should to be closely monitored, specifically pipes made of vitrified clay.	
Storm Structures - MH's & CB's	4%	Normal	Average		
Stormwater Retention Ponds	0.1%	Low	Excellent		
Roads					
Collector	4%	Normal	Good	City road assets are being maintained at an appropriate level of service. Overall, the roads are in Average to Good condition. Road renewal investments should be directed towards roads posing the higher risk to service, specifically, Collector and Arterial roads.	
Arterial	6%	Normal	Good		
Local	11%	Normal	Average		
Sidewalks	3%	Normal	Average		
Traffic Lights	1%	Normal	Average		
Lights Standards	2%	Normal	Good		
Bridges & Culverts					
Bridges	3%	Increased	Average	The City's bridge assets are being maintained at a minimal level of service. Although bridges and culverts are in Average to Good condition, they are nearing or at the 4th quarter of their Ideal Useful Life. A program of routine maintenance and inspections should be ongoing for all structures to minimize the potential for premature deterioration of structural elements. Building reserve funds for renewal/rehabilitation of the City's bridges and culverts over the next 10-20 years should be a priority.	
Culverts >3 meters Diameter	1%	Increased	Good		
Facilities					
Facilities	12%	Normal	Average	Facilities are being maintained at an appropriate level of service.	
Fleet					
City - Rolling Stock	1%	Normal	Fair	The City's fleet are being maintained at an appropriate level of service. Overall the fleet is in fair condition, with most of the rolling stock nearing or at the 4th quarter of their Ideal Useful Life. A program of routine maintenance and inspections should be ongoing for all vehicles to minimize the potential for premature deterioration.	
Fire - Rolling Stock	1%	High	Poor		
Police - Land	0.1%	Normal	Average		
Police - Marine	0.1%	Normal	Fair		
Transit	0.1%	High	Poor		
Parks & Recreation					
Pedestrian Bridges	0.3%	Normal	Average	Parks & Recreation are being maintained at an appropriate level of service. Pedestrian Bridges are in average condition and should be inspected in accordance with OSIM. In general, City recreational equipment is in fair condition.	
Brock Trail	0.6%	Low	Excellent		
Parks - Equipment	0.2%	Normal	Fair		
Athletic Fields - Equipment	0.1%	Normal	Fair		
Islands - Equipment	0.1%	Normal	Fair		
Solid Waste					
Closed Landfill	0.01%	Normal	n/a	Solid Waste is being maintained at a minimal level of service.	
Leachate Collection System	0.2%	Normal	Average		
Compost Facility	0.01%	Normal	Average		

1.5 Funding Report Card

During the City's annual budget process, each component of financing, user fees, grants, levies, and appropriation of, or contributions to, reserves are reviewed and set according to Council direction and operational requirements. While the City's Ten (10) Year Capital Plan identifies projects that will be required, funding is not necessarily determined or finalized until the current budget year. Reserve levels have declined over the past few years, mainly due to matching requirements of large capital grants. As a result, funding is more reliant on user fees, tax levies, grants and debt.

Debt levels are well within Provincial guidelines of the Annual Debt Repayment Limit (ARL) calculation that is set at 25% of Net Revenues or \$12,823,754. Total 2015 debt charges for Water, Wastewater, Stormwater, Roads, Bridges, Facilities, Fleet, Parks and Recreation, and Solid Waste were \$1,156,603. This amount represents 42% of the actual 2015 debt charges (\$2,754,380) paid by the City.

A conscious effort is made annually during budget preparation to limit or prevent sharp increases to user fees and tax levies. This requires a strategic approach to maintenance and capital replacement planning. A closer look at reserve levels and the possibility of building them to aid in long term funding of large capital replacements is recommended.

The implications of aging infrastructure are becoming apparent and, as a result, long term financing strategies become more important through an effective Asset Management Plan.

1.6 Concluding Statement

The asset management plan framework presented in this AMP is meant to guide City Council, department heads, managers and staff so that they can efficiently identify, manage and address infrastructure needs, while taking into consideration key asset management and financial planning principles. Asset management promotes the coordination of infrastructure repair and rehabilitation activities, allowing the City to make informed and cost effective decisions. Economic benefits apply to a diversity of stakeholders including the City, its residents, businesses and industries. Sustainable infrastructure also promotes economic development by creating a place where people want to live, work and do business.

In order to achieve optimal results, it is imperative that support by Council and staff for the asset management planning process be maintained for the long term. This document is meant to be revisited, refined and updated over time as the priorities and needs of the City change and as new asset information emerges.

2.0 INTRODUCTION

2.1 What is an Asset Management Plan?

An Asset Management Plan (AMP) is a strategy developed for the management of a municipality's infrastructure assets, including technical and financial management techniques, over the life cycle of these assets. AMPs are used to optimize benefits, reduce risks and provide satisfactory levels of service to the community in a sustainable and cost effective manner.



Each asset of an AMP has a different life cycle which results in the need for ongoing technical and financial review to determine the priority and timing for replacement or rehabilitation, based on the condition of each asset. An AMP also includes a municipality's preventative maintenance and risk management program to mitigate the risk of failure. Preventative maintenance ensures that the day-to-day "wear and tear" on each asset is dealt with to ensure that its expected life cycle can be optimized. Risk management ensures that staff and Council manage the risk through due diligence.

The following is an excerpt from the Ontario Ministry of Infrastructure "Building Together: Guide for Municipal Asset Management Plans":

"Asset management planning is the process of making the best possible decisions regarding the building, operating, maintaining, renewing, replacing and disposing of infrastructure assets. The objective is to maximize benefits, manage risk, and provide satisfactory levels of service to the public in a sustainable manner. Asset management requires a thorough understanding of the characteristics and condition of assets, as well as the service levels expected from them. It also involves setting strategic priorities to optimize decision-making about when and how to proceed with investments. Finally, it requires the development of a financial plan, which is the most critical step in putting the plan into action."

Each municipality and its assets are unique and the AMP needs to be customized to fit its size, priorities, composition of assets, geographic setting, current and projected asset condition and performance, and anticipated service levels.

2.2 Why Do We Need an Asset Management Plan?

A large portion of the infrastructure in the City of Brockville is approximately mid-way through its useful life cycle since a significant investment in infrastructure was made during the 1950s, 60s and 70s. As with any aging infrastructure, the City can expect an increase in maintenance and operating costs, and also ultimately new capital costs for renewal and replacement at some point in the future.



In order to properly allocate the resources required to meet service levels, municipal managers, staff and Council need a summary document which identifies the technical and financial needs of assets. This information is appropriately described within an AMP. Asset management is essentially a decision support tool intended to provide the information municipalities need to make good decisions at appropriate times to optimize the useful life expectancy of each asset in order to achieve good overall value.

An AMP is intended to provide information well in advance of major asset renewal, rehabilitation or replacement and it enhances the budgeting and planning process by modeling future capital costs over a short, medium and long term horizon. This information will aid the City in understanding future budget pressures and assist in providing options on closing any infrastructure gaps.

Specific benefits associated with an AMP include:

- Allows for better decision-making regarding resource allocation;
- Provides further guidance to elected officials on asset renewal and sustainable fiscal management;
- Leads to more effective communication with ratepayers, elected officials and regulatory agencies;
- Provides consistent levels of service to the Public;
- Reduces assets life cycle cost;
- Improves management of risk to the municipality;
- Allows for more effective financial planning;
- Results in more efficient data management (e.g., eliminates departmental silos).

2.3 What Is Included in an Asset Management Plan?

There are numerous practices and principles that can make up an AMP. The 2011 edition of the International Infrastructure Management Manual (IIMM) outlines the following seven (7) key components:

- Life Cycle Approach – Plan using the full life cycle costs of infrastructure assets (capital costs, operating and maintenance, rehabilitation, disposal, etc.).
- Cost-Effective Management Strategies – Plan for doing the right things at the right time in terms of maintenance, rehabilitation and renewal of infrastructure to minimize ongoing costs (proactive vs. reactive maintenance).
- Defined Levels of Service – Define the current levels of service, and possibly the optimal level of service, that is or should be provided to the community. This should include indications of how infrastructure performance is measured.
- Demand Management – Recognize that future changes are anticipated within the municipality and how these might impact the services you provide (e.g., population, demographic or regulation changes, etc.).
- Risk Management – Plan for managing the risks associated with providing services, including those that can result from failure of key critical infrastructure.
- Sustainable Use of Physical Resources – Plan to ensure services can be provided into the future in a sustainable and affordable way.



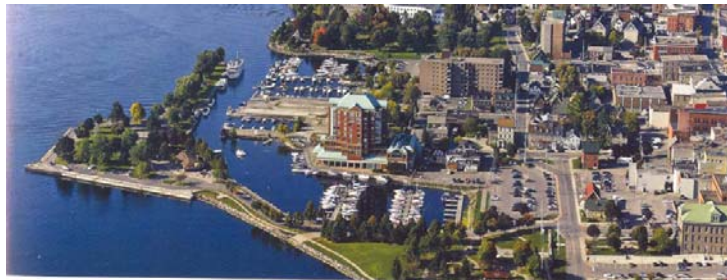
- **Continuous Improvement** – Understand that asset management is ever-changing and all plans and documents need to be kept current and accurate to support decision-making. Ongoing review and improvement are a critical part of asset management planning.

It is important to note that the City of Brockville has adopted most of these asset management best practices. A key benefit of completing an AMP is to summarize these principles in one comprehensive guiding framework document and identify any areas which require improvement or monitoring.

2.4 Link to Community Strategic Plan

Asset management is an important piece of the municipal management structure. An AMP that has ties to municipal governance and administration practices can help strengthen the development and operation of municipal infrastructure and the services they provide to the community. This is clearly evident in the language contained in the City of Brockville Community Strategic Plan (CSP).

The City adopted a CSP (Version 4.4) in February 2009 which is intended to create new opportunities for growth and development in the future. The CSP is part of a desire to bring the City's Vision, Mission and Official Plan up to date.



Per the CSP, the City of Brockville's **Vision Statement** states:

"Mayor and Council are committed to making Brockville a better place to live, work and play and to enjoy an exceptional quality of life. Brockville is committed to families, to an economy that offers opportunities to grow and prosper, to providing amenities that are second to none and conducting our business in a way that is both environmentally and financially sustainable. We encourage the guidance and assistance of our citizens to make this happen."

The **Mission Statement** from the CSP further notes that:

"The City will apply resources, effort and focus on the areas that will move the City towards our vision, keeping in mind our underlying strategic initiatives and the balance needed between competing goals. We will utilize professional management and systems to be leaders in the municipal field. We will promote community and environmental sustainability within a framework of fiscal responsibility and a commitment to customer service."

The Mission Statement is supported by six (6) Core Values in reviewing or undertaking actions in the City. Without reiterating each of these Core Values, one in particular is directly related to asset management and reads as follows:

- **Fiscal Sustainability** – value for money in all aspects of City operations and fiscal security for current and future citizens based on financial controls, capital plans and processes that ensure accountability.

The Community Strategic Plan is further based on four (4) enduring focal points which include People, the Economy, Amenities and Sustainability. With reference to Sustainability, the CSP notes that:

“...a key component of this Strategic Plan is a recognition that the community exists within an environmental and fiscal sustainability framework. The City recognizes its responsibility to maintain our environment and promote development and projects that protect our physical environment for future generations. At the same time, the City of Brockville recognizes a stewardship responsibility in ensuring that tax monies are invested prudently and with accountability.”

Strategic Priority Tables for each Focal Point are described in detail in the CSP. Relevant asset management references found in the Sustainability Focal Point Table include:

Financial:

- *Property taxes/fees are competitive with comparable municipalities;*
- *Seek out cost sharing or service delivery partnerships to reduce costs or improve services;*
- *Maintain and improve community infrastructure;*
- *Continually review operational processes, searching out redundancies, changing conditions or improved technologies to reduce cycle time and improve service to deliver best value for money.*

Environmental:

- *The water, wastewater and stormwater systems adequately service residents, visitors, and businesses, and meet basic needs in a reliable, efficient, affordable and equitable manner.*

Key themes found throughout the CSP which relate to asset management planning include fiscal responsibility, sustainability, efficiency and value for service. Based on the information presented, it is clear that asset management is closely linked to Council's strategic objectives and is fundamental to the success of the goals described in the Community Strategic Plan.

2.5 How Does the Asset Management Plan Support the Capital and Operating Financial Plan?

The City maintains a Ten (10) Year Capital Plan budget which identifies the timing for priority asset renewal, rehabilitation or replacement and the cost to construct these assets. *These priority projects may be amended annually based on asset management information gathered by staff.* The Capital Plan includes many asset categories such as water, wastewater, stormwater, roads, bridges, culverts, facilities, fleet, parks & recreation, and solid waste. This medium term infrastructure planning process has regard for asset data stored in the City's Worktech Asset and Service Management System as well as known operational problems or issues gathered by municipal staff. Some current infrastructure information maintained by the Environmental Services and Operations Departments includes:



- Location;
- Age, material and size (diameter, length, width, height, depth);

- Growth and demand projections;
- Planned expansion areas;
- Critical infrastructure and locations;
- History of breaks and surcharging;
- Condition assessment data and reports;
- Other.

For the Ten (10) Year Capital Plan, infrastructure projects and budgets are identified as either *Capital Replacement* or *Operations and Maintenance*. These two critical budgets are prepared annually by each Municipal department to maintain current service levels. The criteria for prioritizing capital expenditures must have regard for operational need, sustainability objectives, asset life cycle, ability to pay and cost benefit analysis. This is fundamental to the asset management planning process.

2.6 City of Brockville Asset Management Plan

This AMP is intended to act as a guiding framework document that has been structured so that new information and other asset types can be easily incorporated in the future. The initial scope of this AMP, in December 2013, included Water, Wastewater and Stormwater Assets, as well as Roads and Bridges. In 2016, the AMP was updated and expanded to include other City assets, including Municipal Facilities, Fleet, Sidewalks, Street Lights, Traffic Signals, Parks and Recreation, and solid waste. The opportunity was also taken to update the original asset category information using new information developed between 2013 and 2015.

In preparing this AMP, numerous other published municipal AMPs, Best Practice documents and fundamental asset management principles have been reviewed. Some of this information has been adopted and incorporated into this AMP. Refer to Section 9.0 for a comprehensive list of these reference material documents.

The Ontario Ministry of Infrastructure's "Building Together: Guide for Municipal Asset Management Plans" (Guide) has been utilized as a template in developing the AMP. This AMP meets the requirements of the Guide and has been structured based on Section 3 of the Guide.

The City's AMP is intended to cover a ten (10) year planning period and has been designed as a "living document". It is intended to be revisited, re-evaluated and updated on an as required basis.

The following is a list of background information provided by the City in developing the AMP:

- *City of Brockville Community Strategic Plan Version 4.4, February 2009;*
- *City of Brockville Official Plan, approved February 9, 2012;*
- *City of Brockville Capital Budget Summary;*
- *City of Brockville Water Pollution Control Centre 2015 Annual Summary Report;*
- *City of Brockville Drinking Water System 2015 Annual Water Quality Report;*
- *City of Brockville Bridge Management Study Report October 2015, prepared by HP Engineering;*
- *City of Brockville Operations Department Road Pavement Surface Conditions 2012;*

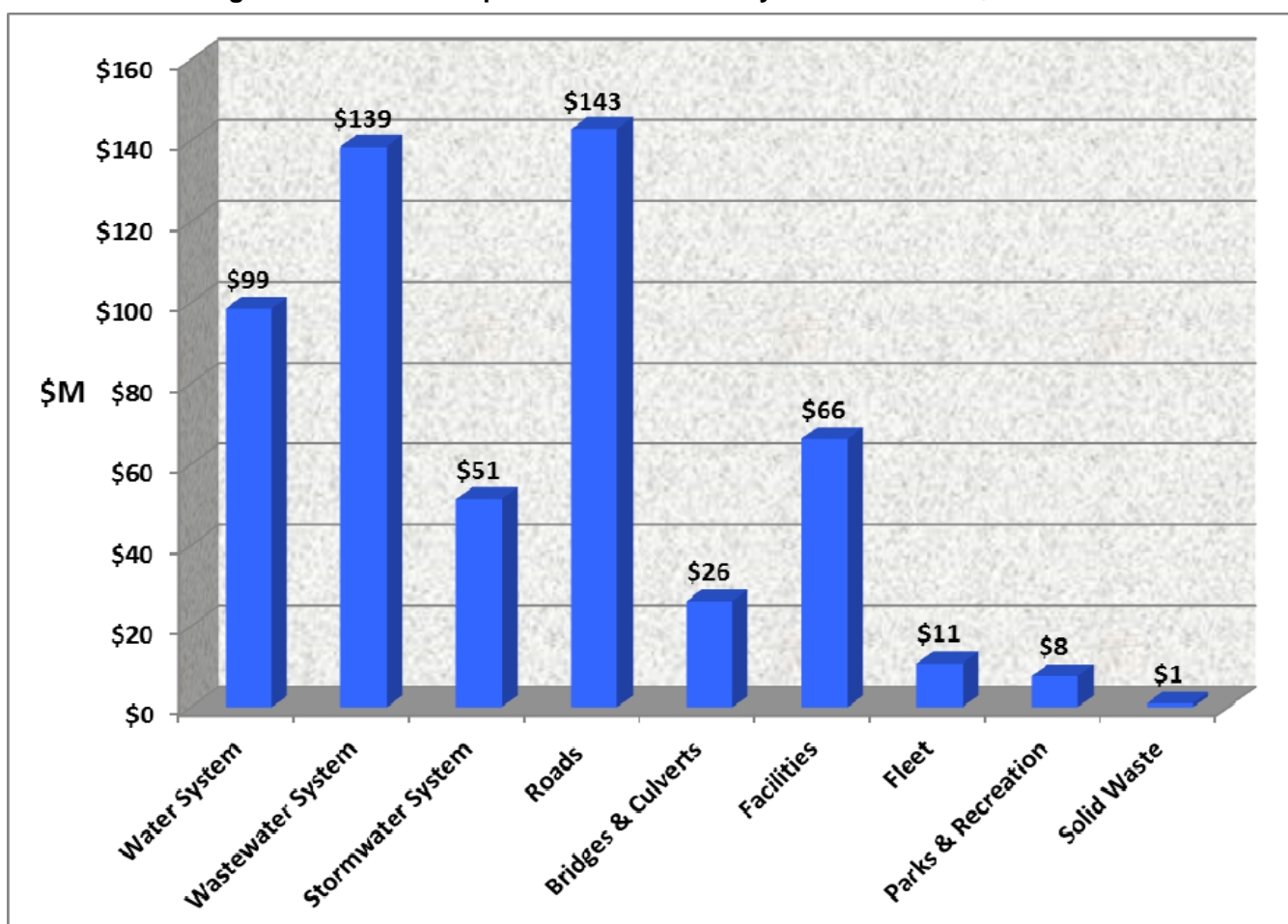
- *City of Brockville Public Sector Accounting Board Tangible Capital Assets;*
- *City of Brockville Worktech Asset and Service Management System;*
- *City of Brockville VADIM Financial System.*

3.0 STATE OF LOCAL INFRASTRUCTURE – ASSET INVENTORY

3.1 Background

Based on current replacement value, the City owns and operates approximately \$543 Million in water, wastewater, stormwater, roads, bridges and culverts, facilities, fleet, parks and recreation and solid waste assets which support ratepayer and Public services to the City of Brockville. Currently, the City maintains an overall average level of service for these infrastructure categories. In general, many of these assets are approximately midway through their life cycle. The City recognizes this and has been proactive in completing preventative maintenance, condition assessments and planning management strategies to ensure that budget allowances are known well in advance of repairs, rehabilitation and eventual replacement and renewal of these assets. This strategy is essential to building reserve funds, examining funding sources, minimizing the financial burden on the City's taxpayers and maximizing its overall investment in core "quality of life" infrastructure.

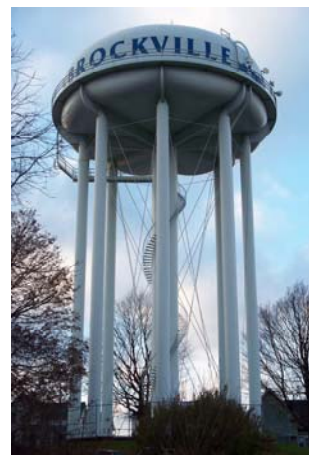
Figure 3.1: Current Replacement Value of City Infrastructure – \$M



The asset inventory information contained in this section of the AMP has been developed based on background information and reports provided by the City, interviews with Environmental Services, Operations and Corporate Services staff and data extracted from the City's Worktech Asset and Service Management System.

3.2 Water System

The City of Brockville provides municipal water to most City residents and a small portion of the Township of Elizabethtown-Kitley. The City is dedicated to delivering a clean, safe, reliable, drinking water supply while remaining compliant with all regulatory requirements. In general, major components of the water system are approximately 40 to 50 years old on average. There is minimal service disruption and service levels meet current and anticipated consumption, and fire protection. Annual operating, maintenance and renewal of the water system infrastructure are funded through consumption-based user fees, flat rate user fees, federal gas tax, Provincial/Federal Assistance Programs and new debt.

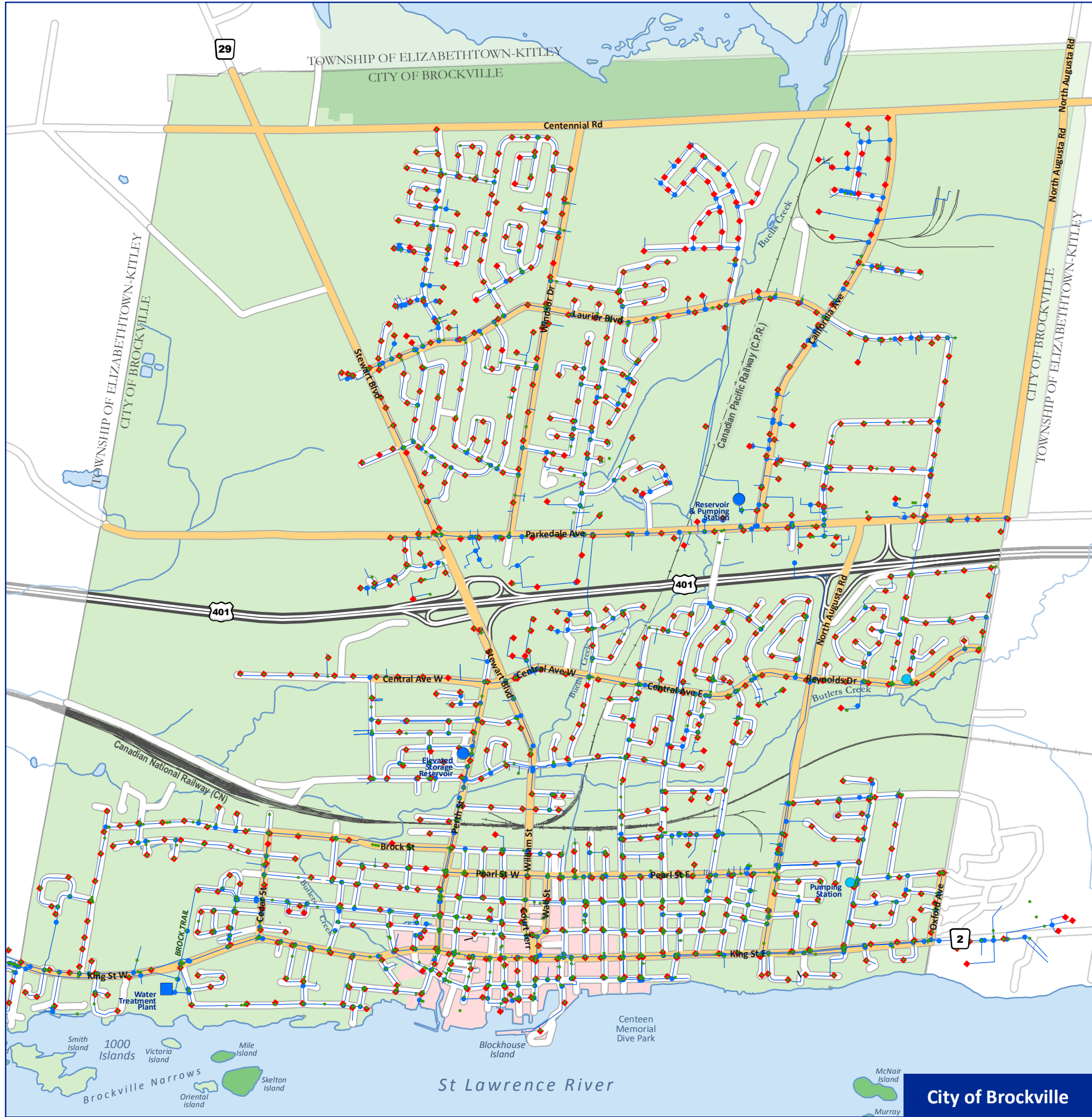


An overview of the City's water system is presented in Drawing No. 3-1 with major components summarized in Table 3.1. The system generally consists of a direct filtration Water Treatment Plant (WTP), an underground network of distribution piping, an elevated storage tank, an underground storage reservoir and three (3) pump/booster stations. The distribution system consists of approximately 126 km of underground piping as well as 875 hydrants and 8,429 flow meters and corresponding service connections to individual properties. The WTP treats raw water from the St. Lawrence River via a 900 mm diameter raw water intake and conveys it into the distribution system which generally consists of pipes ranging in size from 100 mm (4") to 600 mm (24"). Pipes are made from a variety of materials including: cast iron, ductile iron, poly vinyl chloride (PVC), concrete, steel and asbestos cement. The water distribution system dates back to the early 1890s through to present day.

Table 3.1 - Water System Summary


Asset Component	Quantity	Average Ideal Service Life (Years)	Average Age (Years)	Estimated % of Service Life Remaining
Water Transmission Mains	8,054 m	75	46	39
Water Distribution Pipes	118,628 m	96	50	48
Hydrants	875	75	39	48
Meters	8,429	20	7	65
Water Treatment Plant	1	75	47	37
Pump/Booster Stations	3	75	37	51
Water Storage Reservoirs	2	75	51	32

The WTP was constructed in 1958 with major upgrades/renewals in 1979, 1998 and 2003. It has a maximum plant design capacity of 36 MLD (million liters per day). There are a number of major supporting infrastructure components located in the WTP building and on the WTP site. The WTP and its major supporting infrastructure have been treated as one entity in this AMP.



Water System


City of Brockville

3-1

Legend

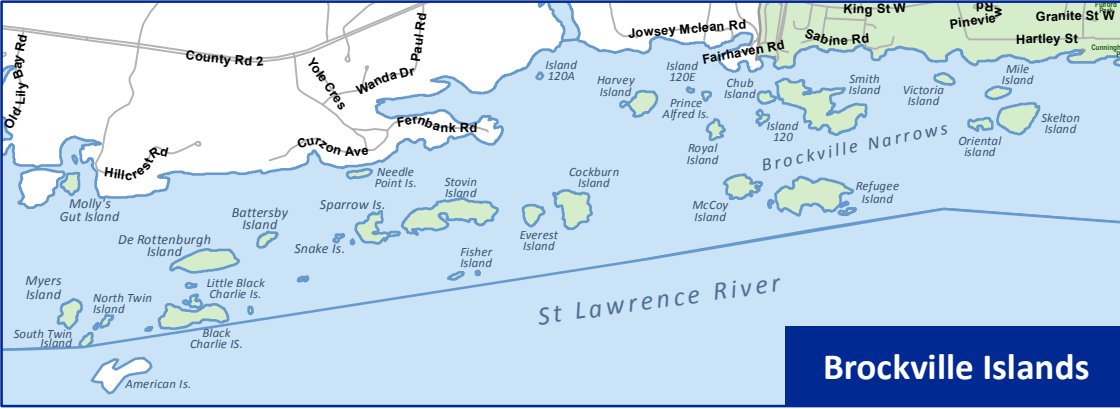
Water Mains	Pumping Station	Valves
Reservoir	Hydrants	Junctions
Treatment Plant		

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BROCKVILLE

CITY OF THE 1000 ISLANDS



Brockville Islands



Downtown

3.3 Wastewater System

The City is responsible for the collection and treatment of wastewater generated within the community and provides this service to most Brockville residents and a small portion of the Township of Elizabethtown-Kitley. In addition to maintaining the collection and treatment system, the City must ensure that the wastewater treatment plant is operated within all government regulations. The communal wastewater system is fundamental in maintaining public health and safety and protection of the environment. Annual operating, maintenance and renewal of the wastewater system infrastructure is generally funded through consumption-based user fees, flat rate user fees, federal gas tax, Provincial/Federal Assistance Programs and new debt.

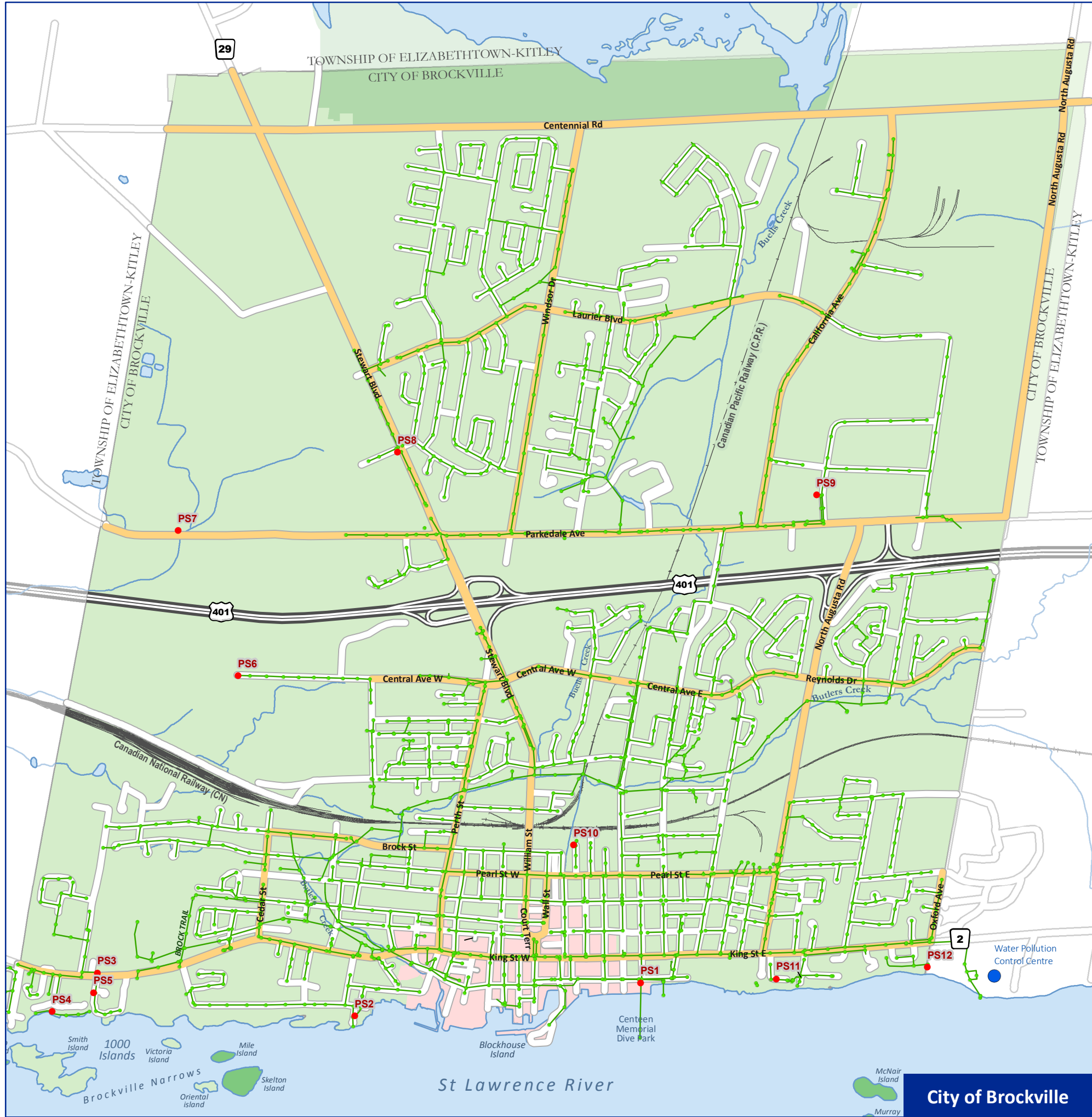


An overview of the City's wastewater system is presented in Drawing No. 3-2 with major components summarized in Table 3.2. The system generally consists of approximately 111 km of wastewater collection piping, one main large pumping station, eleven (11) remote small sub-catchment pumping stations, 1,796 sanitary manholes and a Conventional Activated Sludge Secondary Treatment Wastewater Plant (WPPCC). The sewage collection system generally consists of underground pipe, ranging in diameter from 200 mm (8") to 400 mm (16"). Pipes are generally either PVC, Vitrified Clay or Asbestos Cement. The wastewater system piping dates back to the early 1900s through to present day.

Table 3.2 – Wastewater System Summary

Asset Component	Quantity	Average Ideal Service Life (Years)	Average Age (Years)	Estimated % of Service Life Remaining
Wastewater Trunks	11,290 m	75	44	41
Sanitary Sewer Collection Pipes	100,479 m	91	44	51
Main Sewage Pumping Station	1	75	53	29
Remote Sewage Pumping Stations	11	50	29	42
Sanitary Manholes	1,796	91	44	51
Wastewater Treatment Plant	1	75	13	83

The main WPPCC was built in the 1960s and has been upgraded in several phases beginning in 1991 and 1995. The most recent upgrades came in 2010 with the commencement of the current Secondary Treatment Upgrade. The STP and its major supporting infrastructure have been treated as one entity in this AMP.



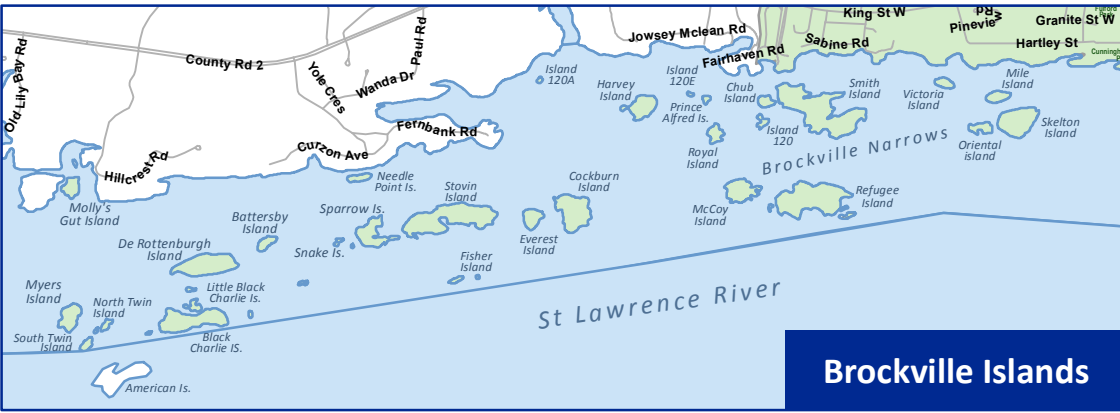
Wastewater System

City of Brockville

Legend

- Water Pollution Control Centre
- Sanitary Pumping Stations
- Sanitary Pipes
- Sanitary Manholes

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3.4 Stormwater System

The City provides for stormwater management within the City of Brockville and to a smaller extent in the Township of Elizabethtown-Kitley. The stormwater system generally consists of a network of underground piping, structures and maintained ditches that carry stormwater to local creeks or to the St. Lawrence River. The stormwater system is designed to manage rainfall and snowmelt and control potential flooding in certain areas of the City. Annual operating, maintenance and renewal of the stormwater system are funded through tax rates, federal gas tax, Provincial/Federal Assistance Programs and new debt.



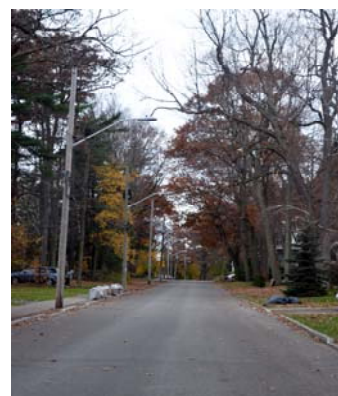
An overview of the City's storm sewer collection system is presented in Drawing No. 3-3 with major components summarized in Table 3.3. The system consists of approximately 103 km of underground gravity flow piping, ranging in diameter from 150 mm (6") to 900 mm (36"), one stormwater retention pond and 4,020 stormwater structures (manholes and catch basins). Pipes are generally either smooth wall plastic, concrete, or metal. The sewer collection system piping system dates back to the early 1900s through to present day. Note that the Buells Creek Detention Basin in the north end is not operated by the City but by the Cataraqui Region Conservation Authority.

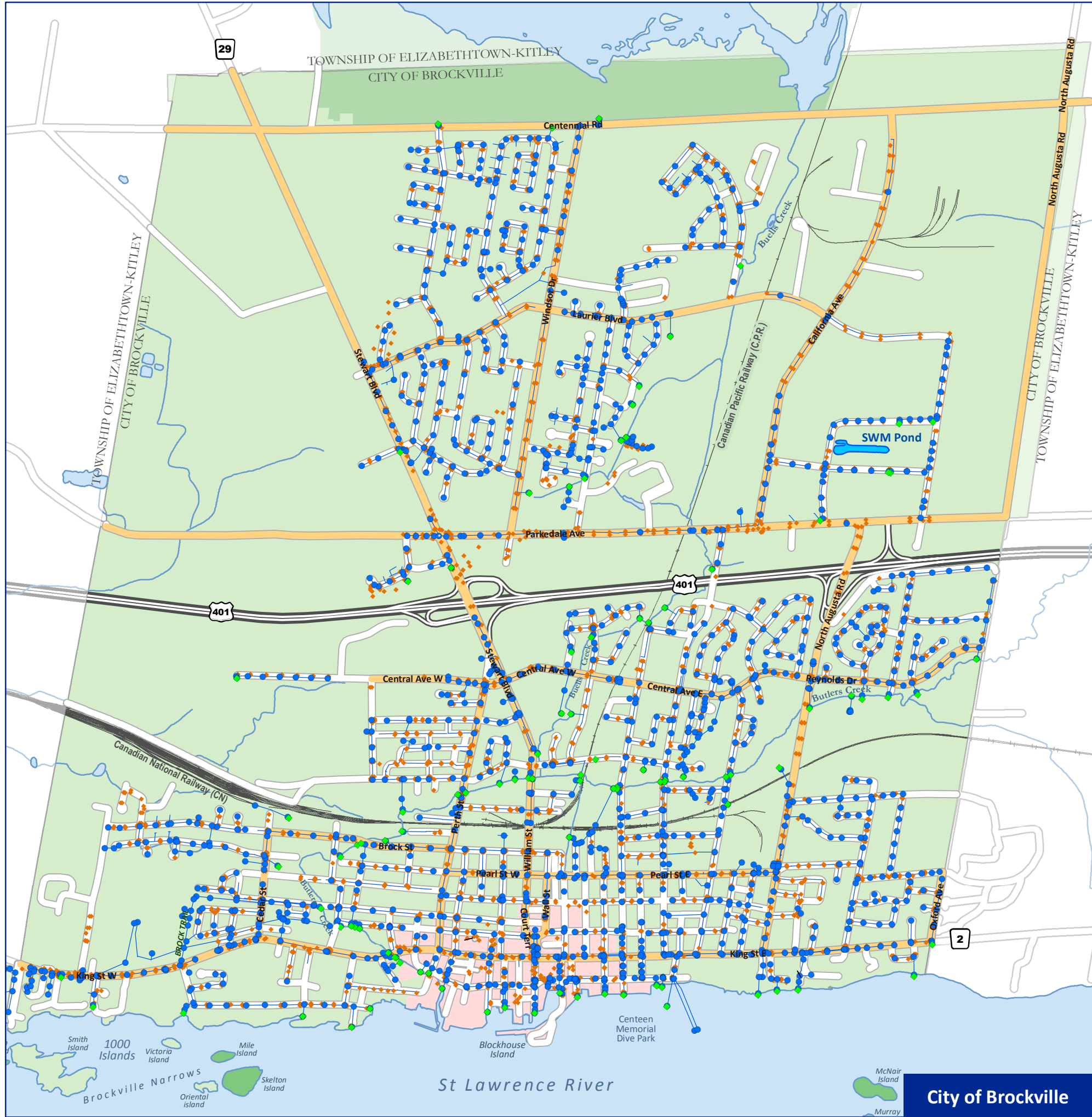
Table 3.3 –Stormwater Summary

Asset Component	Quantity	Average Ideal Service Life (Years)	Average Age (Years)	Estimated % of Service Life Remaining
Storm Sewers	102,782 m	86	43	50
Storm Structures - Manholes & Catch Basins	4,020	86	43	50
Stormwater Retention Ponds	1	75	13	83

3.5 Roads

The City owns and maintains a significant paved road network, as well as sidewalks, street lights and traffic signals, for residents and the general public. All road assets are operated and maintained with the intention of being safe and accessible and in accordance with applicable regulations. Road assets allow movement of goods and people within and around the City of Brockville and are one of the most visible infrastructure assets to the general public. The Operations Department manages the road network as a series of Arterial, Collector and Local roads. Annual operating, maintenance and renewal of the road system are funded through tax rates, Federal Gas Tax, Provincial/Federal Assistance Programs and new debt. It should be noted that the scope of this AMP does not include road signs.





Storm Water System

City of Brockville

3-3

Legend

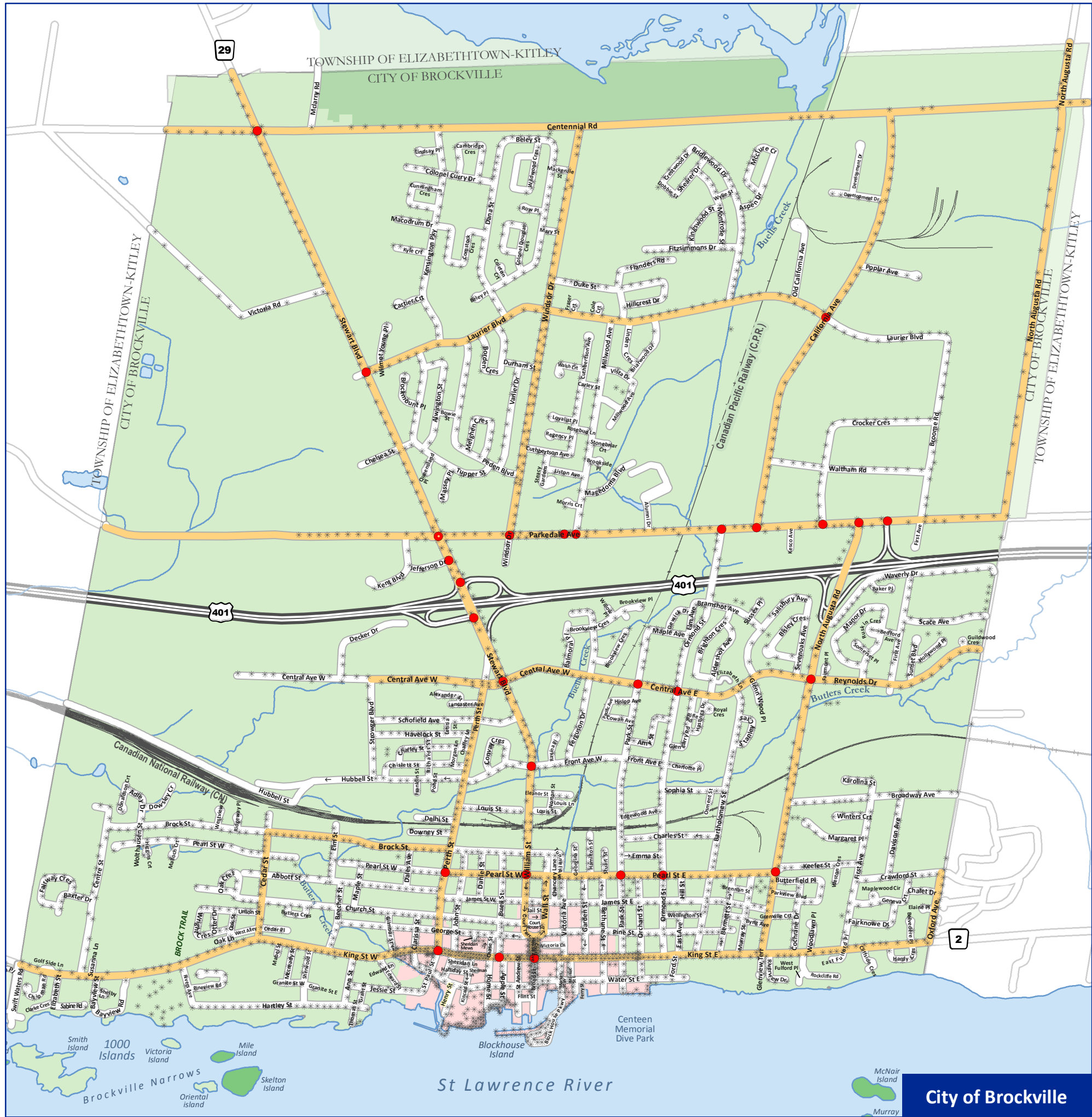
Storm Pipes	Storm Manholes	SWM Pond
Outfall Locations	Catch Basins	

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BROCKVILLE
CITY OF THE 1000 ISLANDS

Brockville Islands

Downtown



Roads

City of Brockville

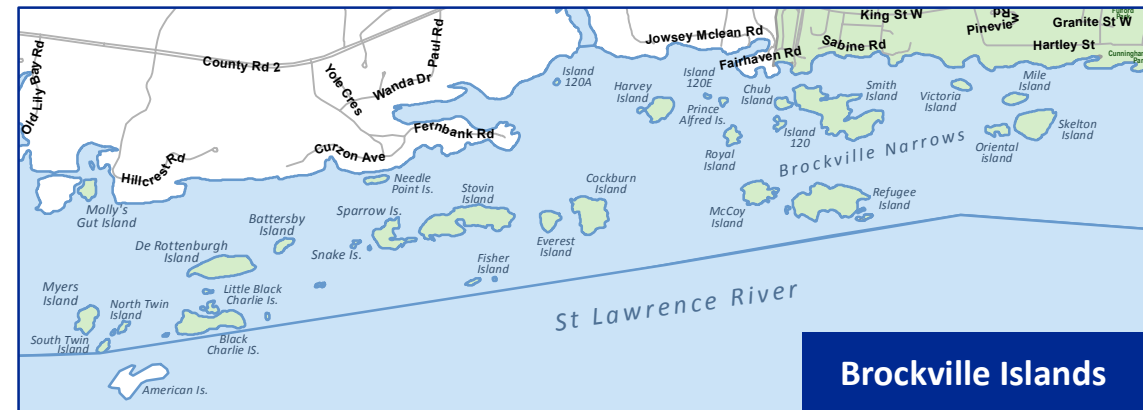
Legend

- Arterial Street
- Local Street
- Traffic Signals
- Private Road
- Provincial Hwy 4 / Lane
- Street Lights

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BROCKVILLE
CITY OF THE 1000 ISLANDS



An overview of the City's road network is presented in Drawing No. 3-4 with major components summarized in Table 3.4. There are approximately 23 km of Collector roads, 29 km of Arterial roads and 67 km of Local roads operated and maintained by the City. Surface width for these roads varies from 6.5 m to 17.5 m. Operations have developed an effective and practical Pavement Condition Index (PCI) system which rates a road's overall pavement condition and ride comfort rating. Pavement condition and ride comfort rating are re-evaluated by Operations staff on an annual basis. The City also owns and maintains 28 Traffic Signals which consist of lights and controllers. In total, the City has 2,715 street lights, most of which are mounted on hydro poles.

Major highway routes serving the City include Highway 401 which bisects the City in an east-west direction and County Road 29 which connects Brockville to the United Counties of Leeds and Grenville and the Town of Smiths Falls. There is also a dual track main Toronto-Ottawa-Montreal CN Railway that passes through the middle of the City in an east-west direction, as well as a CP Railway which connects Ottawa-Smiths Falls and terminates in Brockville. There are also ten (10) level road railway crossings within the City of Brockville.

Table 3.4 – Roads Summary

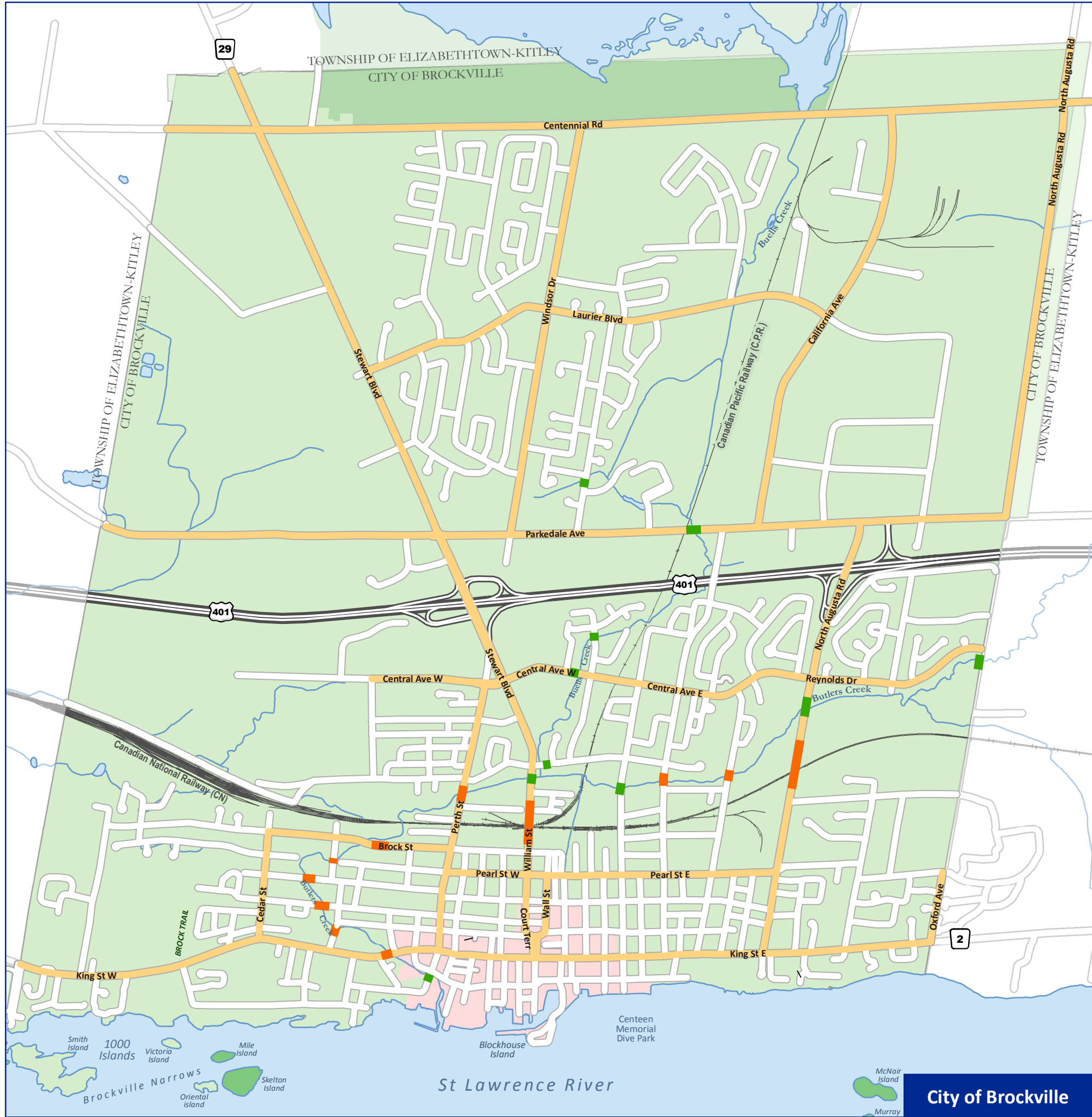
Asset Component	Quantity (m/ea)	Average Ideal Service Life (Years)	Average Age (Years)	Estimate % of Service Life Remaining
Collector Roads	23,160	60	38	37
Arterial Roads	28,670	60	37	38
Local Roads	67,000	60	47	22
Sidewalks	109,600	50	35	30
Traffic Signals – Lights	28	20	13	35
Traffic Signals – Controllers	28	15	8	47
Light Standards – Poles & Arms	547	50	40	20
Light Standards – Arms (on hydro poles)	2,168	50	40	20
Light Standards – Luminaires	2,715	20	6	70

3.6 Bridges and Culverts

The City owns, operates and maintains ten (10) bridge structures which form a critical link in the overall transportation system. These bridges are road related and do not include pedestrian and/or parks and recreation structures. Annual operating, maintenance and renewal of City owned bridges are funded through tax rates, Federal Gas Tax, Provincial/Federal Assistance Programs and new debt.

The oldest bridges were constructed in 1910 with the newest constructed in 1981. Bridge length and deck width varies from 10.0 m to 63.0 m and 5.0 m to 19.0 m, respectively. Culverts which are larger than 3.0 m in diameter are classified as structures by the Ministry of Transportation (MTO). As such, the City maintains





Bridges & Culverts

City of Brockville

3-5

Legend

Bridge

Culvert

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BROCKVILLE

CITY OF THE 1000 ISLANDS



Brockville Islands



Downtown

twelve (12) large drainage culverts where road crossings occur. Most culverts were installed in the 1960's with the newest one installed in 1988. Culvert length and width varies from 3.4 m to 10.3 m and 5.0 m to 30.5 m, respectively. An overview of the City's bridges and culverts is presented in Drawing No. 3-5 and are summarized in Table 3.5.

Each of these structures is visually inspected on a bi-annual basis in accordance with Ministry of Transportation (MTO) guidelines to determine its overall structural condition and potential need for a more detailed investigation and rehabilitation or renewal. The Bridge Condition Index (rating system) used by the City is based on MTO's Municipal Bridge Inspection Forms.

Table 3.5 – Bridges and Culverts Summary

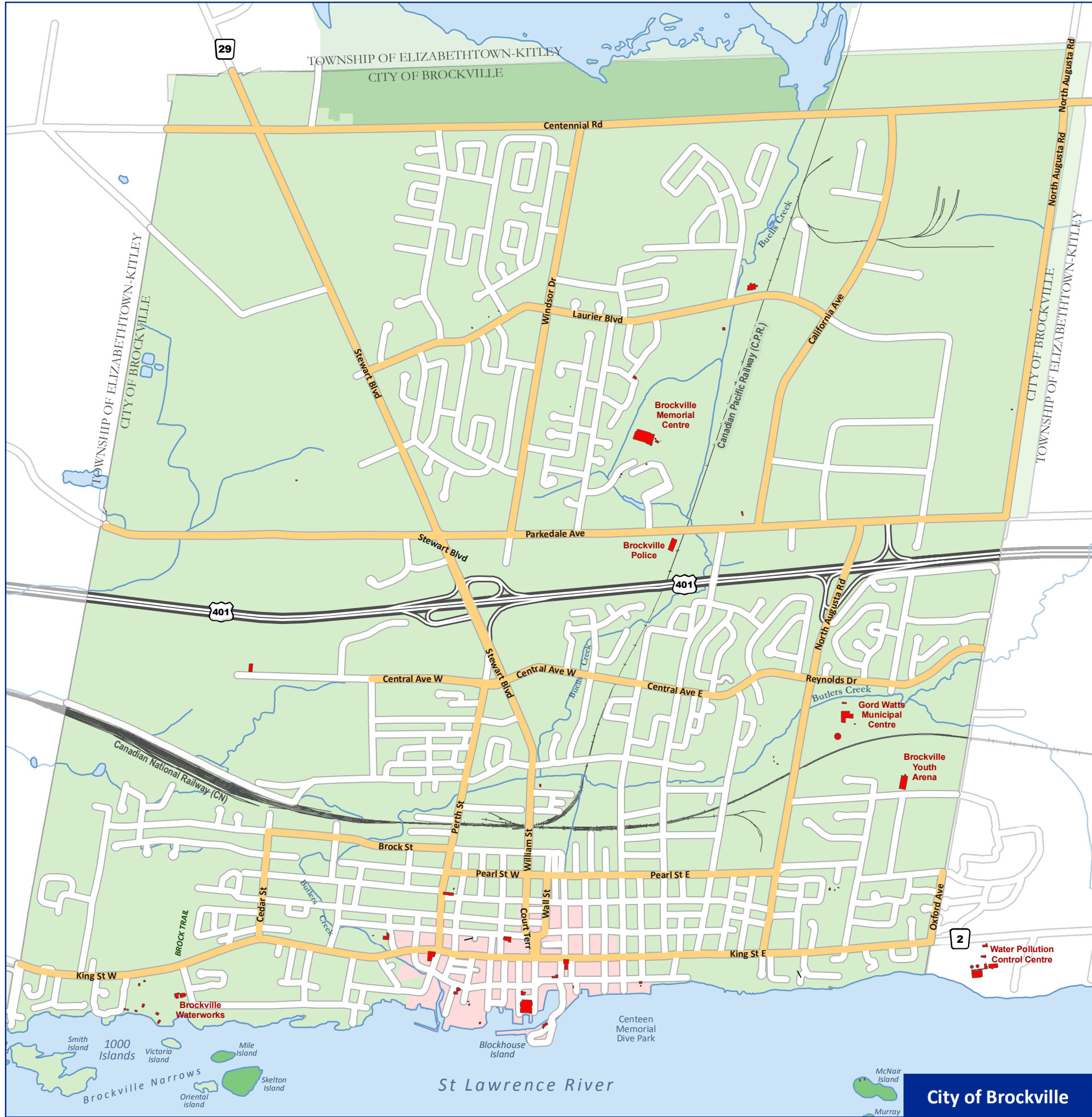
Asset Component	Quantity	Average Ideal Service Life (Years)	Average Age (Years)	Estimated % of Service Life Remaining
Bridges	10	75	58	23
Culverts	12	75	62	17

3.7 Facilities

The City owns, operates and maintains 17 facilities that all require annual maintenance. These include administrative, community, cultural and historical buildings, and strategic and emergency response facilities. Table 3.6 presents a comprehensive summary of all City owned facilities.

Table 3.6 – Facilities Summary

Facility	Location	Year Constructed	Area (square feet)	Average Ideal Service Life (Years)	Estimated % of Service Life Remaining
City Hall (Victoria Building)	1 King St. W.	1860	30,000	75	0
Brockville Arts Centre	235 King St. W.	1900, 1970, 2009	25,000	75	92
Police Headquarters	2269 Parkdale Ave.	1989	16,000	75	65
Fire Station 2	360 Laurier Blvd.	1990	13,000	75	67
Fire Station 1	61 Perth St.	1900	10,000	75	0
Gord Watts Municipal Centre	251 North Augusta Rd.	1972	25,000	75	43
Public Library	23 Buell St.	1969	17,000	75	39
Museum	5 Henry St.	1969	14,000	75	39
Brockville Memorial Civic Centre	1 Magedoma Blvd.	1981	52,000	75	53
Brockville Youth Arena	138 Broadway Ave.	1967	25,000	75	36
Gymnastics Club Building	10 Gilmour St.	1957	6,000	75	23
James A.C. Auld Harbour Service Building	Blockhouse Island Parkway	1984	3,000	75	59
Rotary Field House	Laurier Blvd	1992	2,500	75	69



Facilities

City of Brockville

3-6

Legend

City of Brockville Buildings

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CITY OF THE 1000 ISLANDS



Brockville Islands



Downtown

Facility	Location	Year Constructed	Area (square feet)	Average Ideal Service Life (Years)	Estimated % of Service Life Remaining
Brockville Municipal Airport	4620 Airport Rd.	1967	n/a	75	36
Tourism Office	10 Market St. W.	1969	500	75	39
Cemetery Works	1524 County Rd. 2	1969	500	75	39
Cemetery Chapel	1524 County Rd. 2	1969	500	75	39

Brockville's facilities are dispersed across the City as presented in Drawing 3-6. The Brockville municipal airport is located approximately 8km northwest of Brockville. The airport has one 4,500' x 90' paved runway, a single turf runway of 1,800' x 125'; a terminal building; limited hangar space and tie-down facilities. The Brockville municipal airport can handle both private and commercial aircraft.

3.8 Fleet

The Fleet and Support Service Division provide centralized maintenance and monitoring of the City's fleet of vehicles and operational equipment, including a long range fleet replacement plan.

The Division monitors, maintains and services the fleet for eleven departments, divisions, boards, commissions and EMS. The City is dedicated to keeping their vehicles in safe operating condition. Most vehicles in the fleet are past the mid-way point of their ideal service life. Table 3.7 summarizes the City's fleet inventory. The City of Brockville contracts out its Para Transit services.

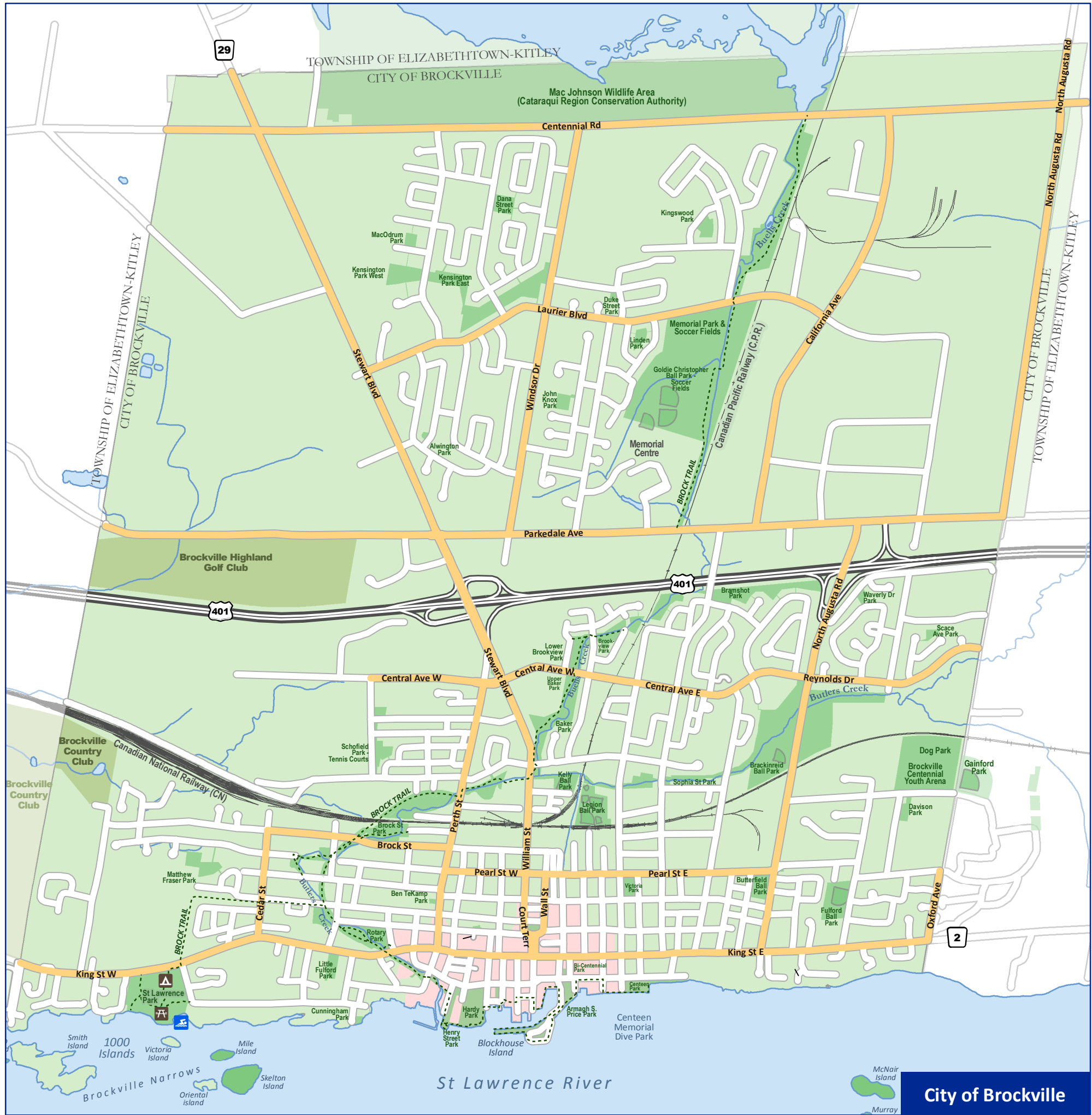
Table 3.7 – Fleet Summary

Asset Component	Quantity (ea)	Average Ideal Service Life (Years)	Average Age (Years)	Estimated % of Service Life Remaining
City - Rolling Stock	106	13	7	44
Fire – Rolling Stock	11	13	12	10
Police – Rolling Stock	18	4	2	56
Police – Marine	2	18	11	39
Transit	4	6	5	24

3.9 Parks and Recreation

The City of Brockville's Public Works/Parks Division is responsible for the general maintenance of the parkland, athletic fields and islands within the St. Lawrence River. The day-to-day operations of the City's harbour at Tunnel Bay campgrounds at St. Lawrence Park and on City of Brockville Islands is also carried out by this division.

There are 18 islands that are located in the St. Lawrence River for conservation and public enjoyment. As part of the world-famous 1000 Islands, they contribute to the scenic and ecological character of an important tourist area and provide valuable recreational opportunities to residents and visitors alike. Activities on the Islands include camping, picnicking, paddling,



Parks & Recreation

City of Brockville

Parks

Beach & Swimming

Boat Launch

Brock Trail

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BROCKVILLE
CITY OF THE 1000 ISLANDS

Brockville Islands

Downtown

and boating. The Islands vary in size from approximately 1,600 m² (0.16 ha) to 74,000 m² (7.4 ha).

City parks and athletic fields are diversified across the City for the pleasure of the general public. They range in size from 855 m² (0.09 ha) to 266,678 m² (26.7ha). There are various structures and pieces of equipment that the City continually maintains at each park to ensure the safety and enjoyment for the park users.

The Brock Trail is a unique City of Brockville pathway system that lets the public walk, jog, bike, blade or roll through the City's spectacular waterfront and scenic green space. The Brock Trail begins at Armagh S. Price Park heading west along the waterfront before turning north following Buell's Creek. The Trail bisects a number of City parks as it winds its way through the community. Future planned expansions of the Trail will link the north end of the City, with ultimate access to the Cataraqui Region Conservation Authority's Mac Johnson Wildlife Area. The Railway Tunnel is proposed to become part of the Brock Trail systems providing a north-south link from the Trail to the waterfront. An east linkage all the way to Oxford Avenue is also planned. The existing Trail is approximately 11 km long with another 1.5 km of proposed trail to be developed.

The following table summarizes the parks and recreation assets.

Table 3.8 – Parks and Recreation Summary

Asset Component	Quantity (m/ea)	Average Ideal Service Life (Years)	Average Age (Years)	Estimated % of Service Life Remaining
Pedestrian Bridges	11	50	30	40
Brock Trail (Main and Secondary Trail)	10,932	50	30	40
Skate Park	1	50	8	84
Parks (30) Equipment	231	21	16	24
Athletic Fields (6) Equipment	51	26	18	30
Islands (18) Equipment	166	17	11	35

An overview of the City's pedestrian bridges, parkland, athletic fields, islands, and the Brock trail is presented in Drawing 3-7.

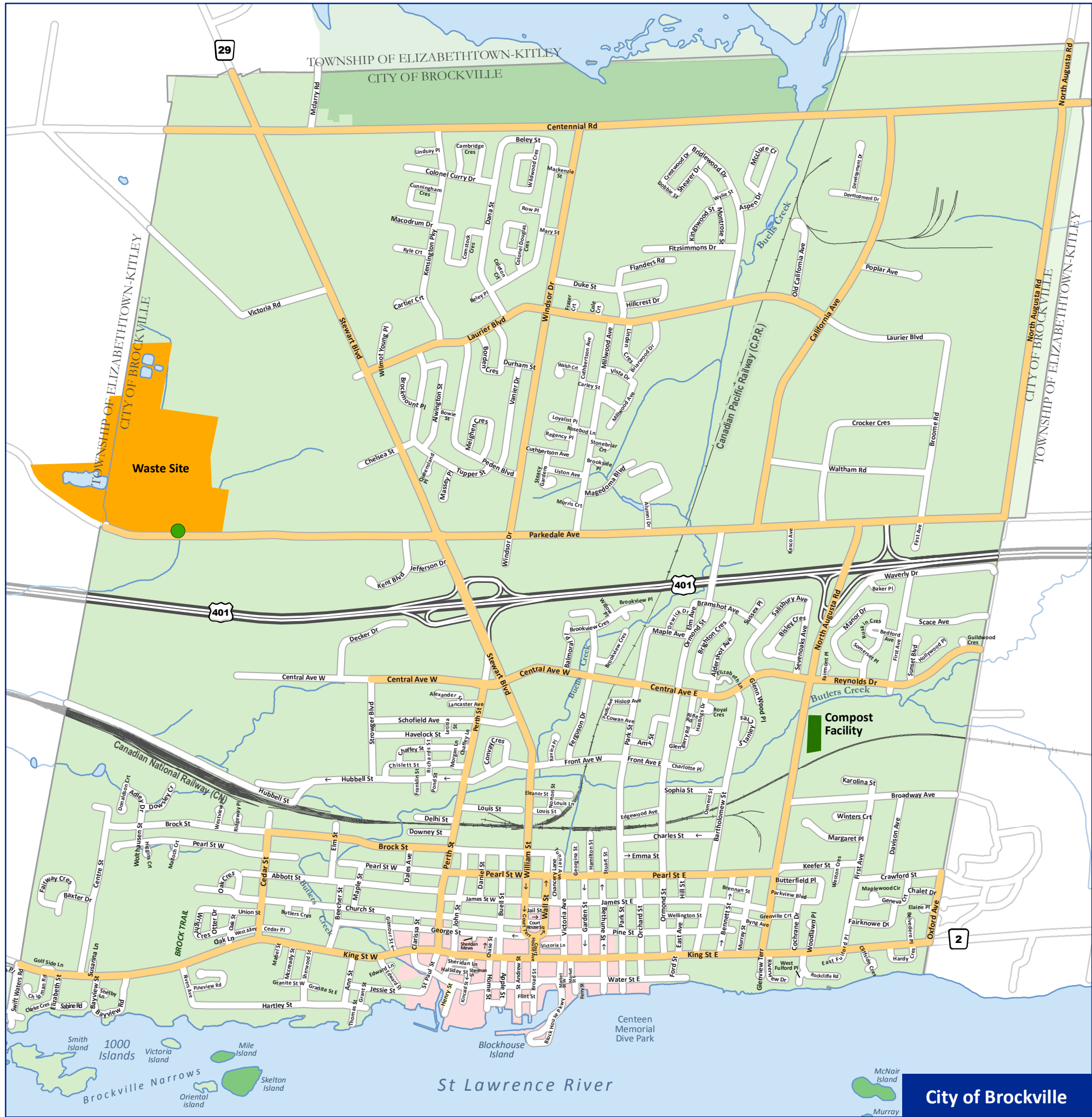
3.10 Solid Waste

The City contracts out all of the solid waste & recycling collection and processing with a 10 year contract (2012-2022) and therefore has minimal assets in the solid waste category. The City owns and monitors one closed landfill and one leachate collection system, and one compost facility.

Table 3.9 summarizes the City's solid waste assets which are shown on Drawing 3-8.

Table 3.9 – Solid Waste Summary

Asset Component	Quantity (ea.)	Average Ideal Service Life (Years)	Average Age (Years)	Estimated % of Service Life Remaining
Closed Landfill (1964-2000)	1	n/a	n/a	0
Leachate Collection System	1	91	25	73
Compost Facility	1	100	24	76



Solid Waste

City of Brockville

Leachate Facility

Waste Site

Composting Facility

Legend

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BROCKVILLE
CITY OF THE 1000 ISLANDS

Brockville Islands

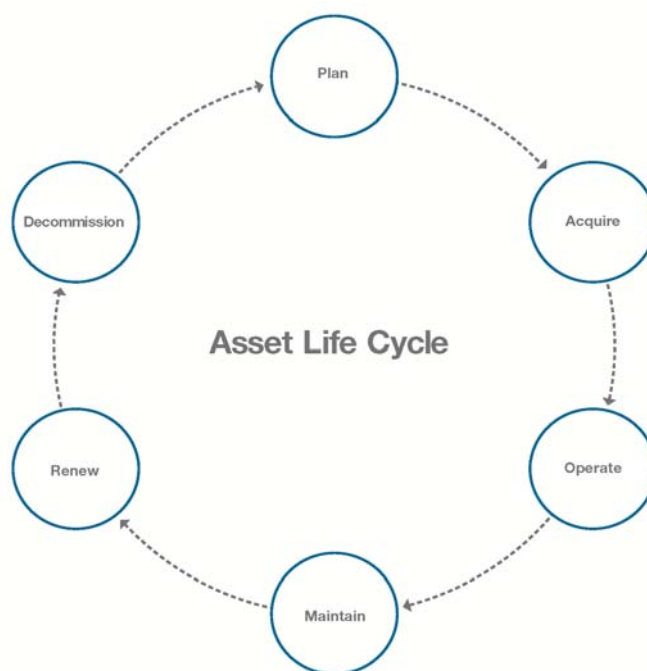
Downtown

4.0 STATE OF LOCAL INFRASTRUCTURE – ASSET CONDITION

4.1 Asset Life Cycle

Asset management is a structured program intended to reduce the life cycle costs of asset ownership while maintaining required service levels by sustaining the infrastructure. The principle of *Life Cycle Costing* is expressed in financial terms to include the total cost of an asset throughout its entire life. This should encompass all the activities associated with acquisition, installation, operation, maintenance, periodic refurbishments and disposal of that asset as shown in the exhibit below.

Figure 4.1 – Typical Asset Life Cycle



In this AMP, supporting tables reference the column headings “Ideal Service Life” and “% of Service Life Remaining”. Ideal Service Life is a reference to the assets’ ideal life cycle assuming regular maintenance and monitoring is completed over the life span of the asset.

It is noted that Ideal Service Life is based on the Canadian Infrastructure Report Card (2012) where infrastructure service lives were adapted from the City of Hamilton Life Cycle State of the Infrastructure (SOTI) Report (2005). As indicated in the SOTI Report, “It is recognized that asset life is influenced by many variables such as material, physical setting, uneven manufacturing quality, installation practices, local weather conditions, etc.” For these reasons, both of the above-referenced Reports summarize a range of Typical Useful Life in years for each asset.

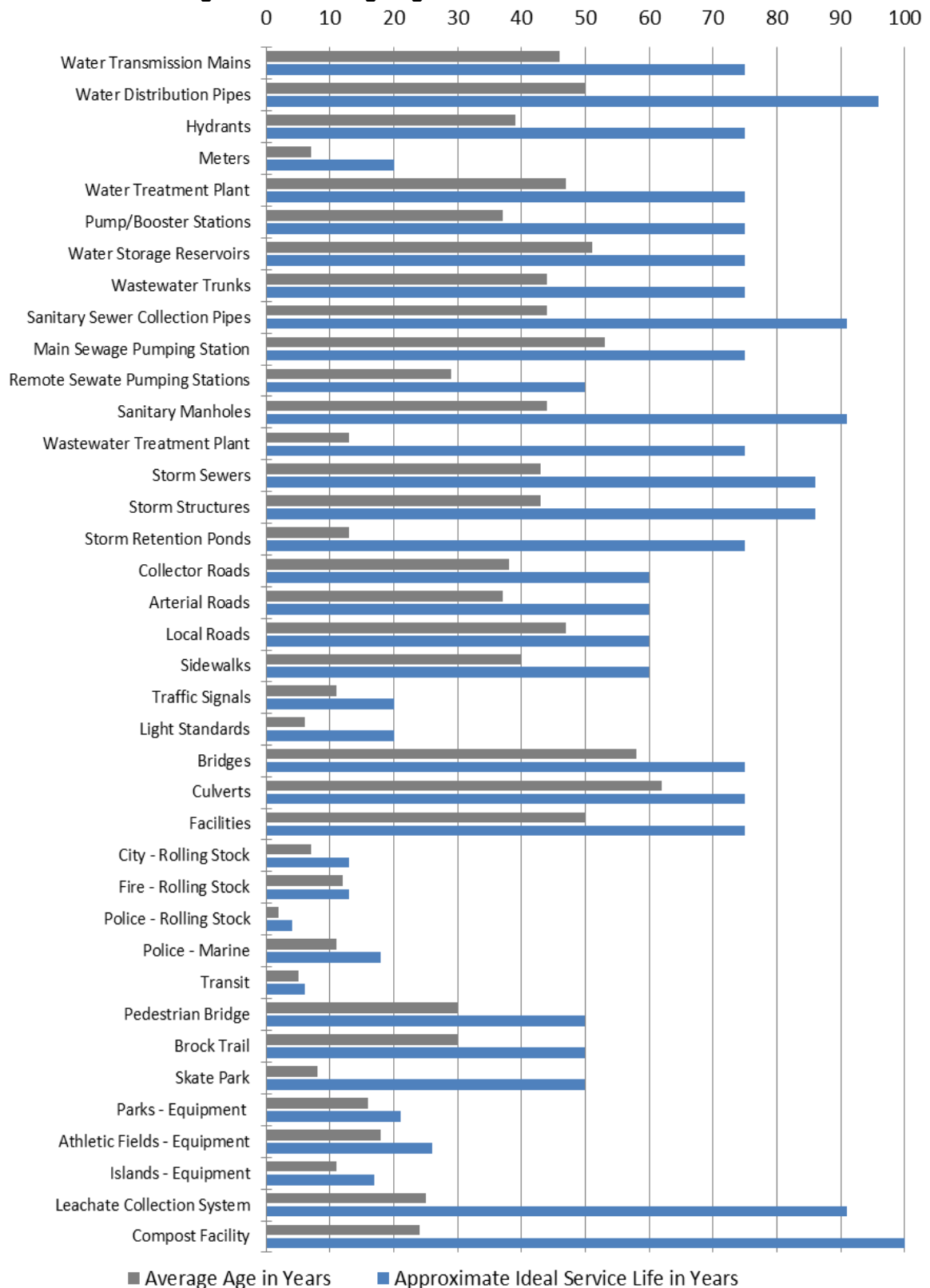
In the interest of establishing a conservative condition assessment, the lower bound service life for each asset was selected as its “Ideal Service Life” and used in the supporting summary

tables which form part of this AMP. “Average Age” is an approximation and has been determined based on the average age of the overall asset/system. The “% of Service Life Remaining” has simply been calculated by subtracting the assets “Average Age” from “Ideal Service Life” and showing the “Service Life Remaining” as a percentage of the “Ideal Service Life”.

4.1.1 Major City Infrastructure - Average Age and Ideal Service Life

Much of the City of Brockville’s infrastructure is approximately halfway through its ideal service life. As these assets age, *preventative* maintenance will extend their useful life. Annual maintenance costs will; however, gradually increase over time as these assets approach their end-of-life cycle. The City should be proactive in monitoring these annual maintenance costs so that staff and Council can make informed decisions with respect to the timing of various inevitable capital projects for rehabilitation or replacement of problem infrastructure.

Figure 4.2 illustrates the City’s Assets Average Age versus Ideal Service Life.

Figure 4.2 – Average Age and Ideal Service Life

4.2 Asset Condition

As part of its maintenance program, the City regularly collects asset condition data on major asset classes to determine the need and timing for preventative or remedial action to prevent loss or interruption of service or economic loss.

Asset condition reflects the physical state of the asset, which may or may not affect its performance. The performance of the asset is the ability to provide the required level of service to customers. Generally, this can be measured in terms of reliability, availability, capacity, and meeting customer demands and needs. All of this is critical information for determining the remaining service life of an asset, and more importantly, the timing for possible intervention to bring levels of service back to the desired standard.



Aside from the physical condition of an asset, there are other “intangible” factors that also need to be considered to determine overall condition and remaining service life. These factors could include:

- Technical advances that might make the asset obsolete.
- Compliance – to what extent does the asset meet design and operational requirements?
- Functionality – does the asset have the ability/capacity to meet community expectations/growth/service levels?
- Economic life – the cost of continuing to operate/maintain/repair/rehabilitate the asset versus its full replacement.

In general, the City has a good understanding of the condition of their assets and how they are performing. All management decisions regarding maintenance, rehabilitation and renewal revolve around these two key indicators.

4.2.1 Asset Condition Rating System

A best practice approach for condition assessments focuses on collecting performance data in order to manage risks associated with critical assets. Once an asset's baseline performance data has been established, it is periodically monitored to determine how that asset is operating. Using this approach, condition grading standards can be relatively simple (e.g., good, average, fair, poor). The City has chosen to adopt a similar holistic Asset Condition Rating System which applies to all assets and is straightforward in its interpretation for municipal staff and Council.

The City's AMP uses a rating system that includes both *physical* condition and *intangible* factors. The Asset Condition Rating System also incorporates any existing condition assessment reports that are based on standard engineering practices and recognized rating systems (e.g., Pavement Condition Index (PCI), Bridge Inspection Reports (OSIM) and Sewer System CCTV Inspections (WRc). Refer to Table 4.1 for an overview of the City's Asset Condition Rating System.

Table 4.1 – Asset Condition Rating System

Average Rating	Condition	Description
9-10	Excellent	Asset is new or relatively new. Asset is physically and structurally sound and performing its function at a high level. Required maintenance costs are minimal to non-existent. No improvements are required at this time. The asset is at the beginning of its expected useful life.
7-8	Good	Asset is physically and structurally sound, performing its function as originally intended. Required maintenance costs are within standards. Some small local improvements may be needed. Asset is relatively new or recently rehabilitated and in the early stage of its expected useful life.
5-6	Average	Asset is physically and structurally sound, performing its function as originally intended. Required maintenance costs are currently within standards but increasing. Some continued improvement will be needed. Asset has been used for some time but within the mid-stage of its expected useful life.
3-4	Fair	Asset is showing signs of deterioration, performing at a lower level than originally intended. Some components are becoming physically deficient and substantial improvement is needed. Maintenance costs are approaching maximum acceptable standards. Asset has been in service for a long time and is within the later stage of its expected useful life.
1-2	Poor	Asset is showing signs of significant deterioration, performing to a much lower level than originally intended. A major portion of the asset is physically deficient. Maintenance costs significantly exceed acceptable standards. Asset is approaching or at the end of its life expectancy and there is a high probability of failure.

As shown in Table 4.2 below, the Transportation Services Division of the Operations Department use an effective in-house Pavement Condition Index (PCI) road rating scale that rates a road's overall pavement condition from 1 to 5. For this AMP, the Roads PCI system (1-5) has been adapted to reflect the Average Ratings (1-10) described in Table 4.1 - Asset Condition Rating System.

Table 4.2 – City of Brockville Pavement Condition Index Road Rating Scale

Rating	Description	Structural Condition %	Alligator Cracking	Longitudinal Cracking	Patching	Distortion
1	Excellent	100-80	None	None	None	None
2	Good	80-60	None	Low	Low	None
3	Fair	60-40	Low	Low	Low	Low
4	Poor	40-20	Medium	Medium	Medium	Medium
5	Very Poor	20-0	High	High	High	High

4.2.2 Infrastructure Report Card

An analysis of the City's water, wastewater and stormwater systems, roads, bridges and culverts, facilities, fleet, parks and recreation and solid waste has been completed based on the asset "Condition Estimate", "% of Service Life Remaining" data, and various intangible factors discussed in Section 4.2. What follows are a series of individual "report cards" for the major assets reported in this AMP.

Current and Replacement Valuations for each system's infrastructure are included as well as the Average Annual Maintenance Budget. Assumptions related to Current and Replacement Valuations and Average Annual Maintenance Budget can be found in Section 4.2.4. This information in turn, has been incorporated in Section 7.0 – Financing Strategy.

4.2.3 Data Verification and Condition Assessment Policy

The City does not have an "official" data verification and condition assessment policy. The adopted approach to data verification is simply to update and populate the Worktech Asset and Service Management System as required. These updates occur monthly in the form of maintenance records, site observed conditions gathered through maintenance, repairs and planned condition assessments and special projects. The updating and verification process is shared by Environmental Services and Operations staff. Reference Section 6.4 - Maintenance Activities for additional information regarding the City's preventative maintenance programs.



The City has been using Worktech to gather, store and analyze its assets since 2010. It is envisioned as a key asset management tool for staff moving forward as inventory and condition assessment data is added, updated and revised. A combination of specialized management software and experienced municipal staff demonstrates the City's commitment to continuously improving its asset information through data verification, planned condition assessments and meeting or exceeding provincial legislation requirements.

4.2.4 Limitations and Assumptions

The information and tables developed for Sections 3 and 4 of the AMP are based on discussions and interviews with municipal staff, Worktech Asset and Service Management System data and a review of available records and documentation, as well as previous experience with these assets and other similar related facilities and infrastructure. No condition assessment, testing or specialty inspections were carried out as part of the investigative work related to preparation of this AMP.



In developing this AMP, and specifically the State of Local Infrastructure tables, a number of data fields require a description of their limitations and assumptions. These fields include references to financial valuation, condition estimate, ideal service life and remaining service life.

Development of the data contained in these fields can also be somewhat subjective (e.g., Table 4.1 - Asset Condition Rating System) due to the number of combinations and permutations of systems, factors, unit costs and probabilities involved and the requirement that the “bottom line” information be presented in a readable and useable format. Some of the specific assumptions that have been made are noted below:

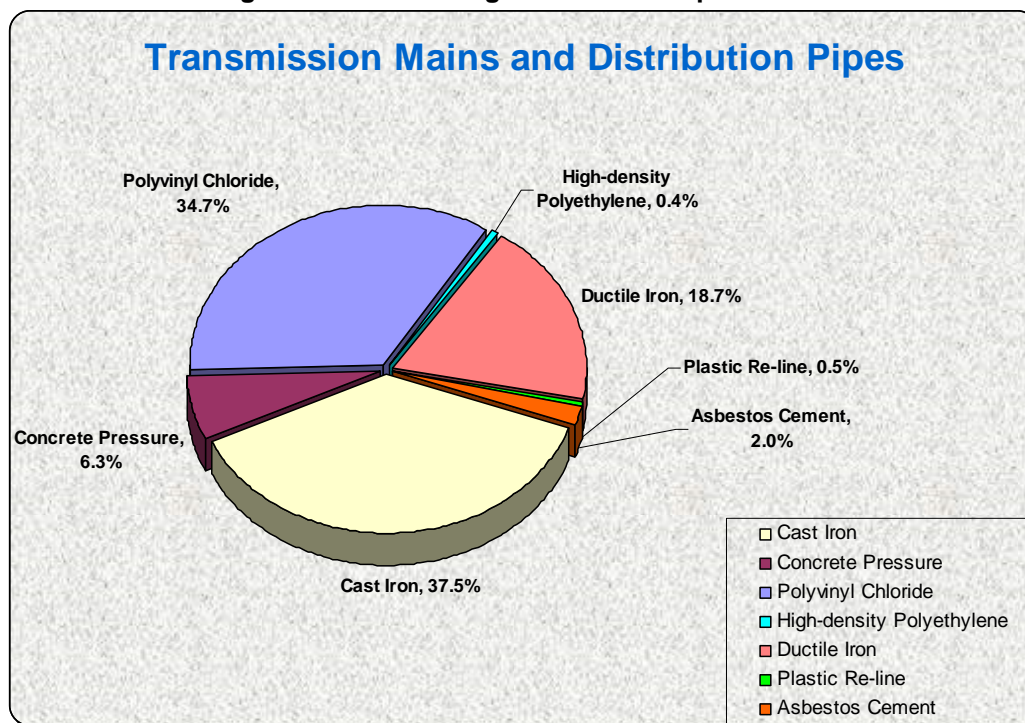
- *The estimated life expectancy of an individual system and its components are based, in general, on materials, the manufacturer’s published data and perceived industry standards. This accounts for wear and tear, deterioration, average life expectancy, obsolescence, etc., and does not preclude that systems can remain functional for longer periods of time. Soil conditions have not been factored into estimated life expectancy for underground piped infrastructure and can have a bearing on actual service life.*
- *The assessment of the remaining life of a system or components is not exact. It is based on limited information and, in many instances, influenced by factors that may occur at some future date. Even the urgency of replacement may be determined by factors that cannot be predicted. For example, retroactive rulings by regulatory agencies may necessitate unanticipated replacement or updating of equipment within a short time frame. By contrast, items such as painting and miscellaneous interior finishes might be delayed for an extended period of time, at the discretion of the City subject to financial and other considerations. The actual year of replacement will be dictated by the physical condition of the system at the time of replacement. Also, certain replacements may be advanced or deferred by the City, subject to other conditions (e.g., financial, coordination with related work, incorporation of wider scope upgrades, etc.).*
- *The Current Valuation is based on Tangible Capital Asset data that was accumulated in 2009 for changes to PSAB 3150. It is the Net Book Value that is based upon the historical cost determined at the time through actual records. Where no records were found, Current Valuation was determined based on current assessed values which were discounted back to the appropriate year of purchase/construction. The assets were then amortized based upon expected service life to calculate the Current Valuation as of December 31, 2015.*
- *Average Annual Maintenance Costs and Budgets have been determined based on actual expenditures from 2013-2015.*
- *Current and Replacement Valuation and Average Annual Maintenance Budget costs are expressed in 2015 dollars, therefore, if these costs are to be used for long-range cash flow projections, the implications for potential future trends of inflation and interest must be applied accordingly. It is recommended that the AMP be reviewed periodically in order that information presented, including financial data be kept current and relevant.*

4.3 Water System Report

Table 4.3 – Water System Condition, Valuation and Maintenance Budget

Asset Component	Average Rating	Condition Estimate	Estimated Current Asset Valuation	Estimated Current Replacement Valuation	Average Annual Maintenance Budget
Water Transmission Mains	4	Fair	\$5,500,478	\$5,033,750	\$14,326
Water Distribution Pipes	5	Average	\$2,659,486	\$35,588,400	\$730,611
Hydrants	5	Average	\$635,925	\$5,075,000	\$53,741
Meters	7	Good	\$1,037,655	\$1,798,381	\$7,163
Water Treatment Plant	6	Average	\$948,700	\$45,000,000	\$658,983
Pump/Booster Stations	6	Average	\$263,908	\$1,503,636	\$7,163
Water Storage Reservoirs	6	Average	\$22,906	\$4,592,808	\$14,326
Total			\$11,069,058	\$98,591,975	\$1,486,312

Figure 4.3 – Percentage of Installed Pipe Material



- On average, the Water System is at the mid-point of its Ideal Service Life.
- Water transmission mains and distribution pipes are in Fair to Average condition.
- The WTP, Pump/Booster Stations, Water Storage Reservoirs and Hydrants are all in Average condition.
- Approximately 27% (37 km) of the water distribution pipes were installed before 1950. These pipes are primarily made of cast iron and are approximately 63 years old, as a minimum. They have an Ideal Service Life of between 75 and 100 years.
- Water distribution pipes installed prior to 1970 represent approximately 43% (60 km) of the system and are primarily made of Cast Iron.
- Water meters are in Good condition since the City is currently working through a meter replacement program. This program is approximately 70% complete, and is anticipated to be 100% by the end of 2018.
- The City completed a City-wide 2 year non-intrusive/no-dig, leak detection program from 2010 to 2012 which resulted in the identification of 25-30 significant watermain leaks. These leaks were responsible for an estimated annual loss of 800,000 – 1.2 million litres of water in the system. These leaks have been repaired and the leak detection program is ongoing to a lesser degree.
- Major maintenance, condition assessment and related rehabilitation/renewal activities and costs for water system assets will continue to increase as this infrastructure approaches the third quarter of its Ideal Service Life.

Recommendations

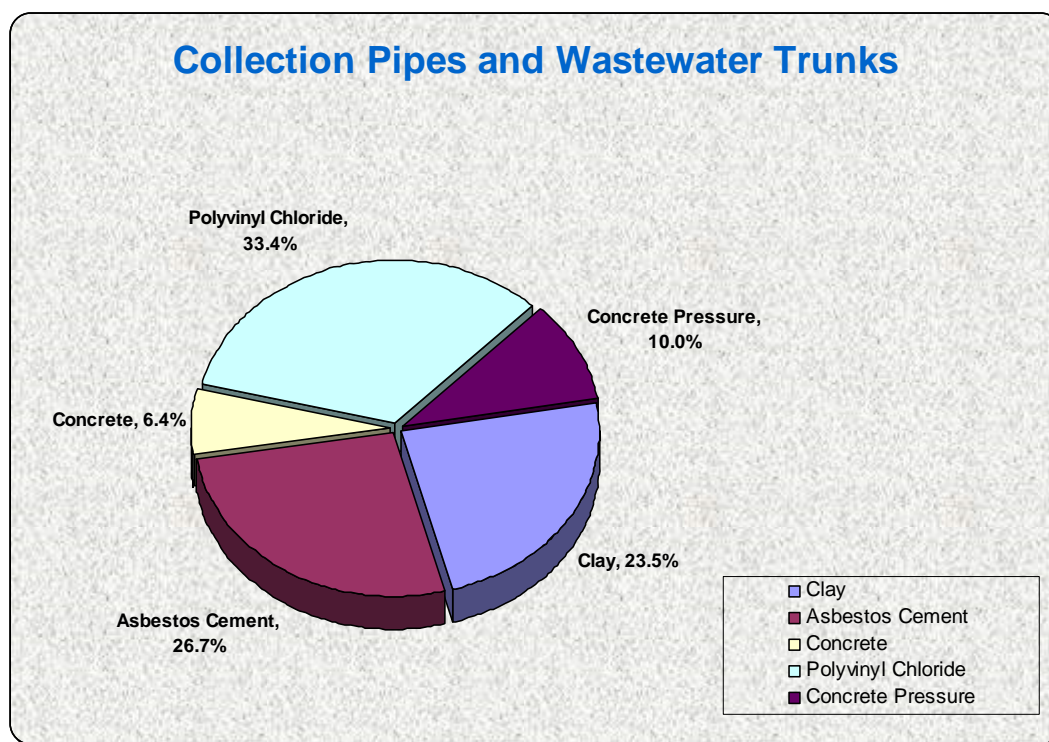
Condition assessment of in-service watermains can be costly and difficult at best. To supplement its watermain condition assessment program, the City should continue to review the history of watermain breaks and compile/document new records of watermain breaks and any operational problems. This data should be entered into the Worktech database so that it can be analyzed for break patterns. The City's GIS will greatly assist in this type of spatial analysis. Break records should include the location, time of year, pipe size, pipe material, observed soil conditions and cause of failure. Careful examination of these records will allow City staff to make informed decisions with respect to watermain renewal or replacement activities. Trenchless technologies for watermain rehabilitation may also be investigated as opposed to more expensive open cut watermain replacement. Opportunities to coordinate watermain rehabilitation with road reconstruction and other related capital projects should continue to be examined.

4.4 Wastewater System Report

Table 4.4 – Wastewater System Condition, Valuation and Maintenance Budget

Asset Component	Average Rating	Condition Estimate	Estimated Current Asset Valuation	Estimated Current Replacement Valuation	Average Annual Maintenance Budget
Wastewater Trunks	5	Average	\$286,556	\$6,209,500	\$5,292
Sanitary Sewer Collection Pipes	5	Average	\$2,865,557	\$25,119,750	\$211,667
Main Sewage Pumping Station	2	Poor	\$205,770	\$6,000,000	\$10,583
Remote Sewage Pumping Stations	6	Average	\$15,861	\$3,570,000	\$31,750
Sanitary Manholes	5	Average	\$493,965	\$9,878,000	\$5,292
Wastewater Treatment Plant	9	Excellent	\$42,009,652	\$87,720,000	\$793,753
Total			\$45,877,361	\$138,497,250	\$1,058,337

Figure 4.4 – Percentage of Installed Wastewater Pipe Material



- On average, the Wastewater System is at the mid-point of its Ideal Service Life. This excludes the WPCC which is in Excellent condition given major renovations in 2010.

- Wastewater trunks and sanitary sewer collection pipes are in Average condition.
- The Main Sewage Pumping Station is in Poor condition and approaching the fourth quarter of its Ideal Useful Life. There are currently significant station improvements that could be implemented to improve operational concerns, increase reliability, reduce risks and renew aging components as well as address current codes and legislative requirements. The City has completed a Class Environmental Assessment of this Station and its forcemain to determine a preferred alternative for renewal.
- The remote smaller Sewage Pumping Stations and sanitary manholes are in Average condition.
- Approximately 42% (47 km) of the wastewater trunks and sanitary sewer collection pipes were installed prior to 1970.
- Virtually all (17%) of the sanitary sewer collection pipes installed before 1950 are Vitrified Clay. These sewer pipes are therefore at least 63 years old and could be much older in some cases.
- Approximately 30% of the City's sanitary sewer collection pipes are made of Asbestos Cement and were installed between 1941 and 1990.

Recommendations

The City should continue with its Closed Circuit Television (CCTV) condition assessment program to confirm the actual physical conditions of wastewater piping. Annual planning for the CCTV program should consider examining asbestos concrete and vitrified clay sanitary sewers as a higher priority. In general, asbestos cement pipes have an Ideal Service Life of approximately 70 years; however, asbestos concrete pipes have been known to fail earlier as compared to other industry standard materials such as PVC. Vitrified clay sanitary sewers may be in good physical condition given their age or they may be nearing the end of their design life. Condition assessment needs to be confirmed via CCTV inspection.

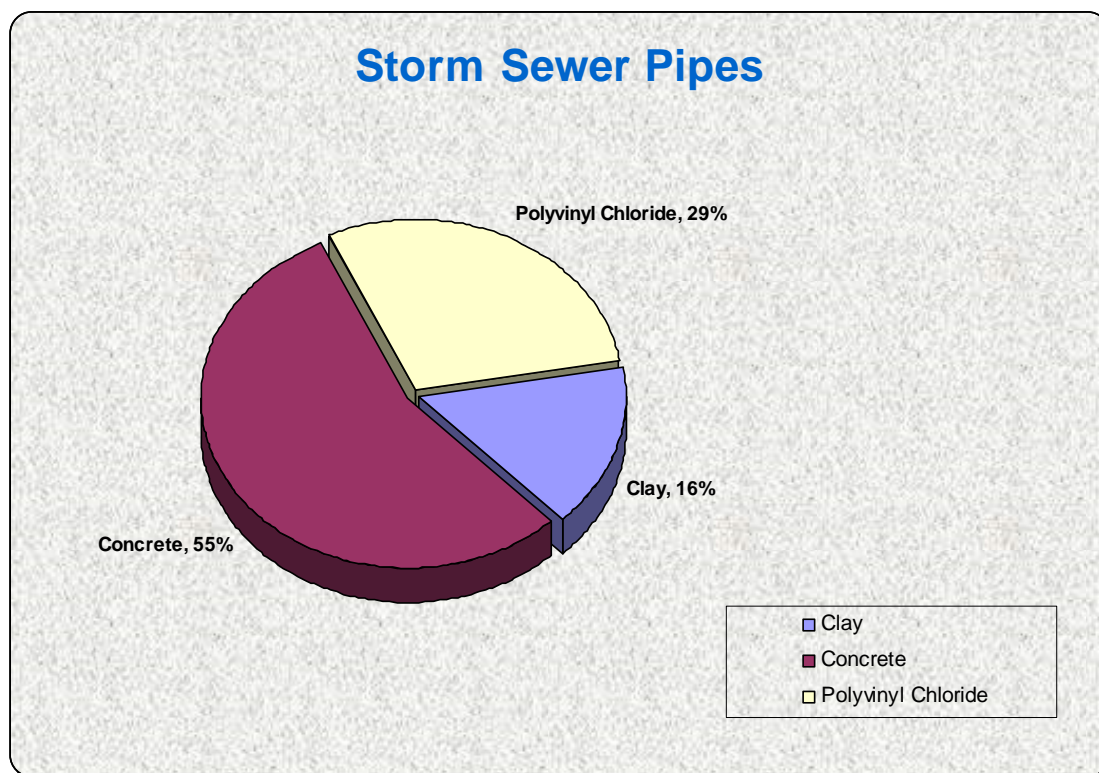
Tracking history of breaks, blockages and interviews with Wastewater staff to determine maintenance and operational issues should also be a component of this exercise. History of breaks, blockages and maintenance/operational issues should be entered into the Worktech database so that it can be used as a decision support tool for capital planning. The City's GIS will greatly assist in this type of spatial analysis tracking. Break and blockage records should include the location, time of year, pipe size, pipe material, observed soil conditions and cause of failure or blockage. Trenchless technologies for wastewater trunks and sanitary sewer rehabilitation may also be investigated as opposed to more expensive open cut sewer replacement. Opportunities to coordinate sanitary sewer rehabilitation with road reconstruction and other related capital projects should continue to be examined. Replacement of manholes and service connections should coincide, where possible, with sanitary sewer rehabilitation.

4.5 Stormwater System Report

Table 4.5 – Stormwater System Condition, Valuation and Maintenance Budget

Asset Component	Average Rating	Condition Estimate	Estimated Current Asset Valuation	Estimated Current Replacement Valuation	Average Annual Maintenance Budget
Storm Sewers	5	Average	\$4,695,738	\$30,834,600	\$223,453
Storm Structures - Manholes and Catch Basins	5	Average	\$1,295,270	\$20,100,000	\$64,684
Stormwater Retention Ponds	9	Excellent	\$450,000	\$500,000	\$5,880
		Total	\$6,441,008	\$51,434,600	\$294,017

Figure 4.5 – Percentage of Installed Storm Sewer Pipe Material



- On average, the Stormwater System is at the mid-point of its Ideal Service Life. This excludes the one Stormwater Retention Pond which is in Excellent condition.
- Storm sewers are in Average condition.
- Storm structures (e.g., manholes and catch basins) are also in Average condition.

- Approximately 39% (40 km) of the storm sewers were installed prior to 1970.
- Approximately 14% of the storm sewers were installed before 1950 and are Vitrified Clay. It is noted that 10% of the storm sewers were installed before 1940 and are Vitrified Clay. These sewer pipes are therefore at least 63-73 years old and could be much older in some cases.

Recommendations

The City should continue with its Closed Circuit Television (CCTV) condition assessment program to confirm the actual physical conditions of storm sewers. Annual planning for the CCTV program should consider examining vitrified clay storm sewers as a higher priority. Vitrified Clay sanitary sewers may be in good physical condition given their age or they may be nearing the end of their design life. Condition assessment needs to be confirmed via CCTV inspection.

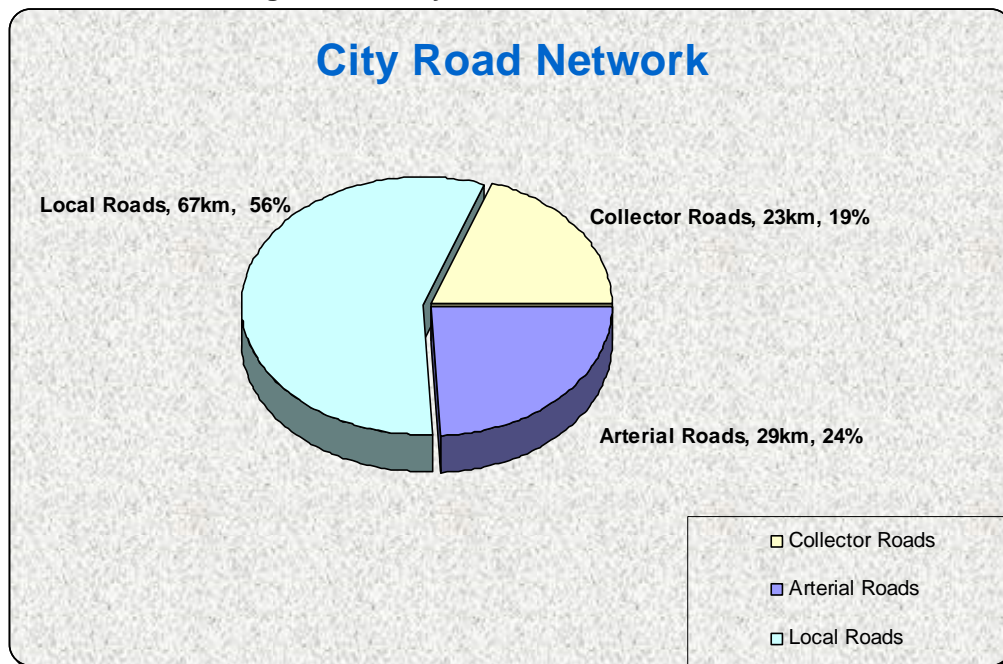
Tracking history of breaks and interviews with Public Works staff to determine operational issues should also be a component of this exercise. History of breaks and operational issues should be entered into the Worktech database so that it can be used as a decision support tool for capital planning. The City's GIS will greatly assist in this type of spatial analysis. Break records should include the location, time of year, pipe size, pipe material, observed soil conditions and cause of failure. Trenchless technologies for storm sewer rehabilitation may also be investigated as opposed to more expensive open cut sewer replacement. Opportunities to coordinate storm sewer rehabilitation with road reconstruction and other related capital projects should continue to be examined. Replacement of manholes and catch basins should coincide, where possible, with storm sewer rehabilitation.

4.6 Roads Report

Table 4.6 – Roads Condition, Valuation and Maintenance Budget

Asset Component	Average Rating	Condition Estimate	Estimated Current Asset Valuation	Estimated Current Replacement Valuation	Average Annual Maintenance Budget
Collector Roads	7	Good	\$2,802,451	\$20,844,000	\$152,406
Arterial Roads	7	Good	\$3,503,064	\$34,404,000	\$190,508
Local Roads	6	Average	\$7,706,740	\$60,300,000	\$419,118
Sidewalks	6	Average	\$2,726,577	\$14,000,000	\$63,191
Traffic Signals – Lights and Controllers	5	Average	\$250,489	\$2,800,000	\$26,066
Light Standards – Arms, Poles and Luminaires	7	Good	\$3,573,427	\$10,600,000	\$33,807
Total			\$20,562,748	\$142,948,000	\$855,096

Figure 4.6 – City Road Network Breakdown



- City roads (including related assets) are generally in Average to Good condition overall.
- There is approximately 119 km of roads in the City. This translates into a total length of approximately 310 lane km which can be further broken down as 177 lane km of Local Roads, 62 lane km of Collector Roads and 71 lane km of Arterial Roads.
- All City roads have an asphalt surface.
- There is approximately 109 km of sidewalk. Typical surface type is concrete.
- The City has developed an ongoing road maintenance program which includes pothole repair, localized asphalt repairs, routing and sealing of road surface cracks and milling and replacement of asphalt surfaces.
- The City regularly upgrades traffic signal controllers to keep up-to-date with the advancements in technology
- All City luminaires were recently upgraded.

Recommendations

Detailed asset information for roads infrastructure is maintained in spreadsheets. The Worktech software should be used to centralize roads data with water, wastewater, storm sewer and bridge information. This centralized asset management database will facilitate a smooth transition to the City's Geographic Information System (GIS) program and minimize or eliminate duplication of information and data silos in Operations and Environmental Services

Departments. Key personnel in both departments should be given limited access to Worktech to manage their respective datasets.

The City's road maintenance program is critical in extending the life cycle of roads and should continue. New methods of extending the life cycle of roads should be implemented when warranted. Opportunities to coordinate road reconstruction with watermain and sewer replacement and other related capital projects should continue to be examined.

4.7 Bridges and Culverts Report

Table 4.7 – Bridges and Culverts Condition, Valuation and Maintenance Budget

Asset Component	Average Rating	Condition Estimate	Estimated Current Asset Valuation	Estimated Current Replacement Valuation	Average Annual Maintenance Budget
Bridges	6	Average	\$1,888,069	\$18,372,000	\$57,515
Culverts	7	Good	\$403,534	\$7,842,000	\$6,400
		Total	\$2,291,603	\$26,214,000	\$63,915

- City bridges are generally in Average condition overall.
- City culverts >3.0 m in diameter are generally in Good condition overall.
- In general, City bridges and culverts are beyond the third quarter of their approximate Ideal Service Life.
- The 2015 Bridge Management Study indicates that there are \$861,000 in immediate priority and \$567,000 in short term (1-5 year) bridge repairs. To facilitate these repairs, \$115,000 in additional engineering investigation costs are recommended to develop more accurate repair, rehabilitation and replacement needs.
- The 2015 Bridge Management Study indicates that there are \$230,000 in immediate priority and \$932,000 in short term (1-5 year) large culvert repairs. To facilitate these repairs, \$82,500 in additional engineering investigation costs are recommended to develop more accurate repair, rehabilitation and replacement needs.

Recommendations

As part of the City's overall bridge management strategy, a program of routine maintenance should be ongoing for all structures in accordance with the Ontario Structure Inspection Manual (OSIM). Maintaining this program will assist in minimizing the potential for premature deterioration of structural elements. When combined with a program of bridge rehabilitation, this approach will assist in maximizing the useful service life of bridges and large culverts.

It is generally not practical to undertake major rehabilitation work on culvert crossings where significant deterioration or deficiencies exist in the metal liner. Culvert replacement is normally planned in these circumstances; however, the possibility of using liners to repair large culverts exists and should be a consideration. The installation cost of liners is typically 50% less than the replacement cost of the culvert.

The Worktech software should be used to centralize bridge and culvert data with water, wastewater, storm sewer and roads information. This centralized asset management database will facilitate a smooth transition to the City's GIS program and minimize or eliminate duplication of information and data silos in Operations and Environmental Services Departments. Key personnel in both departments should be given limited access to Worktech to manage their respective datasets.

4.8 Facilities Report

Table 4.8 – Facilities Condition, Valuation and Maintenance Budget

Facility	Average Rating	Condition Estimate	Estimated Current Asset Valuation	Estimated Current Replacement Valuation	Average Annual Maintenance Budget
City Hall (Victoria Building)	4	Fair	\$2,711	\$8,123,007	\$150,455
Brockville Arts Centre	7	Good	\$1,852,968	\$13,966,954	\$62,342
Police Headquarters	7	Good	\$842,774	\$4,474,629	\$89,591
Fire Station 2	7	Good	\$864,184	\$3,561,738	\$17,400
Fire Station 1	4	Fair	\$6,052	\$2,572,542	\$15,658
Gord Watts Municipal Centre	5	Average	\$725,672	\$4,587,115	\$62,521
Public Library	6	Average	\$102,137	\$4,598,588	\$35,464
Museum	6	Average	\$58,505	\$1,978,829	\$32,386
Brockville Memorial Civic Centre	6	Average	\$3,035,809	\$12,417,062	\$88,881
Brockville Youth Arena	5	Average	\$178,897	\$4,420,769	\$41,009
Gymnastics Club Building	6	Average	\$0	\$1,036,766	\$2,098
James A.C. Auld Harbour Service Building	6	Average	\$141,103	\$558,345	\$65,614
Rotary Field House	7	Good	\$87,277	\$349,832	\$327
Brockville Municipal Airport	4	Fair	\$68,049	\$1,813,744	\$35,895
Tourism Office	2	Poor	\$27,555	\$852,720	\$22,018
Cemetery Works	6	Average	\$15,799	\$798,596	\$0
Cemetery Chapel	6	Average	\$3,171	\$192,882	\$0
Total			\$8,012,663	\$66,304,118	\$721,658

- City facilities are generally in Average condition overall.
- There are 17 facilities which the City owns and operates.
- The City has developed an ongoing maintenance program for all facilities.

Recommendations

The City's maintenance program is critical to keeping the facilities operating efficiently, extending the life cycle and should continue. New methods of extending the life cycle should be implemented when warranted. Opportunities to coordinate with other related capital projects should continue to be examined.

Specialize and focused engineering/architectural condition assessments should be undertaken for facilities as required in order to plan required upgrades and renewals.

4.9 Fleet Report

Table 4.9 – Fleet Condition, Valuation and Maintenance Budget

Asset Component	Average Rating	Condition Estimate	Current Asset Valuation	Current Replacement Valuation	Average Annual Maintenance Budget
City – Rolling Stock	4	Fair	\$1,467,029	\$5,443,975	\$259,656
Fire – Rolling Stock	1	Poor	\$1,153,252	\$4,231,290	\$150,096
Police – Land	6	Average	\$341,292	\$450,690	\$175,461
Police – Marine	4	Fair	\$88,152	\$303,342	\$10,365
Transit Bus	2	Poor	\$85,453	\$377,684	\$71,730
		Total	\$3,135,178	\$10,806,981	\$667,308

- The City's fleet are generally in Fair condition overall.
- The Fleet/Support Service Division is committed to ensuring the City's Fleet is kept in safe operating condition.
- The City has developed an ongoing maintenance and replacement program.

Recommendations

The City's maintenance and replacement program is critical to keeping the City's Fleet operating safely, extending the life cycle and should continue. New methods of extending the life cycle should be implemented when warranted. Opportunities to coordinate with other related capital projects should continue to be examined.

In support of environmental sustainability and reducing the City's carbon footprint, the City should consider using biodiesel, purchasing hybrid or electric vehicles when replacing cars or light trucks, and downsizing vehicle weight or engine size when possible.

4.10 Parks and Recreation Report

Table 4.10 – Parks and Recreation Condition, Valuation and Maintenance Budget

Asset Component	Average Rating	Condition Estimate	Current Asset Valuation	Current Replacement Valuation	Average Annual Maintenance Budget
Pedestrian Bridges	4	Average	\$634,800	\$1,587,000	\$4,921
Brock Trail (Main and Secondary Trail)	9	Excellent	\$11,269	\$3,280,000	\$4,921
Skate Park	9	Excellent	\$200,000	\$350,000	\$4,921
Priority and Community Parks (30) Equipment	3	Fair	\$4,135,928	\$1,277,009	\$843,291
Sports Fields (6) Equipment	3	Fair	\$102,828	\$682,387	\$57,844
Islands (18) Equipment	4	Fair	\$507,326	\$612,000	\$18,966
Total			\$5,592,151	\$7,788,396	\$934,864

- The City's Pedestrian Bridges are generally in Average condition.
- The City's Parks and Recreation equipment is generally in Fair condition.
- The City is committed to ensuring that equipment is safe to use.

Recommendations

A program of routine inspection and maintenance should be ongoing for all pedestrian bridges; similar to the City's bridge management strategy and OSIM.

The City's maintenance and replacement program is critical to keeping the City's recreational equipment safe to use and should continue. New methods of extending the life cycle should be implemented when warranted. Opportunities to coordinate with other related capital projects should continue to be examined.

4.11 Solid Waste Management Report

Asset Component	Average Rating	Condition Estimate	Current Asset Valuation	Current Replacement Valuation	Average Annual Maintenance Budget
Closed Landfill	n/a	n/a	\$21,094	\$76,194	\$45,844
Leachate Collection System	6	Average	\$1,332	\$845,242	\$9,563
Compost Facility	6	Average	\$5,000	\$30,000	\$51,691
Total			\$27,426	\$951,436	\$107,098

- The City has a 10 year contract (2012-2022) for its solid waste & recycling collection and processing.

- The City owns one Leachate collection system which is generally in Average condition overall.
- The city owns and operates on compost facility which is generally in Average condition.
- The City owns one closed landfill.

Recommendations

It is recommended that the City continue to comply with its landfill closure agreement, maintain the leachate collection system, and continue to operate its compost facility.

5.0 DESIRED LEVELS OF SERVICE

5.1 Levels of Service - General

Levels of Service (LOS) are fundamental to asset management and can cover a number of parameters. Levels of Service parameters may include safety, customer satisfaction, quality, quantity, capacity, efficiency, sustainability, reliability, responsiveness and environmental compliance and acceptability. Some of these parameters have a greater influence than others on strategic objectives and have a greater correlation to costs.

The choice of a particular level of service can be influenced by affordability as well as community needs and desires. With reference to the City's Community Strategic Plan, levels of service are a reflection of guiding principles, vision, core values, strategic initiatives, outcomes and corporate and community goals. These levels of service have been established based on the direction provided by municipal administration and Council, the needs and wants of the community as well as legislative and regulatory requirements.



There is almost always a financial burden associated with levels of service which need to be balanced against the benefit provided. In many instances, levels of service are also dictated by the user's willingness to pay. The exception to this rule would be a regulatory requirement that legally obligates the community to provide a certain minimum level of service (e.g. specific minimum water and wastewater treatment standards).

5.2 What Is the Status Quo?

The goal of an asset manager should be to move away from reactive and “worst first” planning and move towards maintenance of assets in a “state of good repair”. This is the most long term economical way to maintain or provide higher levels of service.

Discussing, communicating, consulting and defining LOS can be a rigorous and exhaustive process depending on the municipality’s desire to record and measure this information. LOS is directly linked to customer expectations and willingness and/or ability to pay. These specific relationships have not been analyzed in depth as part of this AMP, but could be further evaluated through additional study, if deemed beneficial.



In the interim, the City has chosen a practical holistic approach to defining LOS. What are the current “status quo” service levels being delivered by the City? In the Strategic Plan and the Drinking Water Quality Management Standard (DWQMS), some of these service commitments include:

- Making Brockville a better place to live, work and play and to enjoy an exceptional quality of life;
- Providing amenities that are second to none;
- Conducting business in a way that is both environmentally friendly and financially sustainable;
- Fiscal sustainability in all aspects of City operations and fiscal security for current and future citizens based on financial controls, capital plans and processes that ensure accountability;
- Amenity and sustainability focal points with corresponding strategic initiatives, projects and performance measurement (e.g., parks, recreation, water and wastewater treatment);
- Meeting or exceeding the applicable Provincial standards for water and wastewater performance under current legislation;
- Ensuring that water, wastewater and storm water systems adequately service residents, visitors, and businesses and meet basic needs in a reliable, efficient, affordable and equitable manner;
- Ensuring that the City of Brockville remains “current” in program and service delivery.

5.3 Cost of Service

Cost of Service is the annual expenditure required to continue to provide the service at the current level. Cost of service is an accumulation of all elements of the asset life cycle, including operations, maintenance, depreciation and overhead. Costs of current services are well understood by the City and reviewed on an annual basis.

Costs associated with municipal service delivery are increasing due to inflation, legislative requirements and public expectations. Trends clearly indicate that historic and traditional methods of funding municipal infrastructure are inadequate. As infrastructure costs increase in the future, it is essential that the public not only be consulted, but also be educated and ultimately make choices with respect to the service levels that they wish to pay for.

When the City makes decisions about improving or adding new levels of service, they should carefully consider the long-term viability of providing a service at that level. If the City adds services or provides a service at a higher level, the costs to provide the service increases and so does the price that the City will have to charge its ratepayers. Careful and informed consideration for the ratepayers and public's ability to pay for upgraded service levels needs to be examined before decisions are made.

Generally, service levels are highly influenced by public expectations, which should be realistic and ultimately tied to a level of service and a cost. These relationships are illustrated below in Figure 5.1.

Figure 5.1 – Level of Service



5.4 Risk Assessment and Levels of Service

It is important to identify and monitor the costs required to deliver a specific level of service. In some instances, the financial resources needed to meet expected levels of service may not be available. Even small shortfalls in funding may represent large dollar amounts over the long term. Risk tolerance is community/municipality dependent and needs to be understood when decisions on Levels of Service are made. Finances or the lack of funding may require a compromise that could affect or defer improvements or maintenance on certain services. Reducing a specific level of service is a legitimate but often overlooked solution to an identified funding shortfall or imbalance; however, reducing a service level may also introduce increased risk such as safety, quality of life, health and increased future asset rehabilitation costs. It is essential that the inherent risks associated with decreasing levels of service or deferring maintenance be fully



understood by Council, municipal staff and the public. The City must be aware of this exposure to risk and determine its level of comfort and willingness to accept that risk.

5.5 Performance Measurement and Monitoring

Regularly measuring and evaluating an asset's performance is a key to strategic asset management. The *performance* of an asset is the ability to provide the required level of service to customers. An asset can be considered to have "failed" when it no longer achieves the required level of service or when it is no longer providing the most cost-effective means of providing that service (i.e., it is more cost-effective to replace than to continue to maintain).

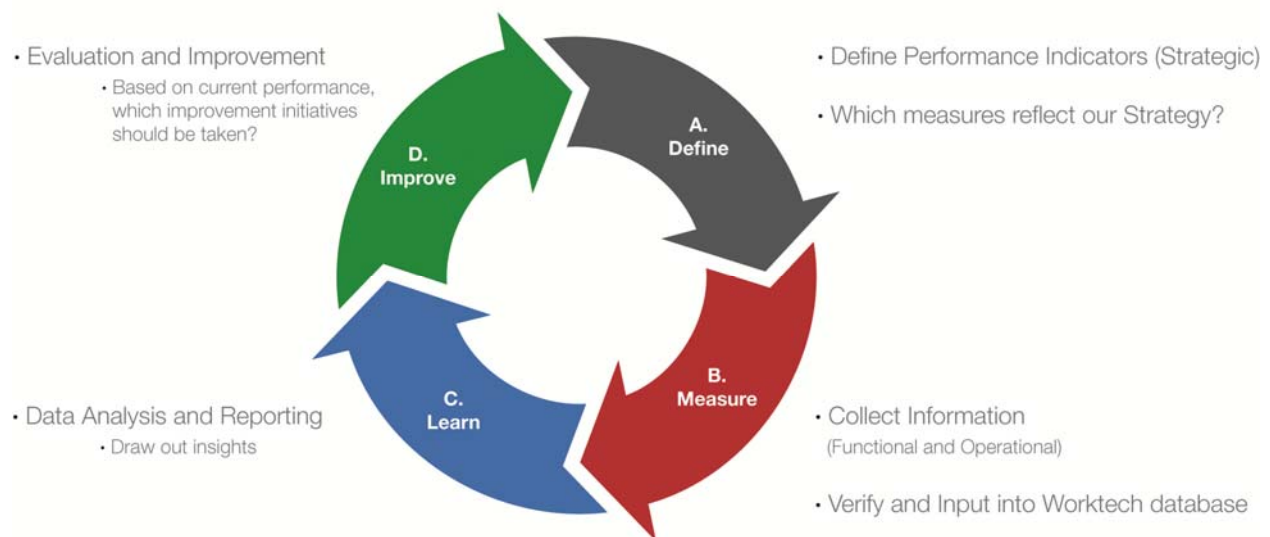
Performance of the City's assets should be monitored regularly and adjustments made at the appropriate stage in their asset life cycle to achieve an acceptable balance between cost, LOS (i.e., performance) and risk. A performance measurement program should include agreed upon performance indicators and a commitment to measure, compare and report on the results of a monitoring program. Performance indicators commonly relate to technical and non-technical measurements, including safety, responsiveness, cost, comfort, condition, reliability, availability, efficiency, capacity, environmental protection and customer satisfaction.

Best Practices by the National Guide to Sustainable Municipal Infrastructure (InfraGuide) identify three types of indicators that should be developed as part of an effective performance measurement and monitoring program. They include:

Strategic Indicators are the highest and most abstract type of indicators. They are set and reviewed by the highest level of municipal decision-makers. Examples include a measurement of a municipality's quality of life or meeting an annual infrastructure budget.

Functional Indicators result from analyzing different but related operational indicators to obtain an overview of an asset's condition. A functional indicator provides managerial-level municipal decision makers (e.g., City Engineer, Public Works Manager) with an overview of an infrastructure asset's condition, state or value (i.e., Roads operational indicators, such as number and types of cracks, smoothness, etc., are combined to produce an overall Pavement Condition index (PCI)).

Operational Indicators are generally raw data collected about an infrastructure asset by work crews while performing their duties or as part of an asset inventory process. Operational indicators are often expressed by municipalities as survey results or scorecards. Some indicators can also be a dollar value, expressed as the cost of an individual asset repair. (e.g., CCTV inspections of sewers, number of breaks per kilometer of water pipeline, average time to repair the break, etc.).

Figure 5.2 – Asset Performance Measurement and Monitoring

Monitoring asset performance involves data collection to establish a baseline monitoring assessment against which future monitoring results can be evaluated. Typical performance questions to be considered when preparing a monitoring process are:

- What service levels have been set for the asset type?
- What technical performance indicators will be used to manage asset performance?
- Is the asset performing and meeting user requirements?
- What limitations (if any) exist with regard to safety, capacity, and the regulatory and environmental requirements?
- What is the ranking of its condition assessment?
- What is the asset's current capacity compared with service demands?

To be certain, the City of Brockville monitors and tracks asset performance indicators. This includes information on:

- The types of asset failures ✓
- The number of breaks (watermains, sanitary and storm sewer pipes) ✓
- The number of customers affected ✓
- The number of customer complaints ✓
- The duration of the service interruption ✓

- The response time by municipal staff ✓
- The severity of the asset failure ✓

Based on the indicator definitions and examples noted above, the City is clearly participating in an ad hoc performance measurement and monitoring program. Further examples of performance indicators include reporting related to provincial regulations and legislation for both the Water and Sewage Treatment Plants. The Condition Rating System described in Section 4.2.1 of this AMP, is also an indication of an asset's overall performance.

An analysis of trends in performance indicators over several years will allow the City to determine whether its asset performance is improving, maintaining the status quo or decreasing. Perhaps the most important overall consideration for performance measurement is keeping good records and reporting.

5.6 External Trends

Aside from existing funding issues, the City is facing new pressures and an increased complexity of decision-making as a result of various trends over the last decade or more. In some instances, the City is bound to provide levels of service which are beyond its control. For example, the City is legally obligated to meet a certain minimum level of service with respect to the WTP, distribution system and associated works based on provincial legislation and regulatory requirements. Some of these external trends are:



- Concern for aging populations and ease of access to services;
- Concern for aging infrastructure;
- Delegation of responsibility for several services formerly managed by provincial authorities to municipalities, while funding support has not increased in proportion to infrastructure needs;
- Increased public awareness of Public Health and Safety issues; with specific emphasis on potable water and emergency services;
- Concern for the natural environment; and
- Concern for climate change – mitigation measures and adaptation needs.

These trends reinforce the importance of asset management best practices, strategic planning, annual user fee reviews and the building of reserve funds. One of these best practices should include the exploration of all available avenues with respect to alternative funding mechanisms. Other potential infrastructure funding sources for the City might include:

- Special Levies;
- Development Fees/Charges;
- Utility Models;
- Private or Corporate Sponsorship;
- Local Government Service Partnerships;
- Funding Partnerships;
- Community Based Volunteer Fundraising; and
- Strategic Budget Allocations.

6.0 ASSET MANAGEMENT STRATEGY

6.1 Background

The City's Asset Management Plan is a comprehensive process that is modeled after best practices, not the least of which is the National Guide to Sustainable Municipal Infrastructure. The City's chosen asset management planning framework highlights a top down (strategic) approach, and a bottom up (operational) approach to effectively manage assets over the short, medium and long term. The graphic below depicts the key elements of the City's Asset Management Strategy.



6.2 Asset Management Planning Framework

Strategic Planning

Council adopted the following statements as part of the Strategic Community Plan process in 2009:

Vision Statement

“Mayor and Council are committed to making Brockville a better place to live, work and play and to enjoy an exceptional quality of life. Brockville is committed to families, to an economy that offers opportunities to grow and prosper, to providing amenities that are second to none and conducting our business in a way that is both environmentally and financially sustainable. We encourage the guidance and assistance of our citizens to make this happen.”

Mission Statement

“The City will apply resources, effort and focus on the areas that will move the City towards our vision, keeping in mind our underlying strategic initiatives and the balance needed between competing goals. We will utilize professional management and systems to be leaders in the municipal field. We will promote community and environmental sustainability within a framework of fiscal responsibility and a commitment to customer service.”

The City of Brockville Official Plan articulates the desired goals and guidelines for development within the City. It provides the essential tools to enhance future growth and change in the City and to create the community envisioned by Brockville’s residents. It also ensures that the planning framework and tools are in place to make certain that the City of Brockville remains a healthy, vibrant and sustainable community with a strong economy, and quality of services and amenities. Other important planning documents such as the approved Downtown and Waterfront Master Plan and Urban Design Strategy (DWMPUDS), describe Brockville’s priorities and identify strategies to implement them.

Asset Management Policy

An asset management policy articulates a Council’s commitment to sustainable stewardship of assets and provides a clear statement to guide staff in carrying out the Municipality’s business strategies, plans and activities. An Asset Management Policy is considered a best practice for asset management. Information gathered, reviewed and incorporated has greatly assisted Council and staff in the development of a straightforward Asset Management Policy for the City of Brockville. It is as follows:

Asset Management Policy Statements

Asset management is a broad strategic framework that encompasses many disciplines and involves the entire organization. The term asset management, as used in this document, is defined as "the application of sound technical, social and economic principles that



considers present and future needs of users, and the service from the asset". To guide the organization, the following policy statements have been developed:

1. Management will maintain and manage infrastructure assets at defined levels to support public safety, community well-being and community goals;
2. Management will monitor standards and service levels to ensure that they meet/support community and Council goals and objectives;
3. Management will develop and maintain asset inventories of all its infrastructure;
4. Management will establish infrastructure replacement strategies through the use of full life cycle costing principles;
5. Management will plan financially for the appropriate level of maintenance of assets to deliver service levels and extend the useful life of assets;
6. Council will plan for and provide stable long term funding to replace and/or renew and/or decommission infrastructure assets;
7. Where appropriate, Council will consider and incorporate asset management in its other corporate plans;
8. Management will report to citizens regularly on the status of performance of work related to the implementation of this asset management policy.

A copy of the City of Brockville Asset Management Policy Statements has been included in this document as Appendix "A".

Medium Range Financial Plans

A critical component of this AMP is the analysis of funding needs for asset renewal over a ten year period. This "medium term" Ten (10) Year Capital Plan has been developed for water, wastewater, stormwater, roads, bridges and culverts, facilities, fleet, parks & recreation and solid waste. To fully understand the funding requirements for asset renewal over a ten year horizon, it is important to review the following information found in Appendix "B" and "C" and in Section 7.0 – Financing Strategy:

- City of Brockville Ten (10) Year Capital Plan;
- Capital Replacement Funding for 2013 – 2015;
- Capital Replacement and Maintenance Funding Sources Ten Year Summary;
- Average Maintenance Costs 2013 – 2015;
- Average Annual Maintenance Costs between 2013 and 2015;
- Maintenance Funding Sources 2013 – 2015;
- Ten Year Maintenance Funding Sources;
- 2013 – 2015 Debt Repayment – Principal and Interest;
- Debt Repayment as a Percentage of the Tax Levy or User Fees.

The information contained in Section 7.0 – Financing Strategy, of this AMP, will provide Council and staff with the background necessary to adopt effective strategies for sustainable funding for asset renewal.

Asset Management Plan - Updating

The research and development of this AMP has resulted in the creation of significant new derived asset information. This new data will allow the City to improve its asset management practices and “fine tune” its short, medium and long-range infrastructure renewal models for each asset class.

Actual timing and costs of renewal can vary due to many factors. Some of these factors include; early failure of an asset, current condition assessment information that may indicate that an asset can provide service beyond the initial useful life estimate, inflation and other considerations. It is intended that the AMP be reviewed and updated on a regular basis to incorporate condition assessment data, financial budget numbers and actual maintenance, rehabilitation and/or renewal costs from the previous year. This “constant improvement” approach will allow the City to develop more precise timing and costs of ongoing and projected infrastructure renewal.

Knowledge Management

Knowledge management is perhaps one of the most important non-infrastructure solutions which the City should embrace in order to improve integrated infrastructure planning. The City’s asset information is maintained in a variety of ways including:

- Worktech Asset and Service Management System;
- VADIM Financial System;
- Departmental Maintained Databases and Documents;
- Consultant Reports; and
- Knowledgeable Staff.

All Environmental Services and Operations data should be stored in a centralized Worktech database and updated on a regular basis by key municipal staff. A structured data maintenance and updating protocol for Worktech is essential in order to eliminate duplicate information and ensure that this data is complete, accurate and up-to-date. The City is also considering an enterprise wide GIS, based on the County of Leeds and Grenville GIS model. A centralized infrastructure database will be a key component of a City GIS. A timeline to implement this important project is currently under review.

Succession planning is a process which should be ongoing at the City given that staff members will eventually retire and/or could leave under unforeseen circumstances. . Their ongoing knowledge needs to be captured and transferred into Worktech or other maintenance management software; especially with respect to existing buried infrastructure.

6.3 Planned Actions

The City has adopted a proactive strategic approach to planned operations and management of its assets so that they fully comprehend budgetary implications for delivery of these essential services. The detailed Ten (10) Year Capital Plan is a clear example of this “planned action” approach to asset management. The plan includes:



- Mandated and Committed Projects;
- Health, Safety and Environmental Projects;
- Strategic Projects;
- Services;
- Waterfront Development;
- Managed Replacement Funds;
- Asphalt, Roads and Sidewalk Reconstruction;
- Minor Capital Projects;
- Other Projects and Financial Considerations.

This information is reviewed and updated annually to reflect:

- Inflation;
- Projects completed;
- Collected condition assessment data;
- Revised priority items based on collected condition assessment data;
- Planned activities;
- New unplanned activities; and
- Wish items.

At this time, there are no significant planned actions related to Disposal Activities – i.e. the activities associated with disposing of an asset once it has reached the end of its useful life. Materials such as concrete, asphalt and other components are recycled where feasible. In particular, all of the asphalt millings related to road repair are re-used at other locations in the City.

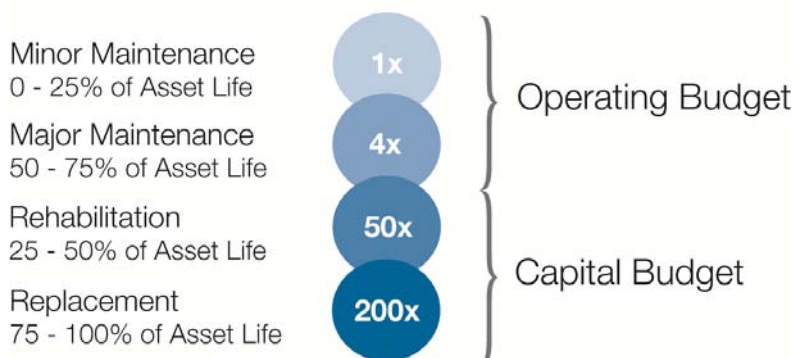
6.4 Maintenance Activities

An excerpt from the 2005 City of Hamilton State of the Infrastructure Report (SOTI) states that *“most municipal infrastructure has four major steps in its life cycle:*

- *In the first quarter of its life, the asset requires only Minor Maintenance;*
- *In the second quarter of its life, the asset requires Major Maintenance;*
- *In the third quarter of its life, the asset typically requires Renewal/Rehabilitation;*
- *In the final quarter of its life, the asset ultimately requires Replacement.*

Whether it is shorter life assets (i.e., electrical, instrumentation, mechanical components) or longer life assets such as buried pipes, this approach is acceptable for desktop financial planning purposes.”

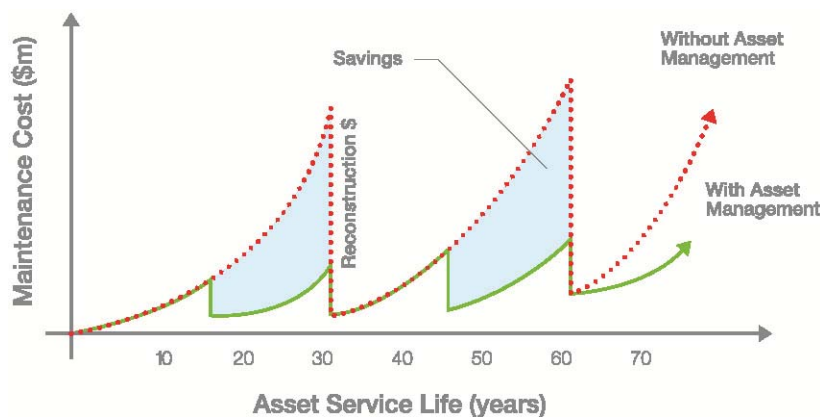
Figure 6.1 shows maintenance, rehabilitation or replacement activities and related ratios which are typically part of an operating and capital budget.

Figure 6.1 – Operating/Capital Budget

“Asset deterioration is dynamic, and the number of different maintenance interventions on an annual basis will vary significantly over time and is not typically a straight line projection.”

Figure 6.1 suggests that relative costs will rise exponentially as an asset ages, in terms of the 1:4:50:200 ratios shown. *“Therefore, for every dollar spent on minor maintenance, \$4 will be spent on major maintenance, \$50 on renewal/rehabilitation and \$200 on reconstruction. These ratios can vary significantly depending on the asset, proposed rehabilitation technology and the impact to its overall useful life.”*

The City has considered this type of projection as a desktop budgeting exercise; however, future maintenance and condition assessment data will be required to develop greater financial projection accuracy over time.

Figure 6.2 – Asset Management Extends Service Life and Reduces Maintenance Costs

The City follows a very detailed water systems weekly operational and maintenance schedule as part of the Drinking Water Quality Management System (DWQMS) for the WTP. This documentation is significant with approximately 450-500 annual preventative maintenance tasks performed on all components of the WTP and its three pumping/booster stations. The following is a brief summary of other preventative maintenance and condition assessment activities which are performed annually by the Environmental Services and Operations Departments.

Water Distribution System	Storm Sewer Collection System
Valve Inspection/Exercise Program	Catch basin vacuum and cleanouts (3,000/Year)
Hydrant Inspections	Flushing and cleaning of storm sewers (8.5 km/Year)
Flushing Program/Fire Flow testing	
Leak Detection Program	
Hydrant Re-build Program – 85/Year	Roads
Backflow Inspection Program	Reference O. Reg. 239/02 Min. Maintenance Standards
	Reference O. Reg. 23/10
	Visual inspections on an annual basis
Wastewater System	Rout and seal
Cleaning of 12 Remote Pumping Stations	
Cleaning of Main Pumping Station	Bridges and Major Culverts
Pigging of the Leachate Forcemains (4" & 6")	Reference O. Reg. 239/02 Min. Maintenance Standards
Pump Down, Clean and Inspect 4 Primary Clarifiers and 3 Secondary Clarifiers	Detailed OSIM Bridge Inspections every 2 years
Pump Down, Clean and Inspect 3 Aeration Tanks	Visual maintenance inspection conducted bi-annually
Mainline Cleaning – 20 km/Year	Power washing, concrete and steel spot repairs
System Repairs: 6-10 Areas Annually and Replace Laterals	Clearing of debris/vegetation in waterway and from approach guiderail
Inflow and Infiltration: CCTV Inspections of Sanitary Sewers	Asphalt surface repairs/rout and seal
Flushing and Cleaning of Sanitary Sewers	Re-grading of approach roadways

6.5 Options/Risk Analysis and Renewal Planning

Risk assessment and analysis is embedded throughout the City's asset management process; however, it is important to understand and identify assets which are more critical to the continuity of service and operations than others. The City has completed a high level qualitative analysis of significant potential risk analysis events. This information has been developed based on interviews with City staff, review of historical inspection and maintenance records, emergency procedures in place and existing infrastructure management strategies and reports. City Risk Analysis Events which have scored the highest (> 20 out of a possible 125 points) include:

- Forcemain/Watermain Break;
- Sanitary Sewer Break;
- Sanitary Sewer Forcemain Break;
- Storm Sewer Main Break; and
- Spill/Discharge of Contaminant into Sewer.

Please reference Appendix "D", – City of Brockville Risk Analysis Matrix and Risk Analysis Rating System.

Combined with the risk analysis completed, the following abstract format breakdown is an overview of the interconnection between the renewal planning and options/risk analysis process for strategic asset management. The asset management strategy described is similar to most municipalities but has been tailored to the City of Brockville. Opportunities to save resources by coordinating solutions to multiple problems must also be explored. As a whole, this information

is critical to the decision-making process when planning for repair, renewal/rehabilitation or replacement of infrastructure assets and building reserve funds.

Water System

ASSET	COMMUNAL WATER TREATMENT AND DISTRIBUTION SYSTEM
Inventory	1 Water Treatment Plant (WTP), 1 Elevated Storage Tank, 1 underground reservoir, 3 pump/booster stations, 8.1 km of water transmission mains, 119 km of water distribution pipes, 875 hydrants, 2,690 valves, 7,456 service connections and 8,429 meters.
Ideal Service Life	Life cycles can vary from 15 -95 years. The WTP is estimated to have a 75 year ideal service life assuming periodic upgrades and preventative maintenance. Water storage reservoirs are also estimated at 75 years. Water transmission mains have a service life of approximately 75 years depending on material and soil conditions. Water distribution pipes have a service life of approximately 95 years depending on material and soil conditions. Pump/Booster stations have an estimated service life of 75 years. Hydrants also have a life cycle of approximately 75 years. Water meters are estimated to have a life cycle of 20 years. These life cycles assume regular maintenance is performed throughout the course of the asset's life.
Integrated	May be integrated with road resurfacing, road construction work and other utilities such as wastewater, hydro, telephone and cable. May also be a standalone replacement/repair. WTP works are typically standalone in nature; however, opportunities to consolidate/coordinate plant upgrade projects should be explored to achieve cost savings.
Rehabilitation and Replacement Criteria	Preliminary assessment criteria for prioritizing rehab/replacement is history of breaks, age of pipe, pipe material, size of pipe, soil conditions, impaired water quality, reduced hydraulic capacity, hydrant spacing and high leakage rates. These symptoms may require a more detailed investigation. The City's Worktech database should be populated with condition assessment data, history of breaks, etc., as it is collected so that it may be used as an analysis and decision support tool for establishing priorities and reviewing areas of concern. A road rehab project may bump up the rehab/replacement of a pipe segment(s) if replacement is scheduled in the near future. Studying history of breaks and failure trends can determine when maintenance costs are increasing at a rate such that rehab/replacement makes the most sense economically. WTP upgrade projects are generally dictated by provincial regulations/reporting and aging infrastructure.
Rehabilitation and Replacement Strategies	Watermain rehab/replacement is based on current condition; however, watermain are buried and it can be difficult and cost prohibitive to complete detailed investigations (even using new and emerging technologies). For this reason, rehab/replacement strategies rely mainly on break history, age, size, material and hydraulic requirements. There are numerous methods for rehabilitation of watermain, including replacement, cleaning and relining, Cured-In-Place-Pipe (CIPP), horizontal drilling and pipe bursting. Cathodic Protection can help to prolong life expectancy of the pipe. There are limitations to each of these technologies. Consideration for the project appropriate technology is assumed.
Life Cycle Consequences/Risk Assessment	Pipe failure is typically catastrophic occurring at undetermined and unexpected times. Some pipe materials with a theoretical 70-100 year life cycle may require replacement much sooner (30+ years), whereas some of these pipes can simply be maintained or rehabilitated to gain many additional years of service life. WTP failures have far reaching consequences including quality, quantity, operational and risk to Public health.

Integrated Asset Priorities	A deteriorated watermain is either rehabilitated or replaced based on a number of factors associated with priorities, cost and risk – City's willingness to accept various risk factors in prioritizing asset management is a reality. Some problem areas may be less of a risk and disruption of service is tolerable. Replacement is a higher priority where fire protection, water quality and disrupted service can result in water loss and collateral damage. Other utilities such as wastewater, hydro, telephone and cable may be integrated into the work plan. Road rehab projects may assist in accelerating the project priority.
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Wastewater System

ASSET	WASTEWATER SYSTEM
Inventory	1 Wastewater Treatment Plant (WWTP), 1 Main Pumping Station, 11 Remote Pumping Stations, 11 km of wastewater trunks, 100 km of sanitary sewer collection pipes, 1,796 sanitary manholes and 5,575 sanitary service connections.
Ideal Service Life	Life cycles can vary from 50-90 years. The WWTP is estimated to have a 75 year ideal service life assuming periodic upgrades and preventative maintenance. The Main Pumping Station has an estimated service life of 75 years. The Remote Sewage Pumping Stations have an estimated service life of 50 years. Wastewater trunks have a service life of approximately 75 years depending on material and soil conditions. Sanitary sewer collection pipes have a service life of approximately 90 years depending on material and soil conditions. Sanitary manhole life cycles are estimated at 90 years. These ideal service life cycles assume regular maintenance is provided throughout the course of the asset's life.
Integrated	May be integrated with road resurfacing, road construction work and other utilities such as wastewater, hydro, telephone and cable. May also be a standalone replacement/repair. WWTP works are typically standalone in nature; however, opportunities to consolidate/coordinate plant upgrade projects should be explored to achieve cost savings.
Rehabilitation and Replacement Criteria	Criterion for prioritizing a rehab/replacement/renewal schedule for sanitary sewers is based on a condition assessment through a CCTV inspection. The camera work and associated standardized rating system (typically WRC) will allow staff/consultants to rate the condition of the infrastructure. Other factors affecting the criteria will include localized collapses, material type, upsizing requirements, new development as well as coordination with the roads replacement and improvement program. Additional condition evaluation programs may include flow monitoring, and Inflow & Infiltration (I&I) source identification. The City's Worktech database should be populated with condition assessment data as it is collected so that it may be used as an analysis and decision support tool for establishing priorities and reviewing areas of concern. WWTP upgrade projects are generally dictated by provincial regulations/reporting and aging infrastructure.
Rehabilitation and Replacement Strategies	Sanitary sewer rehab/replacement will be based on the condition rating of the infrastructure. In most cases, once the pipe has been inspected and assigned a condition rating, staff can determine the best method for rehabilitation. Replacement will be the most common method for collapsed or heavily deteriorated pipe. Other methods include re-lining, Cured-In-Place-Pipe (CIPP), spot repairs and joint sealing. Trenchless technologies should be explored as valid pipe rehabilitation alternatives as opposed to traditional open cut methods
Life Cycle Consequences/Risk	Structural deterioration can result in infiltration of groundwater into the sewer that results in a loss of pipe bedding which promotes further deterioration. It can also

Assessment	result in the accumulation of debris and sediment at sag points in the sewer, calcite build-up at the cracks and joints which promotes root migration into the sewer. These factors lessen the amount of wastewater that can flow unimpeded and can further deteriorate the sewer resulting in potential basement flooding. Groundwater infiltration can also add additional volume of sewage to be treated at the WWTP which results in extra cost. Preventative maintenance (e.g., flushing and CCTV) and rehabilitation is key to maximizing the piped networks life cycle. These programs are currently budgeted for. WWTP failures may have significant consequences including environmental and Public health risks.
Integrated Asset Priorities	A deteriorated sanitary sewer is replaced or rehabilitated based on the condition. Timing and coordination of associated works such as curb, gutter, sidewalks, road trench cuts or pavement should be evaluated if sewer replacement or rehabilitation is planned to maximize "economies of scale". Other utilities such as telephone, hydro and cable may be integrated into the work plan as well. Road rehabilitation projects may help dictate project priority.

Stormwater System

ASSET	DRAINAGE AND STORM SEWER COLLECTION SYSTEM
Inventory	103 km of storm sewers, 1 stormwater retention pond and 4,020 stormwater structures (manholes and catch basins).
Ideal Service Life	Life cycles can vary from 75-90 years.
Integrated	May be integrated with road resurfacing, sanitary and watermain replacement, road reconstruction and other utilities such as hydro, telephone and cable. It may also be a standalone replacement.
Rehabilitation and Replacement Criteria	The criteria for prioritizing the replacement schedule for storm sewers are based on a condition assessment through a CCTV inspection. The camera work and associated standardized rating system (typically WRc) will allow staff/consultants to rate the condition of the infrastructure. Other factors affecting the criteria will include localized collapses, surcharging records, flooding records, material type, upsizing requirements as well as coordination with a roads improvement program.
Rehabilitation and Replacement Strategies	Storm sewer rehabilitation will be based on the condition rating of the infrastructure. In most cases, once pipes have been inspected and assigned a condition rating, staff/consultants can determine the best rehabilitation method. Replacement will be the most common method for collapsed or heavily deteriorated pipes. Other methods include re-lining, Cured-In-Place-Pipe (CIPP), spot repairs and joint sealing. Trenchless technologies should be explored as valid pipe rehabilitation alternatives as opposed to traditional open cut methods.
Life Cycle Consequences/Risk Assessment	Storm sewers will deteriorate in much the same manner as sanitary sewers although consequences of failure for storm sewers are not usually as significant as those of sanitary sewers. Structural deterioration can result in infiltration of groundwater into the sewer which results in a loss of pipe bedding which promotes further deterioration. It can also result in the accumulation of debris and sediment at sag points in the sewer, calcite build-up at the cracks and joints which promotes root migration into the sewer. These factors lessen the amount of wastewater that can flow unimpeded, thereby promoting additional build-up in the pipe. Preventative maintenance (e.g., flushing and CCTV) and rehabilitation are key to maximizing the piped networks life cycle. These programs are currently budgeted for as part of this AMP.

Integrated Asset Priorities	A deteriorated storm sewer and associated manholes and catch basins are replaced or rehabilitated depending on the condition. Timing and coordination of associated works such as curb, gutter, sidewalks, road trench cuts or pavement should be evaluated if sewer replacement or rehabilitation is planned to maximize "economies of scale". Other utilities such as telephone, hydro and cable may be integrated into the work plan as well. Road rehabilitation projects may help dictate project priority.
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Roads

ASSET	ROADS
Inventory	29 km of Arterial roads, 23 km of Collector roads and 67 km of Local roads, 110km of sidewalk. 28 Traffic Lights & controllers, 547 poles & arms, 2,168 arms (hydro poles), 2,715 luminaries
Ideal Service Life	Pavement life of a newly constructed road is affected by design, traffic volumes and loads, construction quality and climate but generally the end of its useful life is as follows: Arterial Roads – 15 years, Collector Roads – 25 years, Local Roads – 35 years. Luminaires 20 years, poles 25-40 years, Traffic Signals 10-20 years
Integrated	May be integrated with other buried assets located in the utility corridor, such as hydro, natural gas, cable, telephone, water, sanitary sewers and storm sewers. May also affect street lighting, traffic signals and sidewalks.
Rehabilitation and Replacement Criteria	Pavement Condition Index (PCI) is a provincially recognized pavement condition rating between 0 and 100 which measures defects in pavement. The City has developed a similar internal PCI for its roads with a rating classification between 1 (Excellent) and 5 (Very Poor). PCI structural thresholds % for rehabilitation/reconstruction are as follows: between 0 and 20 – High, between 20 and 40 – Medium, between 40 and 60 – Low, between 60 and 80 – Low and between 80 and 100 – None. As of December 2013, the average PCI was 75 for Arterial roads, 69 for Collector roads and 68 for Local roads.
Rehabilitation and Replacement Strategies	Based on the PCI index, road classification (arterial, collector, local) and cost/benefit ratio, one of the following rehabilitation strategies is selected: Total reconstruction of pavement with 80mm to 120mm of hot mix asphalt. Mill and resurface pavement with 50mm to 75mm of hot mix asphalt. Pulverize and remix with 50mm to 75mm of hot mix asphalt. Mill and resurface patches of pavement with 50mm of hot mix asphalt. Routing and crack sealing pavements.
Life Cycle Consequences/Risk Assessment	Under funding pavement rehabilitation results in more pavement falling below a PCI value of 60 and results in escalating construction costs. Pavement falling below a PCI value of 20 affects levels of service and increases risk and liabilities for the City.
Integrated Asset Priorities	Pavement rehabilitation forecast is compared to underground utility forecasts. The integration of projects occurs internally within the Operations Department and externally with hydro, natural gas and telephone utilities. In general a pavement rehabilitation project drives the replacement of underground water and sewer infrastructure if the infrastructure is near the end of its life cycle.

Bridges and Culverts

ASSET	BRIDGES AND CULVERTS
Inventory	10 bridges and 12 large culverts (over a 3m span).
Ideal Service Life	Bridges consist of various components incorporating different construction practices and materials. As such, bridges and culverts can have varying assumed service lives. The life cycle can also be affected by traffic volumes and loads, climate and salt exposure. On average, City bridges and large culverts have an approximate Ideal Service Life of 75 years.
Integrated	May be integrated with road resurfacing or road widening projects, however generally not integrated with other City owned infrastructure.
Rehabilitation and Replacement Criteria	Criteria for prioritizing include level of service and traffic volumes, safety and to preserve infrastructure. Bi-annual visual inspections of bridges are completed and detailed bridge construction surveys are completed every 2 years. Bridge components are evaluated and tested providing severity and extent of deterioration and overall condition. An overall Bridge Condition Index is provided for each bridge. A value of 100 indicates that the bridge is in excellent condition and a value of zero indicates that the bridge is in extremely poor condition.
Rehabilitation and Replacement Strategies	Bridge rehabilitation or replacement is based on bridge component age and assumed life spans and the results of condition surveys: Asphalt deck resurfacing – approximately 20 years, joint replacement – approximately 35 years, patch concrete deck, waterproof and asphalt deck resurfacing - approximately 30 years.
Life Cycle Consequences/Risk Assessment	Bridge and major culvert cycles will be reduced, level of service is lowered and safety is compromised.
Integrated Asset Priorities	N/A

Facilities

ASSET	FACILITIES
Inventory	17 Facilities ranging in size from 500 sqft to > 50,000 sqft
Ideal Service Life	Service life can vary from 10 to 75 years. A hot water tank service life would be in the 10 year range, a roof in the 15 to 20 year range, HVAC in the 15 to 25 year range and a building structure in the 50 to 75 year range. Facilities consist of various components incorporating different construction practices and materials. As such, facilities can have varying assumed service lives. Ideal service life assumes adequate annual maintenance is being performed through the components service life.
Integrated	Individual components are reviewed, but projects should be combined to minimize the disruption of operations.
Rehabilitation and Replacement Criteria	Facility Condition Index (FCI) is a standard ratio recognized throughout North America. FCI is the Cost of Maintenance, Repair and Replacement Deficiencies of the Facility(s) / Current Replacement Value of the Facility(s)
Rehabilitation and Replacement Strategies	Facilities rehab/replacement will be based on a comprehensive asset condition report. In most cases, once the facility has been inspected and assigned a condition rating, staff can determine the best method for maintenance and rehabilitation.

Life Cycle Consequences/Risk Assessment	Under funding facility maintenance will lead to increased deterioration of facilities, health and safety issues, inefficient operation, higher operating costs, and accelerated depreciation.
Integrated Asset Priorities	N/A

Fleet

ASSET	FLEET
Inventory	City Rolling Stock - 106 Fire Rolling Stock - 11 Police Rolling Stock - 18 Police Marine - 2 Transit - 4
Ideal Service Life	Service life can vary based on the vehicle type. e.g. Police cruiser 3-5 years, Bus 6 years, Car or light truck 10 years, Fire Truck 10 to 20 years,
Integrated	With the developments in technology and the environmental guidelines.
Rehabilitation and Replacement Criteria	Analysis for vehicle/equipment replacement considers depreciation, maintenance time & costs.
Rehabilitation and Replacement Strategies	Review individual components usage and asset category as a whole.
Life Cycle Consequences/Risk Assessment	Maintenance time and costs will increase as will operations costs. Level of service is lowered and safety is compromised.
Integrated Asset Priorities	N/A

Parks and Recreation

ASSET	PARKS & RECREATION
Inventory	Pedestrian Bridges - 11 Brock Trail - 11km Skate Park - 1 Parks Equipment - 231 Athletic Fields Equipment - 51 Island Equipment - 166
Ideal Service Life	Service life varies depending on equipment type.
Integrated	Individual components are reviewed, but projects should be combined to minimize the disruption of operations.
Rehabilitation and Replacement Criteria	Analysis for vehicle/equipment replacement considers depreciation, maintenance time & costs.
Rehabilitation and Replacement Strategies	Review individual components usage and asset category as a whole.
Life Cycle Consequences/Risk Assessment	Maintenance time and costs will increase as will operations costs. Level of service is lowered and safety is compromised.
Integrated Asset Priorities	N/A

Solid Waste

ASSET	SOLID WASTE
Inventory	1 Closed Landfill, 1 Leachate Collection System, 1 Compost Facility
Ideal Service Life	Service life varies depending on equipment type.
Integrated	With wastewater collection system and environmental guidelines.
Rehabilitation and Replacement Criteria	N/A
Rehabilitation and Replacement Strategies	N/A
Life Cycle Consequences/Risk Assessment	Environmental concerns.
Integrated Asset Priorities	N/A

6.6 Procurement

“It is unwise to pay too much. But it is worse to pay too little. When you pay too little, you sometimes lose everything because the thing you bought was incapable of doing the thing you bought it to do.”

John Ruskin (1819-1900)

In January, 2005, the Council of the City of Brockville passed By-law No. 090-2005 (known as the Purchasing By-law) which is a by-law to provide the purchasing policies, practices, and procedures of goods and services by the City of Brockville. This by-law allows for the consideration of various delivery mechanisms and is reviewed periodically (refer to Appendix “E”).

The procurement of goods and services in the municipal sector is most often obtained through a public tendering process. The product or service is described in detail (e.g building construction with detailed engineering plans) in a Tender Document and sealed bids are invited. The lowest bid normally receives the contract. On a project specific basis, the City utilizes a number of procurement methods, including, but not limited to, Low Value Procurement, Oral Quotations, Written Quotations, Short Form Tender, Public Tender, Request for Proposal (RFP), Qualifications-based Selection (QBS), Request for Qualifications/Expression of Interest (RFQ), Non-Competitive Purchasing, Two-Envelope Method, Sole Sourcing, etc.



It is important that the City regularly evaluate consultant/contractor/supplier performance. A consultant's/contractor's/supplier's past performance is a good predictor of future performance and provides valuable insight into how they undertake their responsibilities, quality of workmanship and response to client needs.

7.0 FINANCING STRATEGY

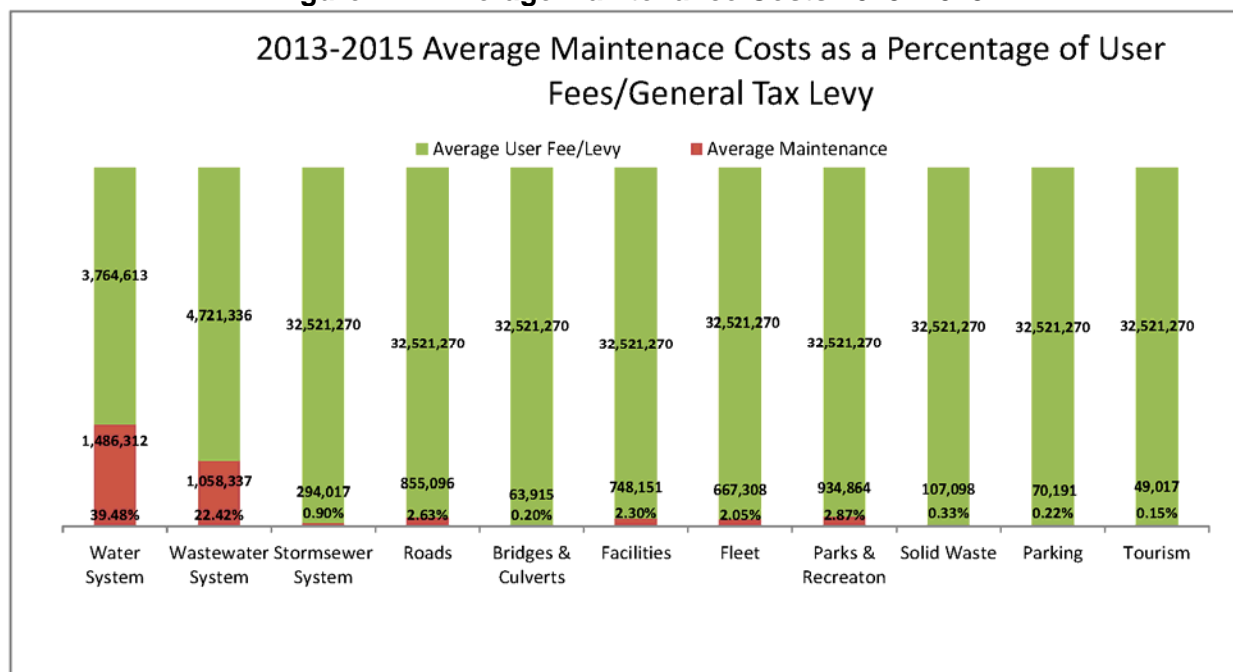
7.1 Background

The City of Brockville utilizes both a short term and medium term financial strategy through the yearly operating and capital budgets as well as the ten (10) year capital plan. The water and wastewater departments have initiated a thirty (30) year plan for long term planning. Each year the maintenance and capital replacement projects are prioritized and the financing is balanced between expected rate increases, reserve levels and the level of annual debt repayment. Maintenance is primarily financed directly through the user fees and general tax levy. Tables referenced in this section of the AMP can be found in Appendix “B” – Financial Strategy. This asset management plan is based on existing infrastructure and not expansion.

7.2 Yearly Maintenance

On an annual basis, Council gives direction on the level of increase which operational budgets may incur. Maintenance projects are assessed and prioritized to fit within Council guidelines. The average operating budget for maintenance as a percentage of user fees or the general tax levy, as applicable, is shown in Figure 7.1 below.

Figure 7.1 - Average Maintenance Costs 2013- 2015



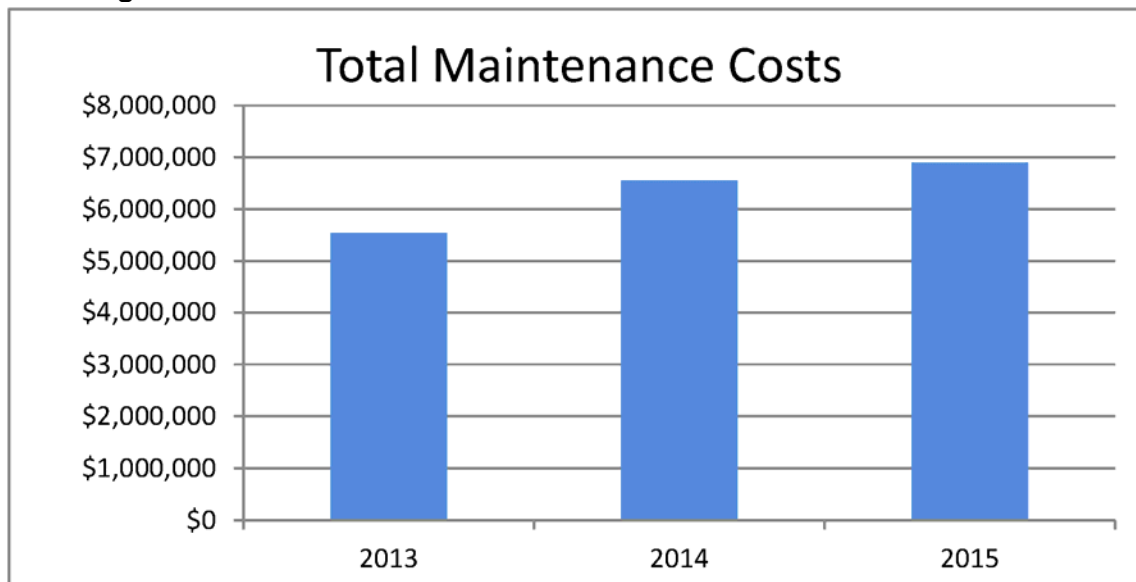
Between 2013 and 2015 maintenance expenses as a percentage for water were 39% of water user fees, while the average for wastewater was 23% of wastewater user fees. All other asset maintenance expenses combine for a total of approximately 12% (\$3,789,657) of the General Tax Levy (\$32,521,270).

Table 7.1 shows that the City spends approximately \$6.3 Million annually on maintenance of its major asset categories. This number is an average based on historical total maintenance costs incurred between 2013 and 2015 as shown in Figure 7.2.

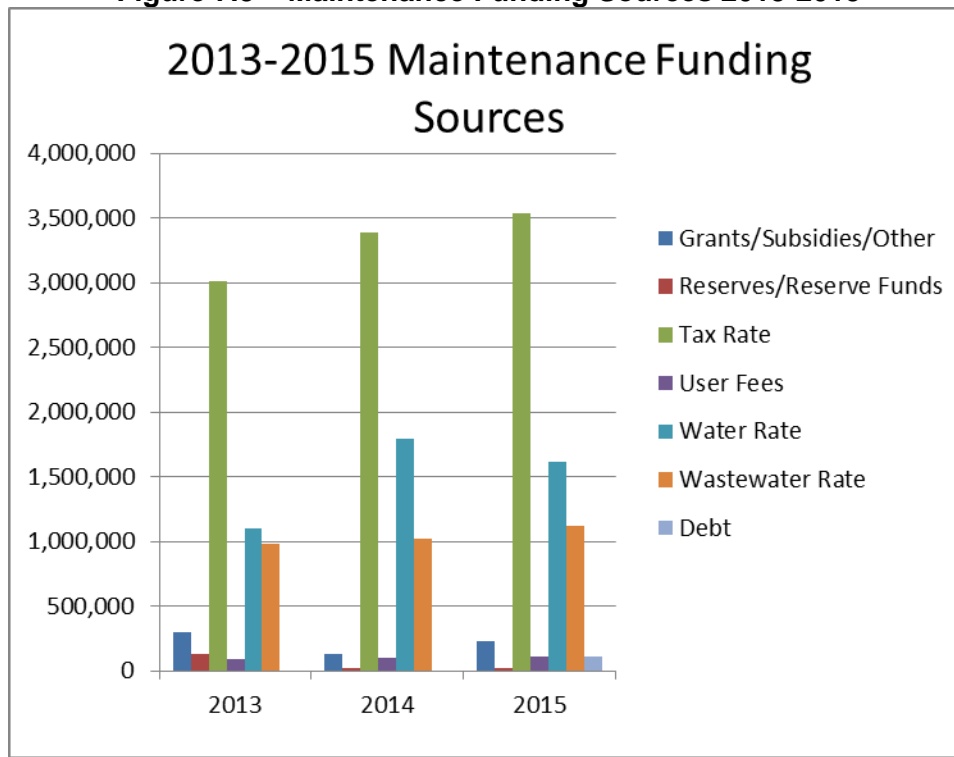
Table 7.1 – Average Annual Maintenance Costs

Asset Category	2013	2014	2015	Average Annual Maintenance Budget
Water System	\$1,079,322	\$1,696,940	\$1,682,672	\$1,486,312
Wastewater System	\$1,101,862	\$1,029,427	\$1,043,722	\$1,058,337
Stormwater System	\$251,613	\$306,245	\$324,193	\$294,017
Roads	\$869,266	\$877,843	\$818,178	\$855,096
Bridges and Culverts	\$33,522	\$119,989	\$38,234	\$63,915
Facilities	\$609,672	\$694,402	\$940,378	\$748,151
Fleet	\$559,689	\$755,998	\$686,238	\$667,308
Parks and Recreation	\$877,781	\$817,301	\$1,109,510	\$934,864
Solid Waste	\$75,919	\$170,088	\$75,287	\$107,098
Parking	\$81,728	\$60,825	\$68,020	\$70,191
Tourism	\$0	\$31,234	\$115,818	\$49,017
Total	\$5,540,374	\$6,560,293	\$6,902,250	\$6,334,306

Each year maintenance projects are prioritized based upon asset management information gathered by staff. Maintenance costs are divided between the general operating budgets for Water, Wastewater, the General Tax Levy and the Capital Program. Maintenance costs that are included in the operational budgets are usually the normal maintenance programs that occur regularly (i.e. annually). Maintenance costs that are provided for in the Capital Program are usually larger maintenance jobs that might occur once every 2 to 5 years and are higher in value. This is done to avoid large swings in the user fees and tax rates. These maintenance costs are originally budgeted in a Ten (10) year Capital Plan and are included within the maintenance costs outlined in this asset management plan. According to the Public Sector Accounting Board (PSAB), all maintenance costs are reported in operating expenses on the financial statements. Starting in 2017, the City will adjust the annual budgeting process of maintenance costs to show all expenses in Operations to better align the annual budget to the appropriate accounting standard. The maintenance items normally shown in the capital budget will be identified through the general ledger account structure.

Figure 7.2 – Total Maintenance Costs Incurred between 2013 and 2015

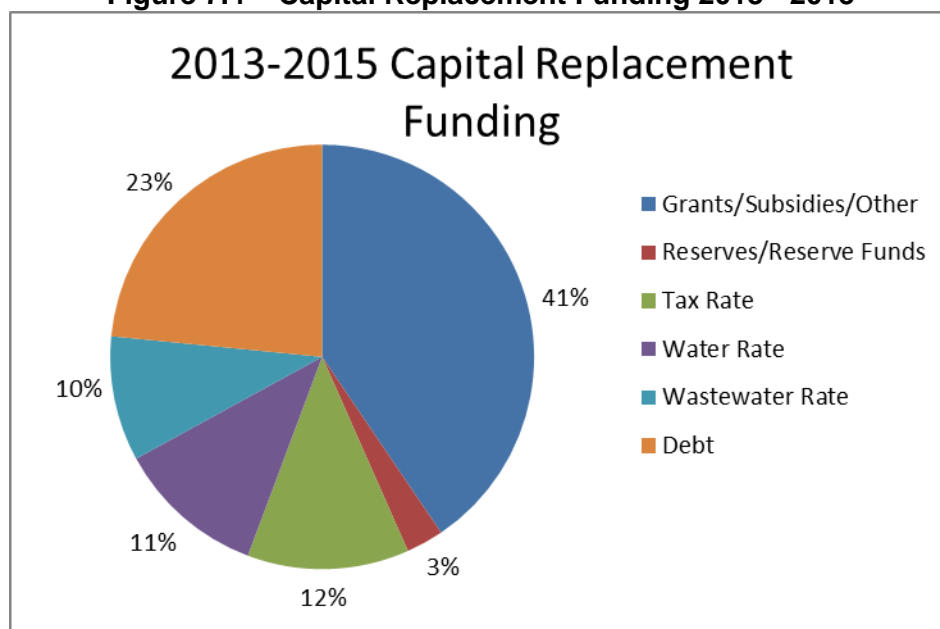
Maintenance funding sources for the same three year period are highlighted below in Figure 7.3. Figure 7.5 should be referenced in Appendix "B" for a detailed breakdown of Capital Replacement and Maintenance Funding Sources over the 2016-2025 (10 year) horizon.

Figure 7.3 – Maintenance Funding Sources 2013-2015

7.3 Capital Replacement

As shown in Appendix “B”, Capital Replacement for 2013-2015 totaled \$12,089,517. As shown on Figure 7.4 below, grants and subsidies made up 41% or \$4,898,647, debt made up 23% or \$2,834,733 and taxes & user fees made up 33% or \$4,012,050.

Figure 7.4 – Capital Replacement Funding 2013 - 2015



7.4 Ten (10) Year Capital Plan

The Ten (10) Year Capital Plan is reviewed each year and updated according to project priorities and the approved level of spending. The main focus of the Ten (10) Year Capital Plan is identifying and prioritizing capital replacement and large maintenance projects. Funding is only finalized one year at a time, except for approved multi-year projects. If a project spans more than one year, the funding is set in place at the start of the project. A comprehensive copy of the City of Brockville Ten (10) Year Capital Plan – Capital Projects can be found in Appendix “C”.

Funding of the Capital Plan through the general tax levy and water and wastewater rates is set each year according to the current year priorities and funding pressures. The City minimizes wide fluctuations in the general tax levy by controlling the level of cash contributions between the reserves and reserve funds for future projects and the level of cash contributions to fund the current year capital projects while at the same time taking into consideration the required debt payments for the year. Recently, the actual contributions to this financing plan decreased an overall average of 1%. Part of this decrease was due to the delayed timing of acquiring new debt.

Of the \$65.6 Million in funding shown in the Ten (10) Year Capital Plan (Appendix “B”), the schedule for capital replacement shows \$7.7 Million in total debt, \$18.8 Million from grants, \$16.4 million from the general tax levy, \$13.9 million from the water rates, \$5.8 million from wastewater rates and \$3.1 million from reserves. This is graphically represented in Figure 7.5.

Of the Federal and Provincial funding programs available only two are guaranteed permanently, the Ontario Gas Tax program for public transportation and the Federal Gas Tax program for local infrastructure projects. The Ontario Gas Tax for public transportation is a formula based funding calculated by the Ministry each year. The current allocation for the City is \$213,391.

The Federal Gas Tax program is part of the Building Canada Plan and is allocated on a per capita formula. The current allocation for Federal Gas Tax is \$1,329,835 and can be split between the general fund, water and wastewater. The Federal Gas Tax program can be used for:

- Public transit
- Wastewater infrastructure
- Drinking water
- Solid waste management
- Community energy systems
- Local roads and bridges
- Capacity building
- Highways
- Local and regional airports
- Short-line rail
- Short-sea shipping
- Disaster mitigation
- Broadband and connectivity
- Brownfield redevelopment
- Culture
- Tourism
- Sport
- Recreation

Maintenance funding sources over a ten year period are also shown in Appendix “B” and illustrated in Figure 7.6.

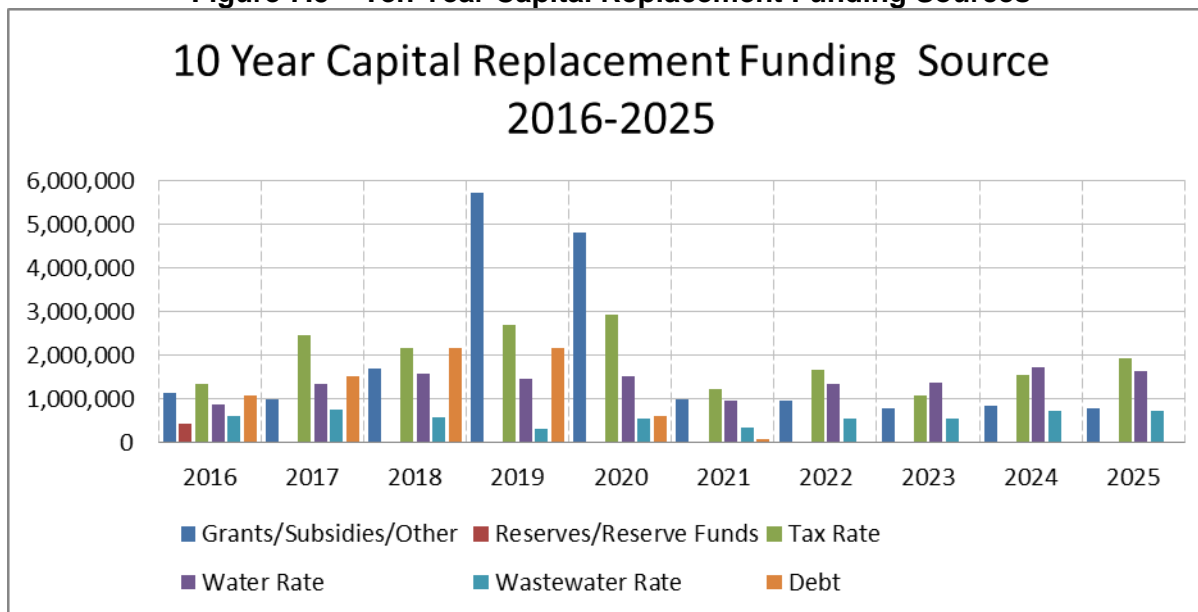
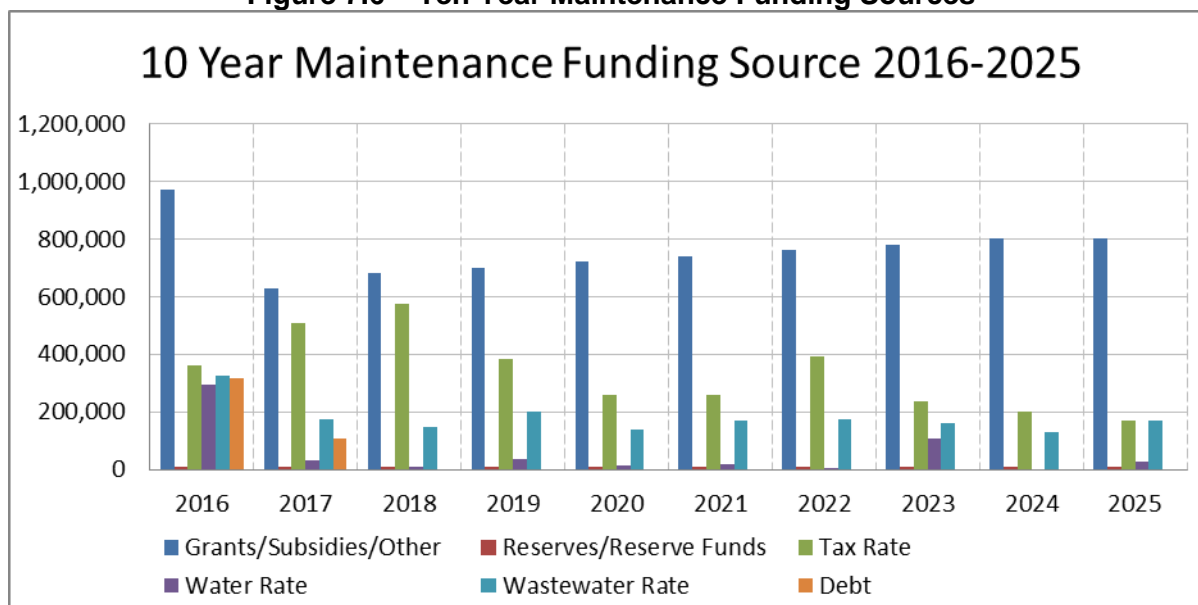
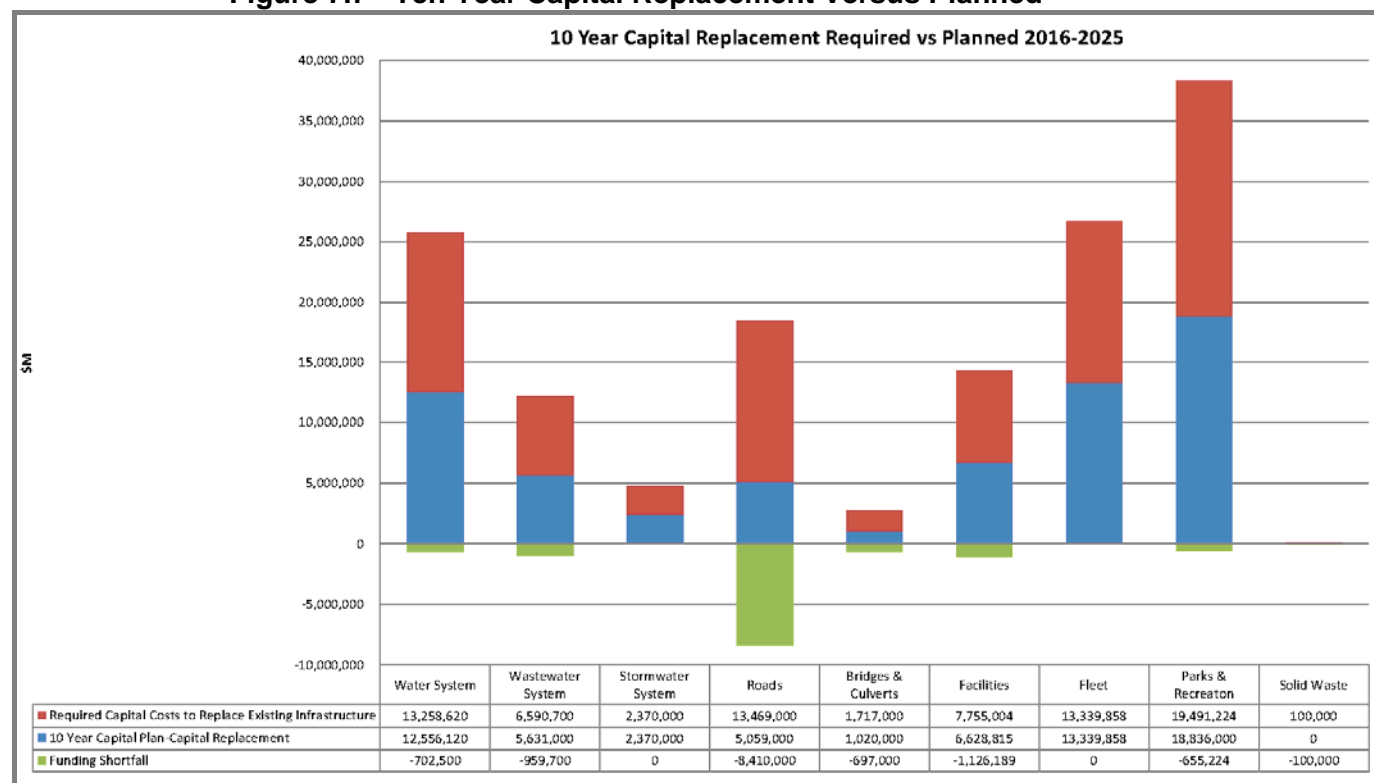
Figure 7.5 – Ten Year Capital Replacement Funding Sources**Figure 7.6 – Ten Year Maintenance Funding Sources**

Figure 7.7 shows a comparison of the Capital Replacement contained within the Ten (10) Year Capital Plan versus the actual dollars that would be required to replace the existing infrastructure, not taking growth into consideration. Replacement cost of the existing infrastructure and the estimated life span of the assets have been used to calculate an estimated annual amount that would be required to cover full replacement at the end of the assets life cycle. Total capital replacement funding contained within the Ten (10) Year Capital Plan for Water, Wastewater, Storm Sewer, Roads, Bridges, Facilities, Fleet, Recreation, and Solid Waste totals \$65 Million, while the required funding to replace the existing assets totals

\$78 Million. This difference represents a shortfall of \$13 Million over a ten year period. As shown on Figure 7.7, the largest shortfall is with the Roads infrastructure which totals \$8 Million over the span of the Ten (10) Year Capital Plan. The implications of this shortfall may mean higher maintenance costs and increased risk for system failure.

Figure 7.7 - Ten Year Capital Replacement Versus Planned



7.5 Reserves and Reserve Funds

Similar to most municipalities, reserve levels have dropped over the last few years, due mainly to matching requirements of large capital grants. As of the end of 2015 the level of reserves/reserve funds for Water was \$2.1 Million, the level of reserves for Wastewater was \$2.6 Million and the reserve level for the General Tax Levy was \$3.6 Million. The total Ten (10) Year Capital Plan of \$79.4 Million, (\$65.7 for Capital Replacement and \$13.8 for Maintenance) for all assets as presented in this AMP is putting pressure on user fees, the general tax levy, debt and grants for funding sources. It is recommended that the level of reserves be reviewed to aid in the replacement of the City's aging infrastructure and to level out funding requirements.

7.6 Debt

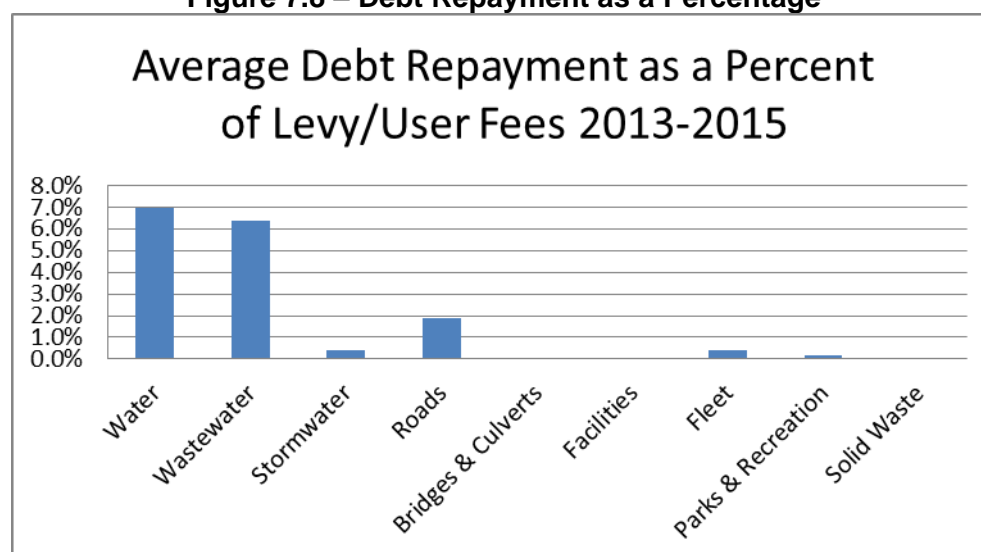
Debt levels are reviewed each year during the budget process and specifically in the funding requirements of approved capital projects. The City's current debt level is well below the Provincial Annual Repayment Limit (ARL). Actual debt repayment amounts for 2013-2015 are provided below in Table 7.2.

Table 7.2: 2013 – 2015 Debt Repayment – Principal and Interest

Asset Category	2013	2014	2015
Water System	\$291,096	\$290,997	\$197,631
Wastewater System	\$262,618	\$233,602	\$405,737
Stormwater System	\$147,388	\$146,858	\$72,711
Roads	\$762,807	\$750,305	\$334,018
Bridges and Culverts	\$0	\$0	\$0
Facilities	\$0	\$0	\$0
Fleet	\$136,892	\$135,243	\$97,223
Parks and Recreation	\$49,298	\$49,279	\$49,283
Solid Waste	\$32,293	\$31,664	\$0
Total	\$1,682,392	\$1,637,948	\$1,156,603

Figure 7.8 shows that, as a percentage of user fees, the debt repayment for the Water System is approximately 7%, and the debt repayment for the Wastewater System is approximately 6%. Debt repayment, as a percentage of the Tax Levy, for Stormwater is less than 1% and for Roads is approximately 2.0%. These percentages are well below the ARL limits for the City which is calculated at 25% of net revenues or \$12.8 million.

Figure 7.8 – Debt Repayment as a Percentage



8.0 SUMMARY OF RECOMMENDATIONS

The following is a summary of recommendations presented throughout this Asset Management Plan.

- This AMP is a “living” document and should be reviewed annually prior to the City's annual budgeting process in order that information presented, including financial data, is current and relevant. Updates of this AMP should be undertaken on a regular and as needed basis.
- The City should hold a Public Meeting to present and discuss this AMP including current and desired levels of service, strategic asset management and funding required.
- The City should post this AMP on its website for Public access.
- The City should be annually reviewing its history of watermain breaks and continuing to compile new records of watermain breaks and any operational problems. This data should be entered into the Worktech database so that it can be analyzed for break patterns. Break records should include the location, time of year, pipe size, pipe material, observed soil conditions and failure cause. Careful examination of these records will allow City staff to make informed decisions with respect to watermain renewal or replacement activities. Trenchless technologies for watermain rehabilitation may also be investigated as opposed to more expensive open cut watermain replacement. Opportunities to coordinate watermain rehabilitation with road reconstruction and other related capital projects should continue to be examined.
- To validate buried pipe conditions, the City should continue with its annual Closed Circuit Television (CCTV) condition assessment program of the sanitary and storm sewer system. This work program should be adjusted annually to target sewers with known operation issues and/or pipe materials which may be nearing the end of their Ideal Service Life. Maintenance holes should be included in this assignment as it proceeds. Collection of this data will allow staff to make informed decisions with respect to priority replacement or rehabilitation of sewers. History of breaks and interviews with Public Works staff to determine operational issues should also constitute a component of this exercise. This information should be entered into the WorkTech database so that it can be used more effectively as a decision support tool for capital planning. Break records should include the location, time of year, pipe size, pipe material, observed soil conditions and failure cause. Trenchless technologies for sewer rehabilitation may also be investigated as opposed to more expensive open cut watermain replacement. Opportunities to coordinate sewer rehabilitation with road reconstruction and other related capital projects should continue to be examined.
- A more detailed investigative condition assessment of the City's Facilities asset category should be undertaken along the same lines as the bridge evaluation work. This should be undertaken to obtain baseline information and to identify a more detailed and engineered/architectural based work plan for renewal, upgrade and eventual replacement.
- It is recommended that the City re-examine and update/document its current performance measurement program based on the contents of this AMP.

- It is recommended that a more structured Worktech updating process be developed by the City to include all City data. This Worktech updating process should occur on a quarterly basis as a minimum.
- It is recommended that the level of reserves be reviewed to aid in the replacement of the City's aging infrastructure and to "smooth out" funding requirements.
- It is recommended that the City be ready (i.e. undertake the necessary studies and environmental assessment work) to move forward with specific detailed project requirements in order to satisfy the terms and conditions of possible funding opportunities.
- As described in Section 7.4 of the Financing Strategy, the City appears to be underfunding its Ten Year Capital Replacement projects based on the funding shortfalls described. It is recommended that the projects contained within the Ten (10) Year Capital Plan be revisited based on this new information.

9.0 SOURCE OF MATERIAL STATEMENT

In preparing the City of Brockville Asset Management Plan, the following background information, publications, reports and best practice guides for asset management have been referenced:

- *Ontario Good Roads Association – A Guide for Road and Bridge Asset Management Plan Development, June 2011*
- *Canadian Infrastructure Report Card 2012*
- *International Infrastructure Management Manual - 2011 Edition*
- *Asset Management Centre 2011, FRAME – Fundamental Resources for Asset Management Excellence*
- *An Asset Management Governance Framework for Canada – February 2009 National Asset Management Working Group (NAMWG)*
- *Levels of Service Guidelines for Asset Management Planning, February 2012 – Tertiary Education Commission*
- *Defining and Developing Levels of Service – A Best Practice by the National Guide to Sustainable Municipal Infrastructure, April 2003*
- *Developing Indicators and Benchmarks – A Best Practice by the National Guide to Sustainable Municipal Infrastructure, December 2002*
- *Alternative Funding Mechanisms - A Best Practice by the National Guide to Sustainable Municipal Infrastructure, April 2003*
- *Deterioration and Inspection of Water Distribution Systems - A Best Practice by the National Guide to Sustainable Municipal Infrastructure, April 2003*
- *Selection of Technologies for the Rehabilitation or Replacement of Sections of a Water Distribution System - A Best Practice by the National Guide to Sustainable Municipal Infrastructure, March 2003*
- *Assessment and Evaluation of Storm and Wastewater Collection Systems - A Best Practice by the National Guide to Sustainable Municipal Infrastructure, July 2004*
- *City of Hamilton State of the Infrastructure (SOTI) Report 2005*
- *MFOA/OGRA Asset Management Webinar Series 2013*
- *Ontario Municipal Benchmarking Initiative – 2011 Performance Measurement Report*
- *City of Nanaimo Asset Management Plan 2010*
- *City of Nanaimo Asset Management Plan 2012 Update*
- *City of Ottawa Comprehensive Asset Management Plan – 2012 State of the Asset report*
- *City of Thunder Bay Transportation and Works Asset Management Plan Report 2005*

10.0 ACRONYMS

The following is a list of acronyms referenced in this Asset Management Plan.

AMP – Asset Management Plan
Guide – “Building Together: Guide for Municipal Asset Management Plans”
JLR – J.L. Richards & Associates Limited
GIS – Geographic Information System
MMS – Maintenance Management System
WTP – Water Treatment Plant
WPCC – Water Pollution Control Centre
P.V.C. – Polyvinyl Chloride
MOE – Ministry of the Environment
SOTI – State of the Infrastructure
PCI – Pavement Condition Index
CCTV – Closed Circuit Television
WRc – Water Research Centre
N/A – Either Not Available or Not Applicable
A.C. – Asbestos Concrete
TCA – Tangible Capital Assets
LOS – Levels of Service
DWQMS – Drinking Water Quality Management Standard
DWMPUDS - Downtown and Waterfront Master Plan and Urban Design Strategy
EPA – Environmental Protection Act
OWRA – Ontario Water Resources Act
ECA – Environmental Compliance Approval
WSER – Wastewater Systems Effluent Regulations
MOE – Ministry of the Environment
QBS – Qualifications-based Selection
RFQ – Request for Qualifications
RFP – Request for Proposals
ARL – Annual Repayment Limit

APPENDIX 'A'
City of Brockville Asset Management Policy Statements

APPENDIX 'B'

Financial Strategy

- **Capital Replacement and Maintenance Funding Sources 10 Year Summary**
- **Capital Replacement for 2010 – 2012**
- **10Year Capital Plan**

APPENDIX 'C'

City of Brockville Ten (10) Year Capital Plan – Capital Projects

APPENDIX 'D'

Risk Analysis

- **City of Brockville Risk Analysis Matrix**
- **Risk Analysis Rating System**

APPENDIX 'E'

Procurement

- **By-law No. 090-2005**

APPENDIX 'A'
City of Brockville Asset Management Policy Statements

CITY OF BROCKVILLE ASSET MANAGEMENT POLICY STATEMENTS

Asset management is a broad strategic framework that encompasses many disciplines and involves the entire organization. The term asset management, as used in this document, is defined as "the application of sound technical, social and economic principles that considers present and future needs of users, and the service from the asset". To guide the organization, the following policy statements have been developed:

- a) Management will maintain and manage infrastructure assets at defined levels to support public safety, community well-being and community goals.
- b) Management will monitor standards and service levels to ensure that they meet/support community and Council goals and objectives.
- c) Management will develop and maintain asset inventories of all its infrastructures.
- d) Management will establish infrastructure replacement strategies through the use of full life cycle costing principles.
- e) Management will plan financially for the appropriate level of maintenance of assets to deliver service levels and extend the useful life of assets.
- f) Council will plan for and provide stable long term funding to replace and/or renew and or decommission infrastructure assets.
- g) Where appropriate Council will consider and incorporate asset management in its other corporate plans.
- h) Management will report to citizens regularly on the status of performance of work related to the implementation of this asset management policy.

APPENDIX 'B'

Financial Strategy

- **Capital Replacement and Maintenance Funding Sources 10 Year Summary**
- **Capital Replacement for 2010 – 2012**
- **10Year Capital Plan**

10 Year Capital Replacement and Maintenance Funding Sources

CAPITAL REPLACEMENT

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	TOTAL
Grants/Subsidies/Other	\$1,156,200	\$1,002,000	\$1,701,000	\$5,713,000	\$4,811,000	\$984,000	\$977,000	\$790,000	\$843,000	\$798,000	\$18,775,200
Reserves/Reserve Funds	\$440,000	\$32,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$472,500
Tax Rate	\$1,342,154	\$2,476,832	\$2,177,913	\$2,685,213	\$2,937,134	\$1,244,017	\$1,659,673	\$1,076,587	\$1,561,868	\$1,934,500	\$19,095,891
Water Rate	\$865,679	\$1,349,164	\$1,594,610	\$1,464,829	\$1,536,384	\$957,951	\$1,350,900	\$1,374,007	\$1,742,403	\$1,632,806	\$13,868,733
Wastewater Rate	\$620,504	\$772,252	\$571,767	\$330,576	\$544,804	\$340,285	\$550,835	\$563,537	\$743,502	\$745,356	\$5,783,418
Debt	\$1,098,828	\$1,530,000	\$2,169,808	\$2,158,118	\$610,797	\$100,000	\$0	\$0	\$0	\$0	\$7,667,551
TOTAL	\$5,523,365	\$7,162,748	\$8,215,098	\$12,351,736	\$10,440,119	\$3,626,253	\$4,538,408	\$3,804,131	\$4,890,773	\$5,110,662	\$65,663,293

MAINTENANCE

Grants/Subsidies/Other	\$969,485	\$630,000	\$680,000	\$700,000	\$720,000	\$740,000	\$760,000	\$780,000	\$800,000	\$800,000	\$7,579,485
Reserves/Reserve Funds	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$100,000
Tax Rate	\$361,693	\$507,125	\$573,624	\$382,549	\$260,029	\$257,973	\$392,395	\$237,350	\$201,275	\$170,885	\$3,344,898
Water Rate	\$293,000	\$33,500	\$7,500	\$35,000	\$15,000	\$20,000	\$3,500	\$107,500	\$0	\$25,000	\$540,000
Wastewater Rate	\$327,000	\$174,500	\$147,500	\$202,500	\$137,000	\$170,000	\$175,000	\$158,700	\$127,500	\$168,500	\$1,788,200
Debt	\$318,016	\$108,514	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$426,530
TOTAL	\$2,279,194	\$1,463,639	\$1,418,624	\$1,330,049	\$1,142,029	\$1,197,973	\$1,340,895	\$1,293,550	\$1,138,775	\$1,174,385	\$13,779,113

Capital Replacement for 2013-2015

	Grants/Subsidies/ Other	Reserves	Tax Rate	Water Rate	Wastewater Rate	Debt	Developer Contributions	TOTAL
Water System	\$183,734	\$0	\$0	\$936,434	\$78,622	\$0	\$0	\$1,198,789
Wastewater System	\$263,243	\$0	\$0	\$0	\$1,021,755	\$627,772	\$0	\$1,912,770
Stormwater System	\$437,342	\$0	\$0	\$0	\$0	\$0	\$0	\$437,342
Roads	\$2,519,373	\$112,494	\$133,154	\$281,256	\$0	\$0	\$0	\$3,046,276
Bridges & Culverts	\$512,183	\$0	\$0	\$0	\$0	\$239,949	\$0	\$752,132
Facilities	\$70,375	\$82,488	\$486,610	\$0	\$0	\$625,000	\$0	\$1,264,472
Fleet	\$0	\$149,104	\$653,647	\$153,055	\$49,469	\$1,333,769	\$0	\$2,339,044
Parking	\$54,421	\$0	\$0	\$0	\$0	\$0	\$0	\$54,421
Parks & Recreation	\$551,120	\$0	\$218,050	\$0	\$0	\$0	\$0	\$769,170
Solid Waste	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Tourism	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Traffic Signals	\$223,844	\$0	\$0	\$0	\$0	\$0	\$0	\$223,844
Transit	\$83,013	\$0	\$0	\$0	\$0	\$8,243	\$0	\$91,255
TOTAL	\$4,898,647	\$344,085	\$1,491,461	\$1,370,744	\$1,149,845	\$2,834,733	\$0	\$12,089,516

10 Year Capital Plan

Capital Replacement	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	TOTAL
Water System	\$959,880	\$1,285,930	\$1,394,450	\$1,451,050	\$1,153,950	\$921,300	\$1,260,910	\$1,357,250	\$1,368,800	\$1,402,600	\$12,556,120
Wastewater System	\$910,000	\$755,000	\$545,000	\$315,000	\$529,000	\$402,000	\$415,000	\$545,000	\$656,000	\$559,000	\$5,631,000
Stormwater System	\$255,000	\$220,000	\$295,000	\$110,000	\$275,000	\$80,000	\$105,000	\$300,000	\$370,000	\$360,000	\$2,370,000
Roads	\$351,000	\$262,000	\$375,000	\$793,000	\$461,000	\$789,000	\$657,000	\$475,000	\$458,000	\$438,000	\$5,059,000
Bridges & Culverts	\$0	\$660,000	\$360,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,020,000
Facilities	\$346,255	\$1,144,999	\$3,207,981	\$716,250	\$282,578	\$247,001	\$227,001	\$375,749	\$33,001	\$48,000	\$6,628,815
Fleet	\$1,913,720	\$2,045,955	\$1,191,032	\$1,051,771	\$1,034,903	\$559,772	\$1,293,304	\$485,760	\$1,845,635	\$1,918,006	\$13,339,858
Parks & Recreation	\$672,510	\$681,364	\$846,635	\$7,914,665	\$6,703,688	\$627,180	\$580,193	\$265,372	\$159,337	\$385,056	\$18,836,000
Solid Waste	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Tourism	\$75,000	\$75,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$150,000
Parking	\$40,000	\$32,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$72,500
TOTAL	\$5,523,365	\$7,162,748	\$8,215,098	\$12,351,736	\$10,440,119	\$3,626,253	\$4,538,408	\$3,804,131	\$4,890,773	\$5,110,662	\$65,663,293

Maintenance	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	TOTAL
Water System	\$455,500	\$33,500	\$7,500	\$35,000	\$15,000	\$20,000	\$3,500	\$107,500	\$0	\$25,000	\$702,500
Wastewater System	\$327,000	\$174,500	\$147,500	\$202,500	\$137,000	\$170,000	\$175,000	\$158,700	\$127,500	\$168,500	\$1,788,200
Stormwater System	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Roads	\$690,000	\$780,000	\$800,000	\$820,000	\$840,000	\$860,000	\$880,000	\$900,000	\$920,000	\$920,000	\$8,410,000
Bridges & Culverts	\$500,000	\$20,000	\$37,000	\$20,000	\$0	\$20,000	\$80,000	\$20,000	\$0	\$0	\$697,000
Facilities	\$235,850	\$401,136	\$266,938	\$54,574	\$80,738	\$89,968	\$114,196	\$73,258	\$80,568	\$28,963	\$1,426,189
Fleet	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Parks & Recreation	\$60,844	\$44,503	\$149,686	\$187,975	\$59,291	\$28,005	\$78,199	\$24,092	\$707	\$21,922	\$655,224
Solid Waste	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$100,000
Parking	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Tourism	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL	\$2,279,194	\$1,463,639	\$1,418,624	\$1,330,049	\$1,142,029	\$1,197,973	\$1,340,895	\$1,293,550	\$1,138,775	\$1,174,385	\$13,779,113

APPENDIX 'C'

City of Brockville Ten (10) Year Capital Plan – Capital Projects

Costs and Revenues stated in 2015 dollars[illegible]

CAPITAL PROJECTS PROPOSED FOR 2016

Costs and Revenues stated in 2015 dollars

Projects	Gross cost of Project	Amount required this year	FUNDING OF PROJECTS						
			Federal Gas Tax	Reserve Funds / Reserves / Surplus'	Grants/ Subsidies/ Donations / Other	Water Fund	Wastewater Fund	Operating Fund	Debentures
6. Managed Replacement Funds:									
.1 Fleet Program									
Tax Rate portion	1,562,217	1,562,217						488,389	1,073,828
Water portion	25,799	25,799				25,799			0
Wastewater portion	110,504	110,504					110,504		0
Transit Portion	215,200	215,200	215,200						0
.2 WPCC Equipment program	384,500	384,500					384,500		0
.3 Computer Replacement Program	66,898	66,898						66,898	0
Water portion	6,616	6,616				6,616			0
Wastewater portion	4,888	4,888					4,888		0
.4 Corporate Computer System	217,075	217,075						217,075	0
.5 Parkland Equipment Program	331,554	331,554						331,554	0
.6 Building/Equipment Maintenance Program	482,105	482,105						482,105	0
.7 Parking Lot Improvements	40,000	40,000		40,000					0
.8 Water Equipment/Construction	720,380	720,380	120,000			600,380			0
Total Funded Reserve Funds:	4,167,737	4,167,737	335,200	40,000	0	632,795	499,892	1,586,021	1,073,828
7. Asphalt, Roads, Sidewalk Reconstruction:									
.1 Asphalt / Concrete Program	690,000	690,000	640,000					50,000	0
Total Asphalt, Roads, Sidewalk Reconstruction:	690,000	690,000	640,000	0	0	0	0	50,000	0
8. Minor Capital: (items below \$25,000)									
.1 Priority Minor Capital projects	34,500	34,500						34,500	0
Total Minor Capital:	34,500	34,500	0	0	0	0	0	34,500	0
9. Other Projects & Financial Considerations									
.1 Traffic Signal Controllers (2/year)	66,000	66,000	66,000						0
.2 Water/Wastewater Meter Replacement - Phase 5 of 7	1,340,000	325,000				162,500	162,500		0
.3 Victoria Building - Window Repair/Replacement - Phase 4 of 8	1,160,000	100,000						100,000	0
.4 Cemetery Drainage - Part 2	200,000	100,000						100,000	0
.5 Public Wi-Fi/ Harbour and Arenas	21,800	21,800						21,800	0
.6 Ange Gabriel/Kensington Community Safety Zone	30,000	30,000						30,000	0
Total Other Projects & Fin. Considerations:	2,817,800	642,800	66,000	0	0	162,500	162,500	251,800	0
Grand Total this year	22,844,037	10,056,037	1,515,685	1,450,000	610,000	1,165,295	952,392	2,188,320	2,174,344

Costs and Revenues stated in 2015 dollars[illegible]

CAPITAL PROJECTS PROPOSED FOR 2017

Costs and Revenues stated in 2015 dollars

Projects	Gross cost of Project	Amount required this year	FUNDING OF PROJECTS						
			Federal Gas Tax	Reserve Funds / Reserves / Surplus'	Grants/ Subsidies/ Donations / Other	Water Fund	Wastewater Fund	Operating Fund	Debentures
6. Managed Replacement Funds:									
.1 Fleet Program									
Tax Rate portion	1,752,099	1,752,099						1,752,099	0
Water portion	63,234	63,234				63,234			0
Wastewater portion	117,252	117,252					117,252		0
Transit Portion	113,370	113,370						113,370	0
.2 WPCC Equipment program	489,500	489,500					489,500		0
.3 Computer Replacement Program	170,600	170,600						170,600	0
Water portion	14,300	14,300				14,300			0
Wastewater portion	9,400	9,400					9,400		0
.4 Corporate Computer System	370,000	370,000						370,000	0
.5 Parkland Equipment Program	285,867	285,867						285,867	0
.6 Building/Equipment Maintenance Program	646,135	646,135						646,135	0
.7 Parking Lot Improvements	0	0							0
.8 Water Equipment/Construction	1,059,430	1,059,430		0		1,059,430			0
Total Funded Reserve Funds:	5,091,187	5,091,187	0	0	0	1,136,964	616,152	3,338,071	0
7. Asphalt, Roads, Sidewalk Reconstruction:									
.1 Asphalt / Concrete Program	780,000	780,000	630,000					41,486	108,514
Total Asphalt, Roads, Sidewalk Reconstruction:	780,000	780,000	630,000	0	0	0	0	41,486	108,514
8. Minor Capital: (items below \$25,000)									
.1 Priority Minor Capital projects	100,000	100,000						100,000	0
Total Minor Capital:	100,000	100,000	0	0	0	0	0	100,000	0
9. Other Projects & Financial Considerations									
.1 Traffic Signal Controllers (2/year)	67,000	67,000	67,000						0
.2 Memorial Centre - Ice Plant Replacement	800,000	800,000							800,000
.3 Victoria Building - Window Repair/Replacement-Phase 4 of 7	560,000	100,000							100,000
Total Other Projects & Fin. Considerations:	1,427,000	967,000	67,000	0	0	0	0	0	900,000
Grand Total this year	12,264,687	9,326,687	1,377,000	42,500	255,000	1,396,964	956,152	3,660,557	1,638,514

Costs and Revenues stated in 2015 dollars

FUNDING OF PROJECTS

CAPITAL PROJECTS PROPOSED FOR 2018

Costs and Revenues stated in 2015 dollars

Projects	Gross cost of Project	Amount required this year	FUNDING OF PROJECTS						
			Federal Gas Tax	Reserve Funds / Reserves / Surplus'	Grants/ Subsidies/ Donations / Other	Water Fund	Wastewater Fund	Operating Fund	Debentures
6. Managed Replacement Funds:									
.1 Fleet Program									
Tax Rate portion	964,105	964,105						964,105	0
Water portion	200,160	200,160				200,160			0
Wastewater portion	26,767	26,767					26,767		0
Transit Portion	0	0							0
.2 WPCCE Equipment program	387,500	387,500					387,500		0
.3 Computer Replacement Program	141,500	141,500			10,200			131,300	0
Water portion	8,000	8,000				8,000			0
Wastewater portion	900	900					900		0
.4 Corporate Computer System	133,750	133,750						133,750	0
.5 Parkland Equipment Program	715,321	715,321						715,321	0
.6 Building/Equipment Maintenance Program	774,919	774,919						774,919	0
.7 Parking Lot Improvements	0	0							0
.8 Water Equipment/Construction	1,186,950	1,186,950	0	0		1,186,950			0
Total Funded Reserve Funds:	4,539,872	4,539,872	0	0	10,200	1,395,110	415,167	2,719,395	0
7. Asphalt, Roads, Sidewalk Reconstruction:									
.1 Asphalt / Concrete Program	800,000	800,000	680,000					120,000	0
Total Asphalt, Roads, Sidewalk Reconstruction:	800,000	800,000	680,000	0	0	0	0	120,000	0
8. Minor Capital: (items below \$25,000)									
.1 Priority Minor Capital projects	100,000	100,000			0			100,000	0
Total Minor Capital:	100,000	100,000	0	0	0	0	0	100,000	0
9. Other Projects & Financial Considerations									
.1 Traffic Signal Controllers (2/year)	70,000	70,000	70,000						0
.2 Victoria Building - Window Repair/Replacement - Phase 5 of 7	560,000	100,000							200,000
.3 Memorial Centre - South Side Expansion	1,000,000	1,000,000							1,000,000
Total Other Projects & Fin. Considerations:	1,630,000	1,170,000	70,000	0	0	0	0	0	1,200,000
Grand Total this year	26,217,872	9,917,872	1,232,000	10,000	1,159,200	1,610,110	720,167	3,116,587	1,969,808

Costs and Revenues stated in 2015 dollars

[illegible]

CAPITAL PROJECTS PROPOSED FOR 2019

Costs and Revenues stated in 2015 dollars

Projects	Gross cost of Project	Amount required this year	FUNDING OF PROJECTS						
			Federal Gas Tax	Reserve Funds / Reserves / Surplus'	Grants/ Subsidies/ Donations / Other	Water Fund	Wastewater Fund	Operating Fund	Debentures
6. Managed Replacement Funds:									
.1 Fleet Program									
Tax Rate portion	1,022,416	1,022,416						1,022,416	0
Water portion	13,779	13,779				13,779			0
Wastewater portion	15,576	15,576					15,576		0
Transit Portion	0	0							0
.2 WPCC Equipment program	397,500	397,500					397,500		0
.3 Computer Replacement Program	111,600	111,600						111,600	0
Water portion	2,200	2,200				2,200			0
Wastewater portion	8,800	8,800					8,800		0
.4 Corporate Computer System	560,000	560,000						560,000	0
.5 Parkland Equipment Program	422,640	422,640						422,640	0
.6 Building/Equipment Maintenance Program	220,824	220,824						220,824	0
.7 Parking Lot Improvements	0	0							0
.8 Water Equipment/Construction	1,151,050	1,151,050	0	0		1,151,050			0
Total Funded Reserve Funds:	3,926,385	3,926,385	0	0	0	1,167,029	421,876	2,337,480	0
7. Asphalt, Roads, Sidewalk Reconstruction:									
.1 Asphalt / Concrete Program	820,000	820,000	700,000					120,000	0
Total Asphalt, Roads, Sidewalk Reconstruction:	820,000	820,000	700,000	0	0	0	0	120,000	0
8. Minor Capital: (items below \$25,000)									
.1 Priority Minor Capital projects	100,000	100,000						100,000	0
Total Minor Capital:	100,000	100,000	0	0	0	0	0	100,000	0
9. Other Projects & Financial Considerations									
.1 Traffic Signal Controllers (2/year)	73,000	73,000	73,000						0
.2 Victoria Building- Window Repair/Replacement-Phase 6 of 7	560,000	100,000							200,000
.3 Memorial Centre - Generator - Back-up Power System	350,000	350,000							350,000
Total Other Projects & Fin. Considerations:	983,000	523,000	73,000	0	0	0	0	0	550,000
Grand Total this year	24,565,385	14,364,385	1,298,000	10,000	5,115,000	1,502,029	541,876	3,839,362	2,158,118

Costs and Revenues stated in 2015 dollars[illegible]

CAPITAL PROJECTS PROPOSED FOR 2020

Costs and Revenues stated in 2015 dollars

Projects	Gross cost of Project	Amount required this year	FUNDING OF PROJECTS						
			Federal Gas Tax	Reserve Funds / Reserves / Surplus'	Grants/ Subsidies/ Donations / Other	Water Fund	Wastewater Fund	Operating Fund	Debentures
6. Managed Replacement Funds:									
.1 Fleet Program									
Tax Rate portion	636,665	636,665						636,665	0
Water portion	382,434	382,434				382,434			0
Wastewater portion	15,804	15,804					15,804		0
Transit Portion	0	0							0
.2 WPCC Equipment program	381,000	381,000					381,000		0
.3 Computer Replacement Program	110,925	110,925						110,925	0
Water portion	12,500	12,500				12,500			0
Wastewater portion	9,400	9,400					9,400		0
.4 Corporate Computer System	269,000	269,000						269,000	0
.5 Parkland Equipment Program	552,979	552,979						552,979	0
.6 Building/Equipment Maintenance Program	163,316	163,316						163,316	0
.7 Parking Lot Improvements	0	0							0
.8 Water Equipment/Construction	768,950	768,950	0	0		768,950			0
Total Funded Reserve Funds:	3,302,973	3,302,973	0	0	0	1,163,884	406,204	1,732,885	0
7. Asphalt, Roads, Sidewalk Reconstruction:									
.1 Asphalt / Concrete Program	840,000	840,000	720,000					120,000	0
Total Asphalt, Roads, Sidewalk Reconstruction:	840,000	840,000	720,000	0	0	0	0	120,000	0
8. Minor Capital: (items below \$25,000)									
.1 Priority Minor Capital projects	100,000	100,000						100,000	0
Total Minor Capital:	100,000	100,000	0	0	0	0	0	100,000	0
9. Other Projects & Financial Considerations									
.1 Traffic Signal Controllers (2/year)	76,000	76,000	76,000						0
.2 Victoria Building- Window Repair/Replacement-Phase 7 of 7	560,000	100,000							200,000
									0
Total Other Projects & Fin. Considerations:	636,000	176,000	76,000	0	0	0	0	0	200,000
Grand Total this year	23,654,973	11,983,973	1,396,000	10,000	4,135,000	1,563,884	691,204	3,677,088	610,797

Costs and Revenues stated in 2015 dollars

[illegible]

CAPITAL PROJECTS PROPOSED FOR 2021

Costs and Revenues stated in 2015 dollars

Projects	Gross cost of Project	Amount required this year	FUNDING OF PROJECTS						
			Federal Gas Tax	Reserve Funds / Reserves / Surplus'	Grants/ Subsidies/ Donations / Other	Water Fund	Wastewater Fund	Operating Fund	Debentures
6. Managed Replacement Funds:									
.1 Fleet Program									
Tax Rate portion	361,839	361,839						361,839	0
Water portion	36,651	36,651				36,651			0
Wastewater portion	38,285	38,285					38,285		0
Transit Portion	122,997	122,997						122,997	0
.2 WPCC Equipment program	382,000	382,000					382,000		0
.3 Computer Replacement Program	120,300	120,300						120,300	0
Water portion	11,200	11,200				11,200			0
Wastewater portion	900	900					900		0
.4 Corporate Computer System	380,000	380,000						380,000	0
.5 Parkland Equipment Program	475,185	475,185						475,185	0
.6 Building/Equipment Maintenance Program	336,969	336,969						336,969	0
.7 Parking Lot Improvements	0	0							0
.8 Water Equipment/Construction	811,300	811,300	0	0		811,300			0
Total Funded Reserve Funds:	3,077,626	3,077,626	0	0	0	859,151	421,185	1,797,290	0
7. Asphalt, Roads, Sidewalk Reconstruction:									
.1 Asphalt / Concrete Program	860,000	860,000	740,000					120,000	0
Total Asphalt, Roads, Sidewalk Reconstruction:	860,000	860,000	740,000	0	0	0	0	120,000	0
8. Minor Capital: (items below \$25,000)									
.1 Priority Minor Capital projects	100,000	100,000						100,000	0
Total Minor Capital:	100,000	100,000	0	0	0	0	0	100,000	0
9. Other Projects & Financial Considerations									
.1 Traffic Signal Controllers (2/year)	79,000	79,000	79,000						0
Total Other Projects & Fin. Considerations:	79,000	79,000	79,000	0	0	0	0	0	0
Grand Total this year	7,677,626	5,436,626	1,609,000	10,000	115,000	989,151	511,185	2,102,290	100,000

Costs and Revenues stated in 2015 dollars

[illegible]

CAPITAL PROJECTS PROPOSED FOR 2022

Costs and Revenues stated in 2015 dollars

Projects	Gross cost of Project	Amount required this year	FUNDING OF PROJECTS						
			Federal Gas Tax	Reserve Funds / Reserves / Surplus'	Grants/ Subsidies/ Donations / Other	Water Fund	Wastewater Fund	Operating Fund	Debentures
6. Managed Replacement Funds:									
.1 Fleet Program									
Tax Rate portion	824,143	824,143						824,143	0
Water portion	89,990	89,990				89,990			0
Wastewater portion	135,835	135,835					135,835		0
Transit Portion	243,336	243,336						243,336	0
.2 WPCC Equipment program	375,000	375,000					375,000		0
.3 Computer Replacement Program	164,500	164,500			10,200			154,300	0
Water portion	2,200	2,200				2,200			0
Wastewater portion	7,300	7,300					7,300		0
.4 Corporate Computer System	239,000	239,000						239,000	0
.5 Parkland Equipment Program	328,392	328,392						328,392	0
.6 Building/Equipment Maintenance Program	341,197	341,197						341,197	0
.7 Parking Lot Improvements	0	0						0	0
.8 Water Equipment/Construction	1,144,410	1,144,410	0	0		1,144,410			0
Total Funded Reserve Funds:	3,895,303	3,895,303	0	0	10,200	1,236,600	518,135	2,130,368	0
7. Asphalt, Roads, Sidewalk Reconstruction:									
.1 Asphalt / Concrete Program	880,000	880,000	760,000					120,000	0
Total Asphalt, Roads, Sidewalk Reconstruction:	880,000	880,000	760,000	0	0	0	0	120,000	0
8. Minor Capital: (items below \$25,000)									
.1 Priority Minor Capital projects	100,000	100,000						100,000	0
Total Minor Capital:	100,000	100,000	0	0	0	0	0	100,000	0
9. Other Projects & Financial Considerations									
.1 Traffic Signal Controllers (2/year)	82,000	82,000	82,000					0	0
Total Other Projects & Fin. Considerations:	82,000	82,000	82,000	0	0	0	0	0	0
Grand Total this year	8,483,303	6,392,303	1,522,000	10,000	225,200	1,356,600	733,135	2,545,368	0

Costs and Revenues stated in 2015 dollars[illegible]

CAPITAL PROJECTS PROPOSED FOR 2023

Costs and Revenues stated in 2015 dollars

Projects	Gross cost of Project	Amount required this year	FUNDING OF PROJECTS						
			Federal Gas Tax	Reserve Funds / Reserves / Surplus'	Grants/ Subsidies/ Donations / Other	Water Fund	Wastewater Fund	Operating Fund	Debentures
6. Managed Replacement Funds:									
.1 Fleet Program									
Tax Rate portion	450,466	450,466						450,466	0
Water portion	16,757	16,757				16,757			0
Wastewater portion	18,537	18,537					18,537		0
Transit Portion	0	0						0	0
.2 WPCC Equipment program	388,700	388,700					388,700		0
.3 Computer Replacement Program	153,200	153,200						153,200	0
Water portion	2,200	2,200				2,200			0
Wastewater portion	7,300	7,300					7,300		0
.4 Corporate Computer System	0	0						0	0
.5 Parkland Equipment Program	259,464	259,464						259,464	0
.6 Building/Equipment Maintenance Program	449,007	449,007						449,007	0
.7 Parking Lot Improvements	0	0							0
.8 Water Equipment/Construction	1,064,750	1,064,750	0	0		1,064,750			0
Total Funded Reserve Funds:	2,810,381	2,810,381	0	0	0	1,083,707	414,537	1,312,137	0
7. Asphalt, Roads, Sidewalk Reconstruction:									
.1 Asphalt / Concrete Program	900,000	900,000	780,000					120,000	0
Total Asphalt, Roads, Sidewalk Reconstruction:	900,000	900,000	780,000	0	0	0	0	120,000	0
8. Minor Capital: (items below \$25,000)									
.1 Priority Minor Capital projects	100,000	100,000						100,000	0
Total Minor Capital:	100,000	100,000	0	0	0	0	0	100,000	0
9. Other Projects & Financial Considerations									
.1 Traffic Signal Controllers (2/year)	85,000	85,000	85,000					0	0
Total Other Projects & Fin. Considerations:	85,000	85,000	85,000	0	0	0	0	0	0
Grand Total this year	7,751,381	5,360,381	1,555,000	10,000	15,000	1,483,707	729,537	1,567,137	0

Costs and Revenues stated in 2015 dollars

[illegible]

CAPITAL PROJECTS PROPOSED FOR 2024

Costs and Revenues stated in 2015 dollars

Projects	Gross cost of Project	Amount required this year	FUNDING OF PROJECTS						
			Federal Gas Tax	Reserve Funds / Reserves / Surplus'	Grants / Donations / Other	Water Fund	Wastewater Fund	Operating Fund	Debentures
6. Managed Replacement Funds:									
.1 Fleet Program									
Tax Rate portion	1,242,038	1,242,038						1,242,038	0
Water portion	373,603	373,603				373,603			0
Wastewater portion	87,502	87,502					87,502		0
Transit Portion	142,492	142,492						142,492	0
.2 WPCC Equipment program	398,500	398,500					398,500		0
.3 Computer Replacement Program		0						0	0
Water portion		0				0			0
Wastewater portion		0					0		0
.4 Corporate Computer System		0						0	0
.5 Parkland Equipment Program	130,044	130,044						130,044	0
.6 Building/Equipment Maintenance Program	113,569	113,569						113,569	0
.7 Parking Lot Improvements	0	0							0
.8 Water Equipment/Construction	1,003,800	1,003,800				1,003,800			0
Total Funded Reserve Funds:	3,491,548	3,491,548	0	0	0	1,377,403	486,002	1,628,143	0
7. Asphalt, Roads, Sidewalk Reconstruction:									
.1 Asphalt / Concrete Program	920,000	920,000	800,000					120,000	0
Total Asphalt, Roads, Sidewalk Reconstruction:	920,000	920,000	800,000	0	0	0	0	120,000	0
8. Minor Capital: (items below \$25,000)									
.1 Priority Minor Capital projects	100,000	100,000						100,000	0
Total Minor Capital:	100,000	100,000	0	0	0	0	0	100,000	0
9. Other Projects & Financial Considerations									
.1 Traffic Signal Controllers (2/year)	88,000	88,000	88,000					0	0
						0	0		0
									0
									0
									0
Total Other Projects & Fin. Considerations:	88,000	88,000	88,000	0	0	0	0	0	0
Grand Total this year	11,470,548	6,129,548	1,628,000	10,000	15,000	1,742,403	871,002	1,863,143	0

Costs and Revenues stated in 2015 dollars

[illegible]

CAPITAL PROJECTS PROPOSED FOR 2025

Costs and Revenues stated in 2015 dollars

Projects	Gross cost of Project	Amount required this year	FUNDING OF PROJECTS						
			Federal Gas Tax	Reserve Funds / Reserves / Surplus'	Grants / Donations / Other	Water Fund	Wastewater Fund	Operating Fund	Debentures
6. Managed Replacement Funds:									
.1 Fleet Program									
Tax Rate portion	1,501,444	1,501,444						1,501,444	0
Water portion	230,206	230,206				230,206			0
Wastewater portion	186,356	186,356					186,356		0
Transit Portion	0	0							0
.2 WPCC Equipment program	352,500	352,500					352,500		0
.3 Computer Replacement Program		0						0	0
Water portion		0				0			0
Wastewater portion		0					0		0
.4 Corporate Computer System		0						0	0
.5 Parkland Equipment Program	406,978	406,978						406,978	0
.6 Building/Equipment Maintenance Program	76,963	76,963						76,963	0
.7 Parking Lot Improvements	0	0							0
.8 Water Equipment/Construction	1,032,600	1,032,600				1,032,600			0
Total Funded Reserve Funds:	3,787,047	3,787,047	0	0	0	1,262,806	538,856	1,985,385	0
7. Asphalt, Roads, Sidewalk Reconstruction:									
.1 Asphalt / Concrete Program	920,000	920,000	800,000					120,000	0
Total Asphalt, Roads, Sidewalk Reconstruction:	920,000	920,000	800,000	0	0	0	0	120,000	0
8. Minor Capital: (items below \$25,000)									
.1 Priority Minor Capital projects	100,000	100,000						100,000	0
Total Minor Capital:	100,000	100,000	0	0	0	0	0	100,000	0
9. Other Projects & Financial Considerations									
.1 Traffic Signal Controllers (2/year)	88,000	88,000	88,000					0	0
						0	0		0
									0
									0
									0
									0
Total Other Projects & Fin. Considerations:	88,000	88,000	88,000	0	0	0	0	0	0
Grand Total this year	6,385,047	6,385,047	1,598,000	10,000	0	1,657,806	913,856	2,205,385	0

APPENDIX 'D'

Risk Analysis

- **City of Brockville Risk Analysis Matrix**
- **Risk Analysis Rating System**

Risk Analysis Rating System

Likelihood is probability/likelihood of a risk event occurring.

Description	Likelihood of Risk Event Occurring	Rating
Rare	May occur in exceptional circumstances or has not occurred in the past.	1
Unlikely	Could occur at some time, historically has not occurred less than once every 5 years.	2
Possible	Has occurred or may occur once or more per year.	3
Likely	Has occurred or may occur on a monthly to quarterly basis.	4
Very Likely	One or more occurrences on a monthly or more frequent basis.	5

Consequence is the potential impact to service levels, health, quality of life or operations.

Description	Consequence of Risk Event Occurring	Rating
Insignificant	Little to no public impact and/or insignificant impact to normal operation/service levels.	1
Minor	Minor public impact and/or manageable operation/service level disruption.	2
Moderate	Moderate public impact and/or significant disruption to normal operations/service levels.	3
Major	Major public impact and/or systems significantly compromised and minimal operation/service levels.	4
Catastrophic	Major public impact, complete failure of system, no service levels provided.	5

Detectability is a measure of the ability to detect the presence of a system, component or asset failure.

Description	Detectability of Risk Event	Rating
Very Detectable	Easy to detect, obvious, almost instantaneous, instrumentation monitored or public complaint.	1
Moderately Detectable	Moderately detectable, alarm may be present, monitoring program in place, problem is noted by staff within 24 hours.	2
Normally Detectable	Normally detectable or identified through normal rounds or regular maintenance, monitoring program in place.	3
Poorly Detectable	Poorly detectable, not normally detected before problem becomes evident, requires specialized condition assessment or investigation required.	4
Undetectable	Cannot detect before problem becomes evident, specialized condition assessment or investigation required.	5

Risk Rating = Likelihood x Consequence x Detectability

City of Brockville Risk Analysis Matrix

Risk Analysis Event	Description of Risk Impact	Monitoring & Control Measures	Emergency/Contingency Plan	"A" Likelihood	"B" Consequence	"C" Detectability	Risk Priority Score (AxBxC)
WATER SYSTEM							
Water Quality Contamination (various scenarios)	Biological, chemical, operational, Public health	SCADA and routine manual monitoring, DWQMS Regulations in place	In place	2	3	2	12
Loss of power supply at WTP (entire system, generator failure)	Quantity/quality, operational	Visual inspection and alarm system (UPS on SCADA system)	In place	1	2	1	2
Feedermain/Watermain Break	Quality/quantity, operational, biological & chemical contamination, loss of pressure, domestic water interruption, potential fire protection impact	Community complaints, annual maintenance/inspection program in place	In place	5	3	3	45
Standpipe Failure	Quality/quantity, operational, fire protection interruption	Level alarms at standpipe, annual maintenance/inspection program in place	In place	2	4	1	8
Hydrant Failure	Operational, loss of domestic water pressure, potential fire protection impact	Community complaints, annual maintenance/inspection program in place	In place	3	3	1	9
Chemical Systems Failure or Spill	Biological & chemical contamination, operational, Public health	Weekly residual testing, daily monitoring, on-line analyzers	In place	1	1	2	2
Failure of intake pipe	Quantity/quality, operational, loss of domestic water pressure, potential fire protection interruption	Set up portable pumps to supply intake well, Operator and contractor visual inspection of low levels in intake well, Alarm levels of intake well on SCADA setpoint page	No procedure in place	1	5	1	5
Source Water Characteristic changes (i.e. oil spill, terrorist act, illegal dumping, etc.)	Biological & chemical contamination, operational, Public health	Alarm on SCADA, shutdown low lift station, MOECC Spills action, Source Water Protection Plan	In place	1	5	3	15
Blocked intake screens	Quantity/quality, operational, loss of domestic water pressure, potential fire protection interruption	Low level alarm on intake well, manual screens	In place	2	2	1	4
Structural/Electrical/Mechanical Failures	Quantity/quality, operational, loss of domestic water pressure, potential fire protection interruption	Alarm on SCADA, redundant back-up equipment, regular inspections	In place	2	4	1	8
Loss of flow/supply	Quantity/quality, operational, loss of domestic water pressure, potential fire protection interruption	Alarm of SCADA, Trunk main repair	In place	1	5	1	5
Chemical feed line/pump failure	Quantity/quality, operational	Coagulant chemical feed flow meter alarmed and trended through SCADA, redundant chemical feed lines, redundant pumps, increase maintenance and inspection	In place	3	5	3	45
Filter failure	Quantity/quality, operational	Turbidity on line analyzers alarmed and trended through SCADA, watertrax alert settings on turbidity data, restrictions on water use, regular assessments	In place	2	5	1	10
Lack of Chlorine supply	Quantity/quality	Low chlorine alarm through SCADA, adjust seasonally, redundant chlorination equipment and feed lines, backup UV for disinfection	In place	1	5	1	5
Structural issues	Operational, loss of domestic water pressure	SCADA alarms, visual inspection	In place	1	2	4	8
Pump failure	Quantity/quality, operational, loss of domestic water pressure, potential fire protection interruption	SCADA alarms, maintenance, replacement program	In place	2	3	1	6
Chemical application - overdosing	Chemical contamination, operational, Public health	Falcon security monitoring, redundancy for SCADA alarms	In place	2	5	1	10
Not able to operate or monitor water treatment or distribution process	Quantity/quality, operational	SCADA alarms, falcon security monitoring, operate plant 24/7, redundant SCADA computers	In place	3	2	1	6
Difficulty maintaining chlorine residual	Quantity/quality	SCADA alarms, redundant chlorination equipment	In place	1	4	1	4
Lack of Redundancy, lack of ability to clean and inspect, unknown valve condition	Quality/quantity, operational, biological & chemical contamination, loss of pressure, domestic water interruption, potential fire protection impact	SCADA alarms, capital planning, redundant feeder main, maintenance and replacement condition assessment, implement inspection program and redundancy	In place	3	5	4	60
Gate valve failure	Quantity/quality, operational, loss of domestic water pressure, potential fire protection interruption	SCADA alarms, preventative maintenance program	In place	1	5	1	5
Contamination	Quantity/quality	Public comments, capital reconstruction program, leak detection program	In place	3	4	5	60
Breach/lack of security, sabotage/vandalism	Quantity/quality, operational	Alarms and Security system, contingency plan, security inspections	In place	1	2	1	2

Emerging Contaminants	Quantity/quality	Sampling	In place	1	1	1	1
Sustained Extreme Weather	Quantity/quality, operational	Public comments, monitoring	Procedure Under Development	1	2	1	2
Algal blooms	Quantity/quality	MOECC communications, raw water monitoring	Procedure Under Development	1	2	1	2
WASTEWATER SYSTEM							
Pumping Station Failure	Potential for flooded basements, Public health, environmental	Liquid level alarms	In place	2	2	1	4
Power Disruption at STP	Potential for flooded basements, Public health, environmental	Standby power and alarming	In place	1	2	1	2
Sanitary Sewer Break	Potential for flooded basements, Public health, environmental	Visual observations	In place	3	3	4	36
Forcemain Break	Potential for flooded basements, Public health, environmental	Visual observations	In place	3	3	4	36
Failure/Collapse of Incoming Sewer Main	No flow or reduced flow into plant, Public health, environmental	Flow measurement at both the Main Pumping Station and Plant, Set-up portable pumping systems to by-pass damaged area	No procedure in place	1	4	2	8
Spill/Discharge of Contaminant into Sewer	Contamination of biological community in plant, contaminant discharge to St. Lawrence River, environmental	Colour/Odour detected by staff, notified by outside agencies, ability to isolate tanks if affected	No procedure in place	2	4	4	36
Screen Failure	Potential for damage to process equipment downstream, force shut down of key plant components, environmental	Alarmed and monitored by SCADA, manual rake of screens, by-pass channel to be installed in 2014	No procedure in place	3	3	1	9
Primary clarifier tank structural failure	Leaking into ground, environmental	Operational SCADA alarms would trigger, isolate affected tank	No procedure in place	1	2	4	8
STORM SYSTEM							
Storm Sewer Main Break	Surcharging sewers, potential for flooded basements	Visual observations, community complaints	In place	3	3	3	27
ROADS							
Road Surface Icing	Injury to drivers, passengers, vehicle and/or property damage	Road patrols, weather monitoring	In place	5	2	1	10
Road Surface Failure	Vehicle damage	Road patrols	In place	4	1	1	4
Loss of Power/Traffic Signals Malfunction	Injury to drivers, passengers, vehicle and/or property damage	Public complaint, road patrol	In place	4	2	1	8
Night Visibility of Regulatory Signage	Injury to drivers, passengers, vehicle and/or property damage	Scheduled life cycle replacement	In place	4	2	2	16
BRIDGES & CULVERTS							
Road Surface icing	Injury to drivers, passengers, vehicle and/or property damage	Road patrols, weather monitoring	In place	5	2	1	10
Water Blockage Due to Debris	Localized flooding	Road patrols	In place	3	1	1	3
Load Restriction Due to Poor Condition	Cost, inconvenience of longer travel routes	Bi-annual inspections	In place	3	1	3	9
Failure of Structure	Injury to drivers, passengers, vehicle and/or property damage	Bi-annual inspections	In place	1	5	3	15
FACILITIES							
Failure of Structure	Injury to occupants, interruption of business	Annual inspections	In place	1	5	2	10
Roof leak	Damage to business equipment, interruption of business	Annual inspections	In place	2	4	1	8
FLEET							
Failure of vehicle safety system	Injury to drivers, passengers, vehicle and/or property damage	Regular inspections	In place	2	4	1	8
Vehicle inoperable	Interruption of business	Regular inspections	In place	2	3	1	6
PARKS & RECREATION							
Failure of Structure	Injury to users	Regular inspections	In place	1	4	1	4

APPENDIX 'E'

Procurement

- **By-law No. 090-2005**

CORPORATION OF THE CITY OF BROCKVILLE

By-Law Number 090-2005 (as amended) CONSOLIDATED COPY

*A By-Law to provide the purchasing policies, practices, and procedures of goods and services by the City of Brockville known as the "Purchasing By-Law"
(as amended by By-law 032-2011)*

WHEREAS the *Municipal Act, 2001*, SO 2001.c. 25 Part VI, s. 271 states that before January 01, 2005, a municipality and local board shall adopt policies with respect to its purchasing of goods and services, including policies with respect to;

- (A) the types of purchasing processes that will be used;
- (B) the goals to be achieved by using each type of purchasing process;
- (C) the circumstances under which each type of purchasing process shall be used ;
- (D) the circumstances under which a tendering process is not required;
- (E) the circumstances under which in-house bids will be encouraged as part of a tendering process;
- (F) how the integrity of each purchase will be maintained;
- (G) how the interest of the municipality or local board, as the case may be, the public and persons participating in a purchasing process will be protected;
- (H) how and when the purchasing process will be reviewed to evaluate its effectiveness; and
- (I) any other prescribed matter.

WHEREAS the Council of the Corporation of the City of Brockville deems it expedient to support the local Canadian marketplace by buying local and/or Canadian when all factors have been considered and are deemed as being equal; and

NOW THEREFORE the Council of the Corporation of the City of Brockville enacts as follows:

1. In this by-law;

Definitions

- 1.1 **"Acquisition"** is the process for obtaining goods and/or services for use, whether on a permanent or on a temporary basis.
- 1.2 **"Agreement"** means a formal written legal agreement or contract for the supply of goods and/or services.
- 1.3 **"Approval"** is the specific authorization to proceed with the purchase or lease of specific goods and/or services.
- 1.4 **"Bid"** means an offer or submission from a supplier in response to a bid

solicitation which may be in the form of an oral or written quotation, a short form or public tender or a request for proposal.

- 1.5 **"Bid Deposit"** means certified cheque, money order, bid surety issued by a surety company or other form of negotiable instrument required by the terms and conditions of the bid solicitation document to guarantee that the successful bidder enter into a contract with the City of Brockville.
- 1.6 **"Bid Solicitation"** means a formal request for bids that may be in the form of a Request for Tender, Request for Quotation, or Request for Proposal.
- 1.7 **"Blanket Purchase Order"** means a purchase order which establishes prices or a method of determining prices, terms and conditions and the period of time during which a supplier agrees to provide goods or services to the purchaser upon the purchaser's demand.
- 1.8 **"Centralized Co-ordination for Standardization"** means policies and procedures maintained and monitored in one area to ensure consistent practices are followed throughout the organization.
- 1.9 **"Chief Administrative Officer"** means the Chief Administrative Officer of the City of Brockville. This title may be abbreviated to C.A.O.
- 1.10 **"City"** means the:
 - Municipal Corporation of the City of Brockville
 - Agencies, Commissions, Boards and Committees of the Corporation of the City of Brockville such as the Police Services Board, Museum Board, Library Board, Cemetery Board, Committee of Adjustment, Airport Commission, Heritage Brockville and the D.B.I.A.
 - Any other Board, Agency, Commission, and Committees that the Corporation of the City of Brockville may add from time to time.
- 1.11 **"Contract"** means any formal legal agreement for goods and/or services.
- 1.12 **"Co-operative Purchasing"** means the participation of two or more public agencies in purchasing.
- 1.13 **"Corporation"** means the Corporation of the City of Brockville.
- 1.14 **"Council" or "City Council"** means the Council of the Corporation of the City of Brockville.
- 1.15 **"Director"** means the head of a department, agency, commission, board or agency within the City.

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- 1.16 **"Emergency"** means a situation with potential to cause harm, death to persons; accrue liability to the City; cause damage to property; or hamper the City's operation and warrants operating outside of the requirements of this by-law.
- 1.17 **"Goods"** shall include supplies, materials or equipment of every kind.
- 1.18 **"In-House Bids"** means a bid prepared by internal staff to compete to supply goods and services which are normally provided by external suppliers.
- 1.19 **"Internal Controls"** means co-ordinated methods and measures in an organization which are designed to endorse efficiency; monitor observance to City policies and procedures; check the accuracy and validity of data; and to safeguard assets.
- 1.20 **"Professional and Consulting Services"** includes services of architects, engineers, designers, surveyors, real estate appraisers, management and financial consultants, brokers, lawyers, accountants, auditors, and any other professional and consulting services required by the City.
- 1.21 **"Project"** means the construction, repair or demolition of any improvement in or on real property, including all costs normally associated therewith or any other work or undertaking.
- 1.22 **"Proponent"** means the party who initiates an unsolicited proposal
- 1.23 **"Proposal"** means written bid from a supplier containing a unique submission designed to meet broad outcomes to a complex need for which there is not any clear or single solution.
- 1.24 **"Purchase"** means the act of and the functional responsibility for procuring goods and/or services.
- 1.25 **"Purchase Order"** means the document used to formalize a transaction with a supplier.
- 1.26 **"Purchasing Card"** is a credit card issued by a financial institution or supplier to be used by the City for the purpose of purchasing goods and/or services.
- 1.27 **"Purchasing Policy Co-ordinator"** means the City Treasurer.
- 1.28 **"Qualified Bidder"** refers to a competent and authorized bidder accredited by the City of Brockville.

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- 1.29 **“Qualified Supplier(s)”** refers to a plausible source who has been identified as a competent supplier from which a department can obtain firm quotations on specific requirements.
 - 1.30 **“Quotation”** means an offer from a supplier to provide to or purchase from the City goods and services, which are submitted orally or in writing, as required by the policy.
 - 1.31 **“Services”** may include, but are not limited to, telephone, gas, water, hydro, janitorial and cleaning services, consultant services, legal services, medical services, insurance, and the rental, repair or maintenance of equipment, machinery or other personal property.
 - 1.32 **“Sole Sourcing”** means the purchasing of a good or service that is unique to a particular supplier and cannot be obtained from another source.
 - 1.33 **“Stores Manager”** means the individual responsible for control of inventory of consumable goods/products.
 - 1.34 **“Supplier”** means any individual or organization providing goods or services to the City of Brockville.
 - 1.35 **“Tender”** means a sealed bid in response to a requested or publicly advertised bid solicitation, which contains an offer in writing to execute some specified services, or to supply certain specified goods, at a certain price.
 - 1.36 **“Total Cost”** means the sum of all costs, including all contingencies and applicable taxes to be paid to a supplier for the purchase of goods and/or services or, in case of a lease or rental agreement, the total cost of lease or rental payments for the full term of the lease or rental agreement.
 - 1.37 **“Treasurer”** means the City of Brockville’s Chief Financial Officer.
 - 1.38 **“Unsolicited Proposal”** means an offer to supply goods and/or services to the City which was not requested.
2. Unless otherwise provided in accordance with this By-Law, the Purchasing Policy Co-ordinator and the authorized employees of purchasing services shall act for the City of Brockville, for the purchase of all goods and services and shall be responsible for providing all necessary advice and services required for such purchases in accordance with the method of purchase legislated by the By-Law and the Purchasing Policies.

3. This By-Law shall apply to the purchase of all goods and/or services made on behalf of the Corporation of the City of Brockville, and by any of the Corporation's legally constituted Boards, Agencies, Commissions, and Committees.
4. No purchase of goods and/or services shall be authorized unless it is in compliance with this by-law and the purchasing policies contained herein.

5. **Purposes , Goals and Objectives**

The purposes, goals, and objectives of this By-law conjoined with the various methods of purchasing will:

- define authority and responsibility and to standardize approved practices.
- provide a central focus for developing expertise and offering advice to departments while maintaining common practices.
- promote open competition with suppliers.
- capitalize on savings for taxpayers.
- ensure that the city is in compliance with the requirements of Section 271 of the *Municipal Act, 2001*.
- ensure service and product delivery, quality, efficiency and effectiveness.
- achieve the best value for the municipality when purchasing goods and services.
- ensure equality among bidders/suppliers.
- ensure openness, accountability and transparency while protecting the financial best interests of the City of Brockville

6. **Authorized Practice**

The Council of the City of Brockville deems it expedient to have and hereby authorizes the following methods, authorization levels and processes:

6.1 **Low Value Purchasing:**

Directors may establish a petty cash fund within their department for purchases of \$75 or less. This method should only be used when a purchase order or purchasing card is not feasible. All petty cash expenditures shall be evidenced by vouchers and shall be forwarded to Treasury to have the department's petty cash fund replenished. The Director or designate with signing privileges has the authority to approve authorize vouchers.

For purchases up to \$1,000, a properly authorized divisional purchase order or purchasing card shall be used providing the procedure used to purchase these goods and/or services demonstrate that fair market value was achieved through comparison buying. The Director or designate with signing privileges has the authority to approve this method.

6.2 **Request for Quotation:**

Oral Quotations:

A minimum of three (3) suppliers shall be asked to quote orally when the value of the purchase falls between \$1,001 to \$5,000. This method shall utilize a centralized co-ordination for standardization and integrity as well as internal controls. The Director or designate with signing privileges at appropriate dollar value level has the authority to approve this method. A record of the quotes shall be retained on file.

Written Quotations:

A minimum of three (3) suppliers shall be asked to quote when the value of the purchase falls between \$5,001 to \$25,000. This method shall utilize a centralized co-ordination for standardization and integrity as well as internal controls. A Director or designate with the signing privileges has the authority to approve this method. When costs exceed \$10,000, a Director shall provide terms of reference which shall meet the satisfaction of the Purchasing Policy Co-ordinator. The Purchasing Policy Co-ordinator shall maintain a list of suggested evaluation criteria for the assistance in formulating an evaluation scheme for this process. A record of the written quotations shall be retained on file.

6.3 **Request for Proposal:**

When the expertise for developing proper specifications and criteria lies in the hands of the suppliers or when additional information is required and it is not practical to call tenders the Director may invite proposals from selected suppliers. The Director, Treasurer and Chief Administrative Officer have the authority to approve requests for proposals subject to amounts being included and approved in the Budget.

Consultants will remain under the criteria that presently exist in Procedure 1012.

6.4 **Request for Tender:**

The following two tender methods shall comply with the City of Brockville Master Tender Document, which is prepared and maintained by the Director of Operations in conjunction with the Purchasing Policy Co-ordinator.

Short Form Tender:

For purchases valued between \$25,001 to \$100,000, a minimum of three (3) bids shall be solicited from qualified bidders. This method shall utilize a centralized co-ordination for standardization and integrity as well as internal controls. The Director, Treasurer and Chief Administrative Officer have the authority to approve purchases under this method. All documentation relevant to the short form tenders shall be retained on file.

Public Tender:

For purchasing activities which exceed \$100,000 a request for bids shall be advertised. The Director and Purchasing Co-ordinator shall determine the best process for advertising tenders.

There will be a public tender opening to receive the bids at a predetermined place, date and time which will be disclosed in the public tender documents.

This method shall utilize a centralized co-ordination for standardization and integrity as well as internal controls. A Director, the Treasurer and the Chief Administrative Officer have the authority to approve this purchase providing that there is Council approval, the amount is within budget and lowest (or highest as the case may be) bid is accepted.

6.5 Non-Competitive Purchasing :

(a) Competition may be precluded under the following circumstances:

- due to the application of any Act or legislation
- due to the existence of patents or copyrights
- in the case of Emergency Purchasing Procedures (see item #18 in this By-Law)

A dollar value has not been defined for this type of purchasing but rigid standards must be met. The Director, the Treasurer and the Chief Administrative Officer have the authority to approve this method of purchasing up to \$50,000 providing that the Director has provided terms of reference which shall meet the satisfaction of the Purchasing Policy Co-ordinator. Council and the appropriate standing committee shall be so advised.

Council's approval is required for all non-competitive purchases in excess of \$50,000.

- (b) Special conditions apply against the following non-competitive purchasing circumstance:
 - when an opportunity arises which will allow for the purchase of a capital item at substantial savings. Council approval must be received in advance for any purchase of this type over \$5,000.

6.6 Unsolicited Proposals:

- (a) Unsolicited proposals received by the City shall be reviewed by the Director and the Purchasing Policy Co-ordinator.
- (b) The proponent will be required to supply, to the City, sufficient information to verify the feasibility of the proposal.
- (c) Should the proposal, in the opinion of staff, have sufficient merit to pursue, it will then be tendered out for general proposals as per this By-Law unless otherwise directed by Council.
- (d) If a solicited tendered proposal is received that is superior to the submitted unsolicited proposal the proponent of the unsolicited proposal shall then have first right to amend their proposal to match the superior proposal.

7. Purchasing Advisement and Policy Responsibilities

Directors have responsibility for purchasing activities within their departments and are accountable for achieving the specific objectives of the purchasing proposal.

The Purchasing Policy Co-ordinator is responsible for,

- providing professional purchasing advice and services to the Director(s),
- monitoring compliance with this by-law,
- notifying the Director(s), in advance if possible, of non-compliance;
- informing Council, by way of the Chief Administrative Officer, that non-compliance with this by-law has occurred.

8. Process Integrity

The objective of the by-law is to establish policies and procedures by which users will be guided to ensure that all purchases of goods and/or services are being conducted with the optimal dollar value consistent with the required quality of service.

An open and honest process shall be maintained that is fair and impartial.

The purchasing by-law promotes and maintains integrity of the purchasing process and protects Council, staff, and suppliers involved in the process by providing clear direction and responsibility.

Purchasing policies approved by Council will act as a guideline and for information in respect to the acquisition of goods and services in compliance with the purchasing by-law.

9. **Values and Authority for Purchases**

Anyone given purchasing authority under this purchasing policy is responsible for reviewing the budget and purchasing policies to ensure that there are sufficient funds in the budget for the selected project and that the information is accurate. All employees given signing authority shall complete a "Signing Limits" form. This form must be authorized by the applicable Director and will be retained in the Treasury Department for referencing, with a copy forwarded to Accounts Payable.

10. **Restrictions**

- 10.1 A project awarded for the purchase of goods and/or services cannot be separated into two or more components to circumvent the requirements of this by-law as it relates to values of purchases in order to avoid having to meet the requirements of this by-law.
- 10.2 A Director shall not award a contract where the Purchasing Policy Co-ordinator has determined that the provisions in this by-law have not been met and as such has advised the Director either orally or in writing.
- 10.3 The Purchasing Policy Co-ordinator shall determine whether any purchasing activity may be accepted when it could result in an employee-employer relationship. Any City employee wishing to bid on City projects must first obtain, in writing, approval from the Chief Administrative Officer to do so. In co-ordination with both the Director and Human Resources a judgement may be determined which will adhere to the integrity set forth in this By-Law.

11. **Understandings and Interpretations**

- 11.1 Except as otherwise stipulated, any purchase of goods and/or services shall be made on a competitive basis, in keeping with accepted public purchasing practices and in accordance with the applicable federal, provincial and municipal laws.

- 11.2 No purchasing process for goods and/or services shall be intentionally structured so as to avoid any provision of the Purchasing By-law and/or Purchasing Policies.
- 11.3 All purchase of goods and/or services for the City of Brockville shall be subject to the provisions of this By-Law. Prices and authority levels as stated within the By-Law are intended to be the total cost including taxes and freight, less any rebates.
- 11.4 All suppliers that will be performing work on City property must provide evidence of appropriate insurance and active Workplace Safety and Insurance Board status to be eligible for specified works.
- 11.5 Specifications shall not be designed or written so as to indicate preference to any one bidder or, where a specific brand and model is stated as a benchmark.

12. **Approval of Budget**

Formal approval of the fiscal year budget or by special approval by Council constitutes financial approval to pursue expenditures outlined in the department's budget. Prior to budget approval, Directors can authorize and approve recurring expenditures which are necessary in the continuity of operations within the City, all of which are subject to the terms and conditions as may be described in the City's Budgeting Control By-law.

13. **Lowest Bid and/or Highest Bid**

- 13.1 In the case of quotations and tenders, the lowest or highest bid, as the case may be, of a qualified bidder shall be accepted if it meets the requirements specified in the competition.
- 13.2 Criteria for awarding of bids will be established prior to issuance of tender document to prospective bidders. The criteria may include one or more of the following:
 - (a) Price
 - (b) Warranties
 - (c) Service (Personnel, Availability and Qualifications)
 - (d) Experience/Past Performance
 - (e) Environmental policies of the bidder
 - (f) Schedule Preventative maintenance programs.
 - (g) Local taxpayer suppliers when all other requirements have been met.

In this instance, the award would not necessarily be the lowest or the highest bid as the case may be.

14. **In-House Bids**

In-House Bids will be accommodated in accordance with section 10.3.

15. **Bids by Members of Council**

Members of Council are permitted to bid on City Projects. When a Member of Council has any pecuniary interest as a result of submitting a bid, they must act in accordance with the provisions of the *Municipal Conflict of Interest Act*. In addition to the requirements of the *Municipal Conflict of Interest Act*, when a Member of Council will be absent from a meeting where a matter, which is the subject of consideration, has any pecuniary interest, direct or indirect, the Members of Council shall advise the Clerk in writing, prior to the meeting to disclose the interest and the general nature thereof.

16. **Trade Agreements**

Purchasing by the City may be subject to the provisions of any Federal or Provincial trade agreements.

Where an applicable trade agreement is in dispute with the purchasing by-law, the trade agreement shall take precedence.

17. **Lease and Financing Arrangements**

Prior to entering into a lease agreement or long term contract, the terms and conditions shall be reviewed by the Policy Purchasing Co-ordinator, who shall provide written confirmation of this review and the acceptability of the agreement. This procedure is to ensure that these contracts are in compliance with Treasury Reporting Standardization on Leasing as is contained in the *Municipal Act*. All financing agreements shall include, where appropriate, the original equipment cost, the length of the lease, the effective rate of interest, the residual value of the goods, the complete repayment schedule, the total cost over the term of the lease, and buy-out options if any.

18. **Emergency Purchasing Procedures**

This refers to a purchasing process where the usual competitive acquisition rules are suspended due to prevailing emergency circumstances. When an event occurs that is determined by the Director to be a threat to public health, the maintenance of essential City services, the welfare of persons or of public property, the protection of the City's physical assets, or the security of the City's

interests or financial liabilities arising from unexpected conditions, and the occurrence requires the immediate delivery of goods and services and time does not permit the Director to follow normal purchasing activities to acquire such goods and services, the Director may make any necessary purchases without following the purchasing by-law and is authorized to do so in the most expedient and economical means possible.

Where a purchase has been made under the Emergency Purchasing Procedure, the Director shall notify the Purchasing Policy Co-ordinator and Chief Administrative Officer within two working days.

The Director shall provide a full written report of the particulars of the emergency situation in all cases, where the amount of the expenditure has exceeded \$1,000 in value. A report to Council shall be submitted for expenditures that exceed \$10,000 under the emergency purchasing procedure.

19. **Blanket Purchase Order**

Following the guidelines determined within this by-law, the Purchasing Policy Co-ordinator may establish prices and select sources to supply goods and services that are used repetitively. The quantity of the goods should be estimated based upon previous usage when requesting the supplier to establish a set price. The City may establish and maintain a blanket order for these frequently used goods and services once the source and price has been predetermined with selected suppliers.

20. **Sole Source Purchasing**

In circumstances where the sources of supply are restricted to the extent that there is not effective price competition or consideration of substitutes is precluded due to any of the following:

- components or replacement parts for which there is no substitute
- compatibility with an existing product, facility or service is required
- specific standards are adopted by Council

The Director(s) shall be responsible to demonstrate to the Chief Administrative Officer and the Purchasing Policy Co-ordinator that the conditions required for sole source purchasing exist prior to authorization of the purchase.

21. **Materials Management and Inventory Control**

Commodities which are available from the central stores inventory and which are suitable for the intended end use shall be requisitioned or purchased on a direct charge basis.

A physical inventory of stock items shall be taken on a periodic basis and an annual count will be undertaken for year end purposes in accordance with financially prescribed processes and generally accepted accounting principles.

22. **Exclusion of Bidders**

The City may, in its sole discretion, prohibit a supplier from bidding on future solicitations, where the supplier has, in the one year period immediately preceding the date of the bidding either,

- performed unsatisfactory work
- failed to meet completion dates and/or failed to follow reasonable instructions
- failed to comply with health and safety conditions or violations
- withdrawn from a tender once the contract has been awarded
- failed to comply with the terms and/or conditions of a contract
- been a party to litigation with the municipality

23. **Goods and Services “Exempt” from Provisions of the Purchasing Policies**

The purchasing methods described in this by-law do not apply to the following Goods and Services:

23.1 ***Training and Education***

- Registration and tuition fees for conferences, conventions, courses and seminars
- Magazines, books and periodicals unless the purchases of such magazines, books and periodicals are subject to value-added services
- Memberships

23.2 ***Refundable Employee / Councillor Expenses***

- Advances
- Meal Allowances
- Travel and Entertainment
- Miscellaneous – Non-Travel

23.3 *Employer's General Expenses*

- Payroll Deduction Remittances
- Medical
- Licenses (Vehicle, Firearms, etc.)
- Debenture Payments
- Grants to Agencies
- Damage Claims
- Petty Cash Replenishment
- Tax Remittances
- Insurance Premiums
- Payroll Related Issues
- Charges to other Government Bodies

23.4 *Miscellaneous*

- where construction or renovation work on a leased building may be performed only by the lesser of the building
- when no bids were received in a competitive process
- when the purchase is already covered by a lease-purchase agreement
- when an urgent purchasing is necessary for fulfilling a statutory order issued by a federal or provincial authority, such as an environmental, public health, or workplace safety compliance order
- when there is a statutory or market based monopoly on the item
- when the required item is covered by an exclusive right such as a patent, copyright or exclusive licence
- where payments are partially or totally credited to the purchase
- when competitive sourcing for low value purchases would be uneconomical or would not attract bids
- when it is necessary to ensure compatibility with existing products or to avoid violating warranty/guarantee requirements when service is required
- agreement on Internal Trade and the Ontario-Quebec Trade Agreement indicate specific exceptions to competitive sourcing
- where the item is being tested on a trial basis
- where the carrying out of the work by the supplier other than the supplier did the original work would nullify the warranty or guarantee held

These purchases are still subject to internal financial controls and generally accepted accounting and reporting practices.

24. When directed by City Council, the following purchase of professional services will be completed through a Request for Proposal:

- Auditing
- Banking
- Actuaries
- Insurance
- General Legal

25. **Co-operative Purchasing**

25.1 The City may participate with other government agencies or public authorities in co-operative purchasing when it is in the best interest to do so.

25.2 If the government agency or authority is of a senior level, then the purchasing policies of that body would come into place under this particular circumstance.

26. **Surplus Stock**

Surplus stock which is no longer used or has become obsolete and is deemed unsuitable for City use may be disposed of in conjunction with Procedure 1010. Directors in conjunction with the Purchasing Policy Co-ordinator shall arrange for the sale/auction of certain identified surplus stock.

27. **Access to Information**

The disclosure of information received relevant to the issue of Bid Solicitations or the Award of Contracts emanating from Bid Solicitation shall be in accordance with the provisions of the *Municipal Freedom of Information and Protection of Privacy Act*, as amended.

28. **Setting Aside Conditions of Purchasing By-Law**

City Council may, on a resolution passed by no less than two-thirds of all of the Members of the City Council present and voting in favour thereof, set aside or waive the provisions of this by-law.

29. **Process Review and Evaluation**

The purchasing by-law and policies will be reviewed and evaluated once every five years or more frequently if directed by Council, to analyze for effectiveness. A review or evaluation of the internal controls may be executed to confirm that all procedures and guidelines are being acknowledged and to ensure that the

purchasing of goods and/or services are being administered fairly and impartially.

30. That Council, in adopting this policy by-law, hereby adopts and authorizes the use of the City of Brockville Master Tender Document as may be amended and updated by Administration from time to time.
31. If any section, clause or provision of this By-Law is for any reason declared by a court of competent jurisdiction to be invalid, the same shall not affect the validity of the By-Law as a whole or part thereof other than the section, clause or provisions of this By-Law shall remain in force and effect until repealed or amended, notwithstanding that one or more provisions shall have been declared to be invalid.
32. Appendix "A" to this By-Law, in which is set out the signing authority, integrity, methods of purchasing and limits of purchasing, shall form part of this By-Law.
33. The purchasing portion of By-Law 105-92 shall be rescinded upon passing of this By-Law.
34. This By-Law shall come into effect upon passing.

Given under the Seal of the
Corporation of the City of Brockville
and passed this 27th Day of September, 2005

[Signed] B.W. TeKamp
Mayor

[Signed] S.M. Seale
City Clerk

Purchasing Practices and Authority Approvals

<u>Procedure</u>	** <u>Tendering Applies</u>	<u>Purchase Value</u>	<u>How Required Integrity is Maintained</u>	
			<u>Method</u>	<u>Who Can Sign</u>
Informal Low Value Procurement		up to \$ 1,000	Purchase order or Divisional Card. <i>*petty cash for purchases under \$ 75 allowed when purchase orders are not feasible.</i> Comparison pricing and competitive pricing to be carried out for a one-time procurement in an expeditious and cost-effective manner through phone, fax, e-mail, vendor catalogues or advertisements. This method will use centralized co-ordination for standardization and integrity as well as internal controls.	Director or Designate, refer to "value & authority for purchase" forms on file.
Oral Quotations		\$ 1,001 to \$ 5,000	Primarily done on an invitational basis from at least three qualified suppliers. Implementation of an effective, objective, fair, open, transparent, accountable and efficient process for obtaining competitive bids based on precisely defined requirements for which there is a clear solution. To accept the lowest (or highest whichever the case may be) bid. Preference for local suppliers is to be considered only when all other factors are equal. This method will use centralized co-ordination for standardization and integrity as well as internal controls and decentralized purchasing by Department.	Director or Designate, refer to "value & authority for purchase" forms on file.
Written Quotations		\$5,001 to \$ 25,000	Primarily done on an invitational basis from at least three qualified suppliers. This method may be supplemented with public advertising. Implementation of an effective, objective, fair, open, transparent, accountable and efficient process for obtaining competitive bids based on precisely defined requirements for which there is a clear solution. To accept the lowest (or highest whichever the case may be) bid. Preference for local suppliers is to be considered only when all other factors are equal. This method will use centralized co-ordination for standardization and integrity as well as internal controls and decentralized purchasing by	Director or Designate, Refer to "value & authority for purchase" forms on file. When costs exceed \$ 10,000, the Director will provide the Purchasing Policy Co-coordinator with terms of reference.
Short Form Tender	**	\$ 25,001 to \$100,000	Implementation of an effective, objective, fair, open and transparent accountable and efficient process for obtaining competitive bids based on precisely defined requirements for which there is a clear or single solution. Documents are to be based on the City of Brockville's Master Tender Document. Acceptance of the lowest (or highest, whichever the case may be) bid meeting the requirements. Central coordination for standardization and internal control - decentralized tender process with reports circulated and signed. Preference for local suppliers is to be considered only when all other factors are equal.	Department Director, Treasurer and C.A.O. Together.

Public Tenders	**	Over \$ 100,000	Implementation of an effective, objective, fair, open and transparent accountable and efficient process for obtaining competitive bids based on precisely defined requirements for which there is a clear or single solution. Documents are to be based on the City of Brockville's Master Tender Document with evaluation criteria based on the Municipal Tendering Procedure (MTO). The advertised (at a minimum in local papers) tender will be submitted on prescribed forms. There will be a public tender opening at a predetermined date, place and time. Acceptance of the lowest (or highest, whichever the case may be) bid meeting the requirements. Central coordination for standardization and internal control - decentralized tender process with reports circulated and signed. Preference for local suppliers is to be considered only when all other factors are equal.	Department Director, Treasurer and C.A.O. provided that: (a) the amount is within the approved budget (b) Council approved (c) Minimum of 3 bids received (d) lowest (or highest, whichever the case may be) bid accepted
Request for Proposal		No dollar value defined	To implement an effective, objective, fair, open, transparent, accountable and efficient process for obtaining unique proposals designed to meet broad outcomes to a complex problem or need for which there is no clear or single solution. When the expertise for developing proper specifications and criteria lies in the hands of the suppliers or where additional information is required and it is not practical to call tenders. The selected proposal earns the highest score and meets the requirements specified in the competition based upon qualitative, technical, and pricing considerations	Department Director, Treasurer and Chief Administrative Officer together.
Non-Competitive Purchasing		No dollar value defined but must meet rigid criteria.	Allows for purchasing in an efficient and timely manner without seeking competitive pricing. Conditions exist when competition is precluding due to the application of any act or legislation or because of the existence of patents or copyrights or due to market conditions, the goods and/or services are in short supply or when the condition of an emergency purchase exists.	Department Director, Treasurer and C.A.O. together. When costs exceed \$10,000, the Director will provide the Purchasing Policy Co-ordinator with terms of reference

**** Section 271 of the Municipal Act, requires to indicate when tendering does & does not apply.**

The Definition of Bid: An offer or submission from a supplier in response to a bid solicitation which may be in the form of an oral or written quotation, a short form or public tender, or a request for proposal.

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