Chatham-Kent

DETAILED ASSET MANAGEMENT PLAN

2025

WATER SERVICES

TENTS

Chatham-Kent Water Report Card

3,725 hydrants

94 watermain breaks in 2024

39,935 active water accounts

5,735 drinking water samples collected

Annual Funding Gap	Asset Renewal Ratio	% of 10-Year Plan Funded
$28,788,992	46%	79%

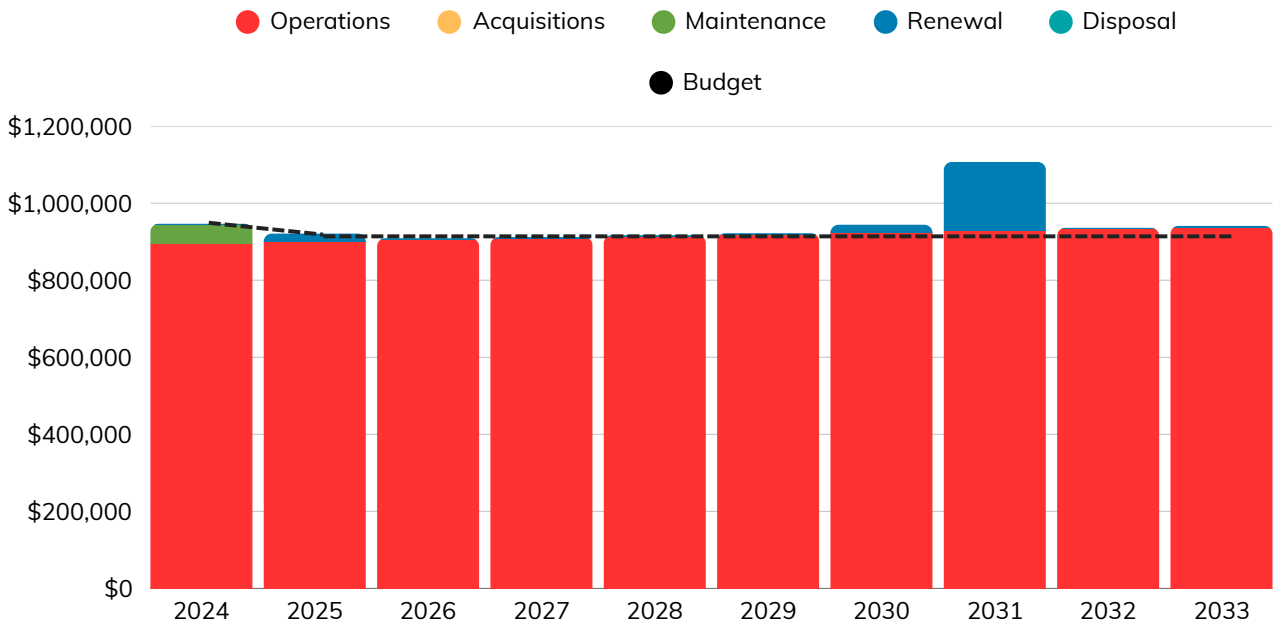
Asset Summary

Assets	Items	Replacement
Vertical assets	treatment plants, wells, pump station, water towers, standpipes, bulk water stations, rechlorination stations, reservoirs	$641,468,356
Linear assets	watermains, hydrants	$1,820,366,282

Assets	Items	Replacement
Administration	PUC fleet, administration building, equipment	$6,302,983
ITT	hardware, software, cellphones	$849,508

$2.5 Billon Total Replacement Cost

10 Year Life Cycle Forecast



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2.0 INTRODUCTION

2.1 Background / Purpose of Services

The Municipality of Chatham-Kent was established in 1998 through the merger of 23 municipalities. During the amalgamation, the Chatham-Kent Public Utilities Commission (hereinafter referred to as "CK PUC") was established to manage the provision of water services for the area. Chatham-Kent is a single-tier municipality located in Southwestern Ontario, comprising both urban and rural communities.

The municipality is bordered by the Town of Lakeshore and the Municipality of Leamington to the west, Southwest Middlesex and West Elgin to the east, the Townships of St. Clair and Dawn-Euphemia to the north, and Lake Erie to the south. The Lower Thames River flows through the municipality towards Lake St. Clair in the west, while the Sydenham River passes through Wallaceburg and Dresden. Chatham-Kent has about 88 kilometers of shoreline along Lake Erie and 24 kilometers along Lake St. Clair. CK PUC, as a local board of the Chatham-Kent Council, operates as the regional water utility.

CK PUC is responsible for delivering water in accordance with provincial standards and for meeting their requirements for due diligence, ensuring that the water they deliver is properly managed and protected.

CK PUC currently operates and maintains six (6) drinking water systems, which are listed below:

Drinking Water System	Maximum Daily Flow in 2024 (M^3)	Water source
Bothwell	512	West Elgin (Tri-County) primary water system (treats water from Lake Erie)
Chatham	40,722	Lake Erie
Ridgetown	3,433	Groundwater
South Chatham-Kent	12,097	Lake Erie
Wallaceburg	8,247	Chenal Ecarte
Wheatley/Tilbury	7,279	Lake Erie

Total drinking water production in 2022 was 19,502,590 cubic meters (m^3) and in 2023, it was 18,128,010 m^3, whereas 17,748,857 m^3 in 2024.
The main goal of the Detailed Asset Management Plan (DAMP) is to improve the strategic management of water assets and related services. It provides guidance on both new and existing infrastructure, ensuring the efficient use of financial resources, reducing risks, and offering a prioritized approach to maintaining service continuity and improvements over the next decade.

Water services assets are defined as “core municipal infrastructure assets” by O. Reg. 588/17, including assets that support the supply, treatment, storage, transmission and distribution of drinking water.

The Water DAMP is intended to be read in conjunction with the planning documents of other municipalities. This should include the Strategic Asset Management Policy, along with the following associated planning documents:

- **Water and Wastewater Master Plan**
- **Chatham-Kent PUC Rate Study**
- **Chatham-Kent PUC Business Plan**
- **Annual Strategic Priorities**
- **Policies and Bylaws**
- **Short-term and Long-term Financial Plans**
- **Grant Applications and Funding**

By considering the DAMP alongside these documents, a holistic approach is ensured, aligning strategic goals, policies, financial strategies, and funding sources for effective management and development of water assets.

This DAMP has a minimum planning horizon of **ten years** and will integrate fully with the Long-Term Financial Plan (LTFP) by 2027. It will outline the necessary steps for the sustainable delivery of services, covering asset management, program delivery, regulatory compliance, and required funding to maintain appropriate service levels throughout the planning period.

This DAMP addresses infrastructure assets specific to the CK PUC, which are vital for delivering services. For a detailed overview of these assets, please refer to **Table 2.2.3**. The total replacement value of CK PUC’s water infrastructure assets included in this plan is **$2.5 billion**.
Key stakeholders in the preparation and implementation of this DAMP are shown in **Table 2.1.1**


Ridgetown Water Treatment Plant

Table 2.1.1. Key stakeholders and roles in Asset Management Plan

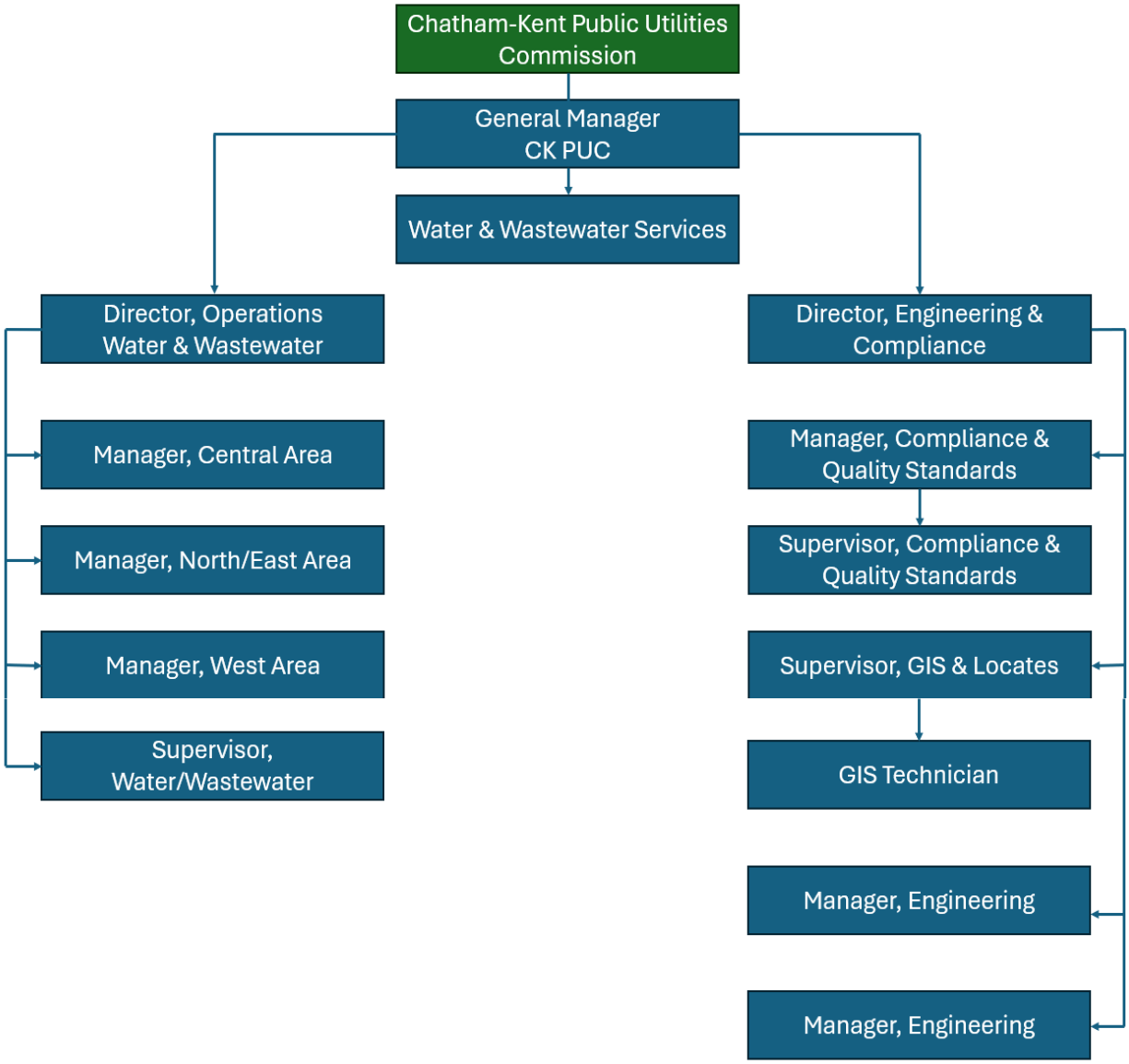
Key Stakeholder	Role in Asset Management Plan
CKPUC Council/Board members	• Distribute resources to achieve planning objectives in service provision while effectively mitigating risks. • Support asset management initiatives to enhance understanding and guide decision-making. • Allocate funding to sustain the desired level of service throughout the entire life cycle.
Mayor / CAO	• Advocate for and champion the adoption of asset management principles within the organization. • Guarantee the availability of sufficient resources to foster the development of staff knowledge and skills, facilitating the implementation and ongoing enhancement of asset management practices.
General Manager, PUC, IES, Public Works	• Allocate resources to meet the organization's objectives in providing services while managing risks. • Overall responsibility for Asset Management provides leadership in influencing decision-making processes related to Asset Management.
Director, PUC, IES, Public Works	• Delivering nominated renewal and upgrade projects. • Review, update, and plan long-term projects.

Key Stakeholder	Role in Asset Management Plan
PUC	Manage regulatory requirements, safety management systems, water operations, and safety programs. Reviews, updates, and manages regulatory manuals and risk registers. Support the measures outlined in the DAMP to improve asset management and service delivery. Provide feedback to improve DAMP.
Service Operators/ Contractors	Ensuring the facility is safe, secure, and compliant with its certification to remain functional and ensure the safety are a high priority. Ensure assets are well maintained.
Asset and Quality Management (AQM)	Establish top-level priorities for the development of asset management and increase awareness of this function among staff and external contractors. Assist with the Asset Management-driven budget and Long-Term Financial Plan.
CK Community	Engage in facilitated discussions to enable the municipality to comprehend the user's preferred level of service, and express support for the Detailed Asset Management Plan.

Water Organizational Chart

The organizational structure for service delivery from infrastructure assets for CK PUC is detailed in Figure 2.1.2 below.

Figure 2.1.2. Water Organizational Structure



2.2 Asset Hierarchy & Registry

An asset hierarchy provides a framework for structuring data within an information system, facilitating data collection, reporting, and informed decision-making. The hierarchy encompasses the asset class and its components, utilized for asset planning and financial reporting, as well as the service level hierarchy employed for service planning and delivery. Chatham-Kent is currently working towards establishing a functional asset hierarchy, which means that the hierarchy has been established based on what the asset owner needs or wants the asset or system to do. Generally, assets and systems are organized according to their primary function.

An asset registry is a single data source containing an inventory of asset data, including attribute information for each asset. This attribute information includes a record of each asset, including condition, age, replacement cost, and asset-specific information (e.g., length, diameter, material, etc.). The CK PUC water asset registry is currently structured as an asset hierarchy, as explained below.

The asset class hierarchy, outlining the assets included in this section, is listed in Table 2.2.1, and the service hierarchy is presented in **Table 2.2.2**.

Table 2.2.1. Asset Class Hierarchy

Vertical Assets	Linear Assets	Administration & ITT
Water Treatment Plant	Hydrants	Administrative Building
Water Towers & Standpipes	Watermains	Vehicles
Booster Pump Stations	Water Meters	Equipment
Re-chlorination Stations		Hardware
Reservoirs & Wells		Software
Bulk Water Stations		

Table 2.2.2. Asset Service Hierarchy

Service Hierarchy	Service Level Objective
Vertical Assets	Asset classes required to provide water services throughout the municipality.
Linear Assets	
Administration, ITT, vehicles, tools and equipment	Service equipment and general assets that enable the asset class to deliver its services.

Asset Registry: Inventory and Valuation

The water assets covered in this plan include water towers, standpipes, water treatment plants, booster pump stations, re-chlorination stations, reservoirs, wells, bulk water stations, hydrants, watermains and other hardware and software assets to provide services to the Chatham-Kent community. These assets have a replacement value of nearly **$2.5 billion**. These assets are categorized as follows:

Vertical Assets:

- 10 Water Towers, 3 Standpipes and 1 Surge Tower
- 6 Water Treatment Plants,
- 5 Booster Pump Stations,
- 3 Reservoirs and 6 Wells,
- 6 Re-chlorination Stations, and
- 12 Bulk Water Stations.

Linear Assets:

- 3,725 Hydrants,
- 72,334 m of Transmission Mains, 1,589,694 m of Distribution Mains, and
- 39,485 Water Meters

ITT & Administration:

- Administrative Building
- PUC fleets (3 Dump trucks, 27 pick-up trucks, 3 SUVs, 3 transit vans)
- Equipment (1 boat, 6 loaders, 4 generators, 1 tractor, 2 forklifts, 5 utility trailers, 1 lawn mower, 1 Lely mower, 2 lawn tractors),
- Hardware, Software, and cell phones

The assets included in this DAMP are shown in **Table 2.2.3**.

Table 2.2.3: Water Assets

Asset Category	Description	Estimate Service Life in Years	Average Age	Average Condition	Average Remaining Service Life	Current Replacement Costs
Water Treatment Plant	6 Treatment Plants	60 Years	33 Years	Good	27 Years	$475.5 Million
Wells	6 Wells	15 years	21 Years	Good	0	$7.03 Million
Booster Pump Stations	5 Booster Pump Stations	40 Years	35 Years	Good	5 Years	$13.7 Million
Water Towers, Standpipes, & Surge Towers	10 Water Towers, 3 Standpipes, 1 Surge Tower	60 Years	37 Years	Good	23 Years	$127.3 Million
Bulk Water Stations	12 Stations	35 Years	16 Years	Good	19 Years	$926,000
Re-chlorination Stations	6 Stations	50 Years	27 Years	Good	23 Years	$6.1 Million
Reservoirs	3 Reservoirs	60 Years	50 Years	Fair	10 Years	$11 Million
Watermains (below 200 mm)	961 KMs	80 Years	44 Years	Fair	36 Years	$607.4 Million
Watermains (200 - 550mm)	611 KMs	80 Years	44 Years	Fair	36 Years	$885.3 Million
Watermains (550-750 mm)	65 KMs	80 Years	44 Years	Fair	36 Years	$186.7 Million
Watermains (Above 750 mm)	25 KMs	80 Years	44 Years	Fair	36 Years	$103.8 Million
Hydrants	3725	75 Years	37 Years	Good	38 Years	$37.3 Million
PUC Fleet	3 Dump trucks, 27 pick-up trucks, 3 SUVs, 3 transit vans	8 Years	5 Years	Good	3 Years	$1.2 Million
Administrative building	1	50 Years	48 Years	Good	2 Years	$4.5 Million
Equipment	1 boat, 6 loaders, 4 generators, 1 tractor, 2 forklifts, 5 utility trailers, 1 lawn mower, 1 Lely mower, 2 lawn tractors	25 Years	19 Years	Good	6 Years	$602,000
Hardware	Varies					$241,000
Software	Varies					$531,000
Cell phones	Varies					$78,000
			Total Replacement Cost			**$2.5 Billion**

All values are shown in 2025-dollar values.

Figure 2.2.1 Water Assets Based on Replacement Value

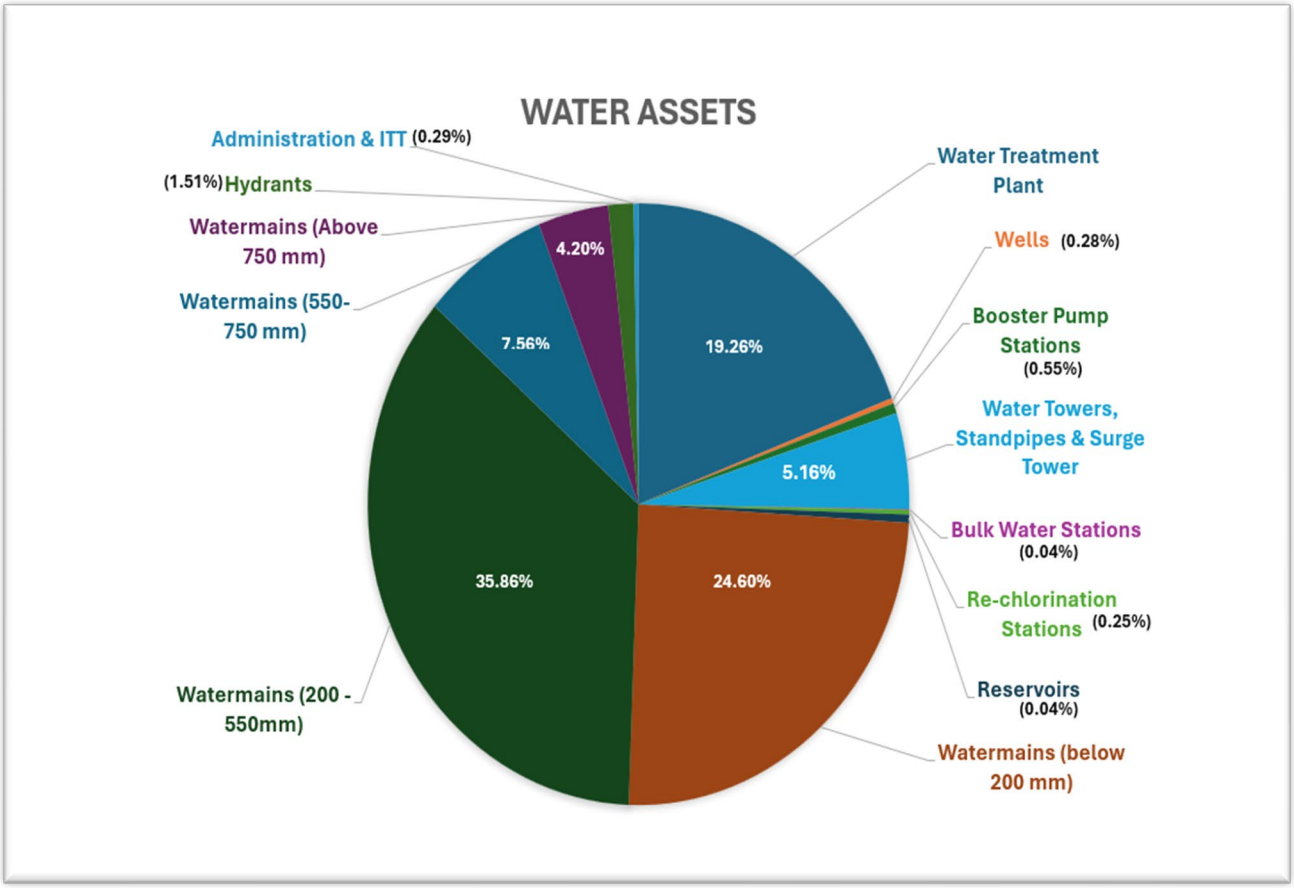


Figure 2.2.1 is a pictorial representation of Water assets based on the total replacement cost of **$2.47 billion.** A major portion of the water assets in this chart are covered by the linear assets, which represent nearly 74**%** of the total replacement costs. The vertical assets, which include all water facilities, account for a total of 26%, whereas ITT & Administration, which encompasses administrative buildings, PUC Fleets, Hardware, software, and other equipment, is considered to be less than **1%**.

The initial DAMP attempt includes all assets required to deliver the water services. However, it is acknowledged that, as this is the first DAMP, additional assets will be included in future iterations. As assets are acquired, disposed of, discovered, or deemed material, they will be included in plans. Various asset parameters, such as age, condition, estimated service life, and replacement costs, will be updated regularly to ensure the plan's data confidence is sufficient to support evidence-based investment decisions.

Water Treatment Plant (WTP)

A water treatment plant is a facility where raw water is treated using various technologies to produce clean and safe water. The Municipality of Chatham-Kent has six water treatment

plants: Chatham WTP, Ridgetown Erie St WTP, Ridgetown Scane Road WTP, South CK WTP, Wallaceburg WTP, and Wheatley WTP. The purpose of these plants is to intake raw water, which is then treated using several technologies to generate clean and safe water.

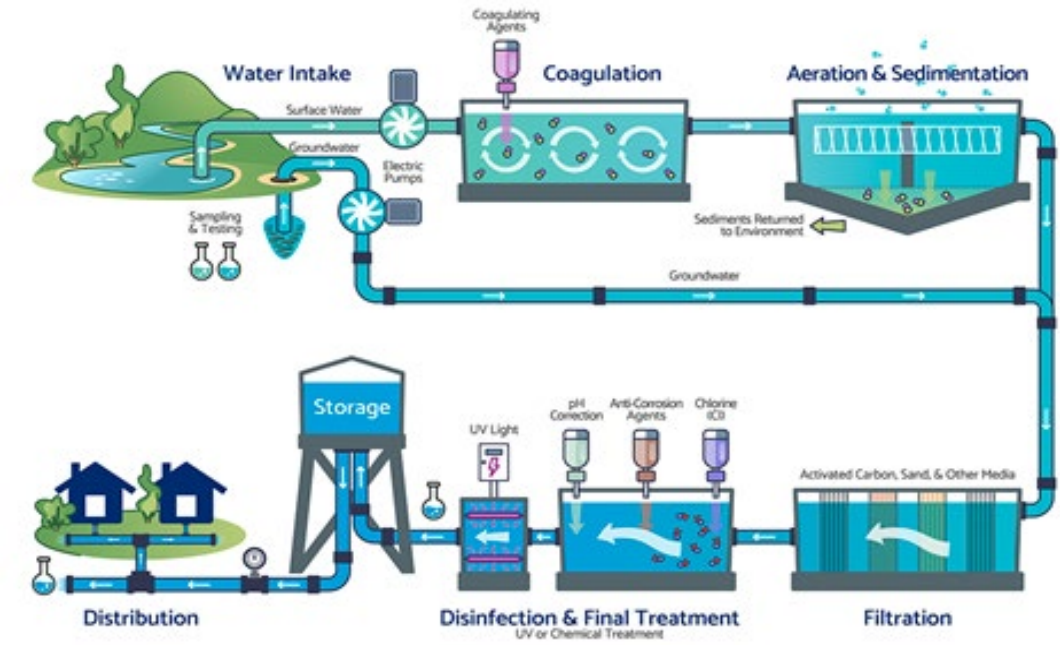
Figure 2.2.1. Chatham Water Treatment Plant

Water Treatment Plant-Process

In Chatham-Kent, raw water is pumped from one of its sources, which requires treatment before it is safe for customers. The raw water (especially surface water) will initially pass through screens to ensure that large debris are filtered and will not damage process pumps or other equipment. The water may be dosed with chlorine or other chemicals to remove potential odors, kill algae, or control zebra mussels.

Raw water contains colloids, and chemicals called coagulants are added to react with these particles, forming larger, settleable particles through a process called coagulation. The water then enters a flocculation tank, where it is mixed slowly to increase the size and density of the particles (floe), ensuring they can quickly settle out of the water.

Figure 2.2.2. Water Treatment Plant-Process



From this point, the water typically flows into sedimentation tanks (or clarifiers), where heavier matter settles due to gravity. The next step in the process is filtration. Removing as many suspended particles as possible is crucial for the operation of a treatment facility.

Before the water is distributed to the community, it is disinfected, pH levels are balanced, and other impurities are removed. The most common addition is through the distribution system to the customer.

The entire process ensures that customers have access to clean, safe water while maintaining sufficient pressure and volume to meet all users' demands.

Bulk Water Stations

A bulk water station is a location where commercial businesses, agricultural operations and the public can purchase large volumes of water at easily accessible locations. CK PUC has **12 bulk water stations** located in Blenheim, Chatham, Coatsworth, Dresden, Eberts, Grande Pointe, Merlin, Pain Court, Ridgetown, Thamesville, Tilbury, and Wallaceburg. Except for Ridgetown and Thamesville, which have 2" camlock fill connections, all other bulk water stations have 3" camlock fill connections.

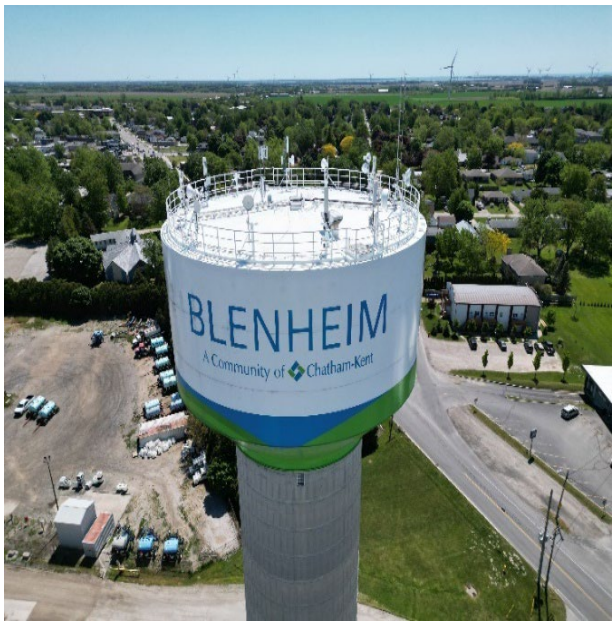
Figure 2.2.3. Bulk Water Station

Water Tower and Standpipes

Water towers and standpipes are elevated structures that support a water tank, constructed at a height sufficient to pressurize a distribution system for potable water and provide emergency storage for fire protection. CK PUC has **10 Water towers** (Tilbury, Dresden, Mitchell's Bay, Pain Court, Bothwell, Wallaceburg, Wheatley, Blenheim, Ridgetown, and Chatham) and 3 Standpipes (Eberts, Cedar Springs, and Thamesville).

CK PUC also possess a surge tower that serves the same function as a standpipe.

Figure 2.2.4. Chatham Water Tower **Figure 2.2.5. Blenheim Water Tower**



Booster Pump Station

Booster pumps can be located anywhere in the system, and their primary purpose is to increase the water pressure in the pipeline network. Booster pump stations are equipped with two or

more pumps that are responsible for pressurizing the water. In emergencies, such as natural disasters or equipment failures, booster pump stations can be crucial for maintaining water supply and pressure in affected areas.

Figure 2.2.6. Blenheim Booster Pump Station

2.3 Asset Condition

Condition is the preferred measurement for planning lifecycle activities to ensure assets deliver the agreed-upon levels of service and reach their expected useful life. Conditions are not currently monitored, and age is the default parameter. Until condition assessments have been completed, age-based data and professional opinions will be utilized.

Table 2.3.1. Watermains by Age

AGE	LENGTH (M)	PERCENTAGE (%)
Above 75 years old	89,985	5.41%
Between 50 and 75 years old	216,777	13.04%
Between 30 and 50 years old	283,248	17.04%
Less than 30 years old	1,072,231	64.51%
Total	**1,662,241**	**100%**

Figure 2.3.1. Watermains by Age

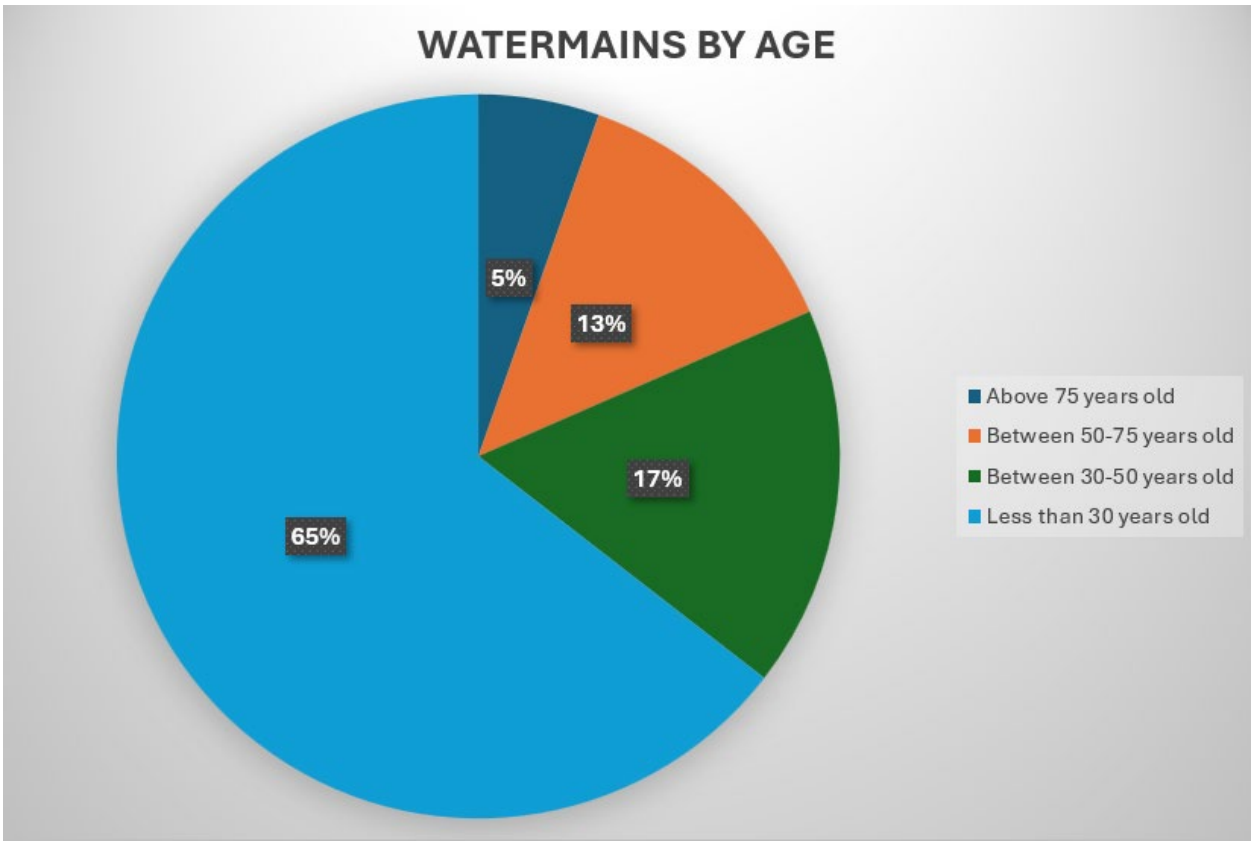
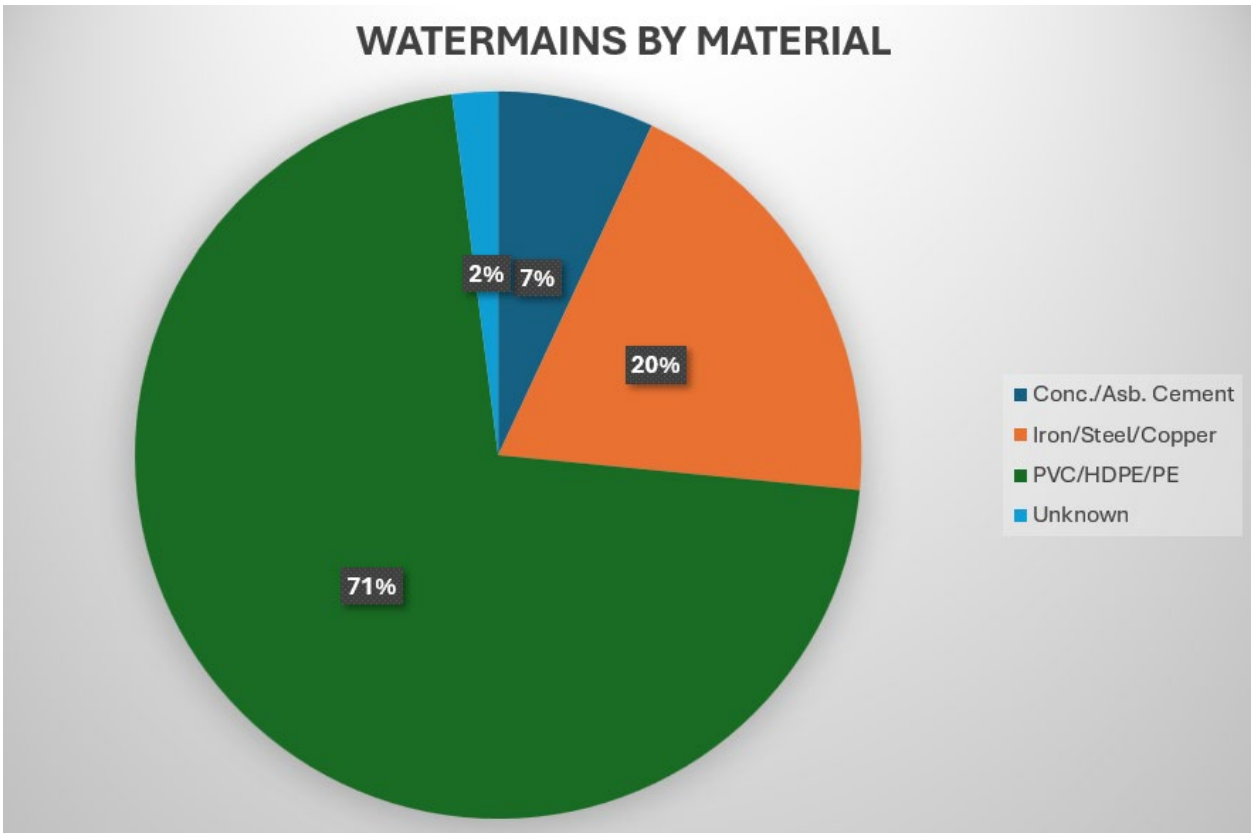


Table 2.3.2. Watermains by Material

MATERIAL	LENGTH (M)	PERCENTAGE (%)
Concrete/Asbestos Cement	115,572	6.95%
Iron/Steel/Copper	325,542	19.58%
Poly Vinyl Chloride (PVC)	1,187,191	71.42%
High Density Polyethylene (HDPE)		
Polyethylene (PE)		
Unknown	33,936	2.04%
Total	**1,662,241**	**100%**

Figure 2.3.2. Watermains by Material



Although condition rating is the preferred measurement for asset management planning, many assets in the CK PUC water services do not yet have a process in place to determine their condition. For assets where a condition program exists and a condition score was output, those conditions were converted to the scale below in **Table 2.3.1.**

Conditions are measured using a 1 – 5 grading system, as detailed in **Table 2.3.1**. A consistent approach to reporting asset performance enables adequate decision support. A more refined

grading system may be employed at a more specific level. However, for reporting in the DAMP, results are translated into a 1–5 grading scale for ease of communication.

Table 2.3.3. Condition Grading System

Condition Grading	Description of Condition
1	**Very Good**: free of defects, only planned and/or routine maintenance required.
2	**Good**: minor defects, increasing maintenance required plus planned maintenance
3	**Fair**: defects requiring regular and/or significant maintenance to reinstate service
4	**Poor**: significant defects, higher order cost intervention likely
5	**Very Poor**: physically unsound beyond rehabilitation, immediate action required.

Currently, asset conditions are assessed using both formal and informal methods.

CK PUC maintains its Water facilities through a preventive maintenance and inspection program that includes activities such as regular TV camera inspections and field assessments to ensure system integrity, smooth operations, and reliability.

Additionally, as part of an ongoing facilities maintenance and improvement program, Water facilities undergo upgrades, such as equipment refurbishment, system replacements, the installation of SCADA communication systems, and the introduction of new online instrumentation for process monitoring. The condition needs to be consistently and formally monitored. The municipality of Chatham-Kent intends to develop a formal condition rating system for CK PUC water assets in 2026.

2.4 Asset Capacity and Performance

Assets are generally provided to meet design standards where these are available. However, performance deficiencies still need to be identified. Additional deliberation will occur, and further performance deficiencies will be pinpointed in subsequent versions of this DAMP.

3.0 LIFECYCLE MANAGEMENT

The lifecycle management plan will detail how CK PUC plans to operate the assets at the agreed-upon levels of service by managing its lifecycle costs. These costs are categorized by

lifecycle phases: **acquisition, operations, maintenance, renewal, and disposal**. It is budget-based but will evolve into a whole lifecycle approach by 2027, where appropriate.

From a financial perspective, infrastructure activities are typically classified as either Operating or Capital. The lifecycle activities used in the asset management and financial planning and reporting process cover:

Capital

- **Acquisition** – the activities that provide a higher level of service (e.g., implementing a new water treatment plan, constructing a new pump station, or replacing a pipeline with a larger diameter) or introducing a new service that did not exist previously (e.g., establishing a new library).
- **Operations** – Long-term plans and rate studies are identified expenditures within the capital budgets; however, these are operational activities.
- **Maintenance** – Large-scale maintenance projects are required to ensure that assets reach their expected service life. (e.g. pump maintenance program, intake repairs, etc.)
- **Renewal** – the activities that replace or restore assets to the standard they initially provided (e.g., Pump Station replacement, Water Tower replacement, pipeline replacement, and building component replacement).

Operating

- **Operations** - the routine activities that keep services accessible and practical, balancing efficiency with user expectations (e.g., staffing costs, training, certification, chemicals, insurance, lab costs, inspections, financial audits, energy costs, etc.).
- **Maintenance** - encompasses both preventative and corrective actions to sustain asset functionality and minimize unexpected failures. Maintenance activities enable an asset to provide service for its planned life (e.g., pipe repairs, component repairs, building and structure repairs).
- **Disposal** – the decommissioning, removal, or repurposing of assets that are no longer cost-effective, safe, or necessary (e.g., shutting down an old water treatment plant, demolishing unsafe buildings, or removing asbestos-lined pipes).

Once CK PUC acquires an asset, the municipality must fund the remaining lifecycle costs, such as operations, maintenance and its likely inevitable renewal. These other lifecycle costs are far more significant than the initial construction or purchase cost and are often multigenerational. Since lifecycle costs are spread across multiple decades, the CK PUC must approach its asset planning with a long-term view to ensure it effectively manages the asset and assists in making informed choices.

3.1 Acquisition Plan

Acquisitions are the lifecycle activities that add new assets that did not exist before or improve the capability or function of an existing asset. These acquisitions may result from growth, council priorities, donation, demand, or social or environmental needs. The costs associated with acquisitions include design, construction, staff training, consulting, purchase costs, and staff time to ensure the asset is ready for service and can be considered 'fit for use'.

3.1.1 Selection Criteria

Proposed acquisitions of new assets and upgrades of existing assets are identified from various sources, such as community requests, proposals identified through strategic plans, or partnerships with others. Potential upgrades and new works should be reviewed to verify that they are essential to the CK PUC's needs.

The proposed upgrade and new work analysis should also include developing a preliminary renewal estimate to ensure that the services are sustainable over the long term. Verified proposals can then be ranked by priority and available funds and scheduled for future work programs. The priority ranking criteria are detailed in **Table 3.1.1**.

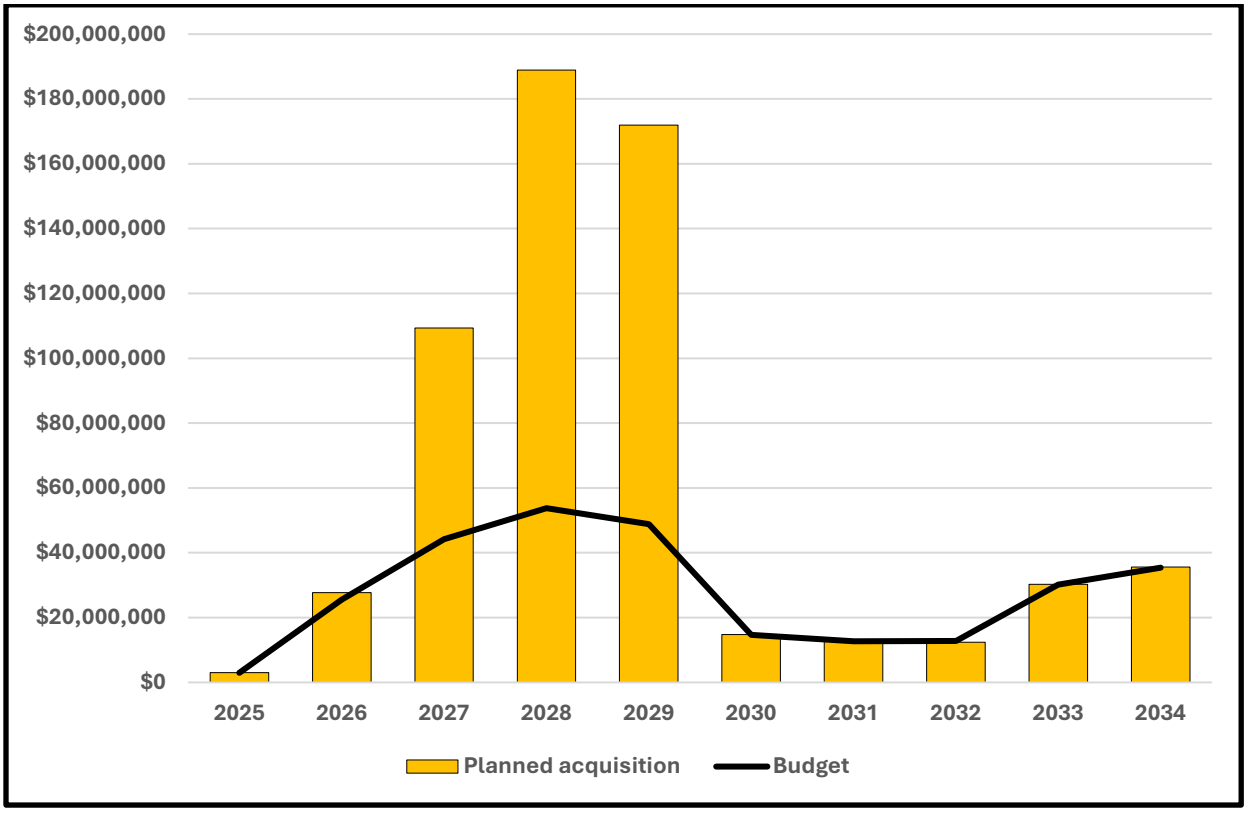
Table 3.1.1: Acquired Assets Priority Ranking Criteria

Criteria	Weighting
Increase demand	25%
Criticality	25%
Safety	25%
New service requests	25%
Total	100%

Summary of Future Asset Acquisition Costs

Forecast acquisition asset costs are summarized in **Figure 3.1.1** and shown relative to the proposed acquisition budget. **Figure 3.1.1** illustrates the acquisition costs for CK PUC over a 10-year planning period. The budget line falls short of the projected acquisition costs from 2025 to 2034. This indicates the necessity of considering an increase in the allocated budget amount.

Figure 3.1.1: Acquisition (Constructed) Summary



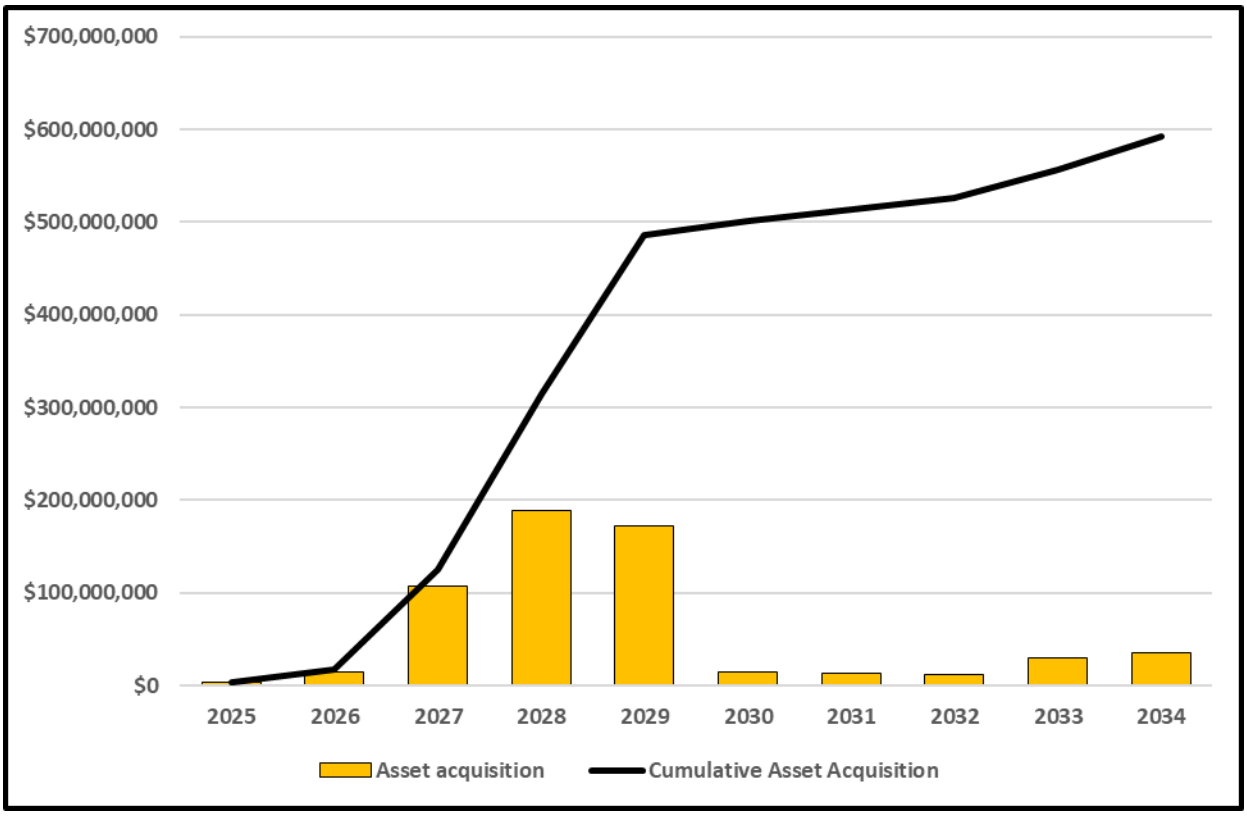
All figure values are shown in 2025-dollar values.

Figure 3.1.1 illustrates all planned acquisitions for the period from 2025 to 2034. The forecasted acquisitions will be financed through the facilities lifecycle reserve fund, watermains lifecycle reserve fund, water reserves, development charges reserve fund, and water revenues. However, the chart indicates that these funding sources do not fully cover all the forecasted acquisitions. Additional funding will be needed for acquisitions in 2027, 2028, and 2029 to meet the required acquisition needs for those years.

When CK PUC commits to new assets, it must be prepared to fund future operations, maintenance, and renewal costs. To ensure long-term sustainability, CK PUC must also adequately fund its reserves to ensure it has sufficient resources to acquire assets at the right time, thereby meeting community needs. When examining the long-term impacts of asset acquisition, it is helpful to consider the cumulative value of the acquired assets being taken on by CK.

The cumulative value of all acquisition work, including both contributed and purchased assets (as constructed), is shown in **Figure 3.1.2**. The figure illustrates the proposed **$600 million** of planned acquisitions over a 10-year planning period, with the black line indicating cumulative asset acquisition. Each year's cumulative asset acquisition is the sum of acquisitions from previous years within the planning period.

Figure 3.1.2: Acquisition Summary



All figure values are shown in 2025-dollar values.

The long-term financial plan will accommodate expenditure on new assets and services in the capital works program, if funding is available.

Forecast acquisition projects for CK PUC Water Services for the period of 2025-2034:

2025

- **$2,056,000** to increase the storage capacity at the existing Chatham Water Treatment Plant.

2026

- **$9,809,000** to increase the storage capacity at the existing Chatham Water Treatment Plant.
- **$3,685,000** for a new 600 mm water transmission main.
- **$13,227,000** for a new 600mm transmission main.

2027

- **$10,398,000** to increase the storage capacity at the existing Chatham Water Treatment Plant.
- **$24,618,000** to increase the treatment capacity of Chatham water treatment plant.
- **$3,682,000** to increase the pumping capacity of Chatham water treatment plant.
- **$11,910,000** for rehabilitation of Ridgetown Elevated Tank.
- **$17,579,000** for a new 600mm transmission main.
- **$ 1,326,000** to increase pumping capacity at the existing South Chatham Kent Water Treatment Plant.
- **$40,000,000** for twinning the waterline from Lake Erie to the Chatham water treatment plant.

2028

- **$117,429,000** to increase the treatment capacity of Chatham water treatment plant.
- **$15,418,000** for a 300mm transmission main.
- **$6,401,000** for retrofitting the Ridgetown water treatment plant as a pumping station.
- **$18,634,000** for a new 600mm transmission main.
- **$30,000,000** for twinning the waterline from Lake Erie to the Chatham water treatment plant.

2029

- **$124,475,000** to increase the treatment capacity of Chatham water treatment plant.
- **$ 16,343,000** for a 300mm transmission main.
- **$30,000,000** for twinning the waterline from Lake Erie to the Chatham water treatment plant.

2030

- **$10,233,000** for a new 200mm local distribution system Looping.
- **$3,419,000** for a new Booster Pumping Station

2031

- **$11,624,000** for a new 600mm transmission main.

2032

- **$5,670,000** for a raw water pumping station.
- **$6,090,000** for 11 km of new 600mm transmission main from the existing Water Treatment Plant.

2033

- **$29,049,000** for 11 km of new 600 mm transmission main from the existing Water Treatment Plant.

2034

- **$30,792,000** for 11 km of new 600 mm transmission main from the existing Water Treatment Plant.
- **$ 3,494,000** for a new local booster pumping station for the east of Wheatley water system

3.2 Operations Plan

Operations include regular activities to provide services. These activities are essential for completing regular day-to-day operations. Examples of typical operational activities of the CK PUC include:

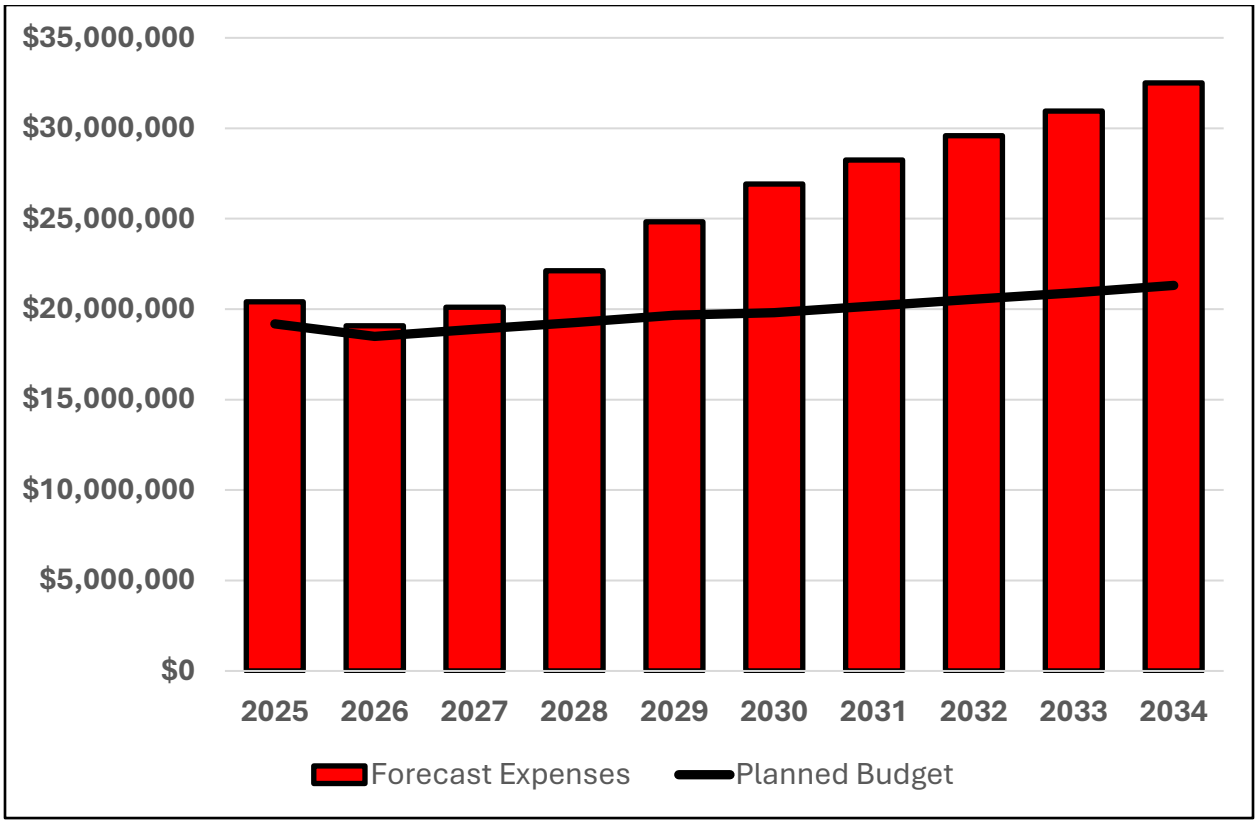
- Staffing costs,
- Water sample collection and laboratory testing,
- Grass cutting,
- Regular inspections of water facilities,
- Utilities, fuel and other chemical costs
- Ensuring all operators are compliant with license requirements,
- Provide necessary training for staff for activities that are required by legislative requirements,
- Master plans, strategies, rate studies,
- Contractor costs are related to managing water operations and other required activities.

CK PUC and Public Works have a Service Level Agreement (SLA) that ensures certain activities are completed. Public Works flush all hydrants. Currently, there are still significant concerns regarding certain operational activities involving hydrants, as well as other legislative requirements that are not currently being met. This issue needs to be addressed, and CK PUC has a Service Level Agreement (SLA) with several departments, including Public Works, Engineering, ITT, and Fleet Services. CK PUC allocates **$4,072,539** annually for the SLA with these departments. Additionally, CK PUC maintains a Service Level Agreement (SLA) with Entegrus for hydro services, costing **$1,970,700** per year.

Summary of Forecast Operations Costs

Forecast operations costs are expected to vary in relation to the total value of the asset stock. If additional assets are acquired, future operations and maintenance costs are likely to increase. If assets are disposed of, the forecast operation costs are expected to decrease. **Figure 3.2.1** shows the forecast operations costs relative to the proposed operations Planned Budget.

Figure 3.2.1: Operations Summary



All figure values are shown in 2025-dollar values.

Figure 3.2.1 is based on the capital and operating budget for CK PUC water services. Funding for these expenses is provided by the budget, facilities lifecycle reserve fund, watermains lifecycle reserve fund, water reserves, development charges reserve fund, and water revenues. The figure shows that the forecasted budget exceeds the planned budget for all years, with a notable increase from 2028 to 2034. While the operational activities in the capital budget are funded through the mentioned revenues and reserves, the higher forecasted operational values are primarily due to operational expenses associated with new acquisitions and inflation.

Currently, operational budget levels are insufficient to meet projected service levels over the 10-year planning period.

Future iterations of the DAMP will need to consider obligations to prioritize required safety and regulatory operational activities. With more operational dollars in the 10-year planning horizon, more must be done to ensure a higher level of service.

Table 3.2.2: Operations Budget Trends

Year	Operation Budget $
2025	$19,184,000
2026	$18,496,000

2027	$18,881,000

3.3 Maintenance Plan

Maintenance includes all actions necessary to retain an asset in as near an appropriate service condition as practicable, including regular, ongoing day-to-day work required to keep assets operating. Effective planned maintenance enables assets to reach their expected useful lives, reducing the need for higher-cost, reactive maintenance. Where maintenance budget allocations result in a lesser level of service, the service consequences and risks have been identified. They are highlighted in this DAMP, and service risks are considered in the Risk Management section of this plan.

Summary of Forecast Maintenance Costs

Forecast maintenance costs are expected to vary in relation to the total value of the asset stock. If additional assets are acquired, future maintenance costs will increase. If assets are disposed of, the forecast maintenance costs are expected to decrease.

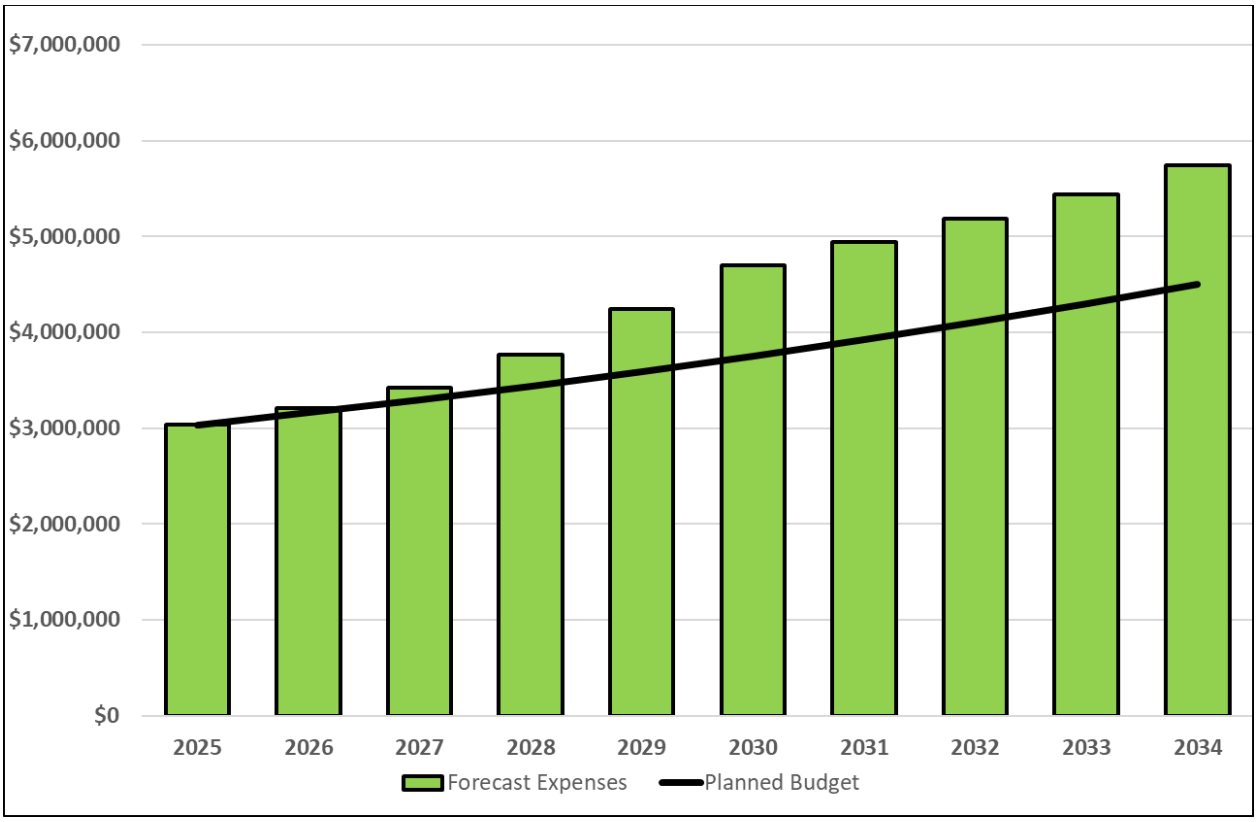
Typical maintenance activities performed by CK PUC on water assets include:

- Maintenance on watermains
- Preventative maintenance of the composite Elevated Tanks, Standpipes and Spheroid Tanks.
- Other maintenance works on water facilities (replacing components, valves, etc.)

CK PUC allocates funds for the preventive maintenance of Water Towers, Standpipes, and Spheroid Tanks, which includes tasks such as painting and other essential upkeep. In 2025, CK PUC plans to spend **$2,120,000** on this maintenance, with the expenditure increasing each year. By the end of 2034, CK PUC will be spending **$3,582,000** annually on the preventive maintenance of these structures.

Figure 3.3.1 illustrates the forecasted maintenance costs in relation to the proposed maintenance budget.

Figure 3.3.1: Maintenance Summary



All figure values are shown in 2025-dollar values.

The maintenance budget levels are insufficient to meet the projected service levels over the entire 10-year planning period. The available budget is adequate to cover all forecasted maintenance expenses for 2025 and 2026; however, from 2027 to 2034, the forecasted costs exceed the budget, indicating that additional funding will be required during these years. The increase in forecast expenses is primarily due to inflation and maintenance activities linked to new acquisitions.

As CK PUC continues to add assets without securing the necessary funding for their lifecycle activities, the staff's ability to maintain these assets at the expected or required service levels may be significantly impacted. It is essential to note that there are mandatory operational and maintenance expenditures driven by legislative requirements, which cannot be deferred or avoided.

Currently, staff assess and prioritize reactive maintenance using experience and judgment. Future iterations of the DAMP will need to consider obligations to ensure that required safety and regulatory maintenance is prioritized.

The trend in maintenance budgets is shown in **Table 3.3.2** below.

Table 3.3.2: Maintenance Budget Trends

Year	Maintenance Budget

2025	$3,035,954
2026	$ 3,162,954
2027	$ 3,297,954

3.4 Renewal Plan

Renewal is major capital work that does not significantly alter the original service provided by the asset but restores, rehabilitates, replaces, or renews an existing asset to its original service potential. Work beyond restoring an asset to its original service potential is considered to be an acquisition, resulting in additional future operations and maintenance costs.

Assets requiring renewal are identified from the asset register data to project the renewal costs (replacement cost) and renewal timing (acquisition year plus updated helpful life to determine the renewal year). **Table 2.2.2.** in section 2 shows the typical useful lives of assets used to develop projected asset renewal forecasts, which were reviewed in **March 2025.**

The estimates for renewals in this DAMP are based on the asset register method.

3.4.2 Renewal ranking criteria

Asset renewal is typically undertaken to either:

- Ensure the reliability of the existing assets to deliver the service.
- To ensure the asset is of sufficient quality to meet the service requirement

The CK PUC prioritizes its renewals by identifying assets or asset groups that have:

- A high consequence of failure
- High use and subsequent impact on users would be significant
- Higher than expected operational or maintenance costs
- Potential to reduce life cycle costs by replacing it with a modern equivalent asset that would provide a comparable service

The ranking criteria used to determine the priority of identified renewal proposals is detailed in **Table 3.4.3**.

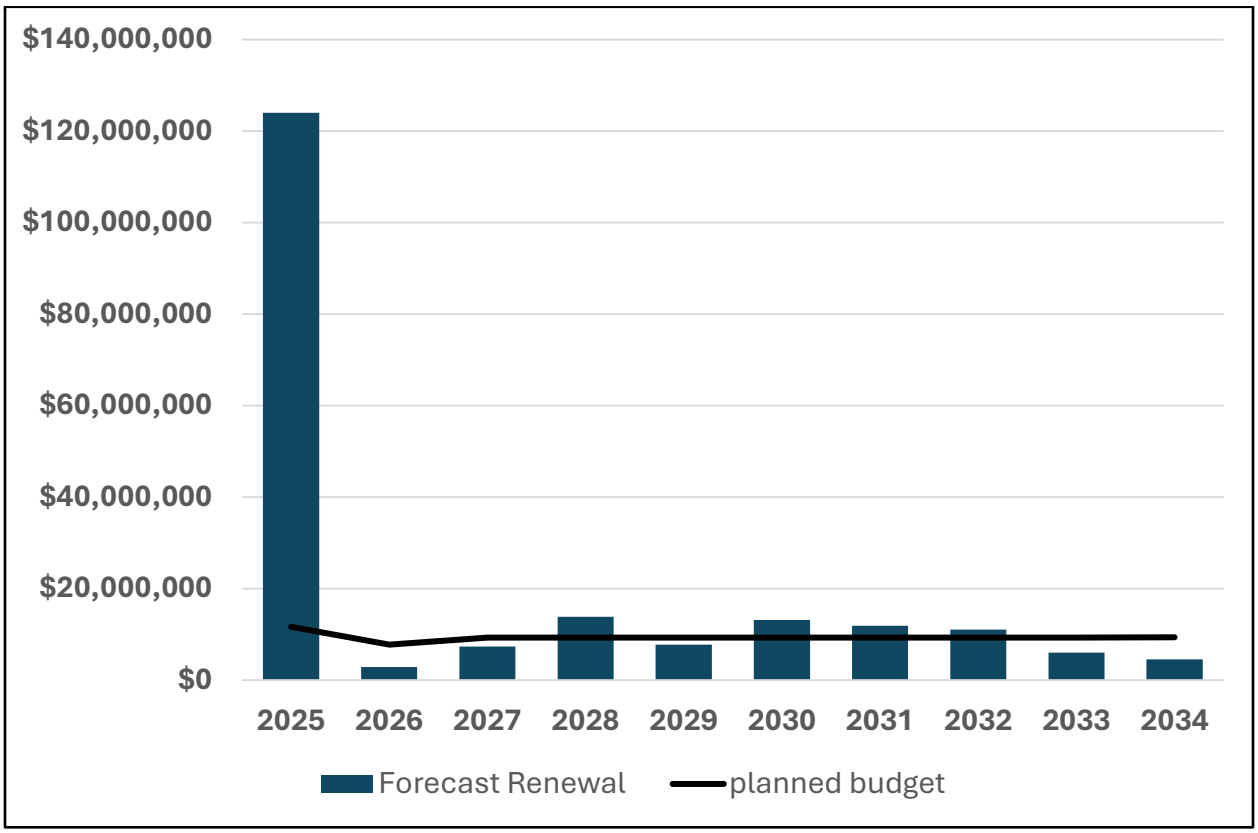
Table 3.4.3: Renewal Priority Ranking Criteria

Criteria	Weighting
Condition is 4 or less (Grading scale 2.1.3)	15%
Regulatory / Legal Compliance	25%
Capacity Improvement	10%
Demand driver	10%
Risk mitigation	20%
Coordinated with other asset replacement	5%
Lifecycle Impacts	15%
Total	100%

3.5 Summary of Future Renewal Costs

Forecast renewal costs are projected to increase if the asset stock increases. In **Figure 3.5.1**, the forecast costs associated with renewals are shown relative to the proposed renewal budget.

Figure 3.5.1: Forecast Renewal Costs 2025 - 2034



All figure values are shown in 2025-dollar values.

Figure 3.5.1 displays the expenses for renewing CK PUC assets between 2025 to 2034. The significant amount highlighted in 2025 represents the total backlog of deferred work that needs to be completed and has yet to be funded. This backlog has been identified either through the current estimated condition of assets or based on their age when condition data was unavailable. Deferred renewals, which refer to assets identified for renewal but not yet scheduled in capital works programs, are also included. A significant portion of this backlog comprises water mains, hydrants, and certain water facilities.

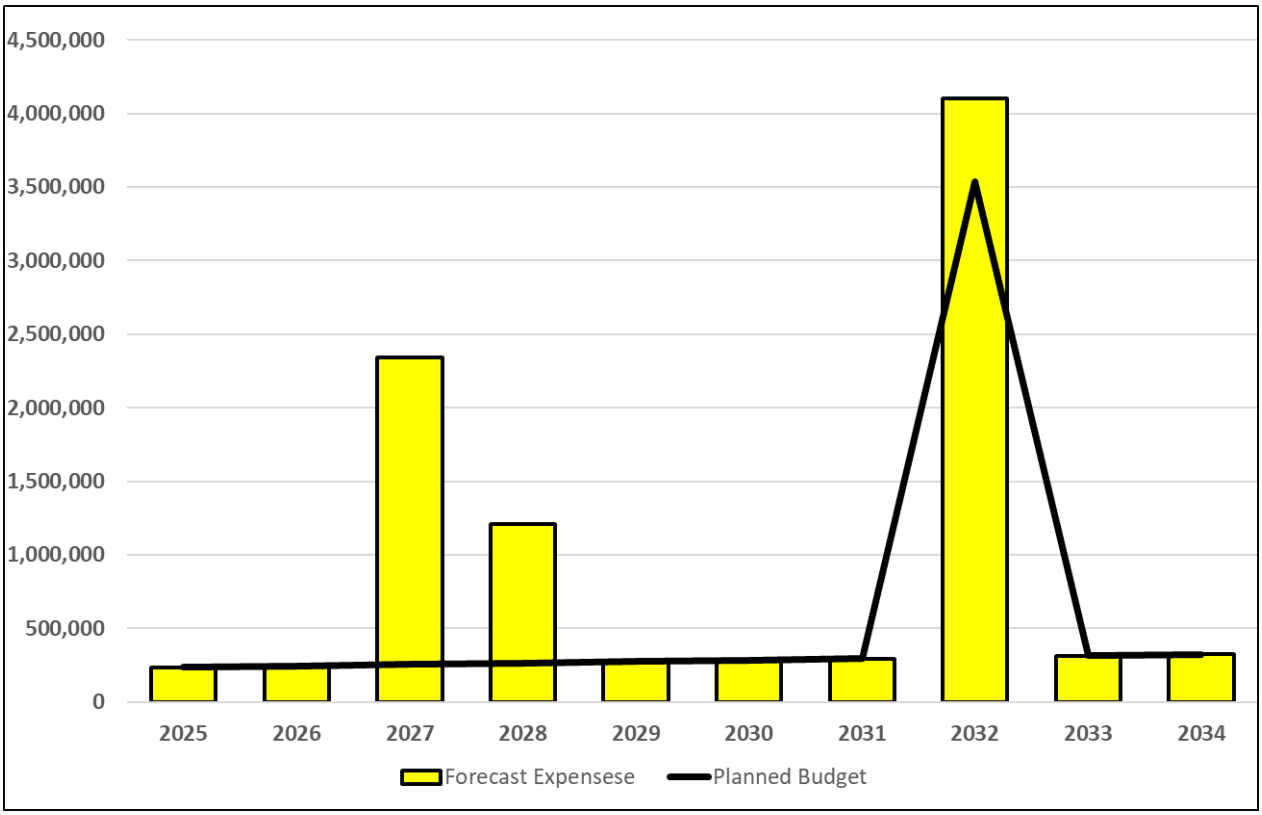
CK PUC funds the renewal of water mains through the annual Watermain Lifecycle Project, utilizing the Watermain Lifecycle Reserve Fund. In 2025 and 2026, **$6,000,000** and **$7,500,000**, respectively, are forecasted to be spent on water main lifecycle replacement. From 2027 to 2034, **$9,000,000** will be allocated annually to this project. Public Works plays a key role in responding to water main breaks and is actively involved in this renewal project. Water main

breaks are a critical factor in prioritizing water main renewal, with those experiencing more frequent breaks being given top priority. Public Works is also responsible for repairing hydrants.

3.6 Disposal Plan

Disposal includes any activity associated with the disposal of a decommissioned asset, including sale, demolition, or relocation. Decommissioning and replacing an asset with a change (increase or decrease) in the capacity is also termed as disposal of the existing asset. Any costs or revenues from asset disposals will be accounted for in the future iteration of the plan and the long-term financial plan. **Figure 3.6.1** represents the forecast costs associated with disposals and are shown relative to the proposed disposal budget.

Figure 3.6.1 Forecast Disposal Costs 2025-2034



All figure values are shown in 2025-dollar values.

Figure 3.6.1 illustrates the forecast disposal and planned budget from 2025 to 2034. The significant spike in 2032 is attributed to the decommissioning of the Tilbury inground reservoir and pumping station. This disposal will be fully funded through reserves and development charges. In contrast, the disposals scheduled for 2027 and 2028 are not fully funded, as there is a lack of funding available in these years.

Table 3.6.1 represents the assets identified for disposal for the period from 2025 to 2034.

Table 3.6.1 Assets Identified for Disposal

Asset	Reason for Disposal	Timing	Disposal Costs	Operations & Maintenance Annual Savings
Ridgetown Water Tower	Passed Estimated Service Life (ESL)	2027	$1,191,000	Undetermined
Tilbury inground reservoir and pumping station	End of life	2032	$3,795,000	Undetermined
Dealtown WTP	End of life	2028	$947,000	Undetermined
Dresden WTP	End of life	2027	$893,000	Undetermined

3.7 Summary of Asset Forecast Costs

The financial projections from this asset plan are shown in **Figure 3.7.1**. These projections include forecast acquisition, operation, maintenance, renewal, and disposal costs. These forecast costs are shown relative to the proposed budget.

The bars in the graphs represent the forecast costs needed to minimize the life cycle costs associated with the service provision. The proposed budget line indicates the estimated amount of available funding. The gap between the forecast work and the proposed budget is the basis of the discussion on achieving a balance between costs, levels of service and risk to achieve the best value outcome.

Figure 3.7.1: Life Cycle Summary

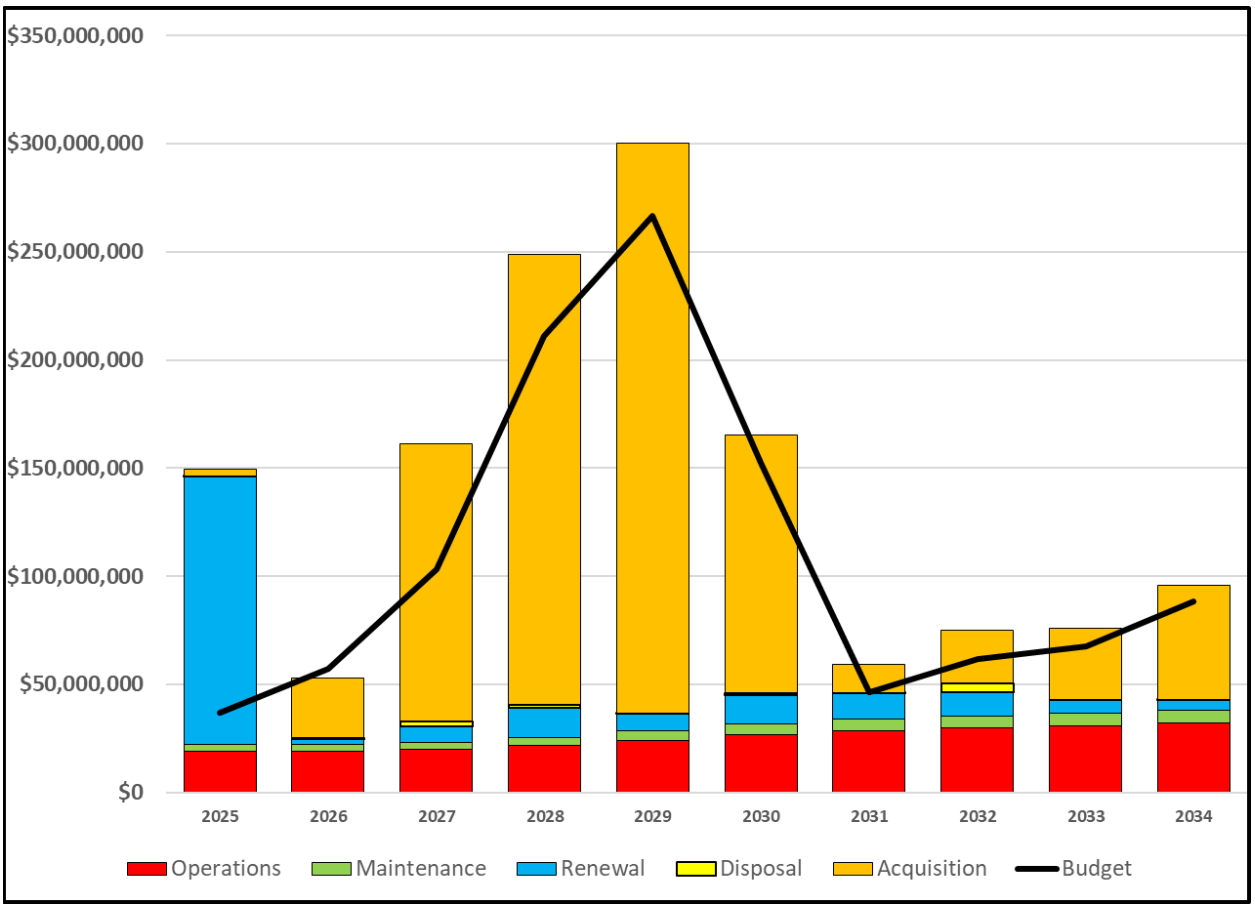


Figure 3.7.1 presents a lifecycle summary for CK PUC over a **10-year** planning period, encompassing operation, maintenance, renewal, acquisition, disposal, and the projected budget.

Budget constraints remain a challenge throughout the period due to backlogged renewals and rising operational and maintenance costs. The blue bar in 2025 represents the backlog of renewals from previous years which is, and extensive and significant amount of work required.

There is also a large number of forecasted acquisitions planned for 2027, 2028, and 2029, but only some of these acquisitions are funded through lifecycle reserves, development charge reserve funds, and water charges.

Allocating adequate resources is crucial for managing assets throughout their life cycle. This includes funding for lifecycle activities, adequate staffing, increased asset knowledge, improved planning, contracted services, and additional equipment or vehicles to ensure CK PUC can effectively implement its lifecycle approach. Without sufficient funding, CK PUC has no choice but to defer these essential lifecycle activities. Deferring such activities is never advisable.

The municipality will benefit from allocating adequate resources to develop a long-term financial plan, ensuring it can fully fund necessary lifecycle activities over time. Funding these activities is essential to ensure that assets remain compliant and safe and continue to deliver the services customers need and expect effectively.

The lack of funding for the backlog of renewals and necessary lifecycle activities presents an additional issue: intergenerational equity. Each year, the municipality defers crucial lifecycle activities, shifting the growing financial burden onto future generations. Consistently allocating sufficient funding over time ensures that future generations will enjoy the same service standards that are available today. As the municipality continues to improve its lifecycle data, it will be able to make more informed decisions on how best to mitigate the impacts of the funding gap and address it in the future.

4.0 LEVELS OF SERVICE

Levels of service describe the value that CK PUC provides for the community and are typically discussed in terms of measures. Utilizing service measures enables decision-makers to understand the outcome of investments, allowing those making choices to clearly comprehend how a dollar more or less will impact Chatham-Kent's ability to deliver its services. These measures also enable Chatham Kent to communicate with the public about the cost of the services they receive today and will be able to afford in the future. The Drinking Water AMP establishes a preliminary level of service measures and the current

> ***"Levels of service measure the actual service delivered so that decisions can be made about the assets based on the service that they provide rather than simply on their condition."***

level of service being provided. The measures align with both Municipality goals and Provincial requirements and recognize that drinking water assets should:

- Provide reliable water services for community use and fire fighting
- Maintain a consistent and high-quality water supply
- Ensure water is safe for domestic purposes and consumption
- Provide and use potable water sustainably.

Service levels are defined in four ways: legislative compliance, customer values, customer service levels, and technical service levels.

4.1 Legislative Requirements

Meeting legislative requirements should be the bare minimum level of service Chatham Kent provides. These requirements often drive many lifecycle costs and staff tasks to ensure that Chatham-Kent complies with all applicable legislation, from Federal to provincial, as well as Chatham-Kent's own bylaws. There are numerous legislative requirements related to the management of assets. Legislative requirements that impact the delivery of water services are outlined in **Table 4.1.1**.

Table 4.1.1: Legislative Requirements

Legislation	Regulations	Requirement
Safe Drinking Water Act, 2002	O. Reg. 205/18: Municipal Residential Drinking Water Systems in Source Protection Areas	This act recognizes that the people of Ontario are entitled to expect their drinking water to be safe and controls the regulation of drinking water systems and drinking water testing.
	O. Reg. 453/07: Financial Plans	
	O. Reg. 229/07: Service of Documents	
	O. Reg. 188/07: Licensing of Municipal Drinking Water Systems	
	O. Reg. 242/05: Compliance and Enforcement	
	O. Reg. 128/04: Certification of Drinking Water System Operators and Water Quality Analysts	
	O. Reg. 248/03: Drinking Water Testing Services	
	O. Reg. 172/03: Definitions of 'Deficiency' and 'Municipal Drinking Water System'	
	O. Reg. 171/03: Definitions of Words and Expressions Used in the Act	
	O. Reg. 170/03: Drinking Water Systems	
	O. Reg. 169/03: Ontario Drinking Water Quality Standards	
Clean Water Act, 2006	O. Reg. 288/07 Source Protection Committees	The purpose of the Act is to protect existing and future sources of drinking water.
	O. Reg. 287/07: General	
	O. Reg. 284/07: Source Protection Areas and Regions	
	O. Reg. 231/07: Service of Documents	
	O. Reg. 288/07 Source Protection Committees	

Legislation	Regulations	Requirement
Ontario Water Resources Act	O. Reg. 450/07 Charges for Industrial and Commercial Water Users	The purpose of the Act is to protect existing and future sources of drinking water.
	O. Reg. 387/04 Water Taking and Transfer	
	R.R.O. 1990, Reg. 903: Wells	
	O. Reg. 450/07 Charges for Industrial and Commercial Water Users	
Canadian Environmental Protection Act		An Act respecting pollution prevention and the protection of the environment and human health to contribute to sustainable development
Canada Water Act		An Act to provide for the management of the water resources of Canada, including research and the planning and implementation of programs relating to the conservation, development and utilization of water resources
2020 Watermain disinfection procedure	This water main disinfection procedure is a supporting document for Ontario legislation and regulations related to Drinking Water.	For watermains, including temporary watermains, that are added to, modified, realigned, replaced, or extended within a Drinking Water System, Operating Authorities shall ensure that the requirements of ANSI/AWWA Standard C651 are followed, as modified by this procedure.

Legislation	Regulations	Requirement
Drinking Water Quality Management Standard	The DWQMS establishes a framework for the operating authority and the owner of a drinking water system to develop a Quality Management System (QMS) that is relevant and appropriate for the system.	The DWQMS approach emphasizes the importance of a proactive and preventative approach to management strategies that identify and manage risks to public health.
O. Reg. 213/07 Fire Code		This regulation stipulates significant regulations including • Availability of Water Supply • Annual inspections and testing of hydrants, valve turnings, flushing, and confirmation of hydrant markings and colours • Flow testing and coding of hydrants • Maintenance and removal of hydrants

A Fire Hydrant System is an active fire protection measure that provides a ready source of water to combat potential fires. It is composed of a series of components that ensure an adequate amount of water is available with suitable pressure and flow, making it accessible for firefighting purposes. The system is usually interconnected with a network of pipes that directly link to the main water supply. This network distributes water to multiple hydrant outlets situated strategically throughout a facility or area.

Section 6.6.6 in the Ontario Fire Code (O. Reg. 213/07) states that fire hydrants should be colour-coded in accordance with NFPA 291, “Recommended Practice for Fire Flow Testing and Marking of Hydrants.” Based on the flow, there are four different classifications: Class AA, Class A, Class B, and Class C.

Class AA

Class AA fire hydrants have a light blue top and nozzle cap. These hydrants offer the highest water flow rate for firefighters, with a minimum flow of 1,500 gpm or 5,700 L/min. Due to the vast amount of water available, these hydrants are the most effective resources for fighting fires in large properties or multi-story buildings.

Class A

Class A fire hydrants are painted with a green top and nozzle cap. The water flow rate for these hydrants ranges from 1,000 to 1,499 gallons per minute (gpm) or from 3,800 to 5,699 liters per minute (L/min), meaning they can meet the standard fire flow requirements of most structures.

Class B

Class B fire hydrants are painted orange. These flow rates range from 500 to 999 GPM (1,900 to 3,799 L/min), making them better suited for residential settings or smaller structures.

Class C

Class C fire hydrants are identified by their red tops and nozzle caps, with a maximum flow rate of 500 gallons per minute (gpm) or 1,900 liters per minute (L/min). Because these are the weakest of the four classes, Class C fire hydrants may need to be used in groups to meet a structure's fire flow requirements.

Hydrant Class	Colour	Flow
AA	BLUE	1,500 gpm (5,678 L/min) or greater
A	GREEN	1,000 - 1,499 gpm (3,785 L/min - 5,677 L/min)
B	ORANGE	500 - 999 gpm (1,893 L/min - 3,784 L/min)
C	RED	less than 500 gpm (1,893 L/min)

In all four classes, the barrels of fire hydrants will be painted yellow. Fire hydrants that are out of service will be painted black. Storz fittings (black) on fire hydrants should not be painted. Private fire hydrants must have their barrels painted red, with the top and nozzle cap color-coded according to the hydrant class.

In Chatham-Kent, most fire hydrants barrel, top and nozzle are painted yellow as shown in the figure below, whereas some has top, and nozzle cap coloured in black. This indicates non-compliance with O. Reg. 213/07, section 6.6.6.

Further discussions will be held in the future, and this issue will be addressed in the upcoming DAMP.



Mandatory O.reg. 588/17 Community Levels of services

As per O.reg. According to 588/17, the municipality is required to report on community-level services to meet the provincial level of service requirements. These quantitative metrics are reported below:

4.2 Customer Research and Expectations

The preparation of the first Water DAMP is intended to streamline consultation before the Municipality of Chatham-Kent adopts levels of service. Subsequent revisions to the DAMP will involve customer consultation, with a focus on service levels and associated costs. This approach aims to assist the council and stakeholders in aligning the required level of service, potential service risks, and consequences with the customers' capacity and willingness to financially support the service.

Public Consultation is required for the Environmental Assessment of projects. Customers can petition for expanding services. If a resident wishes to extend a central line, they can request permission from the CK PUC to extend a water main by completing the petition form attached to the water petition procedures. Suppose a property owner requests a service connection from an existing water main. In that case, the request should be sent to the CK PUC with the necessary supporting documents, and a connection permit should be obtained.

4.3 Customer Value

Service levels are defined in three ways: customer values, customer service levels, and technical service levels. **Customer Values indicate:**

- what aspects of the service are essential to the customer,
- whether they see value in what is currently provided, and
- the likely trend over time based on the current budget provision.

Community consultation will be undertaken to identify Customer values and expected trends regarding the planned budget and outcomes of the consultation. The values will be addressed in future iterations of this plan.

4.4 Customer Levels of Service

The Customer Levels of Service are considered in terms of:

Condition - How good is the service? What is the condition or quality of the service?

Function - Is it suitable for its intended purpose? Is it the right service?

Capacity/Use - Is the service over or underused… do we need more or less of these assets?

In **Table 4.4.1**, under each service measure type (Condition, Function, Capacity/Use), there is a summary of the performance measure being used, the current performance, and the expected performance based on the current budget allocation.
These measures are based on facts related to the service delivery outcome (e.g., the number of occasions when service is unavailable or the proportion of replacement value by condition percentages) to provide a balance compared to the customer's perception, which may be more subjective.

Table 4.4.1: Customer Level of Service Measure

Type of Measure	Level of Service	Performance Measure	Current Performance	Expected Trend Based on Planned Budget
Condition	Ensure that water assets are maintained in good repair.	Average condition of WTP	Good	Slight decrease in the future.
		Average condition of Booster pump station	Good	Slight decrease in the future.
		Average condition of Reservoirs – Inspected every 2 years.	Fair	Maintain condition
		Average condition of wells	Good	Slight decrease in the future.
		Average condition of Bulk water station	Good	Slight decrease in the future.
		Average condition of Water Towers and Standpipes - Towers inspected every 2 years. Rehabilitation projects are cyclical every 2 years.	TBD 2026	TBD 2026
		Average condition of Watermains	Fair	Slight decrease in the future.

Type of Measure	Level of Service	Performance Measure	Current Performance	Expected Trend Based on Planned Budget
Capacity	Sufficient capacity is projected to safely supply water to existing and new customers within the 10-year planning horizon.	Monitoring treatment capacity, storage capacity and pressure within the distribution system annually	100% compliance with the required industry standards	100% compliance with the required industry standards

4.5 Technical Levels of Service

Technical Levels of Service - Technical levels of service describe how a service performs from the provider's perspective. They are quantified using metrics that relate directly to an asset or the service; however, these metrics are related to items that a customer would likely need to be made aware of. Technical measures relate to the activities and allocation of resources to best achieve the desired customer outcomes and demonstrate effective performance.

Technical service measures are linked to the activities and annual budgets covering:

Acquisition – the activities that provide a higher level of service (e.g., replacing a distribution main with a larger size) or introduce a new service that did not exist previously (e.g., construction of a new water treatment plant).

Operation – the regular activities to provide services (e.g. water sampling, inspections, etc.).

Maintenance – the activities necessary to maintain an asset in a state as near as practicable to its original service condition. Maintenance activities enable an asset to provide service for its planned life (e.g. Maintenance works on water facilities, water central break repairs, service leaks).

Renewal – the activities that return the service capability of an asset up to that which it had initially been provided (e.g., renewal of existing water tower with a water tower of same capacity).

Service and asset managers plan, implement, and control technical service levels to influence the service outcomes.

Table 4.5.1 shows the activities expected under the current 10-year Planned Budget allocation and the Forecast activity requirements recommended in this DAMP.

Table 4.5.1: Technical Levels of Service

Lifecycle Activity	Level of Service Statement	Activity Measure	Current Performance	Recommended Performance
Acquisition	Acquisition of a new Water Treatment Plant in Ridgetown to improve capacity and delivery of water services to customers.	Percentage (%) of completion	10% is completed (Municipal Environmental Assessment is almost done)	100% Completion in 2027
		Budget		$11,910,000
	Acquisition of a new booster pumping station.	New booster pumping station to increase transfer capacity for filling Tilbury Water tower.	10% is completed	Completion in 2030
		Budget		$3,419,000
Operation	Ensure that water assets are maintained in good repair.	Conduct a condition assessment of the existing raw water transmission main.	22 kms of transmission main is assessed	Completed by 2025
		Budget		$1,060,000
	Flushing pipes to maintain chlorine residuals and water quality	Percentage of network completed annually.	100%	100%

Lifecycle Activity	Level of Service Statement	Activity Measure	Current Performance	Recommended Performance
Operation	Ensure municipal water operators are compliant with licensing requirements (new and current)	All new hires have their operator's license checked to meet licensing requirements, and PUC provides CEU training to maintain their licensing.	100%	100%
		Budget	$51,300 per year	Increase in the future
	Visual inspection of water facilities to ensure successful operations	Daily inspections completed, continuously alarmed and remote SCADA monitoring	100%	100%
		Budget	$50,501 per year	Increase in the future
Maintenance	Water main breaks	As reported	94 in 2024	As required
	Minimize Service leaks to ensure financial sustainability.	Water Loss annually	TBD in 2026	TBD in 2026
	Preventative maintenance on Water Towers, Standpipes, and Spheroid Tanks.	Preventative maintenance to meet required local system pressures and increase life	$2,120,000 in 2025	Increase in the future.

Lifecycle Activity	Level of Service Statement	Activity Measure	Current Performance	Recommended Performance
Renewal	Annual water main lifecycle replacement	Renewed based on age, condition and other factors to provide required Levels of Service (LOS)	$6,000,000 in 2025 $7,500,000 in 2026 $9,000,000 in 2027	Increase in the future.
	Wheatley Water Treatment Plant (WTP) rehabilitation	Renewal of Wheatley WTP	Budgeted $4,770,000 in 2025	TBD in the future
Disposal	Decommissioning of Tilbury inground reservoir and pumping station	Disposal of the reservoir and pump station to minimize the overall operational complexity and to reduce the long term operational and maintenance costs	Municipal Class Environmental Assessment will commence in 2029	Completed by 2032
		Budget		$3,228,000
	Disposal of existing Ridgetown Water Tower	Passed Estimated Service Life (ESL)		Completed by 2027
		Budget	$1,191,000	$1,191,000

It is essential to regularly monitor service levels, as circumstances can and do change. Current performance is based on existing resource provision and work efficiencies. It is acknowledged that changing circumstances, such as technological advancements and shifting customer priorities, will evolve.

Proposed Level of Service

O. Reg. 588/17 mandates that every municipality define its proposed level of service. The chart below illustrates the existing level of service compared to the proposed level. The planned budget reflects the funds currently available, while the required budget for the proposed level indicates whether an increase in funding is necessary to achieve the desired service level.

Level of Service Statement	Current LOS	Current Budget	Proposed LOS	Required to achieve the Proposed LOS
Chatham-Kent on average will maintain its water vertical assets in **good** conditions over the 10-year planning horizon.	Average conditions are **Good**	**$32.9 million** on average annually	Average condition is **Good**	**+ $10.3 million** annually on average for the life of the plan **(10 years)**
Chatham-Kent will achieve an Asset Renewal Funding Ratio (ARFR) of **25 %** over a 10-year planning horizon to ensure the stormwater system is sustainable.	**46 % (ARFR)**	**$9.4 million** on average annually (for renewal activities only)	**60 % (ARFR)**	**+ $11.6 million** annually on average for the life of the plan **(10 years)**

5.0 FUTURE DEMAND

The municipality's ability to forecast future service demand allows it to plan effectively and find the most efficient way to meet current needs while remaining adaptable to inevitable shifts in demand. Over time, demand is likely to change, influencing the community's needs and expectations.

Demand is defined as the desire customers have for assets or services, and they are willing to pay for them. These desires are for either new assets or services or current assets. The CK PUC's Water and Wastewater Master Plan outlines the vision for the municipality's future growth.

5.1 Demand Drivers

The primary factors driving water demand include population changes, climate change, legislative requirements, and customer preferences and expectations. Additionally, future continuous improvement initiatives identified in this plan will serve as further demand drivers.

5.2 Demand Forecasts

The current position and projections for demand drivers that may impact future service delivery and asset utilization have been identified and documented.

5.3 Demand Impact and Demand Management Plan

Table 5.3.1 shows the impact of demand drivers that may affect future service delivery and asset use.

Demand for new services will be managed by optimizing existing assets, upgrading them, and providing new assets to meet demand and manage demand effectively. Demand management practices can include non-asset solutions, risk insurance, and failure management.

Opportunities identified to date for demand management are shown in **Table 5.3.1**. Further opportunities will be developed in future revisions of this DAMP.

Table 5.3.1: Demand Management Plan

Demand Driver	Current Position	Projection	Impact on services	Demand Management Plan
Population	112,200 (2024)	116,848 (2034)	Increased production capacity at WTP	Revise budgets, long-term financial plans, and Asset Management (AM) plans accordingly.
				Additional staff may be needed to ensure legislative compliance.
				Increased budget due to increased costs for treatment.
				Investigate possible plant upgrades where required.
			Adding new watermains to meet requirements	Revise budgets, long-term financial plans, and Asset Management (AM) plans accordingly.
				Additional staff may be needed to ensure legislative compliance.
				Increased budget due to the higher cost of acquiring and operating new water mains.
			New storage sites need to be constructed to accommodate changes.	Revise budgets, long-term financial plans, and Asset Management (AM) plans accordingly.
				Investigate the need for constructing new water towers and reservoirs.
				Increased budget due to the higher cost of acquiring and operating new water towers and Reservoirs.

Demand Driver	Current Position	Projection	Impact on services	Demand Management Plan
Greenhouse Development	7 in Chatham area, 2 in South Chatham-Kent, and 3 in Wheatley-Tilbury	10 in the Chatham area, 1 in Wallaceburg, 3 in South Chatham-Kent, and 5 in Wheatley-Tilbury	Increased production capacity at WTP	Revise budgets, long-term financial plans, and Asset Management (AM) plans accordingly.
				Additional staff may be needed to ensure legislative compliance.
				Increased budget due to increased costs for treatment.
				Investigate possible plant upgrades where required.
			Adding new watermains to meet requirements	Revise budgets, long-term financial plans, and Asset Management (AM) plans accordingly.
				Additional staff may be needed to ensure legislative compliance.
				Increased budget due to the higher cost of acquiring and operating new water mains.
			New storage sites need to be constructed to accommodate changes.	Revise budgets, long-term financial plans, and Asset Management (AM) plans accordingly.
				Investigate the need for constructing new water towers and reservoirs.
				Increased budget due to the higher cost of acquiring and operating new water towers and Reservoirs.
Legislative Demands from the Province	Working towards compliance	Complete adherence to all legislative demands	Several new demands from the Ministry may require an increase in budget.	Monitor changes and report to the council.

Description	Population		Green house demand		WTP Capacity (ML/D)	Current Rated Capacity (%)	
	2021	2031	2021	2031		Average Daily	Maximum

						Flow (ADF)	Daily Flow (MDF)
Chatham Supply	51,400	55,333	5.4	10.4	68	52%	82%
Ridgetown supply	3,000	3,067			4.09	41%-78%	95%-120%
South Chatham supply	6,100	6,433	0.9	2.8	22.81	54%	82%
Wheatley supply	8,500	9,033	1.9	3.8	23.85	34%	54%
Wallaceburg supply	10,600	10,933		8.6	13.60	40%	58%
Bothwell supply	1,000	1,033			N/A	N/A	N/A
Rural	26,600	26,400					

Average Daily Flow (ADF) is the average of 24-hour volumes to be received by the water system for a continuous 12-month period.

Maximum Daily Flow (MDF) is the highest flow during a 24-hour period.

The table above shows the Water Treatment Plant (WTP) capacity in ML/D, the Current percentage of rated capacity in ADF and MDF, and the forecast in terms of population and greenhouse demand.

The Ridgetown water supply is provided by the Ridgetown Erie Street Water Treatment Plant, with a capacity of 2.78 ML/D, and the Ridgetown Scane Road Water Treatment Plant, with a capacity of 1.31 ML/D. Meanwhile, Bothwell currently receives water through the Tri-County Water Distribution System Agreement. Once this agreement expires, the Bothwell water distribution system will be supplied via a future water main connecting the North Kent Water system, which will run from Moravian to Bothwell.

5.4 Asset Programs to Meet Demand

The new assets required to meet demand may be acquired, donated or constructed. Acquiring new assets, such as a new water treatment plant, water tower, or a new water main, would

commit CKPUC to ongoing operations, maintenance, and renewal costs for the period during which the service provided from the assets is required. These future costs are identified and considered in developing forecasts of future operations, maintenance, and renewal fees for inclusion in the LTFP, as outlined in the finance section of the report.

CKPUC will utilize its Master Plan and other essential documents to inform future decisions when identifying and assessing demands within the DAMP.

6.0 RISK MANAGEMENT

The purpose of infrastructure risk management is to document the findings and recommendations resulting from the periodic identification, assessment, and treatment of risks associated with providing services from infrastructure, using the fundamentals of International Standard ISO 31000:2018, Risk Management – Principles and Guidelines. **ISO 31000:2018** defines risk management as "coordinated activities to direct and control with regard to risk."

Chatham-Kent is developing and implementing a formalized risk assessment process to identify service delivery risks and mitigate them to tolerable levels. The assessment will identify risks that will result in:

- loss or reduction of the level of service
- personal injury
- environmental impacts
- a 'financial shock'
- reputational impacts
- other consequences

The risk assessment process identifies credible risks, the likelihood of the risk event occurring, and the consequences that would result if the event were to happen. The risk assessment should also include the development of a risk rating, which evaluates the risks and develops a risk treatment plan for those deemed unacceptable.

6.1 Critical Assets

Critical assets are defined as those with a high consequence of failure, causing significant loss or reduction of service. Critical assets have been identified, and their typical failure mode and the impact on service delivery are summarized in **Table 6.1.1**. Failure modes may include physical failure, collapse, or interruption of essential services.

Table 6.1.1 Critical Assets

Critical Asset(s)	Failure Mode	Impact
Water Tower, Pump Station, and Water Treatment Plant	Physical Failure	Service interruption
Wells and Reservoirs	Biological Contamination	Impact on Public Health and Safety
		Boil and drinking water advisory will be issued.
Watermains, Valves, Fire hydrants	Physical Failure	Service interruption
SCADA	System failure	Service interruptions and monitoring issues

By identifying critical assets and failure modes, an organization can ensure that investigative activities, condition inspection programs, maintenance and capital expenditure plans are targeted at essential assets.

6.2 Risk Assessment

The risk management process used by Chatham-Kent is an analysis and problem-solving technique designed to provide a logical approach for selecting treatment plans and management actions to protect the community against unacceptable risks.

The process is based on the fundamentals of **International Standard ISO 31000:2018**.

The risk assessment process identifies credible risks, assesses the likelihood of the risk event occurring, determines the consequences should the event occur, develops a risk rating, evaluates the risk, and establishes a risk treatment plan for unacceptable risks.

An assessment of risks associated with service delivery will identify risks that will result in loss or reduction in service, personal injury, environmental impacts, a 'financial shock, reputational impacts, or other consequences.

Critical risks are those assessed with ‘Very High’ (requiring immediate corrective action), and ‘High’ (requiring corrective action) risk ratings identified in the infrastructure risk management plan.

Table 6.2.1 shows the residual risk and treatment costs of implementing the selected treatment plan. It is essential that these critical risks and costs are reported to management and the council.

Table 6.2.1: Risks and Treatment Plans

Asset Providing the Service	What can Happen	When can it occur	Risk Treatment Plan	Risk Rating
Water Towers and Reservoirs	Biological contaminations	Anytime	Regular inspections Water quality testing Routine cleanings	Very High
Watermains	Watermain breaks	Anytime	Condition Assessments of watermains	Very High
Senior Staff Retirements	Loss of knowledge	Anytime	Mentoring programs and other required training	High
Fleets	Breakdown/Accident	Any time	Replace / Repair asset	Very Low
Intake Pipes	Clogging of pipe with solids resulting in reduced supply of raw water for treatment	Anytime	Continuous monitoring Flushing	Very High

Asset Providing the Service	What can Happen	When can it occur	Risk Treatment Plan	Risk Rating
Low chlorine Residual	Health hazards to the residents	Anytime	Continuous monitoring Flushing	Very High
SCADA	Failure of electrical systems that control treatment and distribution systems would lead to reduced water quality or quantity.	Any time	Weekly checks and IT Security protection	Very High
Fire Hydrants	The legislative requirement is not met.	Occurred	Colour code all fire hydrants based on the legislative requirement	Very High
Pumps (High lift, Low lift, Booster, Backwash)	Mechanical failure of pumps results in the reduction (partial or complete) of water supply to treatment or distribution	Any time	Weekly checks Condition Assessments of Plants	Very High

6.3 Infrastructure Resilience Approach

The resilience of our critical infrastructure is crucial to the ongoing delivery of services to our customers. To adapt to changing conditions, Chatham-Kent must understand its capacity to withstand a given level of stress or demand and respond to potential disruptions to ensure continuity of service.

This will be included in future iterations of the DAMP as further investigations are completed.

6.4 Service and Risk Trade-Offs

The decisions made to adopt this DAMP are based on achieving the optimum benefits from the available resources.

6.4.1 What cannot be done

Some operations, maintenance activities, and capital projects cannot be undertaken within the next ten years. These include:

- Fully fund capital upgrades and replacements.
- Increase operations, maintenance, and renewal activities beyond the currently approved increase.
- Ensure that all future renewals outside the planning period can be completed, as the plan's scope is limited to a 10-year planning horizon.
- Improve the current levels of service without increased funding
- Mitigate all risks.

6.4.2 Service trade-off

If forecasted work (operations, maintenance, renewal, acquisition, or disposal) cannot be undertaken due to limited available resources, then this will result in service consequences for users. These service consequences include:

- The condition of infrastructure assets will continue to deteriorate, resulting in a lower level of service.
- Lack of maintenance and renewal may compromise intergenerational equity.

6.4.3 Risk trade-off

The operations and maintenance activities, as well as capital projects that cannot be undertaken, may sustain or create risk consequences. These risk consequences include:

As the condition of assets deteriorates, they may become unsafe to use.

If water assets do not meet current standards, the Authority could be at risk of litigation should an incident occur.

We must prioritize maintenance and renewal work on components with the highest safety risks and defer work on those with lower to medium safety risks.

These actions and expenditures are considered and included in the forecast costs and, where applicable, in the Risk Management Plan.

7.0 Climate Change Adaptation

Climate change may significantly impact on the assets we manage and the services we provide. In the Asset Management Planning process, climate change can be considered a future demand and a risk.

The impacts of climate change on assets will vary depending on location and the type of services provided, as will the response and management of those impacts.
At a minimum, we consider how to manage our existing assets considering the potential climate change impacts on our region.

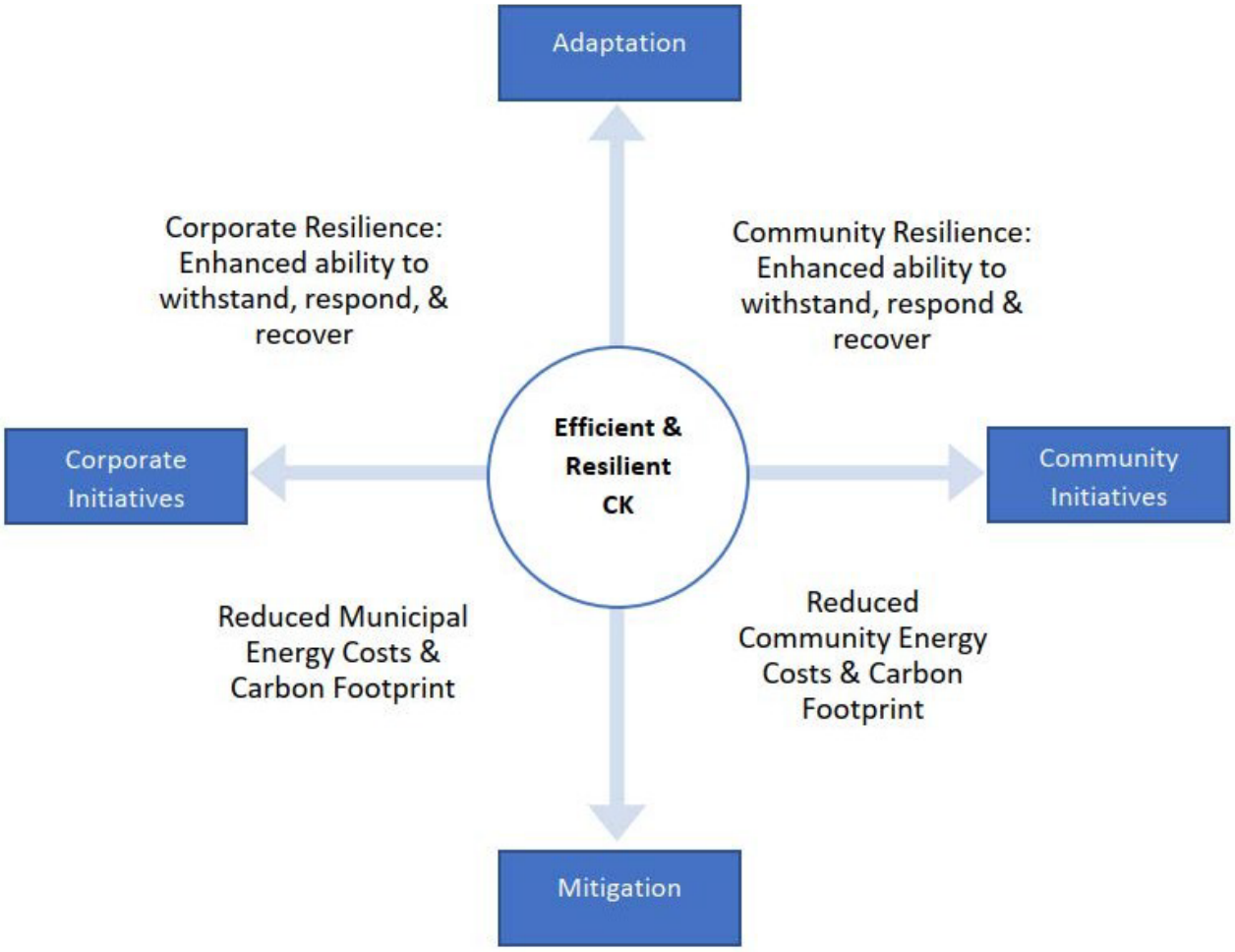
Climate change may significantly impact on the assets CK manages and its services. In the Asset Management Planning process, climate change can be considered a future demand and a risk.

The impacts of climate change on assets will vary depending on the location and the type of services provided, as will the way in which CK responds to and manages those impacts.
There have been many weather and climate-related impacts on the CK community, including the following:

- Extended summer heat waves in 2017 and 2018.
- Severe rainstorms of 2018 (and related flooding).
- Unseasonably wet spring and fall of 2019, which impacted crop production; and
- Record-breaking water levels within river systems and the Great Lakes in 2019 and early 2020 caused significant erosion and flooding issues in the community. This included the closure of Erie Shore Drive, Talbot Trail, and Rose Beach Line, to name a few.

Recognizing these continuing climate change impacts, the Council declared a climate emergency in Chatham-Kent on July 15, 2019. It directed municipal staff to develop a Climate Change Action Plan (CCAP) to reduce CK's contribution to climate change, known as climate mitigation, and to enhance the community's resilience to climate change, known as climate adaptation.

The municipality of Chatham-Kent is completing its Community Capacity Assessment Plan (CCAP), which will be presented to the Council and the public by the end of 2025. The CCAP actions given in the CCAP report document will inform the Climate Section of the DAMPs in 2026. The CCAP actions will also be presented within the departments responsible for their completion.



According to the Climate Atlas of Canada, historical climate patterns indicate that CK's climate has become hotter, wetter, and more extreme over the last six decades, and this trend is expected to persist.

Hotter: Average annual temperatures have risen by 0.5°C and are expected to increase between 3.5 °C and 5.8 °C by the 2080s.

Wetter: Average annual precipitation has increased by 49.8 mm (1.96 in) and is expected to increase by between 78 mm and 127 mm (3.1 in) by the 2080s.

Wilder: Rainstorms have increased in frequency and severity, and seasonal precipitation patterns have shifted, a trend expected to continue.

From 1983 to 2008, insurers spent an average of $400 million per year on catastrophic claims; since 2009, the yearly average has risen to almost $2 billion. These "once in 100 years" events are happening more frequently and are becoming more severe and more costly." (Statistics Canada, 2024) Risks and opportunities identified to date are shown in **Table 7.0.1.**

Table 7.0.1 Managing the Impact of Climate Change on the Assets and Services

Climate Impact (Assets level or Service level)	Projected Position (in 10 years)	Potential Impact on Assets & Services	Climate Management Plan
Annual Precipitation (mm) increase.	+45mm annually	An increase in severe storms will lead to higher lake water turbidity, which will reduce treatment capacity by interfering with the disinfection process at the water treatment plant.	Regularly monitor weather conditions and adjust storage levels as needed or implement real-time turbidity monitoring and modify treatment processes accordingly.
Annual Very Hot Days, (+30 degrees Celsius), increase.	+20 days, annually	Increase in Lake Erie's temperature will make it harder for the municipality to maintain chlorine residuals, as chlorine reacts more quickly at elevated temperatures. pipe corrosion accelerates in warmer conditions.	Continue regular testing for water quality.
Annual Very Hot Days, (+30 degrees Celsius), increase	+20 days, annually	Intake water may become toxic due to algae blooms	Water supply may require increased treatment and continue regular testing for water quality.

Climate Impact (Assets level or Service level)	Projected Position (in 10 years)	Potential Impact on Assets & Services	Climate Management Plan
Extreme Cold for Prolonged Periods Because of Polar Vortex Events	Increase in the future.	Severe cold and frost can result in more frozen water service lines and a higher number of water main breaks.	Continue to install water assets to the standard highlighted by the Municipality.
Annual Very Hot Days (+30 degrees Celsius), increase.	+20 days, annually	Rising temperatures can lead to drought conditions, reducing water availability and potentially resulting in water bans or restrictions. Increased demand for water can also strain storage levels, potentially affecting the supply needed for firefighting.	Implement outdoor water use restrictions, expand treatment and supply capabilities to meet future demands, and educate residents about the Water Use By-law to ensure sustainable water management.

Additionally, the way Chatham-Kent constructs new assets should recognize the opportunity to build in resilience to climate change impacts. Building resilience can have the following benefits:

- Assets will be resilient to the impacts of climate change.
- Services can be sustained, and
- Assets that can endure may lower the lifecycle cost and reduce their carbon footprint.

The impact of climate change on assets is a new and complex discussion, and further opportunities will be developed in future revisions of this DAMP.

8.0 FINANCIAL SUMMARY

8.1 Financial Sustainability and Projections

This section contains the financial requirements resulting from the information presented in the previous sections of this DAMP. Due to legislative requirements, CK PUC Water Services has an existing long-term financial plan that has been the basis for its capital programming and outlines some operational needs.

Asset Management will work to enhance existing data and ensure it aligns with the Asset Management Plan. Long-Term Financial Planning (LTFP) is essential for CK PUC to ensure that lifecycle activities for the network such as renewals, operations, maintenance, and acquisitions are carried out at the optimal time. CK PUC faces growing pressure to meet customer expectations while keeping costs affordable and maintaining financial sustainability.

Without adequate funding for asset activities within its water network, CK PUC will face difficult decisions in the future, which may include options like higher-cost reactive maintenance, increased operational costs, reduced services, and potential reputational damage. CK PUC plans to integrate its water network asset planning into a corporate-wide LTFP. As discussions on desired service levels and asset performance evolve, financial projections will be refined and improved.

8.1.1 Sustainability of service delivery

Two key indicators of sustainable service delivery are considered in the DAMP for this service area. The two indicators are the:

- ✓ **Asset Renewal Funding Ratio (proposed renewal budget for the next 10 years / proposed renewal outlays for the next 10 years shown in the DAMP), and**
- ✓ **Lifecycle Funding Ratio (proposed lifecycle budget for the next 10 years / proposed lifecycle outlays for the next 10 years shown in the DAMP).**

Asset Renewal Funding Ratio (ARFR) – 46.39%

The asset renewal funding ratio for CK PUC water services illustrates that over the next 10 years, we expect to have **46.39%** of the funds required for the optimal renewal of assets.

The Asset Renewal Funding Ratio is used to determine whether CK PUC is accommodating asset renewals in an optimal and cost-effective manner, considering the timing perspective, financial constraints, the risk CK PUC is prepared to accept, and the service levels it wishes to maintain. As the CK PUC water asset information improves and as time passes, there will be future renewal requirements that will be required. As the DAMP evolves, the planning horizon will

extend from 10 years to 20 years, and at that time, significant renewal activities may be identified.

A high ARFR generally indicates that service levels are achievable; however, if expenditures are below this level, it suggests that the desired level of service is not achievable. Each year, the Water DAMP will be updated to acknowledge the financial realities of the available budget and how those realities will impact the current level of service set by the council.

Lower ARFR typically occurs due to:

- Chronic underinvestment
- A lack of permanent infrastructure funding from senior levels of government
- A freeze on funding allocations from senior levels of government
- Large spikes of growth throughout the years

The ARFR is considered a stewardship measure and serves as an indicator of whether Chatham-Kent is achieving intergenerational equity. Ensuring that sufficient financial resources are allocated to renewing assets is essential for achieving sustainability. Funding the ARFR over time so the CK PUC can meet its financial target is essential to ensuring the service is considered sustainable.

If assets are not renewed at the appropriate time, it will inevitably require difficult trade-off choices that could include:

- A reduction in the level of service and availability of assets.
- Increased complaints and reduced customer satisfaction.
- Increased reactive maintenance and renewal costs; and,
- Damage to CK PUC reputation and risk of fines or legal costs

Future CK PUC DAMPs will align with the planned LTFP. This approach will enable staff to devise options and strategies for addressing future long-term renewal rates challenges.

Lifecycle Funding Ratio (LFR) – 10-year financial planning period

The current 10-year Lifecycle Financial Ratio is 79%

This AM Plan identifies the forecast operations, maintenance and renewal costs required to provide the levels of service to the community over a 10-year period. This provides input into the 10-year long-term financial plan (LTFP) aimed at providing the required services in a sustainable manner. This forecast work can be compared to the planned budget over the first 10 years of the planning period to identify any funding shortfall.

The 10-year Lifecycle Financial Ratio evaluates the Planned Budget against the Lifecycle Forecast to ensure optimal operation, maintenance, and renewal of assets, aiming to deliver a consistent level of service over the 10-year planning period. As with the Asset Renewal Funding Ratio (ARFR), the ideal range for this ratio is between **90-110%**. A ratio below this range suggests that the funding for assets is not sufficient to fulfill the organization's commitments to risk management and service levels.

The forecast operations, maintenance and renewal costs over the 10-year planning period is **$1,373,235,000** or **$137,323,000**on average per year. The 10-year LTFP is **$108,534,000** on average per year, giving a 10-year funding shortfall of **$28,789,000** per year. This indicates that **65.73%** of the forecast costs needed to provide the services documented in this AM Plan are accommodated in the proposed budget.

Funding an annual funding shortfall or funding 'gap' cannot be addressed immediately. The overall gap in funding for each of CK PUC's services will require vetting, planning and resources to begin to incorporate gap management into future budgets. This gap will need to be managed over time to reduce it sustainably and limit financial shock to customers.

Options for managing the gap include:

- **Financing strategies** – increased funding, grant opportunities, envelope funding for specific lifecycle activities, long-term debt utilization.
- **Adjustments to lifecycle activities** – increase/decrease maintenance or operations, increase/decrease frequency of renewals, extend estimated service life, limit acquisitions or dispose of underutilized assets Influence level of service expectations or demand drivers.

These options and others will allow the CK PUC to ensure the gap would be managed appropriately if one existed and to ensure the level of service outcomes the customers desire is achieved. Providing sustainable services from infrastructure requires the management of service levels, risks, forecast outlays and financing to eventually achieve a financial indicator of **90-110%** for the first years of the AM Plan and ideally over the 10-year life of the Long-Term Financial Plan.

Providing sustainable and affordable services from infrastructure requires the management of service levels, risks, forecast outlays and financing to achieve a financial indicator of approximately 1.0 for the first years of the AM Plan and ideally over the 10-year life of the Long-Term Financial Plan.

8.2 Forecast Costs (Outlays) for the Long-term Financial Plan

Table 8.2.1 shows the forecast costs (outlays) required for consideration in the 10-year long-term financial plan (LFTP). Providing services in a financially sustainable manner requires balancing the forecast outlays needed to deliver the agreed service levels with the planned budget allocations in the long-term financial plan.

Any gap between the forecast outlays and the amounts allocated in the financial plan indicates that further work is required to review service levels in the DAMP and/or financial projections in the LTFP. The initial DAMP only attempts to quantify the financial gap for the service; future plans will focus on the methods and strategies to manage that gap over time, aiming to achieve sustainable services and intergenerational equity.

Chatham-Kent will manage any 'gap' by developing this DAMP to guide future service levels and resources required to provide these services in consultation with the community.

Table 8.2.1. Forecast Costs (outlays) for the Long-Term Financial Plan 2025 - 2034

Year	Acquisition	Operation	Maintenance	Renewal	Disposal
2025	$2,967,000	$19,184,000	$3,036,000	$123,975,000	$236,000
2026	$27,668,000	$18,918,000	$3,204,000	$2,839,000	$246,000
2027	$128,078,000	$19,938,000	$3,419,000	$7,318,000	$2,340,000
2028	$208,161,000	$21,769,000	$3,793,000	$13,836,000	$1,213,000
2029	$263,725,000	$24,290,000	$4,298,000	$7,773,000	$276,000
2030	$119,203,000	$27,005,000	$4,897,000	$13,169,000	$286,000
2031	$12,770,000	$28,812,000	$5,291,000	$11,929,000	$296,000
2032	$24,424,000	$29,786,000	$5,537,000	$11,081,000	$4,101,000
2033	$32,730,000	$30,873,000	$5,813,000	$6,040,000	$316,000
2034	$52,968,000	$32,084,000	$6,115,000	$4,521,000	$326,000

8.3 Funding Strategy

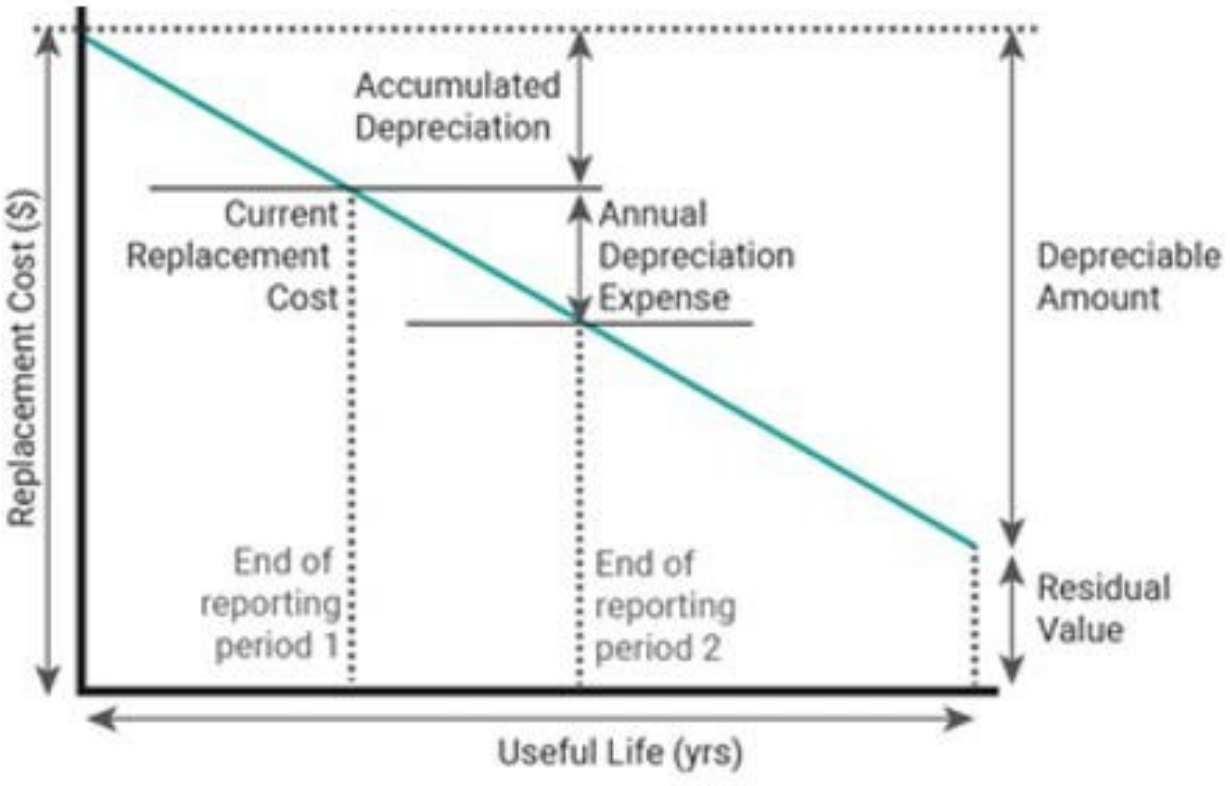
The proposed funding for assets is outlined in the operational budget and 10-year capital budget. These operational and capital budgets determine how funding will be provided, whereas the DAMP typically communicates how and when this will be spent, along with the service and risk consequences. Future iterations of the DAMP will provide more detailed service delivery options and alternatives to optimize limited financial resources.

8.4Valuation Forecasts

8.4.1 Asset valuations

Asset values are forecast to increase as additional assets are added to the service. Net valuations will increase significantly as projections improve and can be validated with market pricing. In the longer term, additional assets will increase operations and maintenance needs and require additional costs for future renewals.

Any additional assets will also add to future depreciation forecasts. Any disposals of assets would decrease the operations and maintenance needs in the longer term and remove the high-cost renewal obligations. At this time, it is impossible to separate the disposal costs from the renewal or maintenance costs; however, this will be improved for the next iteration of the plan. The best available estimate of the value of assets included in this DAMP is shown below.



The assets are valued utilizing the Current Replacement Cost (Market Prices Index).

Table 8.4.2 Asset Valuation Table

Assets Valuation	Financial Value
Replacement Cost (Gross)	**$2,467,134,163**
Depreciable Amount	**$2,467,134,163**
Current Replacement Cost	**$1,244,740,608**
Annual Depreciation Expense	**$33,693,888**

8.5 Key Assumptions Made in Financial Forecasts

Some assumptions were necessary to compile this DAMP. This section outlines the key assumptions made during its development and aims to provide readers with an understanding of the confidence level in the data supporting the financial forecasts.

Key assumptions made in this DAMP are:

- Using professional judgment, assumptions were made regarding the existing and planned operation, maintenance, and renewal budget.
- The omission of disposal assets during this budget period and small projects will have a minor impact on disposal projections.
- Budgets have been allocated based on the best available data on assets
- A 4 % annual inflationary amount has been applied to the operational and maintenance forecast to reflect the projections that costs will increase over time
- Replacement costs are based on current market pricing and are determined to be a like-for-like replacement
- Maintenance forecasts are based on the current budget allocated and require further refinement to align the costs with technical levels of service
- Operational forecasts are based on current budget allocations and encompass anticipated needs that are known

8.6 Forecast Reliability and Confidence

This DAMP's forecast costs, proposed budgets, and valuation projections are based on the most accurate and up-to-date data available. Current and accurate information is critical for effective asset and financial management. Data confidence is classified on an **A-E scale** under **Table 8.6.1.**

Table 8.6.1: Data Confidence Grading System

Confidence Grade	Description
A. Very High	Data based on sound records, procedures, investigations and analysis, appropriately documented and agreed as the best method of assessment. The dataset is complete and estimated to be accurate ± 2%
B. High	Data based on sound records, procedures, investigations and analysis are documented properly but have minor shortcomings; for example, some of the data is old, some documentation is missing and/or reliance is placed on unconfirmed reports or some extrapolation. The dataset is complete and estimated to be accurate ± 10%
C. Medium	Data based on sound records, procedures, investigations and analysis which is incomplete or unsupported or extrapolated from a limited sample for which grade A or B data are available. The dataset is substantially complete, but up to 50% is extrapolated data, and accuracy is estimated ± 25%
D. Low	Data is based on unconfirmed verbal reports and/or cursory inspections and analysis. The dataset may not be fully complete, and most data is estimated or extrapolated. Accuracy ± 40%
E. Very Low	None or very little data held.

The estimated confidence level for the reliability of data used in this DAMP is shown in **Table 8.6.2**.

Table 8.6.2: Data Confidence Assessment for Data used in DAMP

Data	Confidence Assessment	Comment
Demand drivers	High	Based on subject matter expert opinions
Growth projections	Medium	Based on master plan and projections
Acquisition forecast	High	Based on capital budget, master plan and other studies
Operation forecast	Medium	Based on subject matter expert opinions, budget forecast and historical trends
Maintenance forecast	Medium	Data available on the existing operation expenditures used to set future budget and other studies
Renewal forecast - asset value	Medium	Requires alignment with reserve contributions and estimated service life improvement items
Asset useful lives	Medium	Most of them align with purchasing practices but should be improved and vetted annually.
Condition modeling	Low	Age based on minimal condition inspection data
Disposal forecast	Medium	This requires improvement to process and administration of disposals

The estimated confidence level for the reliability of data used in this DAMP is considered to be a **Low-Medium** Confidence Level.

9.0 PLAN IMPROVEMENT AND MONITORING

Status of Asset Management Practices

ISO 55000 Refers to this as the Asset Management System

9.1 Accounting and Financial Data Source

This DAMP utilizes accounting and financial data. The source of the data is

- Chatham-Kent 2025 - 2027 Multi-Year Budget (Capital & Operating)
- Chatham-Kent PUC rate study
- Chatham-Kent PUC financial plan
- Internal Market Price Valuations
- AM Software Multi-Year Forecasting Models
- Council Reports
- Financial Exports from various systems

9.2 Asset Management Data Sources

This DAMP also utilizes asset management data. The sources of the data are:

- Asset Registers
- Insurance Data
- Tangible Capital Asset Data
- Building Condition Assessment Data
- Subject Matter Expert Knowledge and Anecdotal Information

9.3 Continuous Improvement Plan

Chatham-Kent must recognize areas within the DAMP and its planning processes requiring future improvements to ensure effective asset management and informed decision-making. The tasks listed below are essential to improving the DAMP and the municipality's ability to make evidence-based and informed decisions. These improvements span from improved lifecycle activities, financial planning, and plans to enhance the assets physically.

Table 9.3.1 highlights proposed improvement items that require further discussion and analysis to determine feasibility, resource requirements, and alignment with current work plans. Future iterations of this DAMP will provide updates on these improvement plans. The costs and resources to complete each task have yet to be included in the lifecycle models to data, and resource requirements would need to be reviewed for internal resource-driven projects. The improvement plan generated from this DAMP is shown in **Table 9.3.1.**

Task	Task	Responsibility	Resources Required	Timeline
1	Improve data quality, GIS accuracy, and inventory completeness	GIS, Asset Management & Development Services, CK PUC	$5,000 Staff Time	2025-2027
2	Develop a long-term financial plan to align budgeting with asset management planning	CK PUC, Finance and Asset Management	$15,000 p.a., $60,000 Total	2025-2029
3	Conduct condition assessments for Water Treatment Plants (WTP)	CK PUC, Asset Management	$250,000 Total, Internal Staff, Tender Process, Specialty Assessor	2025-2028
4	Develop a Level of Service (LOS) survey to assess water distribution performance	CK PUC, Asset Management, Engineering and compliance	$2,500 Staff Time	Annually
5	Conduct a water loss investigation	CK PUC, Asset Management, Engineering and compliance	$100,000	2025-2028
6	Improve asset replacement cost estimation by aligning with current market prices instead of historical data	CK PUC	$ 30,000 p.a/ $90,000 Total	2025-2028
7	Ensure that the fire hydrants are colour-coded based on the legislative requirements.	CK PUC, CKFS, Public Works, AQM	TBD	2025

Table 9.3.1: Continuous Improvement Plan

The detailed improvements are intended to ensure that CK PUC can achieve sustainable service over time. Some initiatives are required to meet legislative requirements, and others improve service or data quality. While not legislative, some initiatives are intended to find financial efficiencies or are required for other operational improvements.

Upon council approval, specific improvements can be accomplished within staffing capacity and should be included as work plan items for CK PUC. Other initiatives necessitate resources beyond those allocated in the current budget. Should resources be inadequate for the identified items, the strategy is to postpone them. Annually, the DAMP will be revised to align Continuous Improvement items with the budgetary opportunities and constraints.

9.4 Monitoring and Review Procedures

This DAMP will be reviewed during the annual budget planning process and revised to show any material changes in service levels, risks, forecast costs, and proposed budgets resulting from budget decisions.

The DAMP will be reviewed and updated annually to ensure it accurately represents the current service level, asset values, forecasted operations, maintenance, renewals, acquisition, and asset disposal costs, as well as planned budgets. These forecast costs and proposed budgets are incorporated into the Long-Term Financial Plan or will be incorporated into the Long-Term Financial Plan once completed. The DAMP has a maximum life of 4 years and is due for complete revision and updating within one year of each Municipality of Chatham-Kent election.

9.5 Performance Measures

The effectiveness of this DAMP can be measured in the following ways:

- The degree to which the required forecast costs identified in this DAMP are incorporated into the long-term financial plan,
- The degree to which the 1–5-year detailed works programs, budgets, business plans and corporate structures consider the ‘global’ work program trends provided by the DAMP,
- The degree to which the existing and projected service levels and service consequences, risks and residual risks are incorporated into the Strategic Planning documents and associated plans,
- The Asset Renewal Funding Ratio achieves the Organizational target (this target is often 90 – 100%.

10. APPENDICES

Appendix A- Mandatory O.reg. 588/17 Community Levels of services

As per O.reg. According to 588/17, the municipality is required to report on community-level services to meet the provincial level of service requirements. These quantitative metrics are reported below:

Scope

1. Description, including maps, of the user groups or areas within the municipality that are connected to the municipal water system.

Most properties within the municipality's urban and rural areas are connected to the municipal drinking water system. These properties include residential, industrial, commercial and institutional uses.

As stated in section 2, CK PUC operates and maintains six (6) different drinking water systems. The Bothwell system is a stand-alone system that receives treated potable water from the West Elgin (Tri-county) primary water system that treats water from Lake Erie. The Chatham, South Chatham-Kent, and Wheatley drinking water systems receive their raw water supply from Lake Erie. Ridgetown water system draws water from the ground using drinking water wells. Wallaceburg water system receives raw water supply from Chenal Ecarte.

2. Description, which may include maps, of the user groups or areas of the municipality that have fire flow.

Most properties within the municipality's urban area have fire flow. Urban properties encompass a range of uses, including residential, industrial, commercial, and institutional uses. Rural areas in the municipality lack fire flow and would be serviced using firefighter techniques.

Reliability

1. Description of boil water advisories and service interruptions

A Boil Water Advisory will be issued by the Chatham-Kent Public Health Unit if there is a potential that the distribution water has been compromised and is potentially unsafe to drink. Reasons for a Boil Water Advisory might include:

- An outbreak of illness related to drinking water
- A water main break
- Adverse water sample
- Evidence that water may not be properly treated

- Flooding

During a boil water advisory, it is recommended to either find an alternative water source, such as bottled water, or boil your water for at least 1 minute before using it.
There were three precautionary boil-water advisories in 2024, affecting 10,434 properties.

A “Do Not Drink” advisory will be issued if the water is unsafe for any purpose. This may happen if there is evidence that the treated or distribution of water has been contaminated. In this case, boiling the water will not make it safe to use.

There were no “Do Not Drink” advisories in 2024, and none have occurred since the amalgamation of Chatham-Kent.

Mandatory O.reg. 588/17 Technical Levels of Service

There are technical levels of service that the Municipality is required to report on to meet the provincial requirements. These quantitative metrics are reported below:

Table 4.1.2. Mandatory Technical Levels of Service

Service Attribute	Mandatory Technical Levels of Service	Current
Scope	Percentage of properties connected to the municipal water system	39,935 customers (Approximately 80%)
Reliability	Percentage of properties where fire flow is available	Customers within urban boundaries have access to firefighting supplies.
Reliability	Number of Water Advisory (BWA) events and total properties affected	• Event affecting 10,400 properties • Event affecting 24 properties • Event affecting 10 properties
	Number of water main breaks and average service interruption for repair	94
	The number of connection days per year where a boil water advisory notice is in place compared to the total number of properties connected to the municipal water system	• 3-day event • 2-day event • 2-day event
	The number of connection days per year due to water main breaks compared to the total number of properties connected to the municipal water system	U/K

Reliability	Percentage of watermains that are likely in poor or very poor condition	20%
	Percentage of facilities that are likely in poor or very poor condition	5%
	Average number of hours per water service interruption	U/K
Safety	Incidents of non-compliance per reporting year	1
	Number of households affected by “Do Not Drink” advisories	0 properties
	Incidents of Adverse Drinking Water Tests	6 in 2024

Connection days are defined as “the number of properties connected to a municipal system that are affected by a service issue, multiplied by the number of days on which those properties are affected by the service issue.”

In 2024, 39,935 customers were connected to the municipal water system, which accounts for approximately 80% of the properties. During that year, there were three Boil Water Advisories (BWAs) affecting 10,400 properties, 24 properties, and 10 properties, respectively. There were no “Do Not Drink” water advisories in 2024.

Additionally, 94 water main breaks were reported in 2024, along with 6 incidents of adverse drinking water tests and 1 incident of non-compliance.

Nearly 20% of watermains are in poor or very poor condition, as illustrated by the large blue bar in Figure 3.5.1 for the year 2025. This condition is primarily due to a lack of renewal at the end of the Estimated Service Life (ESL), as well as other factors, such as frequent water main breaks. Similarly, nearly 5% of facilities are also in poor or very poor condition.

10. APPENDICES – Water Service Area Maps

Figure 10.1. Chatham-Kent Water Distribution Systems

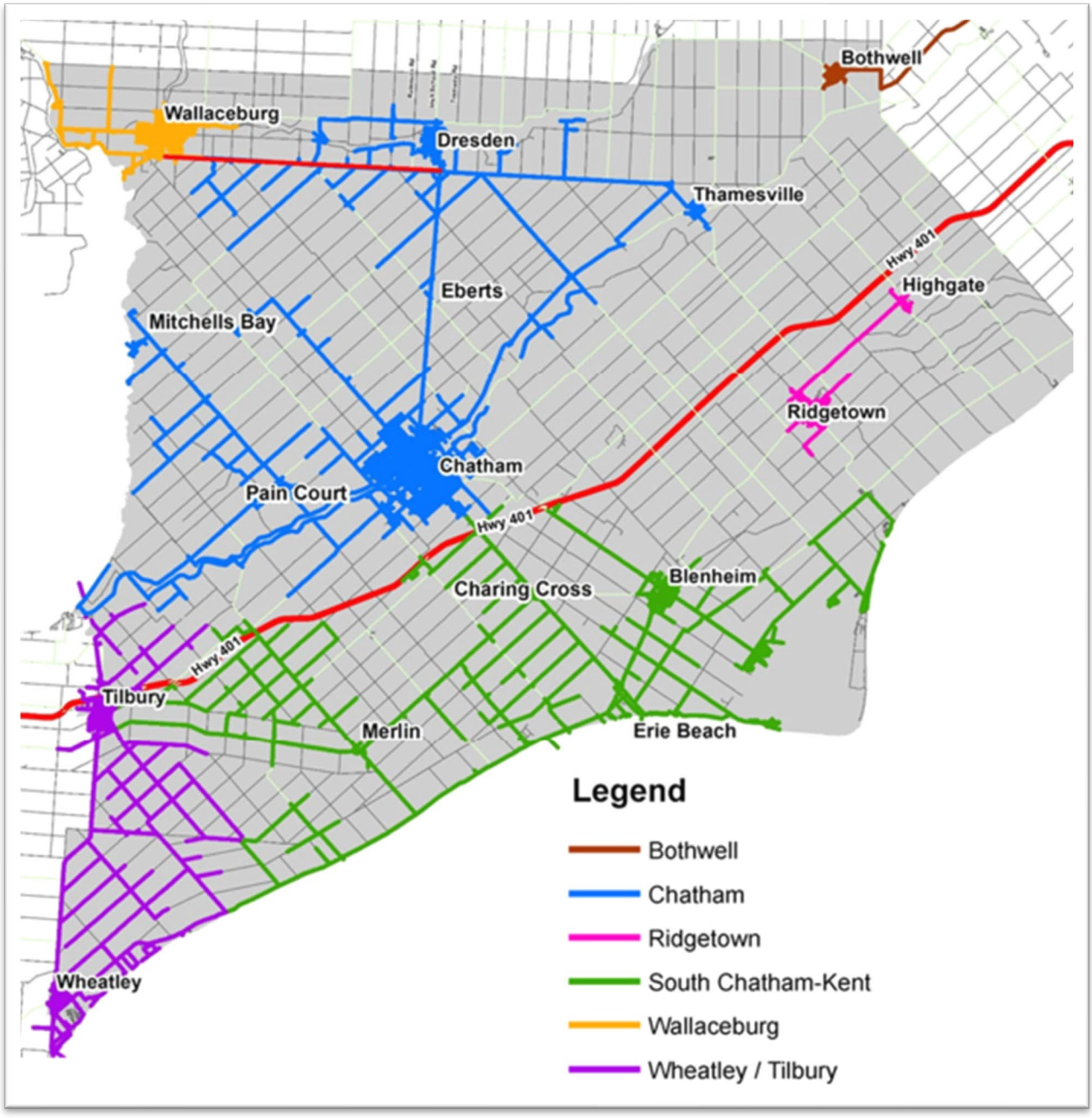


Figure 10.2. Bothwell Water System

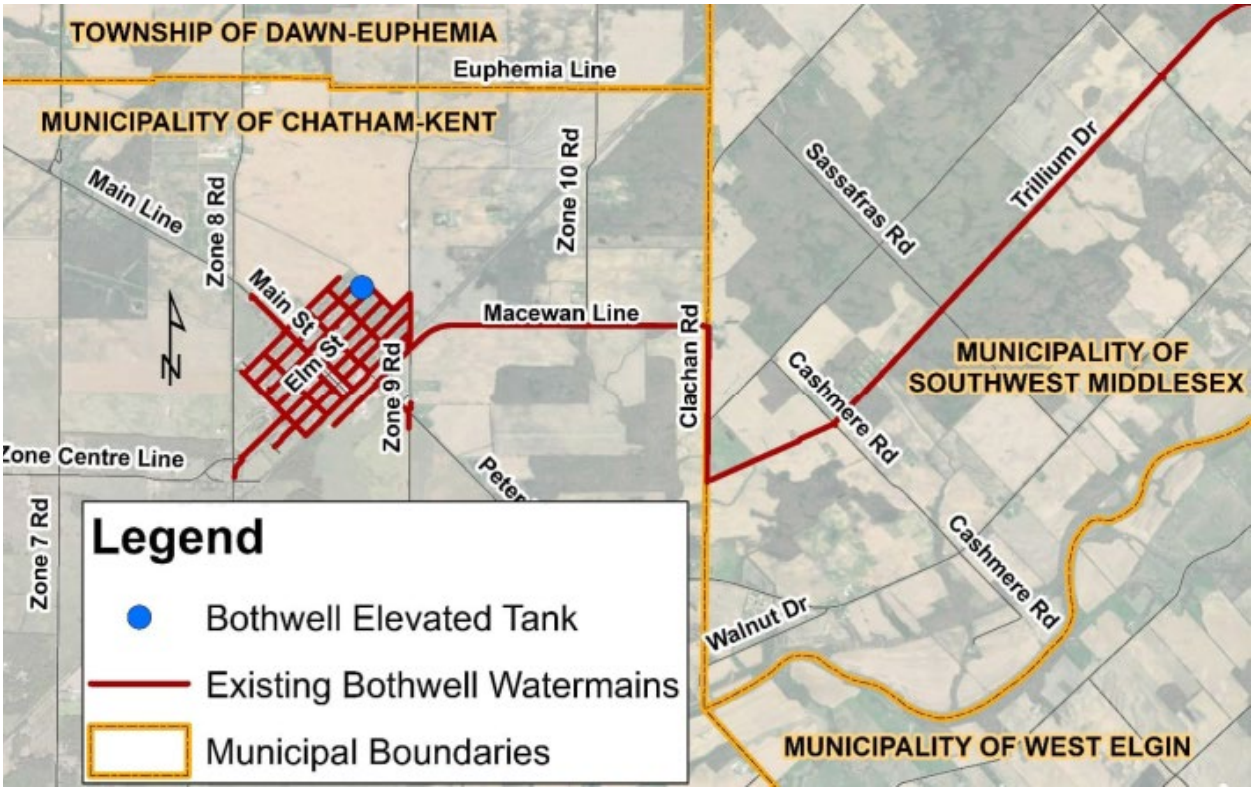


Figure 10.3. Chatham Water System

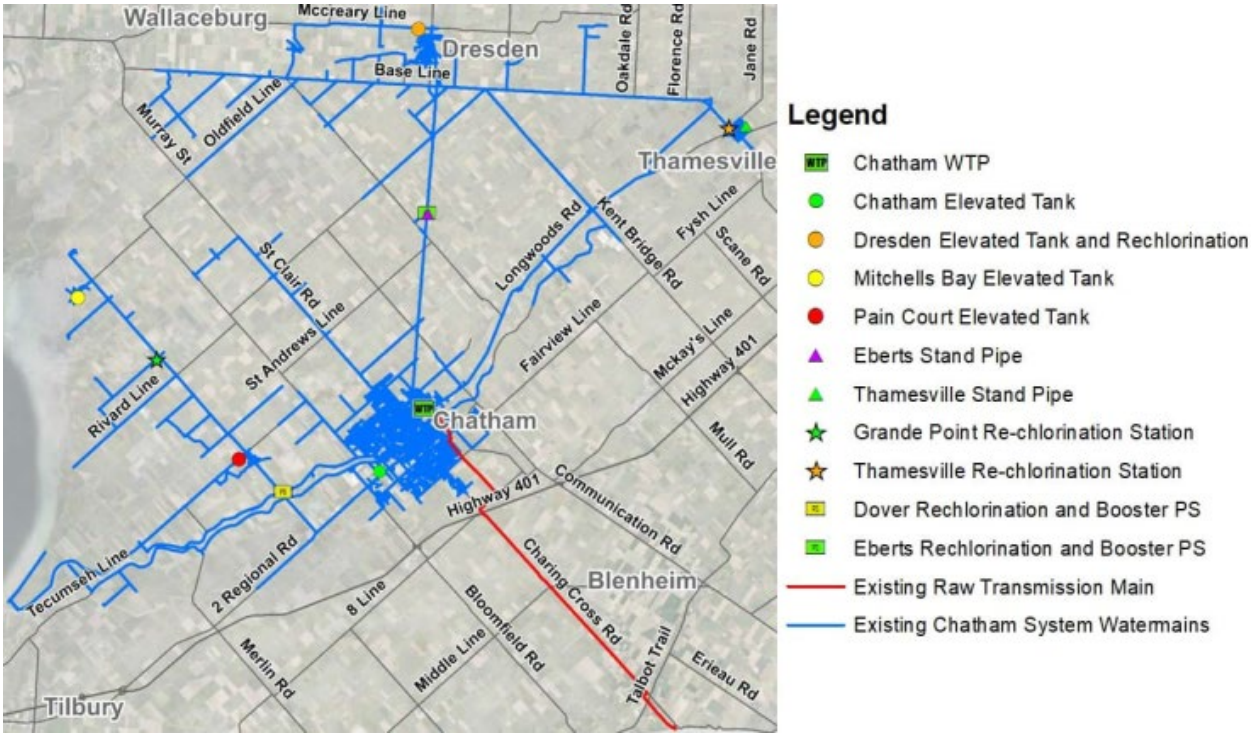


Figure 10.4. Ridgetown Water System

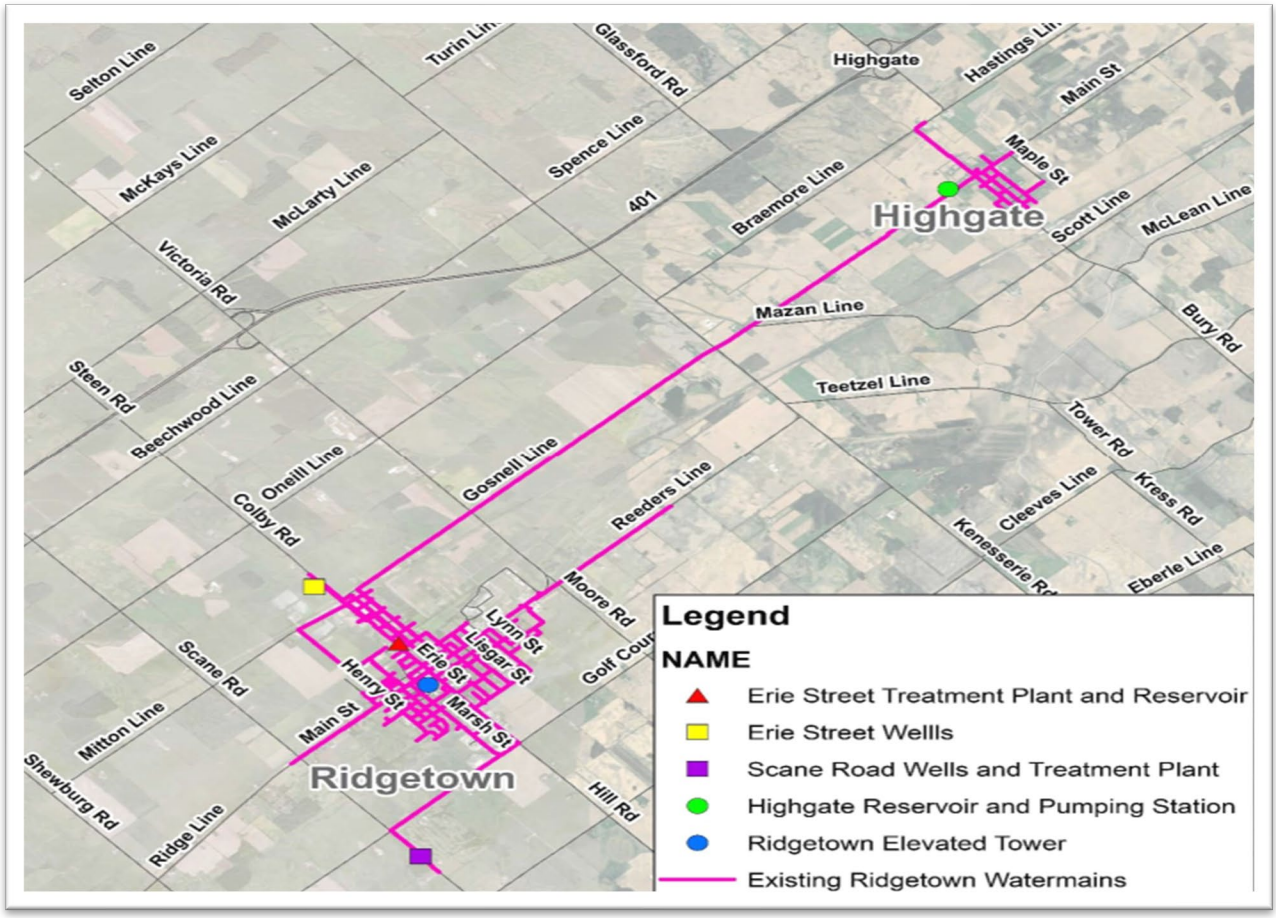


Figure 10.5. South Chatham-Kent Water System

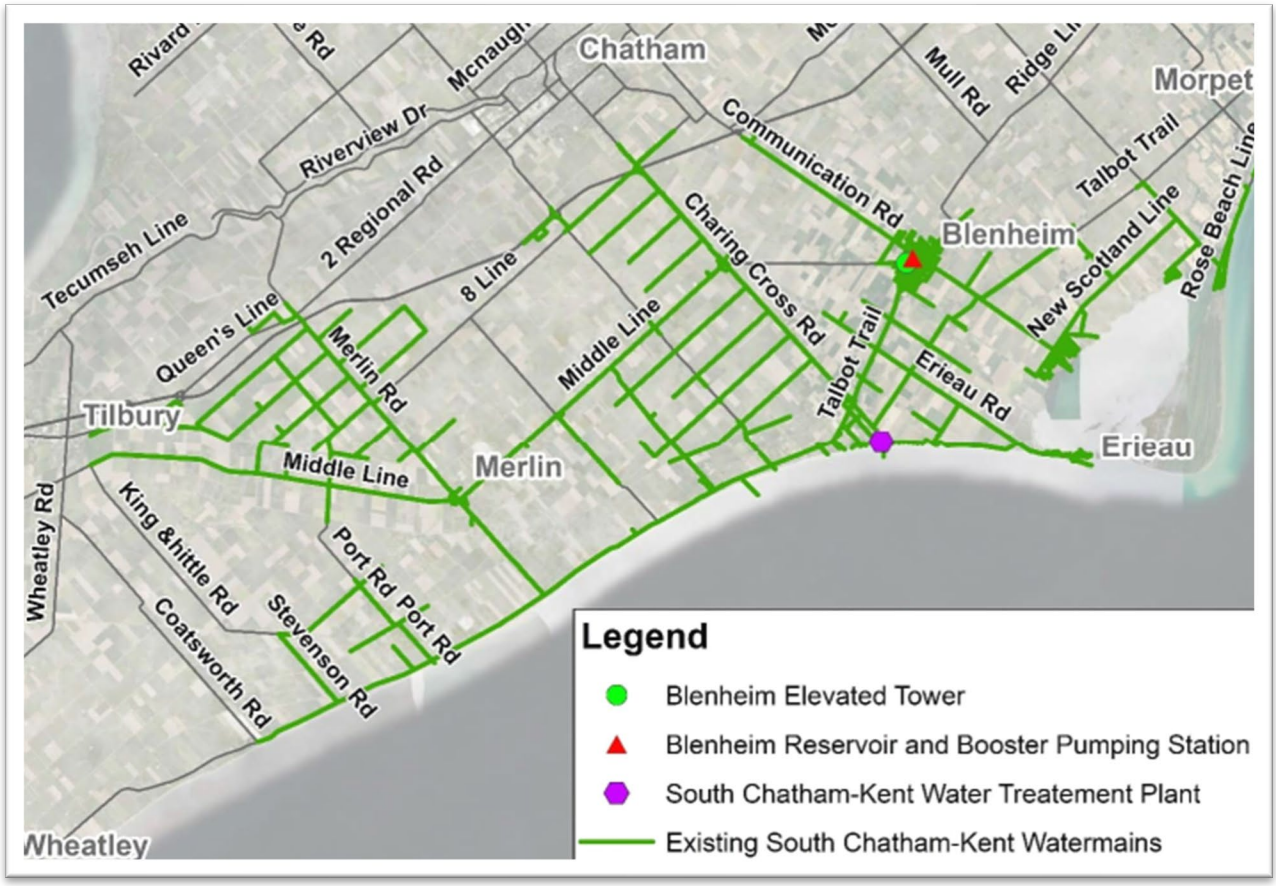


Figure 10.6. Wallaceburg Water System

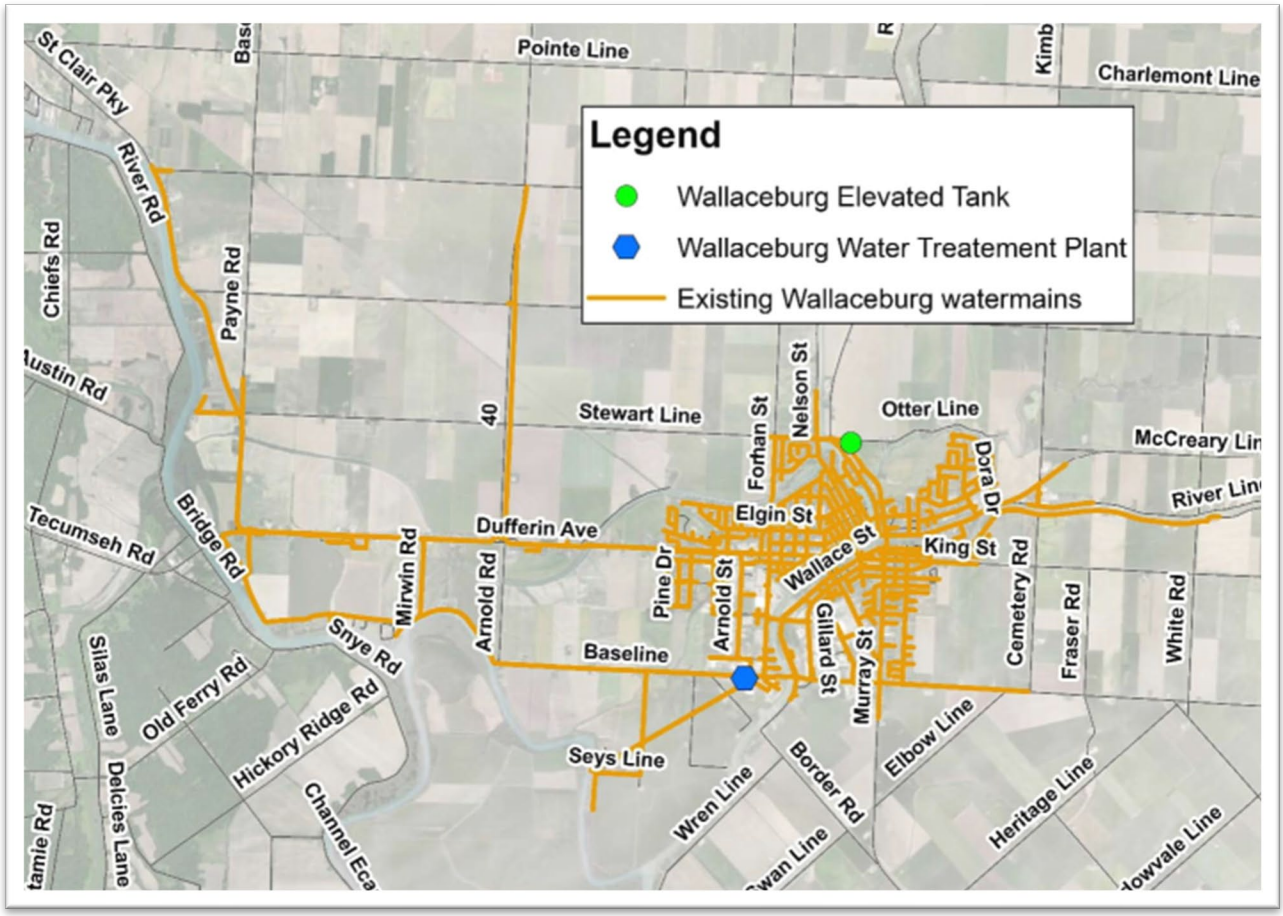


Figure 10.7. Wheatley / Tilbury Water System

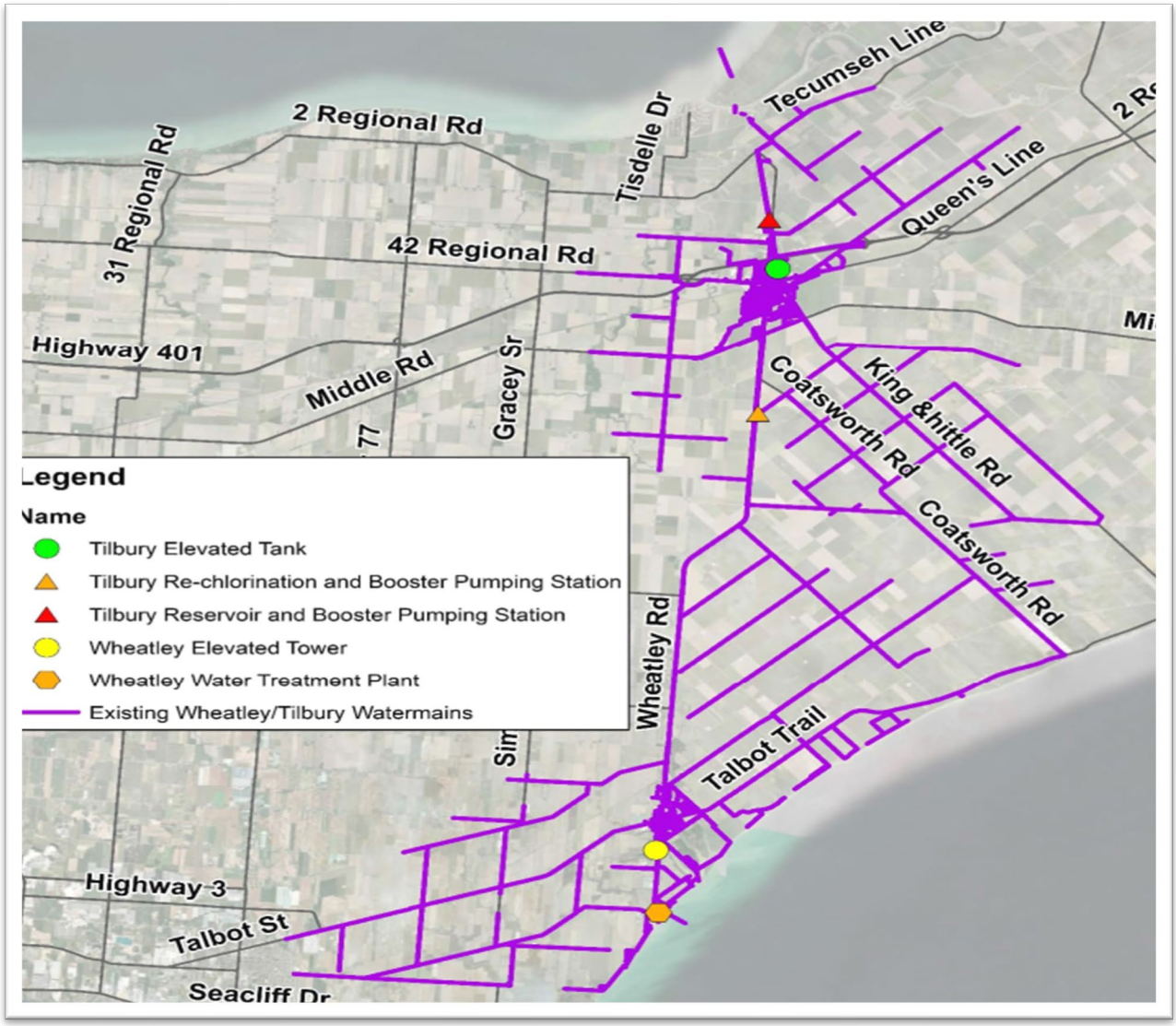
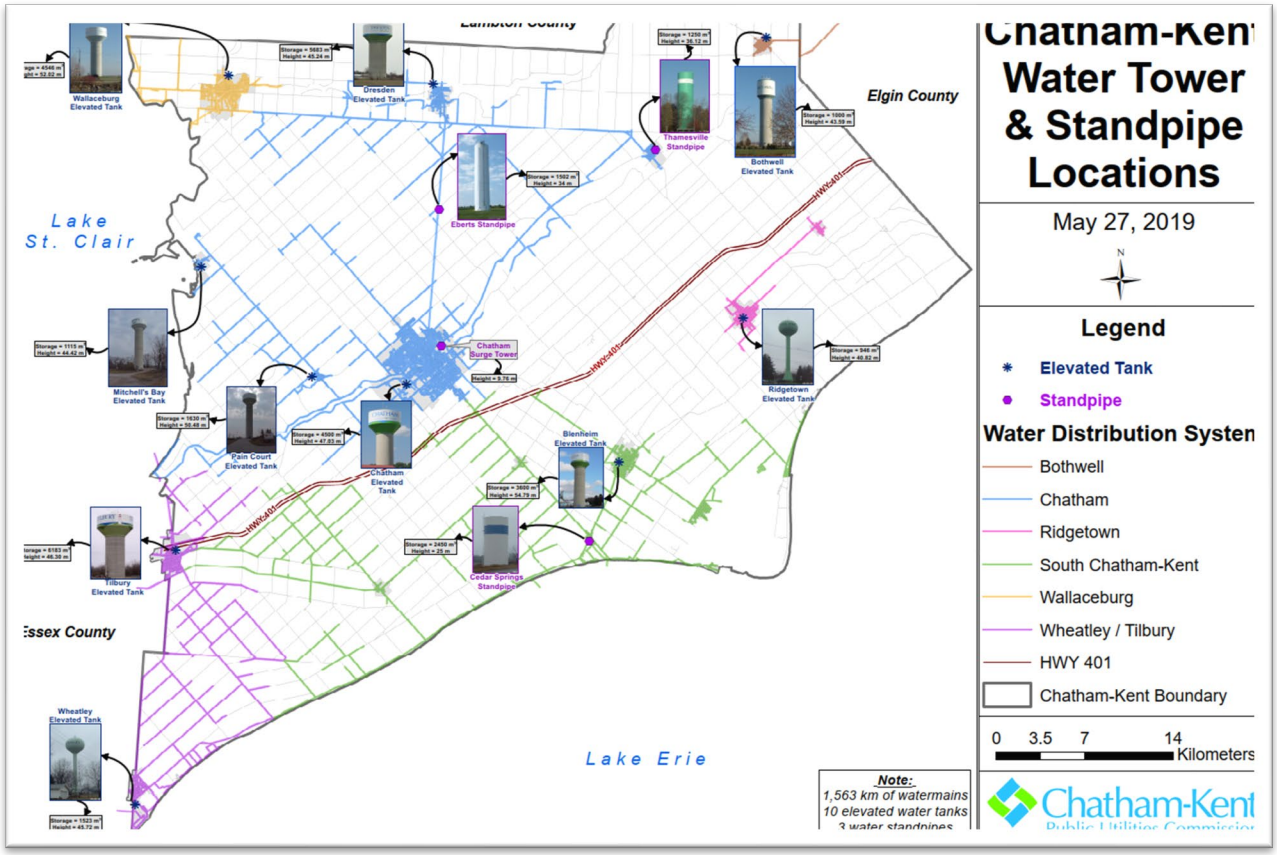


Figure 10.8. Chatham-Kent Water Towers and Standpipe Location



Document Control

Rev No.	Date	Revision Details	Author	Reviewer	Approver
1	March 2025	Rev 1	Akshara P		