

2021

CENTRAL ELGIN

WATER

DETAILED ASSET MANAGEMENT PLAN

AUGUST 2021

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REV NO.	DATE	REVISION DETAILS	AUTHOR	REVIEWER	APPROVER
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V1.0	August 2021	1st Detailed Asset Management Plan	Sean Hilderley	Lloyd Perrin	Council
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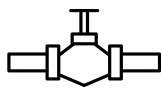
WATER ASSET REPORT CARD

Description

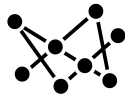
The water network distributes water to 4,372 private connections around the municipality. The service objective is to deliver safe, clean drinking water on demand to all connections 24 hours a day, seven days a week.



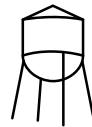
WATERMAIN



WATER VALVE



SERVICES



STORAGE



HYDRANTS



WATER SUPPLY

58.3 M



total replacement costs

medium/high

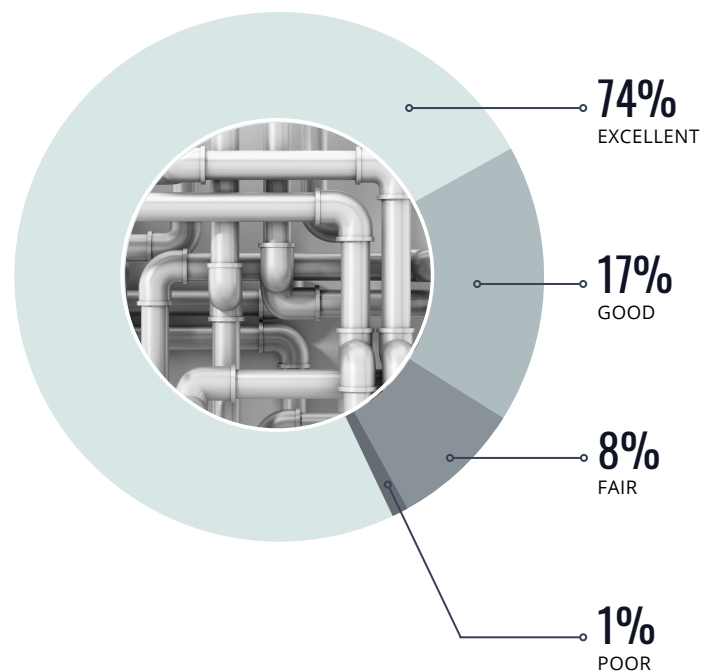
data quality index

? excellent

watermain condition

Water Distribution

PIPE NETWORK CONDITION



EXECUTIVE SUMMARY

1.1 The Purpose Of The Plan

This Detailed Asset Management Plan details information about infrastructure assets with actions required to provide an agreed level of service in the most cost-effective manner while outlining associated risks. The plan defines the services to be provided, how the services are provided and what funds are required to provide over the 2022-2031 year planning period. The Detailed Asset Management Plan will link to a future Long Term Financial Plan which considers a 10 year planning period.

1.2 Asset Description

This plan covers the infrastructure assets that provide water services.

The water network comprises:

- Watermains (89.1 km)
- Valves (approximately 953)
- Services (4372)
- Water Meters (4372)
- Water Towers (2)
- Hydrants (442)
- Sampling Stations (47)
- Facilities and Chambers (13)
- SCADA System (1)

The above assets have a replacement value estimated at **\$58,335,871**.



1.3 Levels of Service

The approved rate structure to 2031 will allow the system to be operated and maintained at current levels. The proposed rate structure may not be sufficient to be able to provide proactive maintenance to the system.

The main service consequences of the planned budget are:

- Insufficient proactive maintenance
- Larger area service interruptions, as a result of valve failure
- Potential service interruptions as a result of main breaks on aging infrastructure

1.4 Future Demand

The factors influencing future demand and the impacts they have on service delivery are created by:

- Population growth
- Distribution network expansion
- Globally, COVID 19 has affected both the supply chain and costs for services since February 2020. The pandemic has increased both the scarcity of materials and the financial costs to operate maintain and renew assets and these levels are anticipated to continue.

These demands will be approached using a combination of managing existing assets, upgrading existing assets and providing new assets to meet demand. Demand management practices may also include a combination of non-asset solutions, insuring against risks and managing failures.

- Distribution system expansion should be constructed to provide capacity for proposed growth and existing non serviced residents
- Add additional assets when road rehabilitation opportunities arise

1.5 Lifecycle Management Plan

1.5.1 What Does It Cost

The forecast lifecycle costs necessary to provide the services covered by this Asset Management Plan includes operation, maintenance, renewal, acquisition, and disposal of assets. Although the Asset Management Plan may be prepared for a range of time periods, it typically informs a Long-Term Financial Planning period of 10 years. A summary output from the Asset Management Plan is the forecast of 10 year total outlays, which for The Municipal Water System is estimated as **\$40,123,936** or **\$4,012,393** on average per year.

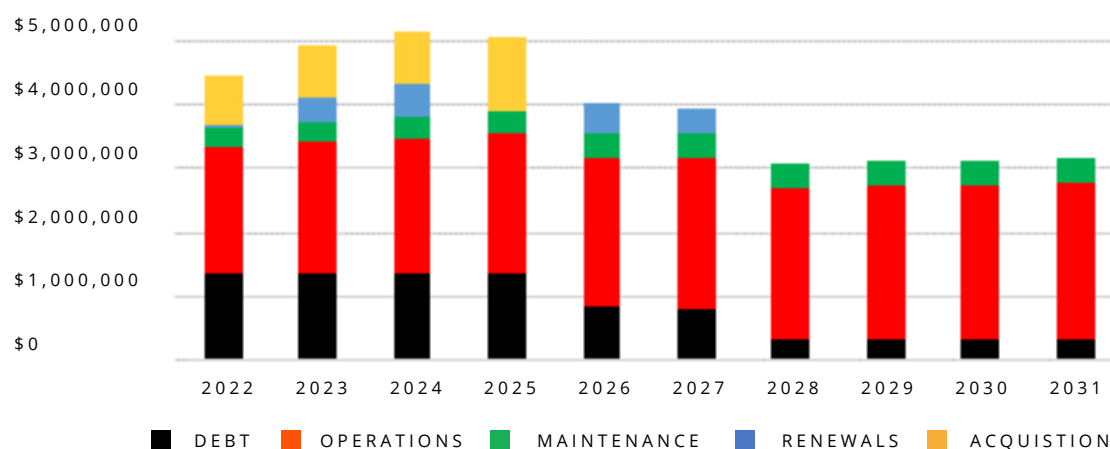
1.6 Financial Summary

1.6.1 What Will It Do

Estimated available funding for the 10 year period is **\$31,216,020** or **\$3,121,602** on average per year, as per the Long-Term Financial Plan or Planned Budget. This is **77.90%** of the cost to sustain the current level of service at the lowest lifecycle cost. The infrastructure reality is that only what is funded in the budget can be provided. Informed decision making is dependent on the Detailed Asset Management Plan, which emphasizes the effects of Planned Budgets on service levels and risks.

The anticipated planned budget for the water network leaves a shortfall of **\$890,791** on average per year of the forecast lifecycle costs required to provide services in the plan compared with the planned budget currently included in the Long Term Financial Plan. This is shown in the figure below

GRAPH 1.6.1 - FORECAST LIFECYCLE COSTS AND PLANNED BUDGETS



Graph values are in current dollars, 2021.

Central Elgin will provide water services for the following:

- Operation, maintenance, renewal and acquisition of watermains, hydrants, water service connections, water meters, sampling stations, water valves, water towers, facilities & chambers, SCADA systems to meet service levels set by Central Elgin within its annual budgets

1.6.2 What Cannot Be Done

Central Elgin currently does **not** allocate enough budget to sustain these services at the proposed standard or to provide all new services being sought. Works and services that may not be provided under present funding levels are:

- Continue to proactively operate valves as a proactive maintenance measure to ensure operation
- Provide proactive maintenance on pressure boosting pumps
- Provide proactive hydrant maintenance as desired
- Responding to main breaks in a timely fashion

1.6.3 Managing the Risks

The present budget levels may not be sufficient to continue to manage risks in the medium term.

The main risk consequences are:

- Funding maintenance and operation of future donated assets
- Loss of key staff

Central Elgin will endeavor to manage these risks within available funding by:

- Monitoring, Flushing and Training
- Succession Planning
- Perform any maintenance and operations that will be required to meet the Safe Drinking Water Act

1.7 *Asset Management Planning Practices*

Key assumptions made in this Detailed Asset Management Plan are:

- Data assumptions
- Approximately 10-15% of costs were assumed due to data gaps

Assets requiring renewal are identified from both the asset register and capital plan.

- The timing of capital renewals based on the asset register is applied by adding the useful life to the year of acquisition or year of last renewal,
- Alternatively, an estimate of renewal lifecycle costs is projected from external condition modelling systems and may be supplemented with, or based on, expert knowledge.

The Asset Register was used to forecast the renewal lifecycle costs for this Detailed Asset Management Plan. This plan is based on a highly reliable level of confidence of the information which is housed in the municipal Asset Management Software (WorkTech).

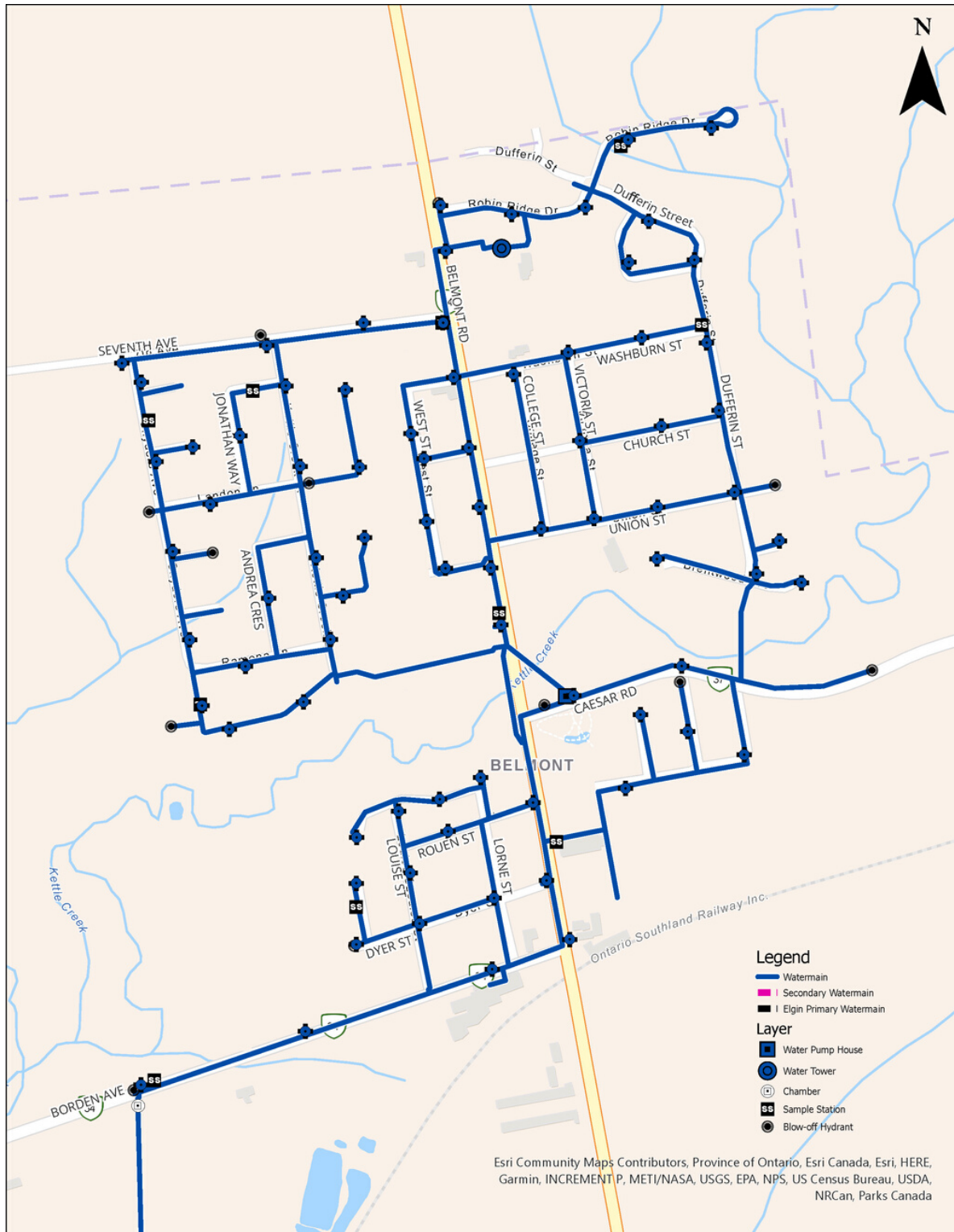
1.8 *Monitoring and Improvement Program*

To improve Central Elgins asset management practices the municipality will:

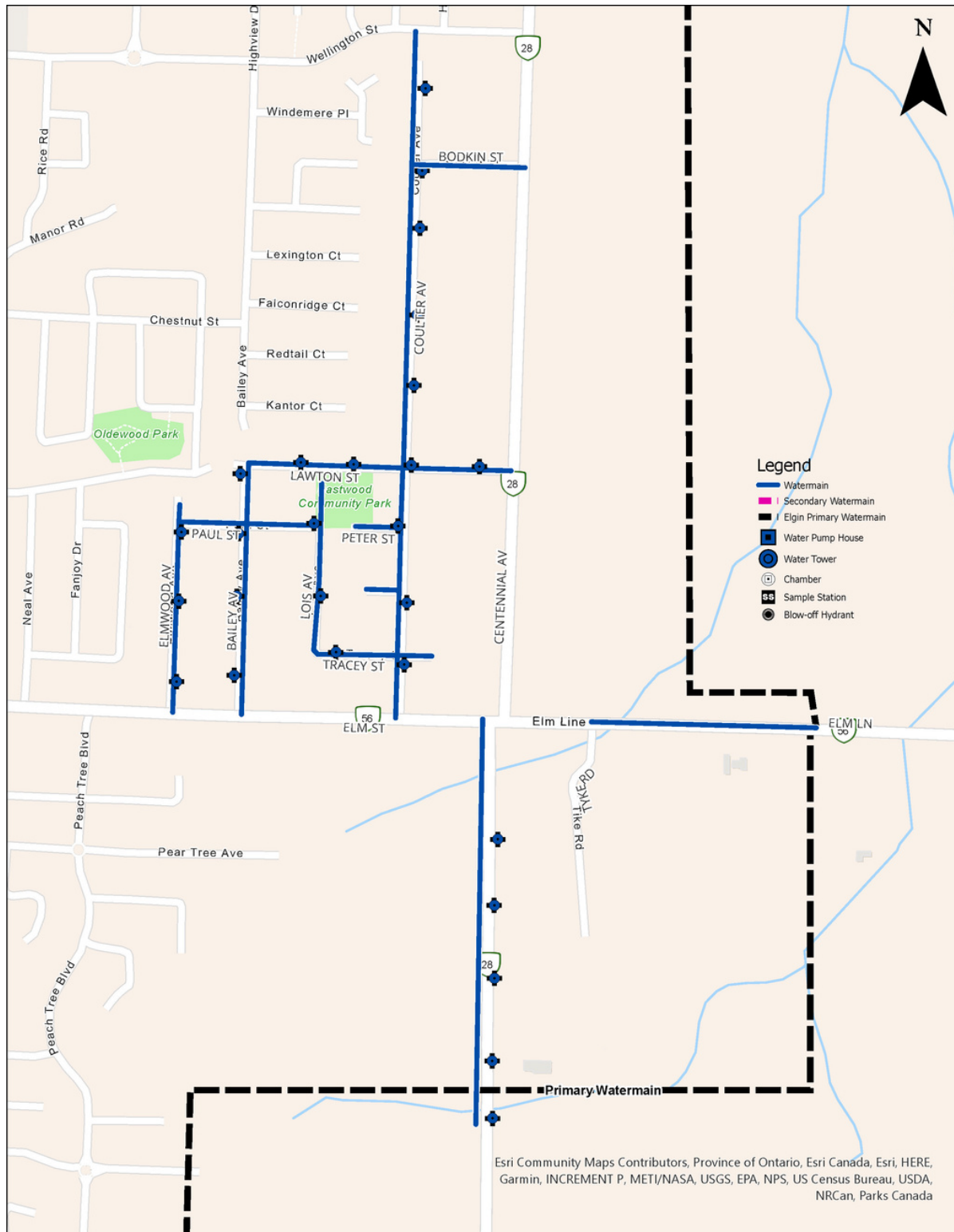
- Increased system operation practices that are digitally documented and integrated into the municipal Asset Management Software (WorkTech)
- Improve GIS data quality (i.e. linear asset locations)

1.9 Central Elgin Water Systems

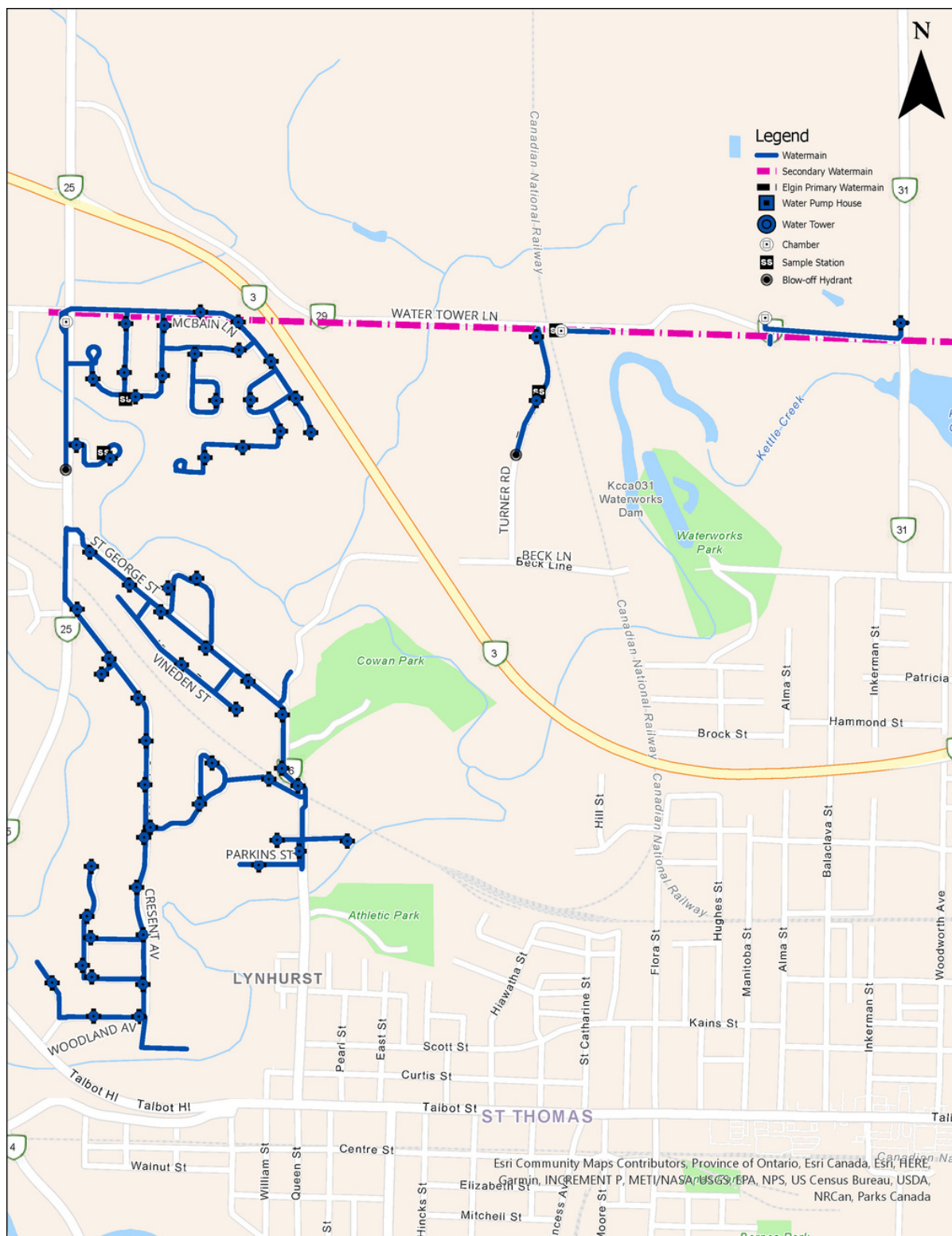
Belmont Water System



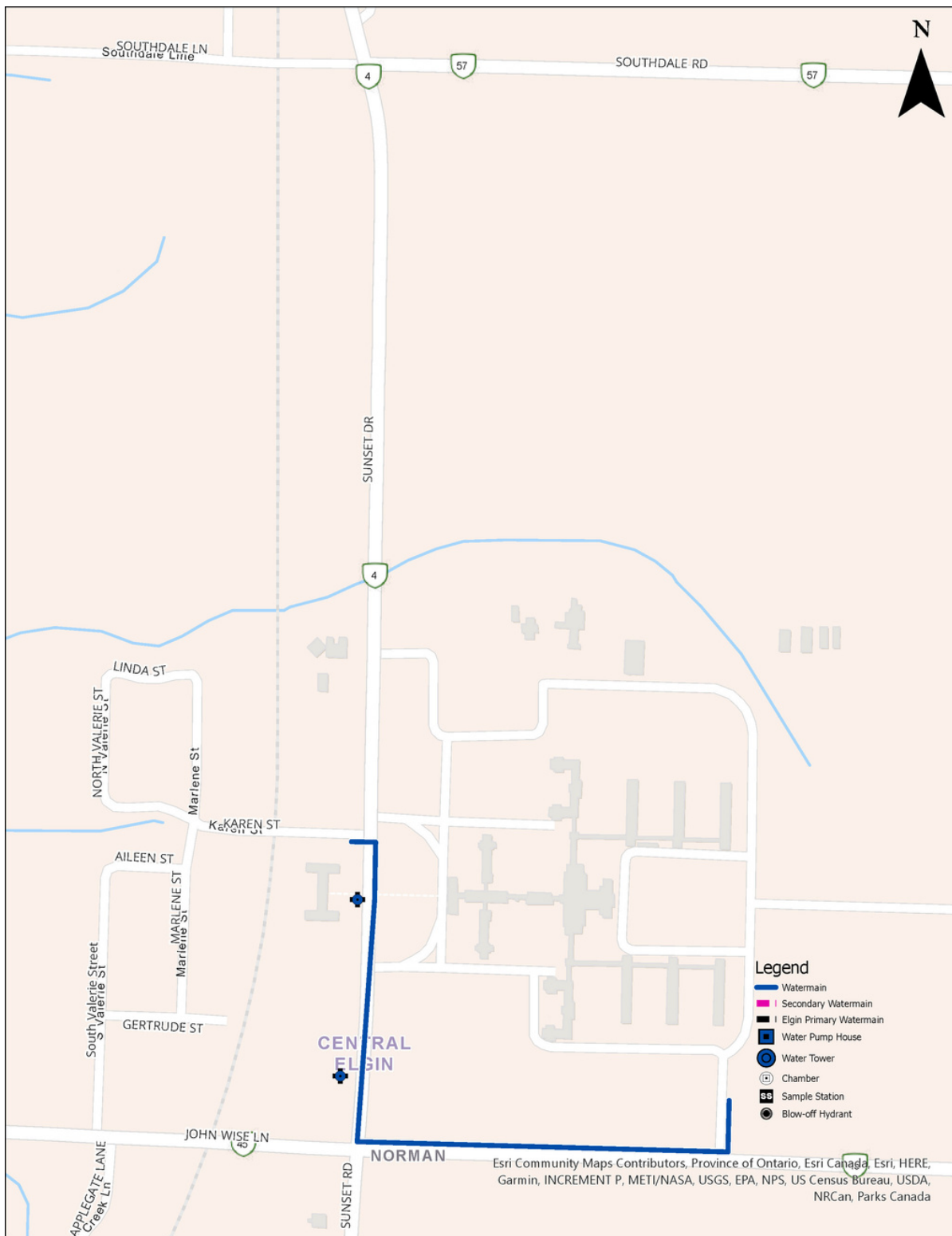
Eastwood Water System



Lynhurst Water System



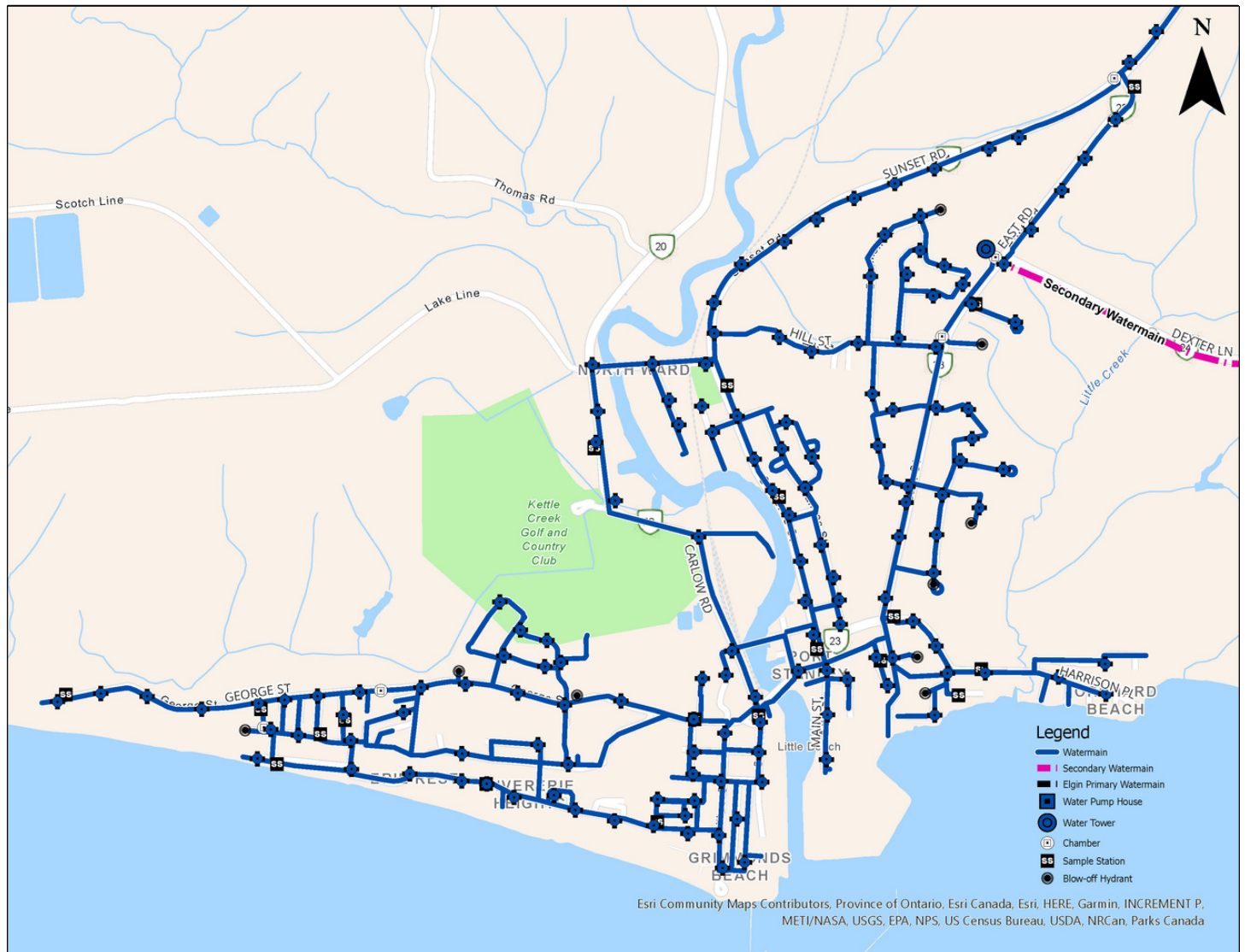
Norman Water System



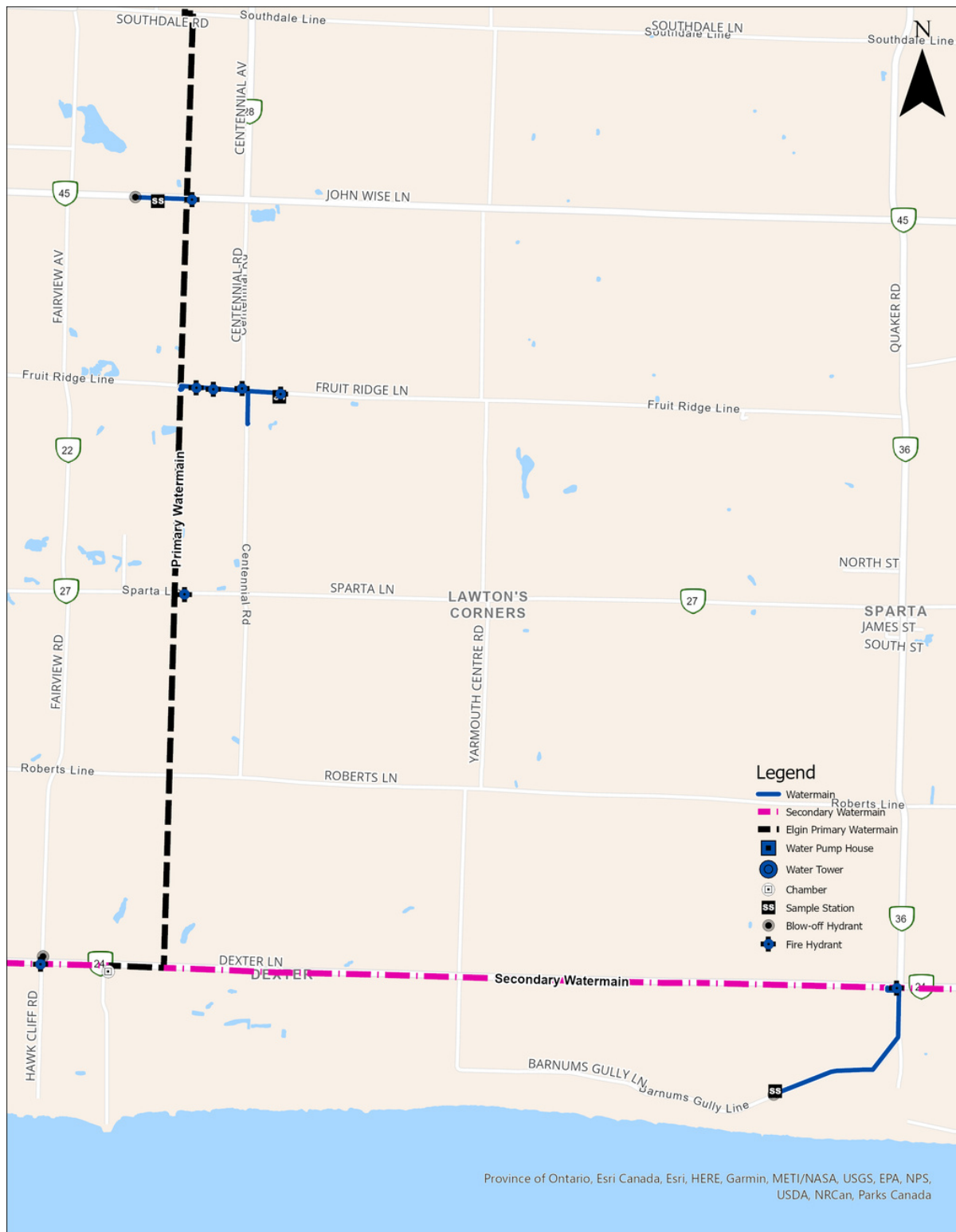
North Rural Water System



Port Stanley Water System



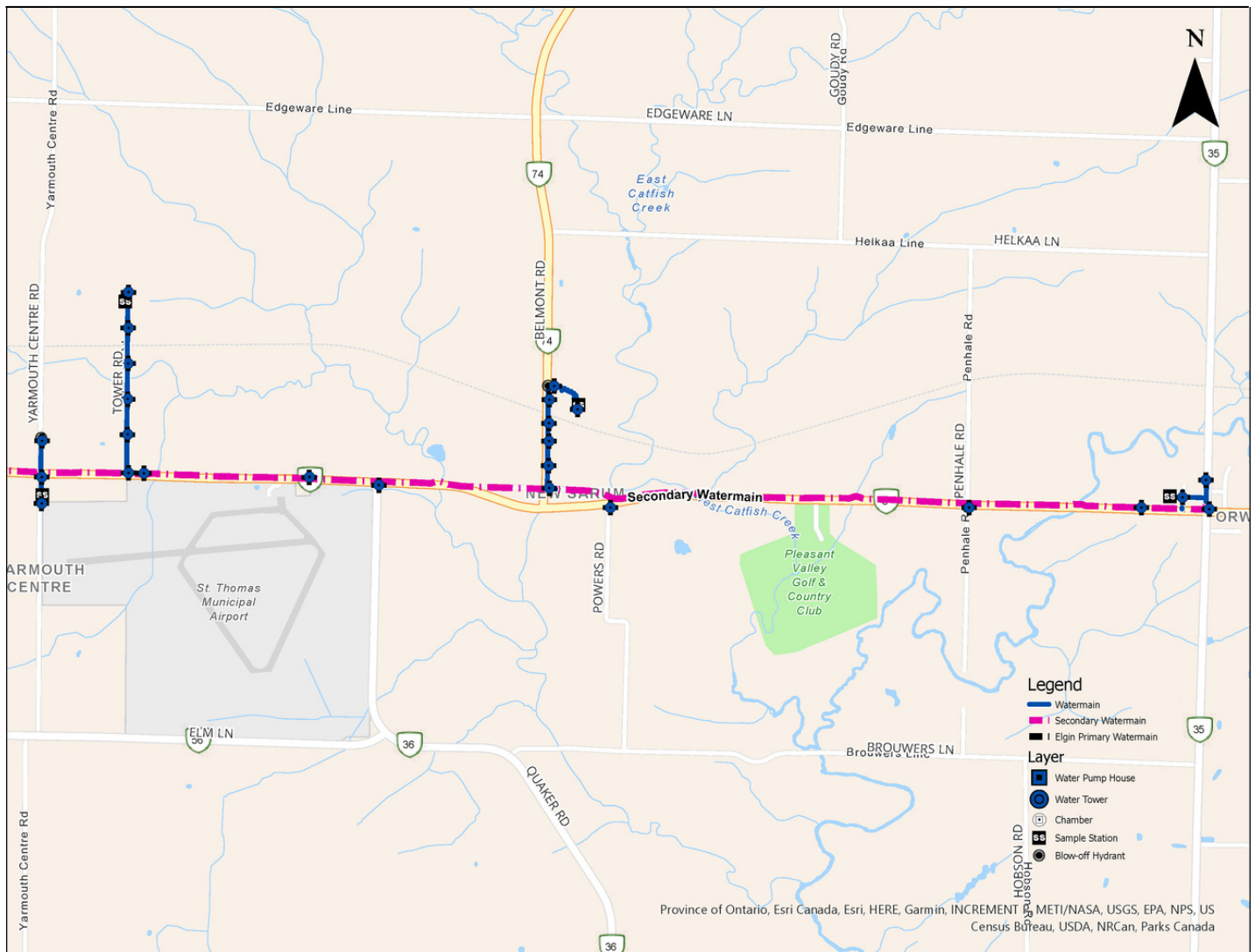
South Rural Water System



Union Water System



West Rural Water System



INTRODUCTION

2.1 *Background*

This Detailed Asset Management Plan communicates the requirements for the sustainable delivery of services through management of assets, compliance with regulatory requirements, and required funding to provide the appropriate levels of service over the planning period.

The Detailed Asset Management Plan is to be read with Central Elgin planning documents. This includes the Strategic Asset Management Policy (2021), along with:

- Municipality of Central Elgin Official Plan (March 2013)
- Municipality of Central Elgin - Water and Wastewater Rate Study Update (January 2021)
- Municipality of Central Elgin - Drinking Water Quality Management System (DWQMS)
- Water Conservation By-law

The Municipality has undertaken needs and rate studies for water and wastewater since 2002, these studies have guided the Municipality's infrastructure renewal projects since that time. The implementation of formal Detailed Asset Management Plan will be the next logical progressing to overall asset management of the Municipality's water assets.

The infrastructure assets covered by this Detailed Asset Management Plan includes the major components required to deliver effective water services for Central Elgin customers. The majority of the water network infrastructure is located within the urban areas of Central Elgin which includes Belmont, Eastwood subdivisions, Lynnhurst, Port Stanley, Sparta and Union. As a result of the Elgin Area Water Supply System being located within the Municipality of Central Elgin there are significant amounts of rural water mains located throughout the Municipality that provide water service to rural customers. These areas contain conveyance piping, valves, sample stations, facilities, water towers and fire hydrants. For a detailed summary of the water network assets covered refer to Table in Section 5.

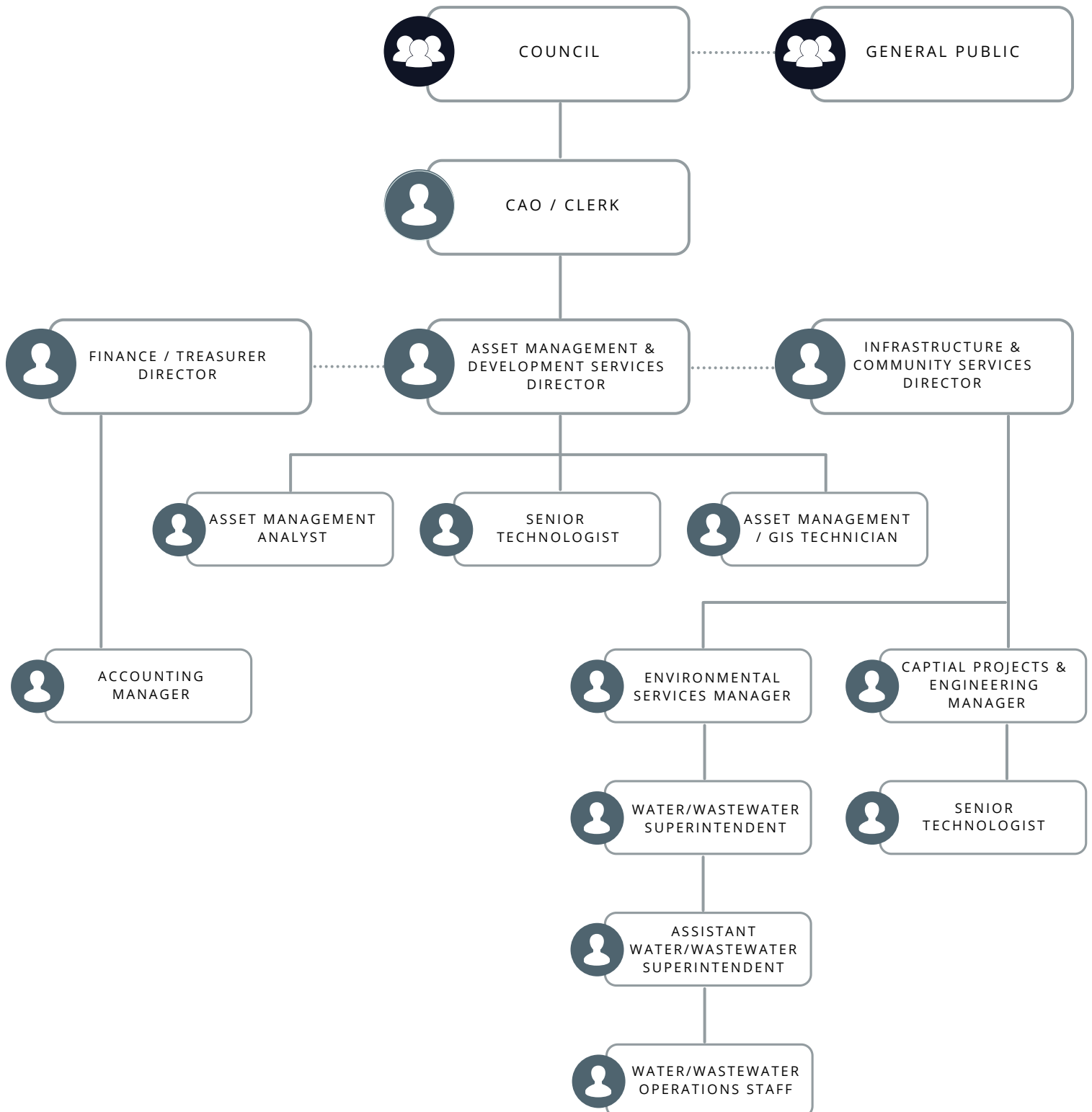
The infrastructure assets included in this plan have a total replacement value of **\$58,335,871**.

TABLE 2.1 - KEY STAKEHOLDERS IN THE ASSET MANAGEMENT PLAN

KEY STAKEHOLDER	ROLE IN ASSET MANAGEMENT PLAN
CENTRAL ELGIN COUNCIL	<ul style="list-style-type: none"> • Allocate resources to meet planning objectives in providing services while managing risks, • Support asset management initiatives necessary to improve knowledge and inform choices • Fund the level of service desired over the whole-life
CAO/CLERK	<ul style="list-style-type: none"> • Champion of supporting asset management principles for the organization • Ensures adequate resources(staff/financial) to develop staff resources, to aid in the success of asset management for the organization
SENIOR MANAGEMENT	<ul style="list-style-type: none"> • Set high level priorities for asset management development, and raise awareness of this function with staff and outside contractors • Support the asset management driven budget and Long Term Financial Plan (10 year horizon) • Support the actions required in the Detailed Asset Management Plan to better manage assets and deliver service
FIELD STAFF/ OPERATIONAL STAFF	<ul style="list-style-type: none"> • Verify condition and location of assets • Provide operational and maintenance service to assets • Report to senior management any progress, deficiencies and effectiveness of operations and maintenance activities.
PROVINCE OF ONTARIO	<ul style="list-style-type: none"> • Sets regulation for drinking water through legislation which outlines mandatory standards and practices • Mandates personal liability to individuals who oversee and operate municipal water systems
EXTERNAL PARTIES	<ul style="list-style-type: none"> • Participate in facilitated conversation to allow the municipality to understand the communities desired level of service • Be supportive of the Detailed Asset Management Plan that may reduce level of service for the communities desire to reduce taxation

Central Elgin's organization structure for service delivery is detailed below:

FIGURE 2.1 - SERVICE DELIVERY ORGANIZATIONAL STRUCTURE



2.2 Goals and Objectives of Asset Ownership

Central Elgin's primary objective for managing its water assets is to deliver safe and effective water services while meeting all applicable legislation and regulation. Consideration will be given to the defined level of service when maintaining and renewing assets in the most cost effective manner for present and future consumers.

The key elements of infrastructure asset management are:

- Providing a defined level of service and monitoring performance
- Managing the impact of growth through demand management and infrastructure investment
- Taking a lifecycle approach to developing cost-effective management strategies for the long term that meet the defined level of service
- Identifying, assessing and appropriately controlling risks
- Linking to a Long Term Financial Plan which identifies required, affordable forecast costs and how it will be allocated

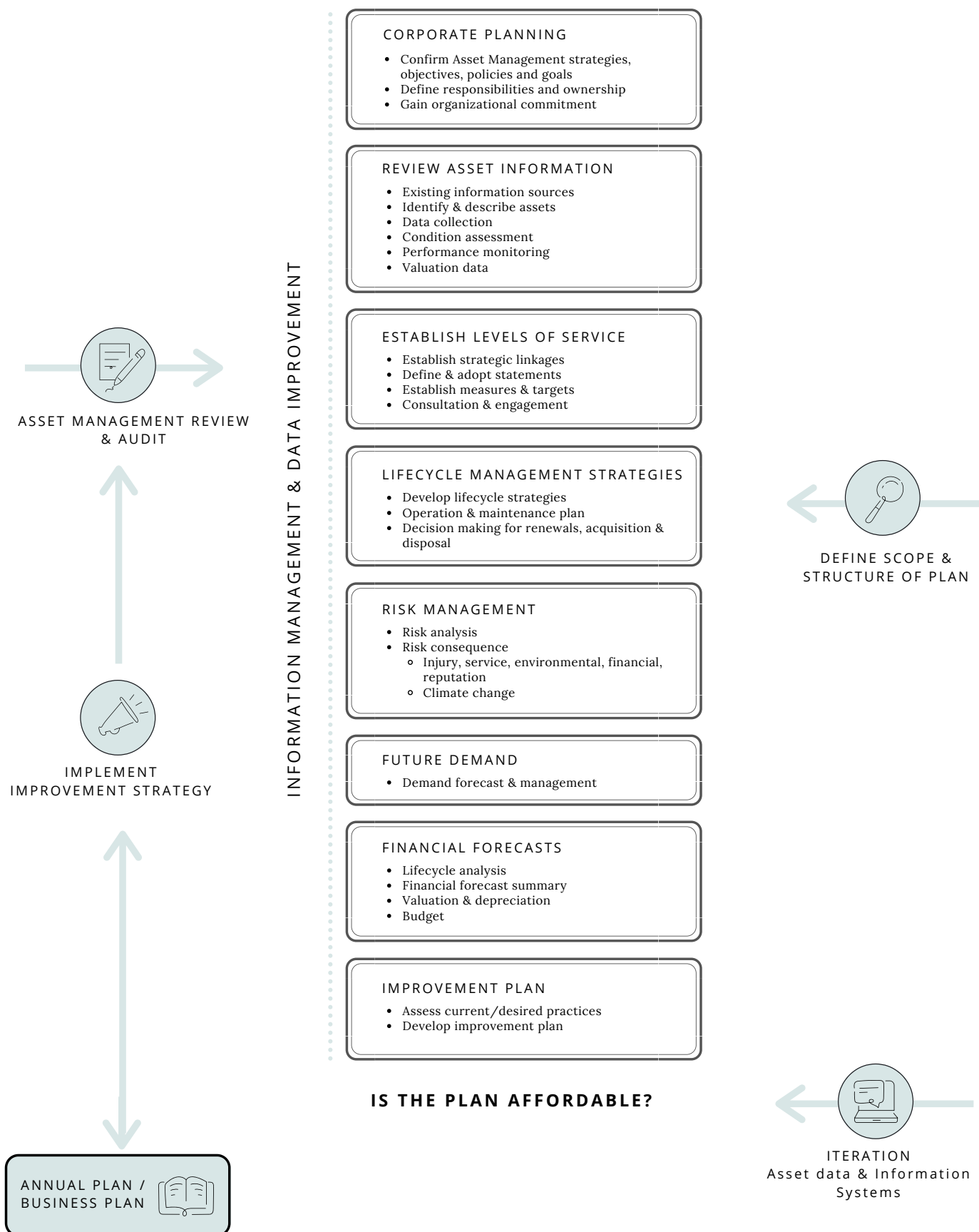
Key elements of the planning framework are:

- Levels of Service – specifies the services and levels of service to be provided
- Risk Management – resiliency, environmental, climate, human safety, financial, reputation and functional
- Future Demand – how this will impact on future service delivery and how this is to be met
- Lifecycle Management – Taking a lifecycle approach to developing cost effective management strategies for the long term that meet the defined level of service
- Financial Summary – what funds are required to provide the defined services
- Asset Management Practices – how we manage provision of the services
- Monitoring – how the plan will be monitored to ensure objectives are met
- Asset Management Improvement Plan – how we increase asset management maturity

Other references to the benefits, fundamentals principles and objectives of asset management are:

- International Infrastructure Management Manual 2015
- ISO 55000

FIGURE 2.2 - ROAD MAP FOR PREPARING AN ASSET MANAGEMENT PLAN



LEVELS OF SERVICE

3.1 Customer Research and Expectations

Central Elgin is committed to conducting an annual Level of Service survey to engage with its customers to determine their satisfaction with the services provided.

This Detailed Asset Management Plan is prepared to facilitate consultation prior to adoption of Levels of Service by the Municipality of Central Elgin. This Detailed Asset Management Plan is informed by a Level of Service survey that was published on the municipal website, www.centralelgin.org and the municipality's Community Engagement Website, www.letstalkcentralelgin.org. The 2020 survey was also posted on the municipality's social media platforms including Facebook and Twitter. The survey was posted on these platforms for a 6 week period in December 2020 and January 2021.

The survey had a total of 504 respondents, and assuming that the survey was completed by one member of a household, this represents approximately **8%** of the municipality's households. A summary of the results of the Level of Service Survey can be found on the community engagement website. This Level of Service survey is used to determine the public's general satisfaction with the current Level of Service that is being provided for the wastewater assets. Identifying the customers desired Level of Service assists Council and stakeholders in matching the level of service required, service risks and consequences with the customer's ability and willingness to pay for the service.

Table 3.1 summarizes the results from the Central Elgin Customer Satisfaction Survey.

TABLE 3.1 - CUSTOMER SATISFACTION SURVEY LEVELS

PERFORMANCE MEASURE	VERY SATISFIED	FAIRLY SATISFIED	SATISFIED	SOMEWHAT SATISFIED	NOT SATISFIED
Network reliability/ Unscheduled service interruption	✓				
No adverse taste of tap water		✓			
No adverse odor of tap water		✓			
Water pressure		✓			
Water clarity	✓				
Confidence that water is safe to drink	✓				

3.2 Strategic and Corporate Goals

This Detailed Asset Management Plan is prepared under the direction of the Central Elgin Strategic Asset Management Policy which outlines Council's asset management vision, goals and objectives.

Central Elgin's mission is:

"To develop our municipality through responsible management and long range planning, while having regard for our urban, agricultural, tourist and recreational communities with a vision of economic stability."

Strategic goals have been set by the Municipality. The relevant goals and objectives and how these are addressed in this Detailed Asset Management Plan are summarized in Table 3.2.

TABLE 3.2 - GOALS AND HOW THEY ARE ADDRESSED IN THIS PLAN

GOAL	OBJECTIVE	HOW GOAL AND OBJECTIVES ARE ADDRESS IN THE PLAN
SAFE COMMUNITIES	<ul style="list-style-type: none"> Reduce risk to public health, property and infrastructure 	<ul style="list-style-type: none"> Ensure the municipal water system is adequately operated maintained and renewed in accordance with the <u>Safe Drinking Water Act</u>. Ensure that the system is sized appropriately to provide capacity for peak demands as well as fire flows.
ADEQUATE, SUSTAINABLE & AFFORDABLE INFRASTRUCTURE	<ul style="list-style-type: none"> Ensure service is adequately sized for current and future use Understand network whole life costs 	<ul style="list-style-type: none"> Identify underserved areas and consider servicing capacity of the water system when extension of services are undertaken Lifecycle costs will inform decisions with the goal of reducing whole life costs
STRONG LOCAL ECONOMY & SUSTAINABLE COMMUNITY	<ul style="list-style-type: none"> To provide a reliable water system to be used for residential, commercial, industrial, agricultural and institutional customers 	<ul style="list-style-type: none"> Ensure the water system is adequately maintained, operated and renewed in conformity with the Safe Drinking Water Act and Drinking Water Quality Management System
CONSERVATION & APPRECIATION OF OUR NATURAL ENVIRONMENT	<ul style="list-style-type: none"> Conservation through recognizing factors such as climate change and times of drought 	<ul style="list-style-type: none"> Expansion of the water network will be conducted under the Municipal Class Environmental Assessment process Water Conservation parameters are included in the municipality's Water Use Bylaw.
GOOD GOVERNANCE	<ul style="list-style-type: none"> Engage regularly with the customers to identify the desired levels of service 	<ul style="list-style-type: none"> Perform annual level of service survey with customers and report the responses back to the community

3.3 Legislative Requirements

There are many legislative requirements relating to the management of assets. Legislative requirements that impact the delivery of the municipal water service are outlined in Table 3.3.

TABLE 3.3 - LEGISLATIVE REQUIREMENTS

LEGISLATIVE	REQUIREMENT
PROVINCIAL POLICY STATEMENT	Prioritization of development on full municipal services
SAFE DRINKING WATER ACT <u>O.REG 453/07</u>	<p>Mandates the municipal financial planning requirements and obligations for operating a water system over a 6 year horizon</p> <p>Customers are entitled to expect their drinking water to be safe</p> <p>To provide for the protection of human health and the prevention of drinking water health hazards through the control and regulation of the municipal water systems and drinking water testing. 2002, c. 32, s. 1.</p> <p>Protect existing and future sources of drinking water</p>
CLEAN WATER ACT 2006 <u>O.REG 287/07</u>	The conservation, protection and management of Ontario's waters and for their efficient and sustainable use, in order to promote Ontario's long term environmental, social and economic well-being.
ASSET MANAGMENT PLANNING ACT <u>O.REG 588/17</u>	Identifies the requirements for municipal asset management planning to assist municipalities to better understand their infrastructure needs and inform infrastructure planning and investment decisions
WATER OPPORTUNITIES ACT	Identifies the requirements for water sustainability and performance indicators and targets.

3.4 *Customer Values*

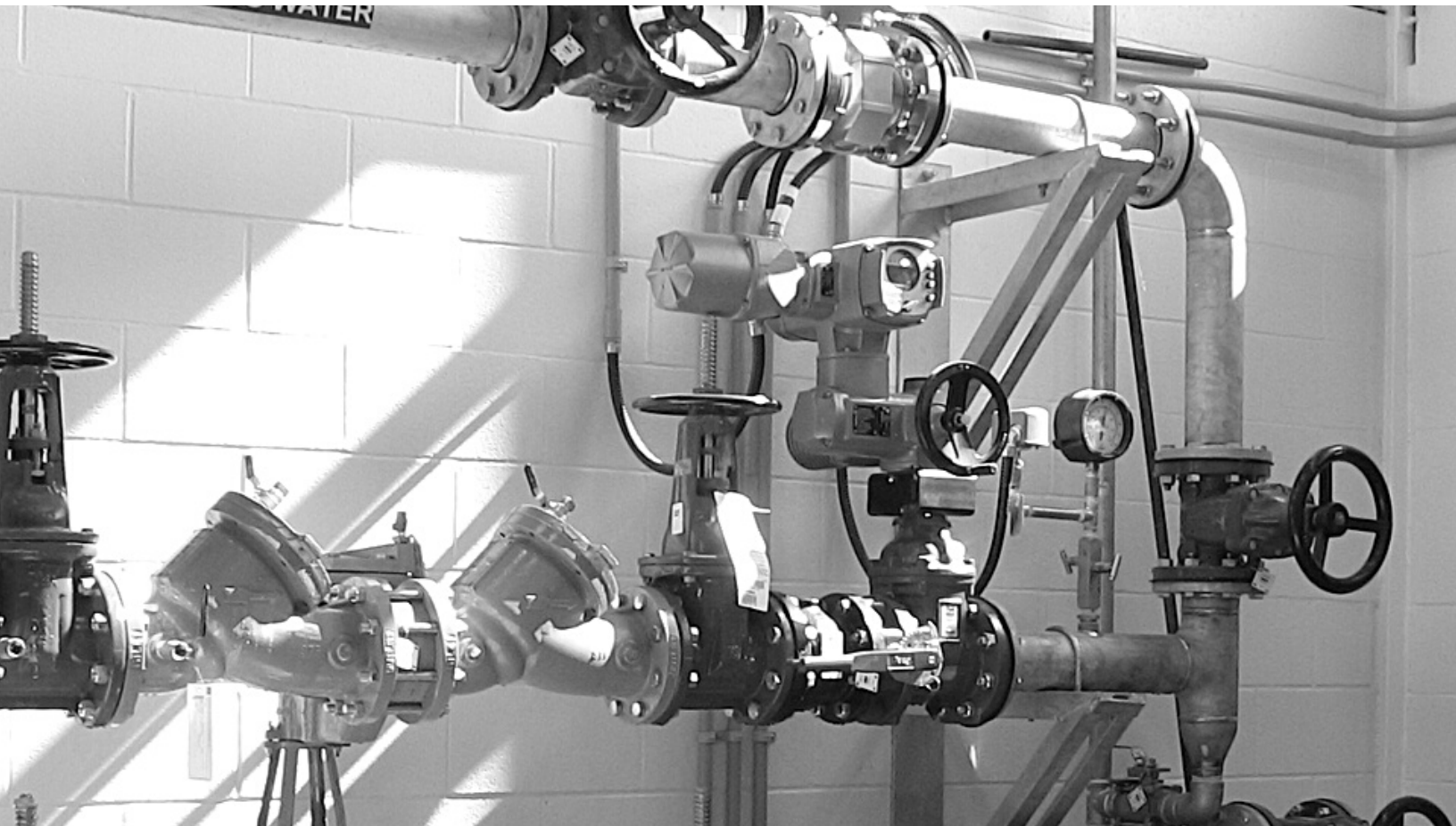
Service levels are defined in three ways, customer values, customer levels of service and technical levels of service.

Customer values indicate:

- What aspects of the service is important to the customer
- Whether they see value in what is currently provided
- The likely trend over time based on the current available funding

TABLE 3.4 - CUSTOMER VALUES

CUSTOMER VALUES	CUSTOMER SATISFACTION MEASURE	FEEDBACK	EXPECTED TREND BASED ON PLANNED BUDGET
RELIABLE UNINTERRUPTED WATER SERVICE	<ul style="list-style-type: none"> • Number of unplanned service interruption • Annual level of service survey 	Very Satisfied	Trending to remain the same
WATER IS SAFE TO DRINK	<ul style="list-style-type: none"> • Number of boil water advisory's annually 	Very Satisfied	Maintain current level of service



3.5 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 under used? ... Does Central Elgin need more or less of these assets?

In Table 3.5 under each of the service measure types (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 of fact related to the service delivery outcome (i.e. number of occasions when service is not available or proportion of replacement value by condition %'s) to provide a balance in comparison to the customer perception that may be more subjective.

TABLE 3.5 - CUSTOMERS LEVEL OF SERVICE MEASURES

MEASURE TYPE	LEVEL OF SERVICE	PERFORMANCE MEASURE	CURRENT PERFORMANCE	EXPECTED BUDGET TREND
CONDITION	Network kept in good condition with no unplanned service interruptions	Annual Level of Service Survey	VERY SATISFIED (< 2/1000 households/year)	MAINTAIN
		Customer Complaints Annually		
		CONFIDENCE LEVELS	HIGH	HIGH
FUNCTION	Fire hydrants are in working condition and able to provide fire flow	Annual hydrant inspection and testing for both maintenance and flow	VERY SATISFIED 100% completed once a year	MAINTAIN
		CONFIDENCE LEVELS	MEDIUM	MEDIUM
		CONFIDENCE LEVELS	HIGH	HIGH
CAPACITY	Sufficient capacity to safely supply water to existing and new customers projected in 10 year planning horizon	Annual monitoring of treatment capacity, storage capacity and pressure within the distribution system	VERY SATISFIED 100% compliance with accepted industry standards	MAINTAIN
		CONFIDENCE LEVELS	HIGH	HIGH
		CONFIDENCE LEVELS	HIGH	HIGH

3.6 Technical Levels of Service

To deliver the customer values, and impact the achieved Customer Levels of Service, are operational or technical measures of performance. These 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 to provide a higher level of service (i.e. replacing a transmission/distribution pipe with a larger size) or a new service that did not exist previously. This includes services installed as a result of new development and donated to the municipality.

Operation

The regular activities to provide services (i.e. water sampling, flushing, energy costs, inspections, etc)

Maintenance

The activities necessary to retain an asset as near as practicable to an appropriate service condition. Maintenance activities enable an asset to provide service for its planned life (i.e. water main break repairs, service leaks)

Renewal

The activities that return the service capability of an asset up to that which it had originally provided (i.e. replacement of existing water main with water main of same size)

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

Table 3.6 shows the activities expected to be provided under the current 10 year planned budget allocation, and the forecast activity requirements being recommended in this Detailed Asset Management Plan.

TABLE 3.6 - TECHNICAL LEVELS OF SERVICE

LIFECYCLE	PURPOSE OF ACTIVITY	ACTIVITY MEASURE	CURRENT PERFORMANCE *	RECOMMENDED PERFORMANCE **
ACQUISITION	Expansion of service	Customer Request as a result of failed private water supply	As Requested	As Requested
		Budget	User Funded	User Funded
	Confirm new development is built to approved design specs prior to assumption	Staff inspection of donated assets completed prior to assumption	100%	100%
		Budget	\$40, 000	\$40,000
OPERATION	Flushing pipes to maintain chlorine residuals and water quality	% of Network completed annually	100%	100%
		Budget	\$100, 000	\$100,000
	Sampling of chlorine residuals to ensure water quality & public safety	Daily	100%	100%
		Budget	\$18,000 + lab cost	\$18,000 + lab cost
	Fire Hydrant Inspection – to ensure operation	Annually	75% Annually	100% Annually
		Budget	\$10,000	\$13,500
	Visual inspection of Water Towers to ensure successful operations	Daily inspections completed	100%	100%
		Budget	\$15,000	\$15,000
	Daily inspection of Belmont pumphouse to ensure safe high quality water is available	% of Scheduled inspections completed	100%	100%
		Budget	\$98,000	\$98,000

LIFECYCLE	PURPOSE OF ACTIVITY	ACTIVITY MEASURE	CURRENT PERFORMANCE *	RECOMMENDED PERFORMANCE **
OPERATION	Exercise valves to ensure continued operations	100% of network valves exercise biennially	50% Annually	50% Annually
		Budget	\$50,000	\$50,000
	Water service inspections	As required by new service	As required	As required
		Budget	\$15,000	\$15,000
MAINTENANCE	Rebuild fire hydrants	Failed inspection/Leaking/Accident	Inspection or as needed	Inspection or as needed
		Budget	\$50,000	\$ 50,000
	Service leaks	Customer complaint/Inspection	As required	As required
		Budget	\$10,000	\$10,000
	Water main breaks	As reported/Inspection	As required	As required
		Budget	\$10,000	\$13,500
RENEWAL	Updating ageing infrastructure coordinated with road reconstruction	Based on age, condition and capital plan	Planned with other capital projects	Planned with other capital projects
		Budget	\$300,000/km	\$300,000/km
	Updating ageing infrastructure separate from road recon	Due to failure	As per Capital Plan	As per Asset Management Plan
		Budget	\$35,000/km watermain	\$35,000/km watermain
DISPOSAL		Budget	\$50,000	\$50,000

* Current activities related to planned budget

** Expected performance related to forecast lifecycle costs.

It is important to monitor the service levels regularly as circumstances can and do change. Current performance is based on existing resource provision and work efficiencies. It is acknowledged changing circumstances such as technology and customer priorities will change over time.

FUTURE DEMAND

4.1 Demand Drivers

Drivers affecting demand include things such as changes in population, regulations, demographics, seasonal factors, consumer preferences and expectations, technology, economics, and environmental awareness.

4.2 Demand Forecasts

The present position and projections for demand drivers that may impact future service delivery and use of assets have been identified and documented.

4.3 Demand Impact and Demand Management Plan

The impact of demand drivers that may affect future service delivery and use of assets are shown in Table 4.3.

Demand for new services will be managed through a combination of managing existing assets, upgrading of existing assets and providing new assets. Other demand management practices can include non-asset solutions, insuring against risks and managing failures.

Opportunities identified to date for demand management are also shown in Table 4.3. Further opportunities will be developed in future revisions of this Detailed Asset Management Plan.

TABLE 4.3 - DEMAND MANAGEMENT PLAN

DEMAND DRIVER	CURRENT POSITION	PROJECTION	IMPACT ON SERVICES	DEMAND MANAGEMENT PLAN
POPULATION GROWTH (OVER 5 YEARS)	14, 000	15,700	Increased population leads to a need to acquire new assets	Requires extension to existing distribution system for new development Improve system capacity for high density development

4.4 Asset Programs To Meet Demand

The new assets required to meet demand may be acquired, donated or constructed. Additional assets are discussed in Section 5.4.

Acquiring new assets will commit Central Elgin to ongoing operations, maintenance and renewal costs for the period that the service provided from the assets is required. These future costs are identified and considered in developing forecasts of future operations, maintenance and renewal costs for inclusion in the future long term financial plan (Refer to Section 5).

4.5 *Climate Change Adaptation*

Climate change will have a significant impact on the assets and services provided by Central Elgin. In the context of the detailed asset management planning process climate change can be considered as both a future demand and a risk.

How climate change impacts assets will vary depending on the location and the type of services provided, as will the way in which impacts are managed and responded to.

As a minimum Central Elgin considers how to manage the existing assets given the potential climate change impacts for the region.

Risk and opportunities identified to date are shown in Table 4.5.1

TABLE 4.5.1 - MANAGING THE IMPACT OF CLIMATE CHANGE ON ASSETS & SERVICES

CLIMATE CHANGE DESCRIPTION	PROJECTED CHANGE	POTENTIAL IMPACT ON ASSETS & SERVICES	MANAGEMENT
DROUGHT IMPACT TO MUNICIPAL/PRIVATE OWNED WELLS AND WATER SUPPLIES	Increased hot weather events	Water capacity may be reduced and possible water bans or restrictions. Increased demand from residents on private wells to connect to reliable municipals services	Educate residents on the Water Use By-law and outdoor watering restrictions.
HEAT AND RUNOFF IMPACT TO LAKE CREATING ALGAE BLOOMS	Increased hot weather events	Intake water may become toxic due to algae blooms	Regional water supply may require increased treatment
INCREASED LAKE LEVELS CAUSING EROSION OF BLUFF	Increased and Sustained rainfall events	Supporting soils for The Municipal Water Systems may erode (Old Dexter Line)	Rerouting of existing water mains away from bluff erosion

Additionally, the way in which Central Elgin constructs new assets should recognize that there is opportunity to build in resilience to climate change impacts. Building resilience can have the following benefits:

- Assets will withstand the impacts of climate change
- Services can be sustained
- Assets that can endure may potentially lower the lifecycle cost and reduce their carbon footprint

Table 4.5.2 summarizes some asset climate change resilience opportunities

TABLE 4.5.2 - BUILDING ASSET RESILIENCE TO CLIMATE CHANGE

NEW ASSET DESCRIPTION	CLIMATE CHANGE IMPACT ON THESE ASSETS	BUILD RESILIENCE IN NEW WORKS
WATER MAINS	Increased lake levels causing erosion	Build assets away from lake 100 year erosion boundary
NEW WELLS	Wells drying up due to drought	Hook up to Elgin Area Primary Water Supply
WATER STORAGE (I.E. TOWERS)	Potential increased drought frequency can impact demand on supply and require increase in storage	Increase storage capacity in reservoirs when they are renewed

The impact of climate change on assets is a new and complex discussion and further opportunities will be developed in future revisions of the Detailed Asset Management Plan.

LIFECYCLE MANAGEMENT PLAN

The Lifecycle Management Plan details how Central Elgin plans to manage and operate the assets at the agreed levels of service (Refer to Section 3) while managing lifecycle costs.

5.1 *Background Data*

5.1.1 Physical Parameters

The assets covered by this Detailed Asset Management Plan are shown in Figure 5.1.1.

The Municipality of Central Elgin is a geographically large municipality comprised of approximately 39,350 Hectares. Central Elgin borders the City of London, St. Thomas and the north shore of Lake Erie. Water assets consist of approximately 89 km's of conveyance pipes which are mostly located in urban areas such as Belmont, Eastwood subdivision, Lynhurst, Port Stanley. Within these urban areas you will also find water towers, fire hydrants, water valves sample stations, and facilities and chambers.

The age profile of the assets included in the Detailed Asset Management Plan are shown in Table 5.1.1.

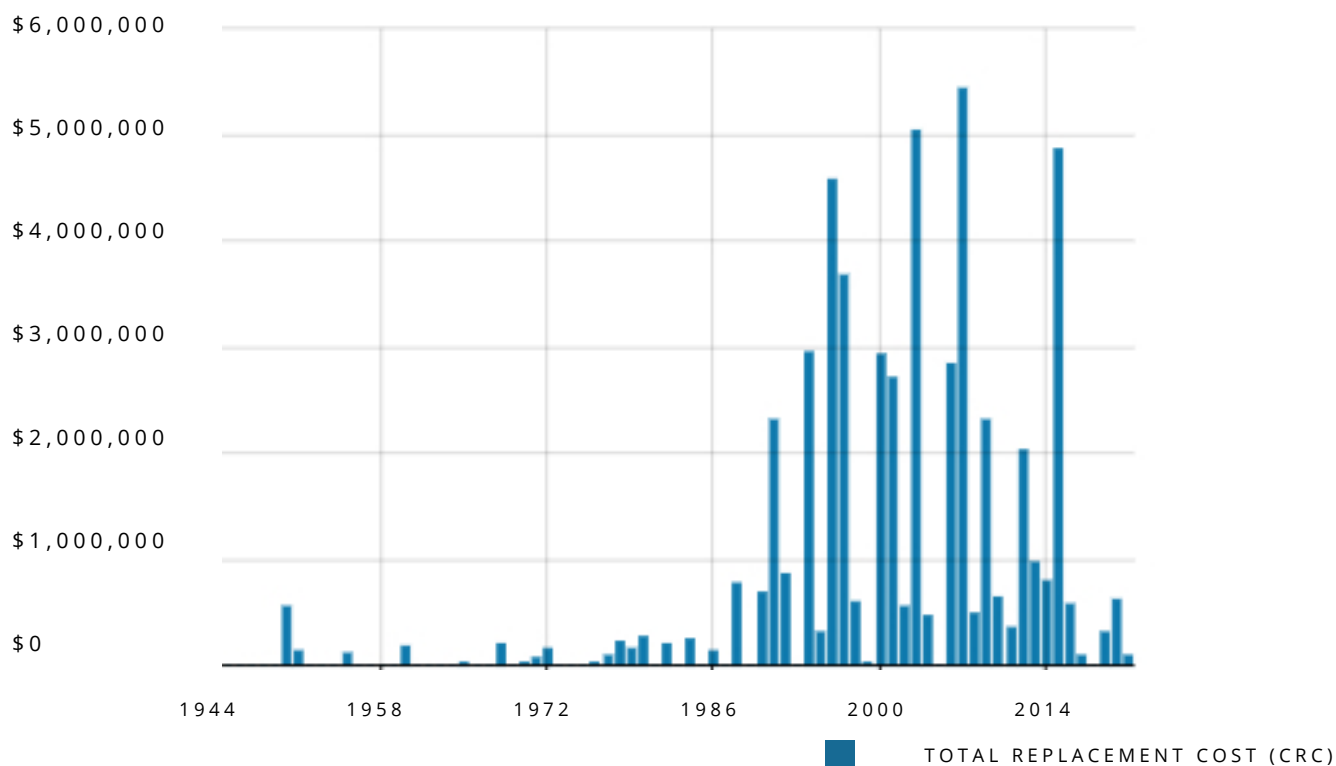


TABLE 5.1.1 - ASSETS COVERED BY THIS PLAN

ASSET CATEGORY	DIMENSION	REPLACEMENT VALUE
WATERMAINS	89.1 KM	\$18.2M
HYDRANTS	417	\$2.7M
SERVICES	4372	\$19.3M
WATER METERS	4372	\$2.3M
SAMPLING STATIONS	47	310K
WATER VALVES	953 (Approx.)	\$3.5M
WATER TOWERS	2	\$3.5M Port Stanley \$3M Belmont
FACILITIES & CHAMBERS	Water Booster Stations Pump house, and Chambers	240K - Booster Stations \$2.2M - Pump House \$2.3M - 11 Chambers
SCADA SYSTEM	Virtualized SCADA System and PLC/Transmitting Equipment	800K
TOTAL		\$58.3M

All figure values are shown in current day dollars, 2021

GRAPH 5.1.1 - ASSET AGE PROFILE



Graph values are shown in current day dollars, 2021

The municipality has invested heavily in the water supply and distribution system since 2001. As a result, the majority of the horizontal assets (pipes, valves, hydrants, services) have been replaced. The Port Stanley water tower is 25 years old and the Belmont Tower is less than 20 years old. The water supply system in Belmont was renewed 15 years ago and there is sufficient capacity for supply to address the 30 year growth projections for Belmont.

Due to the significant quantity of renewals and acquisitions of assets since 2001 the municipality undertook the works utilizing debt financing.

These works include:

- Construction of the new Belmont elevated storage facility
- Renewal of the Belmont water supply system (pumps, wells, mechanical system)
- Replacement of water lines in Belmont, Eastwood Subdivision, Lynhurst, Port Stanley and transmission main to Union

5.1.2 Asset Capacity and Performance

Assets are generally provided to meet design standards where these are available. However, there is insufficient resources to address all known deficiencies. Locations where deficiencies in service performance are known are detailed in Table 5.1.2.

TABLE 5.1.2 - KNOWN SERVICE PERFORMANCE DEFICIENCIES

LOCATION	SERVICE DEFICIENCY
Port Stanley water supply from Elgin Area Water Supply System to the Municipal Water System	Reduced pumping pressure from the Elgin Area Water Supply System (remedy with booster pumping station)

The above service deficiencies were identified by the Director of Asset Management and Development.

5.1.3 Asset Condition

Condition is not currently monitored and age is the default parameter. A combination of age based data and professional opinion will be utilized until condition assessments have been completed.

Condition is measured using a 1 – 5 rating system as detailed in Table 5.1.3. It is important that a consistent approach is used in reporting asset performance enabling effective decision support. A finer rating system will be used at a more specific level, however, for reporting in the Detailed Asset Management Plan results are translated to a 1 – 5 rating scale for ease of communication.

TABLE 5.1.3 - CONDITION RATING SYSTEM

CONDITION RATING	DESCRIPTION RATING SYSTEM
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 and/or beyond rehabilitation, immediate action required

5.1.4 Asset Hierarchy

An asset hierarchy provides a framework for structuring data in an information system to assist in collection of data, reporting information and making decisions. The hierarchy includes the asset class and component used for asset planning and financial reporting and service level hierarchy used for service planning and delivery.

The service hierarchy is shown in Table 5.2.2.

TABLE 5.1.4 - ASSET SERVICE HIERARCHY

SERVICE HIERARCHY	SERVICE LEVEL OBJECTIVE
ASSET CLASS - WATER	Water Network to provide services to residents
ASSET FEATURES - Water mains, Hydrants, Valves, Services, Facilities, Water Meters, Sampling Stations, Water towers, Chambers, SCADA	Specific components of infrastructure that enables main asset class to deliver its service

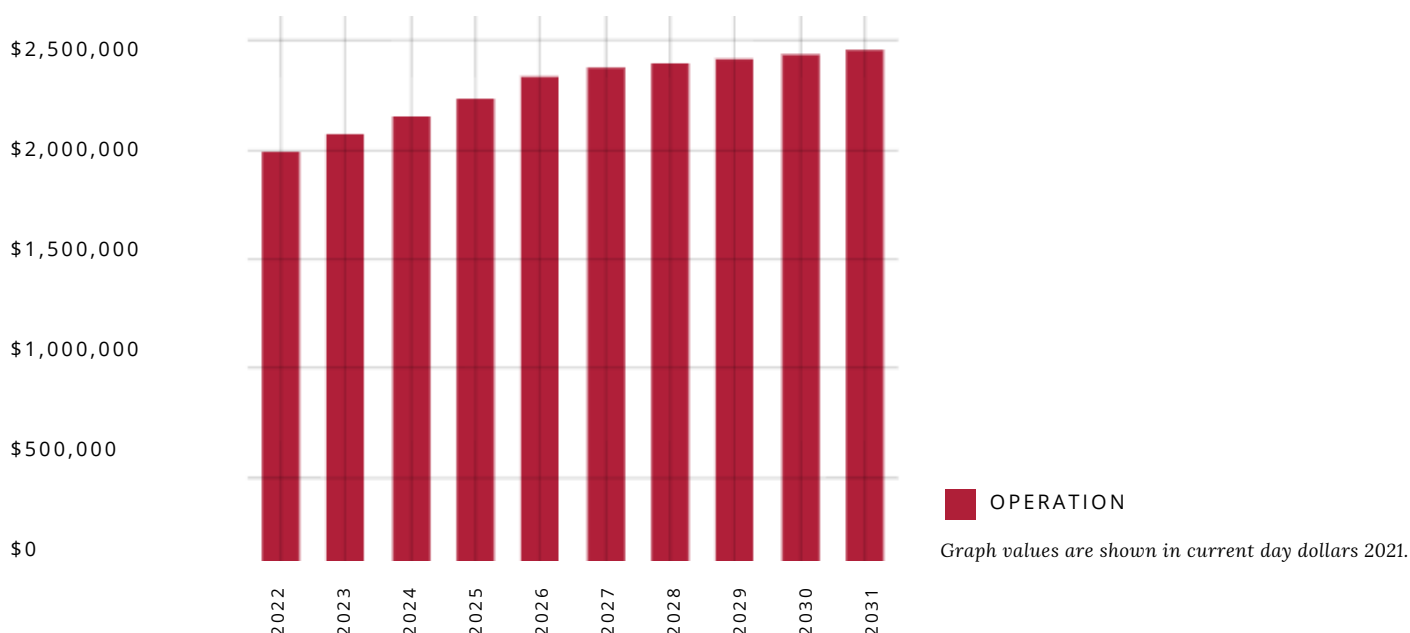
5.2 Operations Plan

Operations include regular activities to provide services. Examples of typical operational activities include cleaning, water sample collection, quality testing, asset inspections, and utility costs.

TABLE 5.2 - OPERATIONAL BUDGET TRENDS

YEAR	OPERATIONS BUDGET
2020	\$ 1.98 M
2021	\$ 1.98 M
2022	\$ 1.98 M

GRAPH 5.2 - OPERATIONS PLAN



5.2.1 Maintenance Plan

Maintenance includes all actions necessary for retaining an asset as near as practicable to an appropriate service condition including regular ongoing day-to-day work necessary to keep assets operating. Examples of typical maintenance activities include pipe repairs, service repairs, pump maintenance and equipment repairs. The trend in maintenance budgets are shown in Table 5.2.1.

TABLE 5.2.1 - MAINTENANCE BUDGET TRENDS

YEAR	MAINTENANCE BUDGET
2020	\$ 317 K
2021	\$ 317 K
2022	\$ 317 K

Maintenance budget levels are considered to be inadequate to meet projected service levels, which may be less than or equal to current service levels. Where maintenance budget allocations are such that they will result in a lesser level of service, the service consequences and service risks have been identified and are highlighted in this Detailed Asset Management Plan.

Assessment and priority of reactive maintenance is undertaken by staff using experience and judgement.

GRAPH 5.2.1 - MAINTENANCE PLAN



5.2.2 Summary of Forecast Operations and Maintenance Costs

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

Graph 5.2.2 shows the forecast operations and maintenance costs.

GRAPH 5.2.2 - OPERATION AND MAINTENANCE SUMMARY



Graph values are shown in current day dollars, 2021.

The forecast of operations and maintenance are shown to be increasing steadily overtime, this may present budget shortfalls that may have to be addressed. It should be noted that the majority of the Operational costs represent fixed costs that cannot be altered. For example, Cost of purchased water from Elgin Area Regional Water Supply 26%, and Water Treatment Costs 2%. There is no avenue to reduce these costs over time with the exception of debt repayment being completed.

Deferred maintenance (i.e. works that are identified for maintenance activities but unable to be completed due to available resources) should be included in the infrastructure risk management plan.

5.3 *Renewal Plan*

Renewal is defined as major works which do 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 over and above restoring an asset to original service potential is considered to be an acquisition resulting in additional future operations and maintenance costs.

Assets requiring renewal are identified by using the asset register data to project the renewal costs (current replacement cost) and renewal timing (acquisition year plus updated useful life to determine the renewal year).

The typical useful lives of assets used to develop projected asset renewal forecasts are shown in Table 5.3

Asset useful lives were last reviewed in 2009.

TABLE 5.3 - USEFUL LIVES OF ASSETS

ASSET SUB CATEGORY	USEFUL LIFE
WATER MAINS	100
HYDRANTS	50
SERVICES	100
WATER METERS	25
SAMPLING STATIONS	25
WATER VALVES	100
WATER TOWERS	75
FACILITIES AND CHAMBERS	75
SCADA SYSTEM	75

The estimates for renewals in this Detailed Asset Management Plan were based on the Tangible Capital Asset Policy, 2009. These will be reviewed in 2021.

5.3.1. *Renewal Ranking Criteria*

Asset renewal is typically undertaken to either:

- Ensure the reliability of the existing infrastructure to deliver the service it was constructed to facilitate or
- Ensure the infrastructure is of sufficient quality to meet the service requirements

Central Elgin prioritizes renewals by identifying assets or asset groups that:

- Have a high consequence of failure
- Have high use and subsequent impact on users would be significant
- Have higher than expected operational or maintenance costs
- Have potential to reduce lifecycle costs by replacement with a modern equivalent asset that would provide the equivalent service

The ranking criteria used to determine priority of identified renewal proposals is detailed in Table 5.3.1.

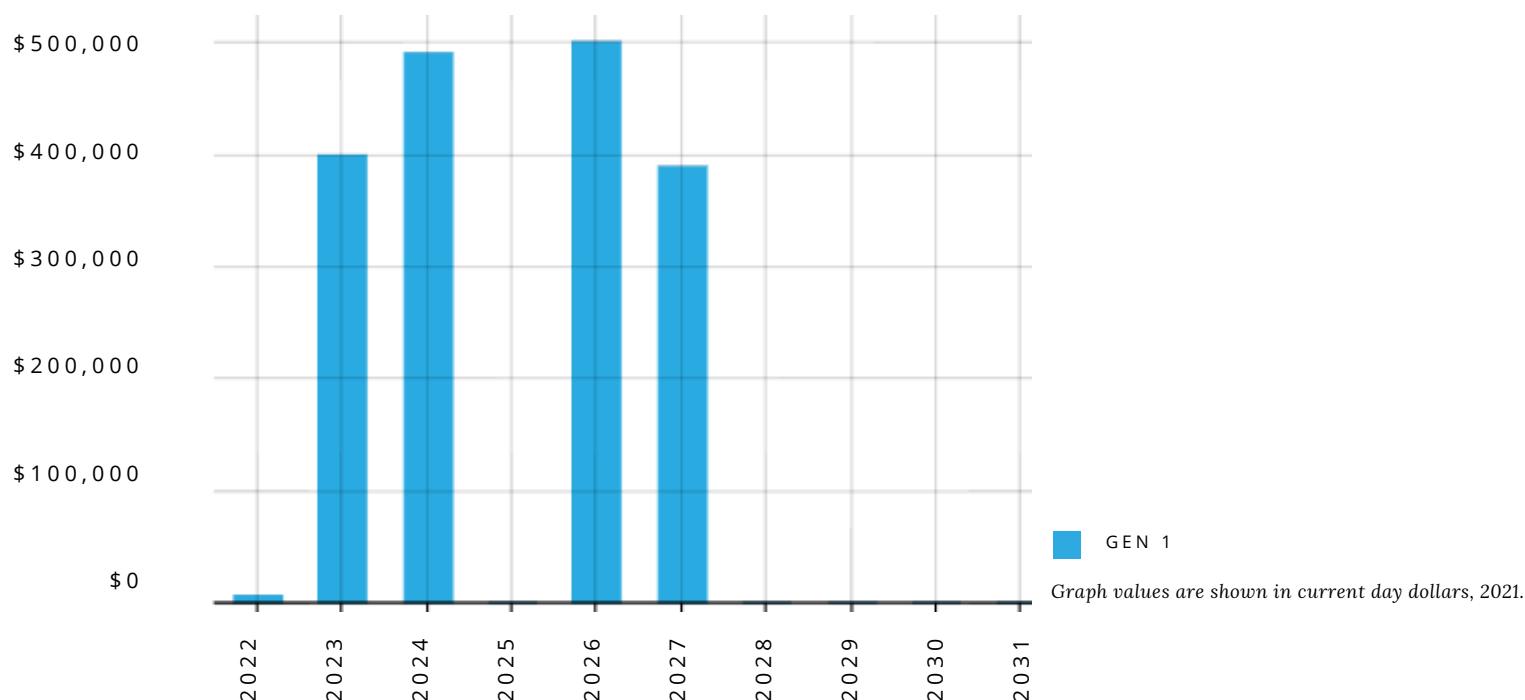
TABLE 5.3.1 - RENEWAL PRIORITY RANKING CRITERIA

CRITERIA	WEIGHING
COMPLETE ASSET FAILURE	20 %
COORDINATED ASSET REPLACEMENT	5%
CAPACITY IMPROVEMENTS	5%
COMPROMISED DRINKING WATER QUALITY AND PUBLIC HEALTH	70%
TOTAL	100%

5.4 Summary Of Future Renewal Costs

Forecast renewal costs are projected to increase over time if the asset inventory increases. The forecast costs associated with renewals are shown in figure 5.4.1.

GRAPH 5.4.1 - RENEWAL SUMMARY



Forecasted renewals for 2023 include George Street. In 2024 watermain replacement on Smith and William Street are proposed. In 2026, the repainting of the Port Stanley water tower is purposed. In 2027, it is proposed to replace the watermain in Lyndale Ave in conjunction with the road renewal.

5.5 *Acquisition Plan*

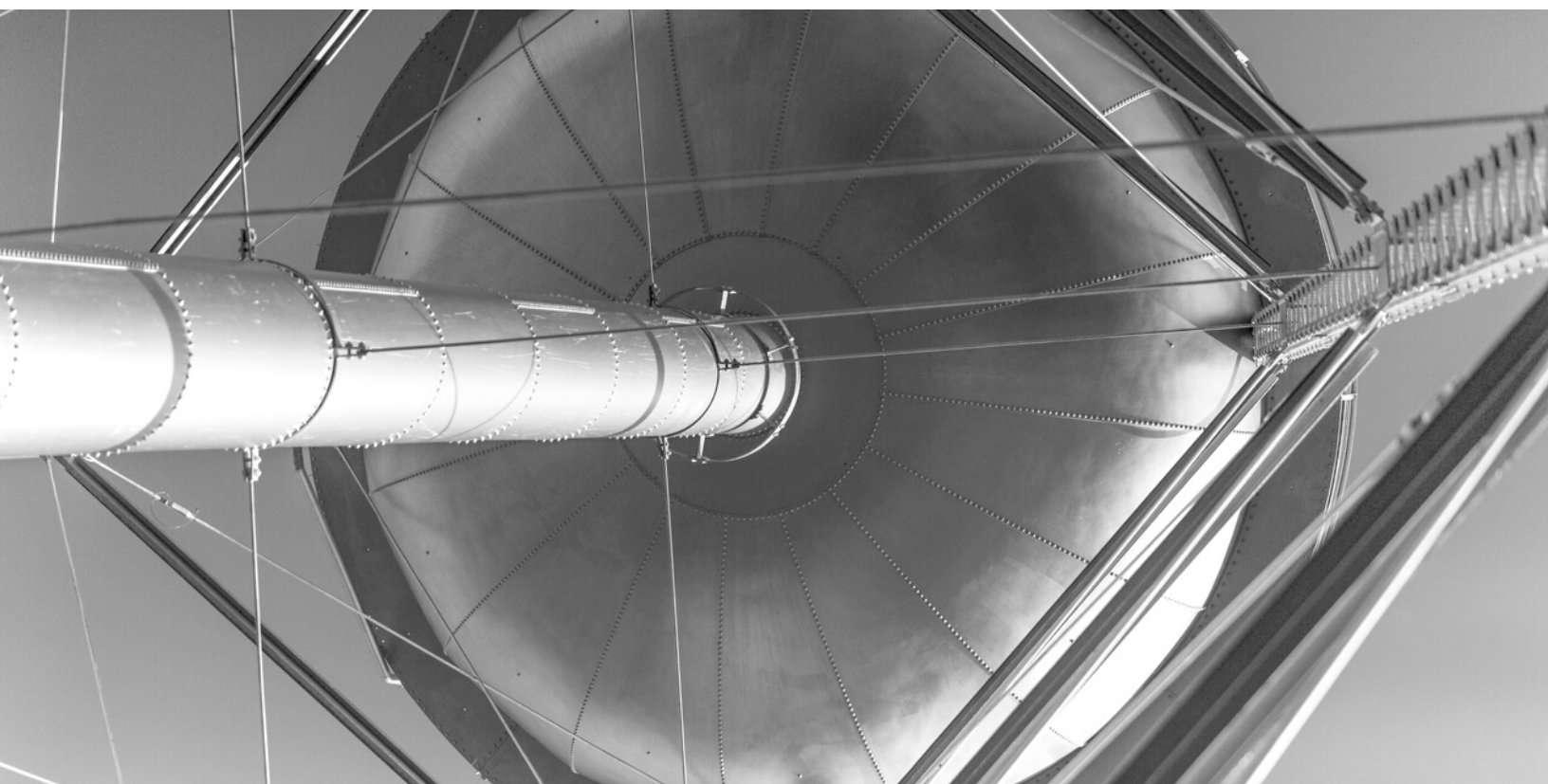
Acquisitions are defined as the addition of assets that did not previously exist or works which will upgrade or improve an existing asset beyond its existing capacity. Acquisitions may result from growth, demand, social or environmental needs. Assets may also be donated to the Municipality of Central Elgin such as works constructed in new development.

5.5.1 Selection Criteria

Proposed acquisition of new assets, and upgrade of existing assets, are identified from various sources such as community requests, proposals identified by strategic plans or partnerships with others. Potential upgrade and new works should be reviewed to verify that they are essential. Proposed upgrade and new work analysis should also include the development of a preliminary renewal estimate to ensure that the services are sustainable over the longer term. Verified proposals can then be ranked by priority and available funds and scheduled in future works programmes. The priority ranking criteria is detailed in Table 5.5.1.

TABLE 5.5.1 - ACQUIRED ASSETS PRIORITY RANKING CRITERIA

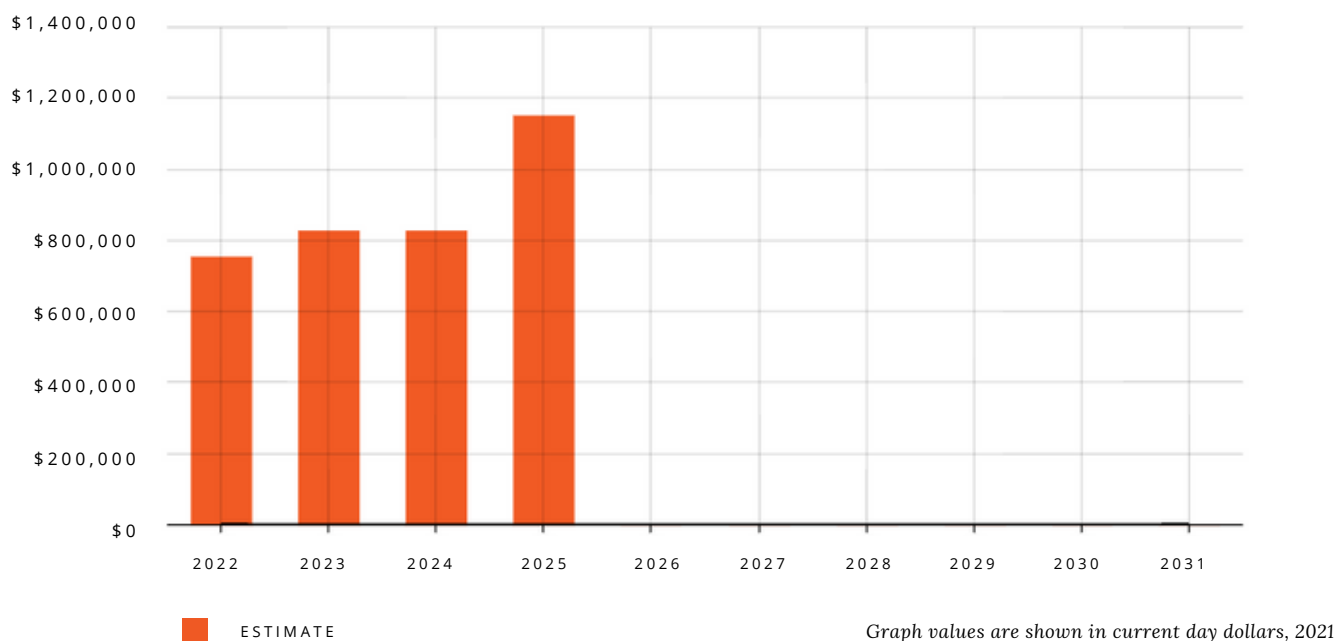
CRITERIA	WEIGHTING
GROWTH DONATED ASSETS	80%
NEW SERVICE REQUESTS	20%
TOTAL	100%



5.5.2 Summary of Future Asset Acquisition Costs

Forecast acquisition costs are summarized in Graph 5.5.2.

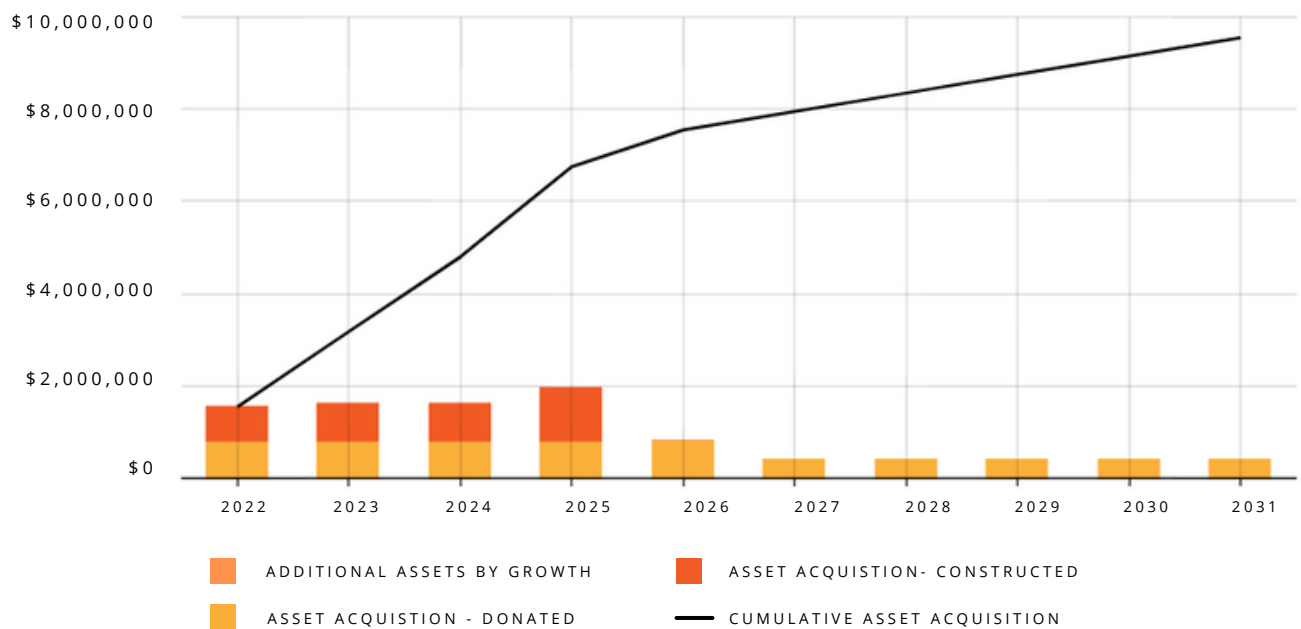
GRAPH 5.5.2- ACQUISITION CONSTRUCTION SUMMARY



In 2022, Central Elgin intends to construct the Dexter Line Pressure Booster Station. In 2023 and 2024 Central Elgin intends on replacing water meters with new technology meters. In 2025, the projected acquisitions include extensions of mains on Seventh Avenue in Belmont as well as in Union.

When Central Elgin commits to new assets, the municipality must be prepared to fund future operations, maintenance and renewals of the asset. Central Elgin must also account for future depreciation when reviewing long term sustainability. When reviewing the long-term impacts of asset acquisition, it is useful to consider the cumulative value of the acquired assets being taken on by the Entity. The cumulative value of all acquisition work, including assets that are constructed and contributed shown in Figure 5.5.3.

GRAPH 5.5.3 - AQUISITION SUMMARY



Graph values are shown in current day dollars, 2021.

Expenditure on new assets and services will be accommodated in the budget and in the future long term financial plan, but only to the extent that there is available funding.

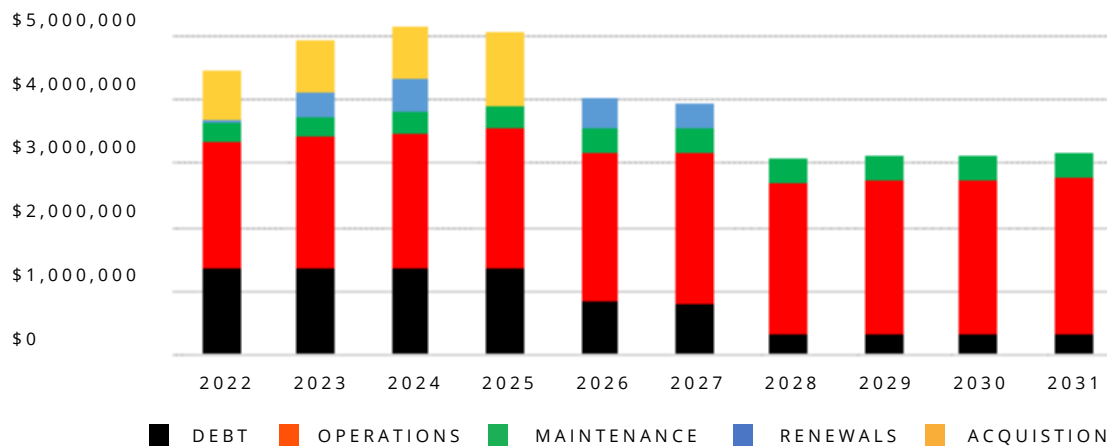
Central Elgin is anticipating an additional 650 homes to be added to the water network in the near term. These donated assets are estimated to be valued at **\$7 million** and will require additional operational and maintenance resources to ensure level of service can be maintained. Continued asset acquisition without sustainable funding allocation for operations and maintenance will require Central Elgin to lower its level of service and increase the likelihood of high cost reactive maintenance and the need for premature renewals.

5.5.3 Summary of Asset Forecast Costs

The financial projections from this asset plan are shown in Graph 5.5.4. These projections include forecast costs for acquisition, operation, maintenance, renewal, and disposal.

The bars in the graphs represent the forecast costs needed to minimize the lifecycle costs associated with the service provision.

GRAPH 5.5.4- LIFECYCLE SUMMARY



Graph values are in current dollars, 2021.

In 2022, Central Elgin has sufficient funding to continue operating the water network. Decreasing the current Level of Service is not an option as all the regulatory provincial compliances are being met, and if decreased; the Level of Service may not be attainable.

If current budget is maintained:

- Risk of reactive maintenance will increase
- Risk of unplanned service interruptions will increase

All of which are not acceptable based on the Municipality's goals and strategic plan.

RISK MANAGEMENT PLANNING

The purpose of 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.

Risk Management is defined as the effects of uncertainty on water assets and the networks service objectives.

Central Elgin will develop and implement a formalized risk assessment process to identify risks associated with service delivery and to implement proactive strategies to mitigate risks to tolerable levels. The risk assessment process identifies credible risks, the likelihood of the risk event occurring, and the consequences should the event occur. The risk assessment should also include the development of a risk rating, evaluation of the risks and development of a risk treatment plan for those risks that are deemed to be non-acceptable.

6.1 Critical Assets

Critical assets are defined as those which have a high consequence of failure causing significant loss or reduction of service. Critical assets have been identified and along with their typical failure mode, and the impact on service delivery, are summarized in Table 6.1. Failure modes may include physical failure, or essential service interruption.

TABLE 6.1 - CRITICAL ASSETS

CRITICAL ASSET(S)	FAILURE MODE	IMPACT
WATER TOWER AND PUMP HOUSE	Physical Failure	Service Interruption
MUNICIPAL WATER SYSTEM	Biological Contamination	Public Health and Safety
FIRE HYDRANTS	Physical Failure	Lifesaving Service Interruption
SCADA	Physical Failure	Monitoring Issues/Service Interruptions
CHLORINE CONTACT PIPE	Physical Failure	Service Interruption
CRITICAL MAIN VALVES	Physical Failure	Service Interruption
CRITICAL WATER MAINS (DEXTER LINE)	Physical Failure	Service Interruption

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

6.2 Risk Assessment

The risk management process used is shown in Figure 6.2 below.

It is an analysis and problem-solving technique designed to provide a logical process for the selection of treatment plans and management actions to protect the community against unacceptable risks.

FIGURE 6.2 - RISK MANAGEMENT PROCESS - ABRIDGED



The risk assessment process identifies credible risks, the likelihood of the risk event occurring, the consequences should the event occur, development of a risk rating, evaluation of the risk and development of a risk treatment plan for non-acceptable 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 within the Detailed Asset Management Plan. The residual risk and treatment costs of implementing the selected treatment plan is shown in Figure 6.2. It is essential that these critical risks and costs are reported to management and the Council of the Municipality of Central Elgin.

TABLE 6.2- RISKS AND TREATMENT PLANS

SERVICE OF ASSET AT RISK	WHAT CAN HAPPEN	RISK RATING (VH, H)	RISK TREATMENT PLAN	RESIDUAL RISK	TREATMENT COSTS
WATER	Low Chlorine Residual – creates health risk to residents	VH	Continuous monitoring, flushing, Training	L	\$ 223,000
WATER	Senior Staff Retire – Loss of Knowledge	H	Mentoring Program and Process documenting over 6 months	L	\$ 50, 000

Note: The residual risk is the risk remaining after the selected risk treatment plan is implemented.

6.3 *Infrastructure Resilience Approach*

The resilience of critical infrastructure is vital to the ongoing provision of services to customers. To adapt to changing conditions Central Elgin needs to understand the capacity to ‘withstand a given level of stress or demand’, as well as its responsibility to respond to possible disruptions to ensure continuity of service.

Central Elgin will monitor and report upon its resiliency stewardship measures that include recovery planning, financial capacity, asset planning, climate change and crisis leadership.

Central Elgins current measures of resiliency are show in Table 6.3 which includes the type of threats and hazards and the current measures that the organization takes to ensure service delivery resilience.

TABLE 6.3 - RESILIENCE ASSESSMENT

THREAT/HAZARD	ASSESSMENT METHOD	CURRENT RESILIENCE APPROACH
PUBLIC HEALTH AND SAFETY	Water Quality Testing	High
CAPACITY CONSTRAINT	Flow testing and monitoring	High

6.4 *Service and Risk Trade-Offs*

The decisions made in adopting this Detailed Asset Management Plan are based on the objective to achieve the optimum benefits from the available resources.

6.4.1 What Cannot Be Done

There are some operations and maintenance activities and capital projects that are unable to be undertaken within the next 10 years based on the current available budget. These include:

- Proactive valve operating
- Condition assessments

6.4.2 Service Trade-Off

If there is forecast work (operations, maintenance, renewal, acquisition or disposal) that cannot be undertaken due to available resources, then this will result in service consequences for customers. These service consequences include:

- Creates potential service interruption areas

6.4.3 Risk Trade-Off

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

- Health and Safety
- High cost of reactive maintenance vs low cost planned maintenance

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

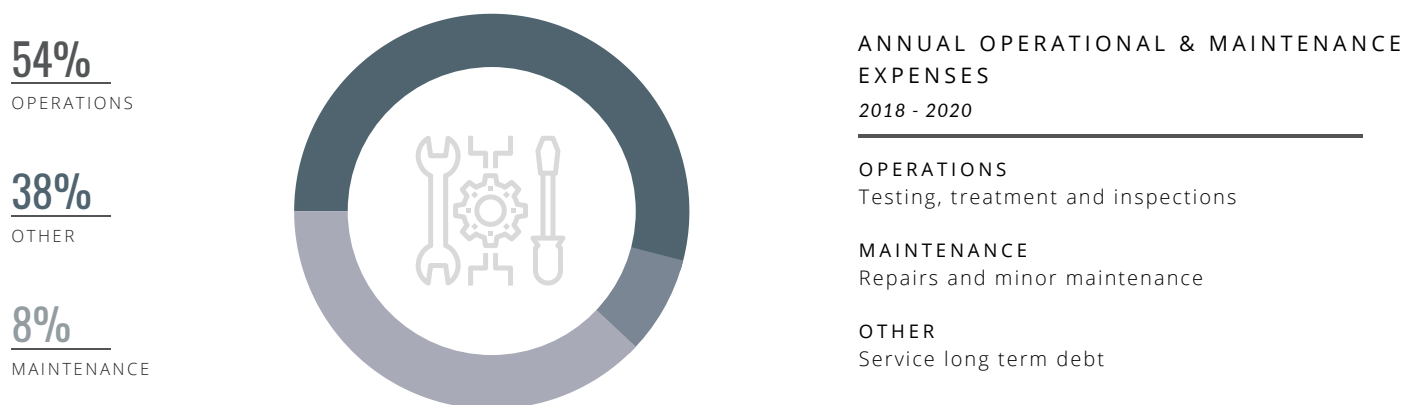


FINANCIAL SUMMARY

This section contains the financial requirements resulting from the information presented in the previous sections of this Detailed Asset Management Plan. The financial projections will be improved as the discussion on desired levels of service and asset performance matures.

7.1 *Financial Sustainability and Projections*

FIGURE 7.1 - ANNUAL OPERATING AND MAINTENANCE EXPENDITURES



7.1.1 Sustainability of Service Delivery

Key indicators of sustainable service delivery are:

1. Asset Renewal Funding Ratio (Proposed renewal budget for the next 10 years/ forecast renewal costs for the next 10 years)
2. Medium Range Term Forecast Costs/Proposed Budget (Over 10 years of the planning period)

Asset Renewal Funding Ratio

Asset Renewal Funding Ratio 0%

The Asset Renewal Funding Ratio is an important indicator and illustrates that over the next 10 years we expect to have 0.0% of the funds required for the optimal renewal of assets. This is an accurate indicator since Council of the Municipality of Central Elgin has decided to debt finance any renewals that are undertaken in the next 10 year period.

The forecast renewal work along with the proposed renewal budget, and the cumulative shortfall, is illustrated in Appendix D.

Medium Term - 10 Year Financial Planning Period

This Detailed Asset Management Plan identifies the forecast operations, maintenance and renewal costs required to provide an agreed level of service to the community over a 10 year period. This provides input into 10 year financial and funding plans aimed at providing the required services in a sustainable manner.

This forecast work can be compared to the proposed budget over the first 10 years of the planning period to identify any funding shortfall.

The forecast operations, maintenance and renewal costs over the 10 year planning period is **\$2,830,591** on average per year. The forecast debt repayment over the next 10 years is **\$826,803** on average per year. The combined forecast with debt would average **\$3,657,393 per year**. (Note, these calculations exclude donated and constructed assets.)

The proposed (budget) operations, maintenance and renewal funding is **\$2,294,799** on average per year. The proposed budget that includes operations, maintenance, renewal funding and debt repayment is **\$3,121,602** on average over a ten year period which is a 10 year funding **shortfall of \$535,791 per year**. This indicates that **85.3%** of the forecast cost need to provide the services documented in the Detailed Asset Management Plan are accommodated in the proposed budget. Note, these calculations exclude acquired assets.)

Providing sustainable 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 Detailed Asset Management Plan and ideally over the 10 year life of the Long Term Financial Plan.

7.1.2 Forecast Costs (Outlays) for Long Term Financial Plan

Table 7.1.2 shows the forecast costs (outlays) required for consideration in the 10 year long term financial plan.

Providing services in a financially sustainable manner requires a balance between the forecast outlays required to deliver the agreed service levels with the planned budget allocations in the long term financial plan.

A gap between the forecast outlays and the amounts allocated in the financial plan indicates further work is required on reviewing service levels in the Detailed Asset Management Plan.

Central Elgin will manage the funding gap by developing this Detailed Asset Management Plan to provide guidance on future service levels and resources required to provide these services in consultation with the community.

TABLE 7.1.2 - FORECAST COSTS

YEAR	ACQUISITION	OPERATION	MAINTENANCE	RENEWAL	DISPOSAL	DEBT	TOTAL
2022	\$ 750,000	\$ 1,985,749	\$ 309,050	\$ 50,000	\$ 0	\$ 1,350,890	\$ 4,445,689
2023	\$ 825,000	\$ 2,064,799	\$ 324,240	\$ 400,000	\$ 0	\$ 1,346,755	\$ 4,960,794
2024	\$ 825,000	\$ 2,147,674	\$ 340,165	\$ 490,000	\$ 0	\$ 1,342,389	\$ 5,145,228
2025	\$ 1,150,000	\$ 2,230,549	\$ 356,090	\$ 0	\$ 0	\$ 1,338,214	\$ 5,074,853
2026	\$ 0	\$ 2,329,999	\$ 375,200	\$ 500,000	\$ 0	\$ 1,338,214	\$ 4,543,413
2027	\$ 0	\$ 2,370,799	\$ 383,040	\$ 390,000	\$ 0	\$ 840,404	\$ 3,984,243
2028	\$ 0	\$ 2,391,199	\$ 386,960	\$ 0	\$ 0	\$ 789,694	\$ 3,567,853
2029	\$ 0	\$ 2,411,599	\$ 390,880	\$ 0	\$ 0	\$ 314,920	\$ 3,117,399
2030	\$ 0	\$ 2,431,999	\$ 394,800	\$ 0	\$ 0	\$ 314,920	\$ 3,141,719
2031	\$ 0	\$ 2,452,399	\$ 398,720	\$ 0	\$ 0	\$ 314,920	\$ 3,166,039

Graph values are shown in current day dollars, 2021.

7.2 Funding Strategy

The proposed funding for assets is outlined in the Central Elgin budget and Long Term Financial Plan. The financial strategy of the Municipality determines how funding will be provided, whereas the Detailed Asset Management Plan communicates how and when this will be spent, along with the service and risk consequences of various service alternatives.

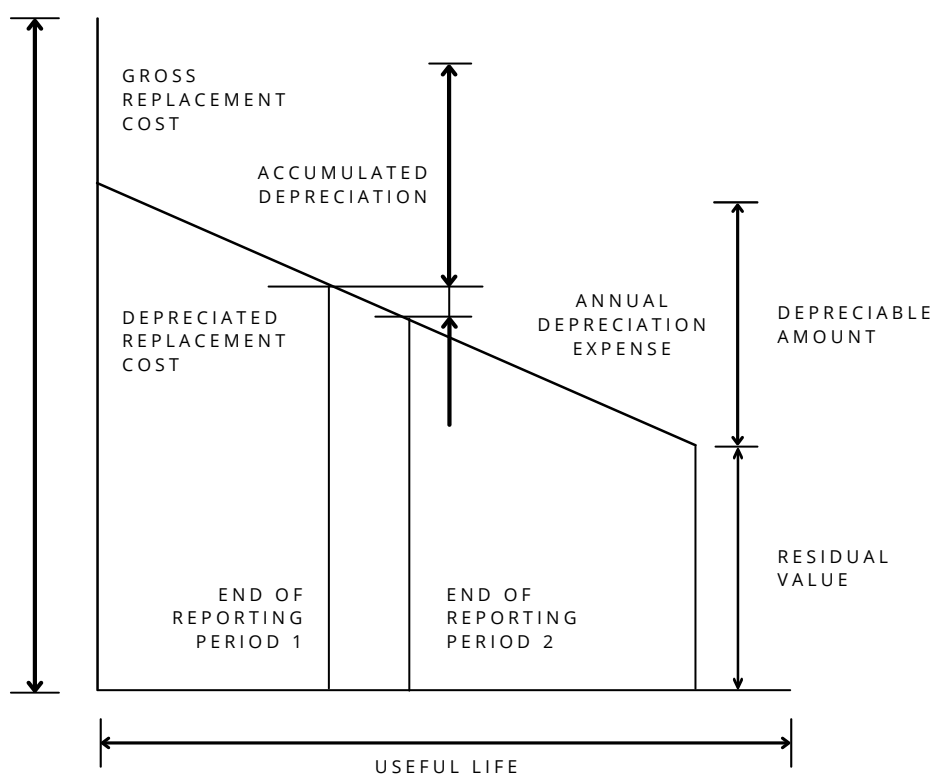
7.3 Valuation Forecasts

7.3.1 Asset Valuations

The best available estimate of the value of assets included in this Detailed Asset Management Plan are shown below. The assets are valued at market rate prices based on 2020 construction values:

Replacement Cost (Current/Gross)	\$ 58,573,074
Depreciable Amount	\$ 58,573,074
Depreciated Replacement Cost	\$ 45,020,444
Depreciation	\$ 720,709

FIGURE 7.3.1 - ASSET VALUATION



7.3.2 Valuation Forecast

Asset values are forecast to increase as additional assets are added to the service.

Additional assets will generally add to the operations and maintenance needs in the longer term. Additional assets will also require additional costs due to future renewals. Any additional assets will also add to future depreciation forecasts.

7.4 *Key Assumptions Made In Financial Forecasts*

In compiling this Detailed Asset Management Plan, it was necessary to make some assumptions. This section details the key assumptions made in the development of this Detailed Asset Management Plan and should provide readers with an understanding of the level of confidence in the data behind the financial forecasts.

Key assumptions made in this Detailed Asset Management Plan are:

- Data sourced from the 2021 budget

7.5 *Forecast Reliability and Confidence*

The forecast costs, proposed budgets, and valuation projections in this Detailed Asset Management Plan are based on the best available data. For effective asset and financial management, it is critical that the information is current and accurate. Data confidence is classified on an A - E level scale in accordance with Table 7.5.1.

TABLE 7.5.1 - DATA CONFIDENCE GRADING SYSTEM

CONFIDENCE GRADE	DESCRIPTION
A - VERY HIGH	Data based on sound records, procedures, investigations and analysis, documented properly and agreed as the best method of assessment. Dataset is complete and estimated to be accurate $\pm 2\%$
B - HIGH	Data based on sound records, procedures, investigations and analysis, documented properly but has 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. Dataset is complete and estimated to be accurate $\pm 10\%$
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. Dataset is substantially complete but up to 50% is extrapolated data and accuracy estimated $\pm 25\%$
D - LOW	Data is based on unconfirmed verbal reports and/or cursory inspections and analysis. Dataset may not be fully complete, and most data is estimated or extrapolated. Accuracy $\pm 40\%$
E - VERY LOW	None or very little data held

The estimated confidence level for and reliability of data used in this Detailed Asset Management Plan is shown in Table 7.5.2.

TABLE 7.5.2 - DATA CONFIDENCE ASSESSMENT FOR DATA USED IN ASSET MANAGEMENT PLAN

DATA	CONFIDENCE ASSESSMENT	COMMENT
DEMAND DRIVERS	LOW	No formal process
GROWTH PROJECTIONS	HIGH	Population and growth projection study provides good detail on rate of growth and location is guided by the municipalities Official Plan
ACQUISITION FORECAST	MEDIUM	Based on population growth projections and identified planned development applications
OPERATION FORECAST	MEDIUM	Future costs are extrapolated from existing budget allocations and are projected out by system growth modelling
MAINTENANCE FORECAST	MEDIUM	Future costs are extrapolated from existing budget allocations and are projected out by system growth modelling
RENEWAL FORECAST (ASSET VALUES)	MEDIUM	Market prices are used and updated annually. Not all information is available at this time.
ASSET USEFUL LIVES	MEDIUM	Subject matter expert opinion based on Tangible Capital Assets
CONDITION MODELING	MEDIUM	No current formal method to determine condition
DISPOSAL FORECAST	LOW	No formal process currently, however it is under development

The estimated confidence level for and reliability of data used in this Detailed Asset Management Plan is considered to be a **medium/high** confidence level.

PLAN IMPROVEMENT AND MONITORING

8.1 Status of Asset Management Practices

8.1.1 Accounting and Financial Data Sources

This Detailed Asset Management Plan utilizes accounting and financial data. The source of the data is the 2021 budget and actuals from the previous two years (2019-2020).

8.1.2 Asset Management Data Sources

This Detailed Asset Management Plan also utilizes asset management data. The source of the data uses market replacement cost unit prices for assets averaged over a 3 year period.

8.2 Improvement Plan

It is important that Central Elgin recognizes areas of the Detailed Asset Management Plan and planning process that require future improvements to ensure effective asset management and informed decision making. The improvement plan generated from this Detailed Asset Management Plan is shown in Table 8.2.



TABLE 8.2 - IMPROVEMENT PLAN

TASK NUMBER	TASK	RESPONSIBILITY	RESOURCES REQUIRED	TIMELINE
1	Verify Operations of Water Assets	Asset Management & Development Services	\$ 5,000 Staff Time	2023
2	Improve Data Quality (GIS accuracy and inventory completeness)	GIS, Asset Management & Development Services	\$ 5,000 Staff Time	2023
3	Develop Level of Service Survey	Asset Management & Development Services	\$ 2,500 Staff Time	Annually
4	Formalize Asset Pre-Assumption Checklist	Asset Management & Development Services	\$ 1,500 Staff Time	2022
5	Lifecycle Costs Analysis for Asset Subclasses	Asset Management & Development Services	\$ 4,000/Year	2023
6	Implement 3 Financial Indicators into Detailed Asset Management Plan <ul style="list-style-type: none"> Asset Renewal Funding Ratio (ARFR) Operation Surplus Ratio (OSR) Net Financial Liabilities Ratio (NFLR) 	Asset Management & Development Services	\$ 8,000 Staff Time	2023

8.3 Monitoring and Review Procedures

This Detailed Asset Management Plan 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 as a result of budget decisions.

The Detailed Asset Management Plan will be reviewed and updated annually to ensure it represents the current service level, asset values, forecast operations, maintenance, renewals, acquisition and asset disposal costs and planned budgets. These forecast costs and proposed budget are incorporated into the Long Term Financial Plan or will be incorporated into the Long Term Financial Plan once completed.

The Plan has a maximum life of 4 years and is due for revision each spring, and a full review/adaptation within 1 year of each Municipal Council election.

8.4 Performance Measures

The effectiveness of this Detailed Asset Management Plan can be measured in the following ways:

- The degree to which the required forecast costs identified in this Detailed Asset Management Plan 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' works program trends provided by the Detailed Asset Management Plan
- 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 achieving the organizational target (this target is often 90 – 100%).