

2021

CENTRAL ELGIN

# STORM WATER

DETAILED ASSET MANAGEMENT PLAN

JUNE 2021

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REV NO.	DATE	REVISION DETAILS	AUTHOR	REVIEWER	APPROVER
V1.0	June 2021	1st Detailed Asset Management Plan for Storm water	Sean Hilderley	Lloyd Perrin	Council

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# STORM WATER ASSET REPORT CARD

## Description

The storm water management system collects and conveys rainwater runoff from private property, public land and roads. The service objective is to provide a reliable storm water network to mitigate the impacts to properties, and return the water safely back to natural water courses. Assets include:

 CONVEYANCE PIPES	 PERSONAL DRAIN CONNECTION	 WATER QUALITY DEVICES	 INFILTRATION GALLERIES	 MANHOLES	 CATCH BASINS	 STORM WATER MANAGEMENT PONDS
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# 44.6 M



total replacement costs

medium

data quality index

## Collection Pipes

Investment by Decade

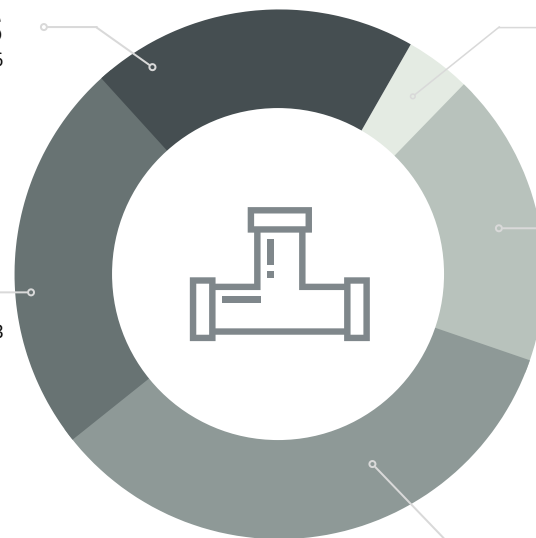
2010's  
\$9, 052, 876

70's  
\$1, 892, 244

80's  
\$7, 957, 852

00's  
\$10, 546, 313

90's  
\$15, 116, 521



# EXECUTIVE SUMMARY

## *1.1 The Purpose Of The Plan*

This 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 the service over the 2022 – 2031 year planning period. The Detailed Asset Management Plan will link to future Long Term Financial Plan which considers a ten (10) year planning period.

## *1.2 Asset Description*

This plan covers the infrastructure assets that provide storm water services.

The storm water network comprises:

- Conveyance Pipe and Leads (53.4 km's at diameters varying between 100 mm – 1600 mm)
- Manholes (470)
- Catch Basins (1,871)
- Major Independent Water Quality Devices (2)
- Storm water Management Ponds (8)
- Personal Drain Connections (approximately 2,400)
- Infiltration Galleries (2)

The above assets have a replacement value estimated at **\$44,567,000**.



### *1.3 Levels of Service*

The allocation in the planned budget is insufficient to continue providing existing levels of service for the planning period.

The main service consequences of the planned budget are:

- Unable to maintain storm assets adequately in the near to long term
- Increased risk of property damage to customers
- Impacts to transportation with increased risk of road flooding

### *1.4 Future Demand*

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

- Development intensification increases the quantity of impervious surfaces and the need to acquire, operate, and maintain additional assets to mitigate the storm water impacts of development
- Environmental sustainability and climate change will impact the design of future assets and the renewal of existing infrastructure
- Desire for new assets to address drainage issues
- 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 is anticipated to continue.

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

- Future development and renewal will be designed to ensure they are appropriately sized to provide financial sustainability
- Future development and renewals will be designed to ensure climate and environmental risks are considered and mitigated to the appropriate levels
- Aligning renewal opportunities with other infrastructure renewals such as a road reconstruction

### *1.5 Lifecycle Management Plan*

#### *1.5.1 What Does It Cost*

The forecast lifecycle costs necessary to provide the services covered by this plan includes operation, maintenance, renewal, acquisition, and disposal of assets. The Detailed Asset Management Plan will inform a 10 year, long term financial plan. Therefore, a summary output from the Detailed Asset Management Plan is the forecast of 10 year total outlays, which for the storm water network is estimated as **\$8,092,079** or **\$809,208** on average per year.



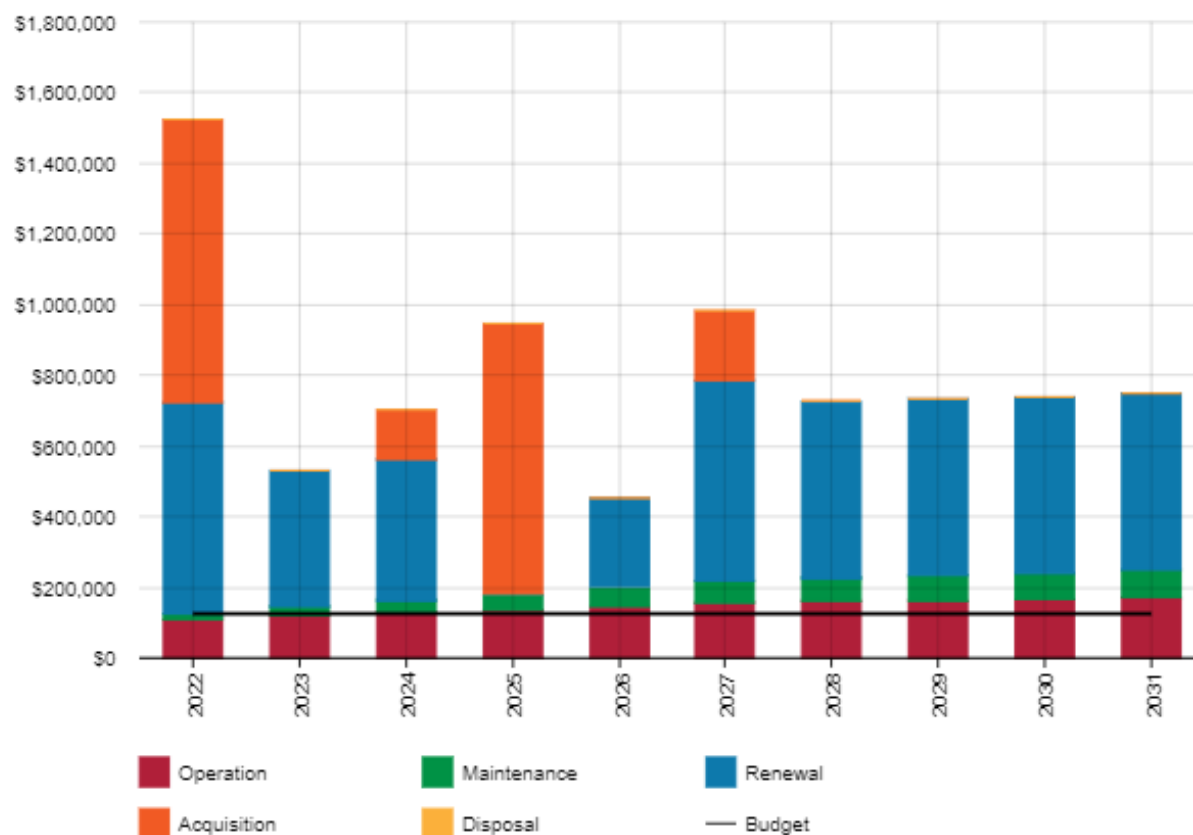
## 1.6 Financial Summary

### 1.6.1 What Will It Do

Estimated available funding for the ten year period is **\$1,255,000** (or **\$125,500** on average per year) as per the planned budget. This is **15.51%** of the cost required 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 depends on the Detailed Asset Management Plan emphasizing the consequences of planned budgets on the service levels provided and risks.

The anticipated planned budget for the storm water network leaves a shortfall of **\$683,708** on average per year of the 10 year planned lifecycle costs required to provide services. This is shown in the graph below.

GRAPH 1.6.1 - FORECAST LIFECYCLE COSTS AND PLANNED BUDGETS



Graph values are in current dollars, 2021.

Central Elgin will provide stormwater services for the following:

- Operation, maintenance, renewal and acquisition of conveyance pipes, manholes, catch basins, storm water management ponds, infiltration galleries, water quality devices and personal drain connections to meet service levels set by Central Elgins annual budget.

### 1.6.2 What Cannot Be Done

Currently, there is not enough allocated budget to sustain the proposed level of service. Works and services that cannot be provided under present funding levels are:

- Planned and reactive maintenance activities such as repairing catch basin, and disposing of contaminants from storm water management ponds
- Operations activities such as removing debris from manholes, flushing and repairs of conveyance pipes may need to be altered to fund reactive maintenance
- Improve data quality to support present and future decisions

### 1.6.3 Managing the Risks

The present budget levels are insufficient to continue to manage risks in the medium term.

The main risk consequences are:

- Insufficient funding to ensure stormwater protection services can be maintained at current levels
- Contaminants impacting the environment and the natural watercourse for future generations
- High cost reactive maintenance will increase financial shocks to Central Elgin and divert funds from other services
- Future development and renewals may not be sized appropriately to mitigate climate impacts and to ensure intergenerational equitability

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

- Ensuring future development is appropriately sized and future climate and financial risks mitigated
- Improve data confidence through donated acquisition processes and condition assessment practices
- Ensure that Council and the public are adequately informed to the risks and financial obligations and responsibilities of long lived multi-generational infrastructure assets
- Inform the future long term financial plan to ensure future sustainability goals are set and achieved

## *1.7 Asset Management Planning Practices*

Key assumptions made in this Detailed Asset Management Plan are:

- Where condition data confidence was low, lifecycle assumptions were made
- Risk analysis is based on some estimated data and is not a complete analysis of the entire network
- Demand data required minor estimations and will be refined over time
- Level of Service information required some estimation
- Age and condition information is based on historical Tangible Capital Assets data as well as the asset registry, which required some estimations

Assets requiring renewal are identified from the Asset Register.

- Project selection for renewals are currently based on the age within the asset register. Assets may be prioritized differently due to either a functional failure or to align with other asset renewal opportunities

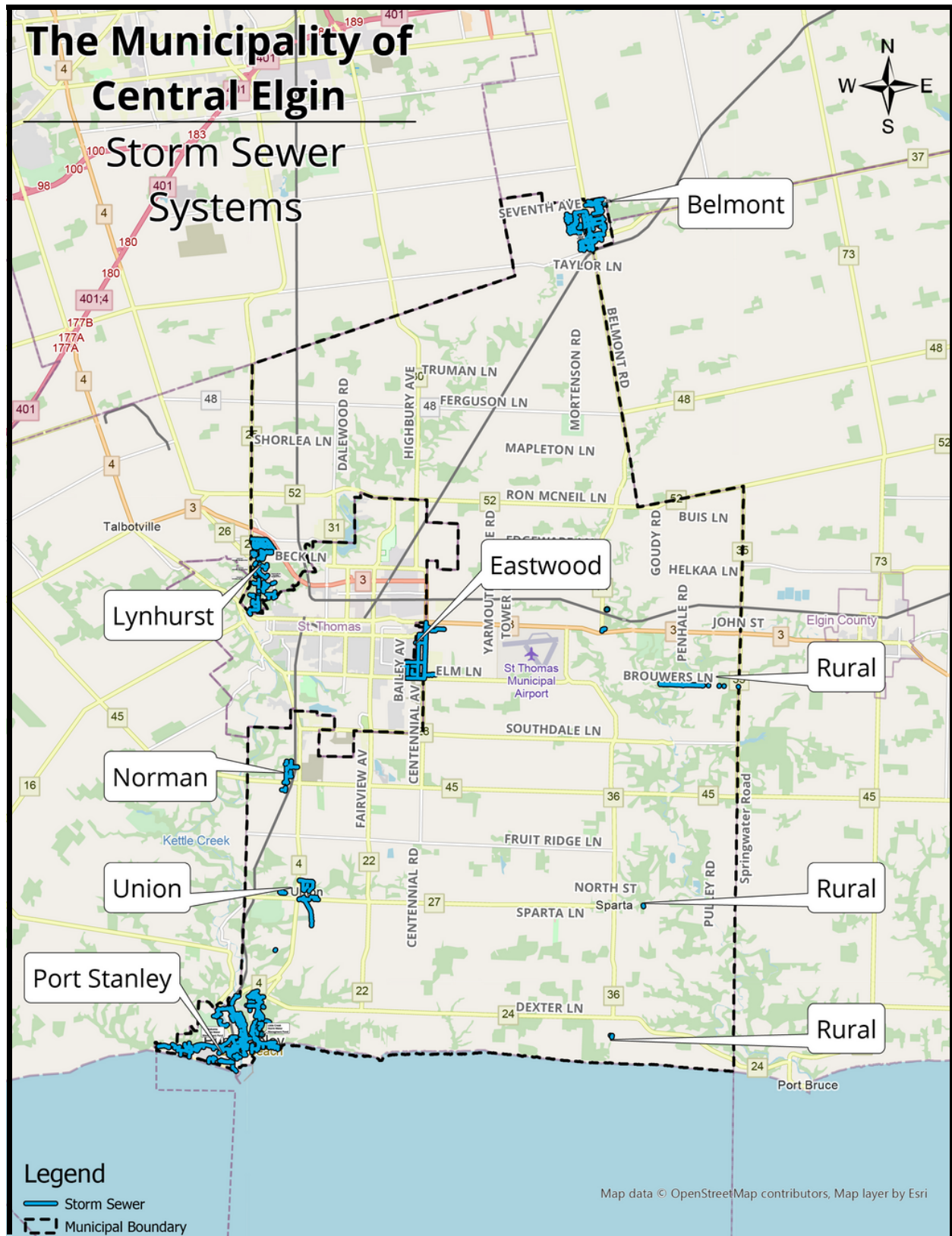
The Asset Register was used to forecast the renewal lifecycle costs for this Detailed Asset Management Plan. This plan is based on a medium level of confidence information.

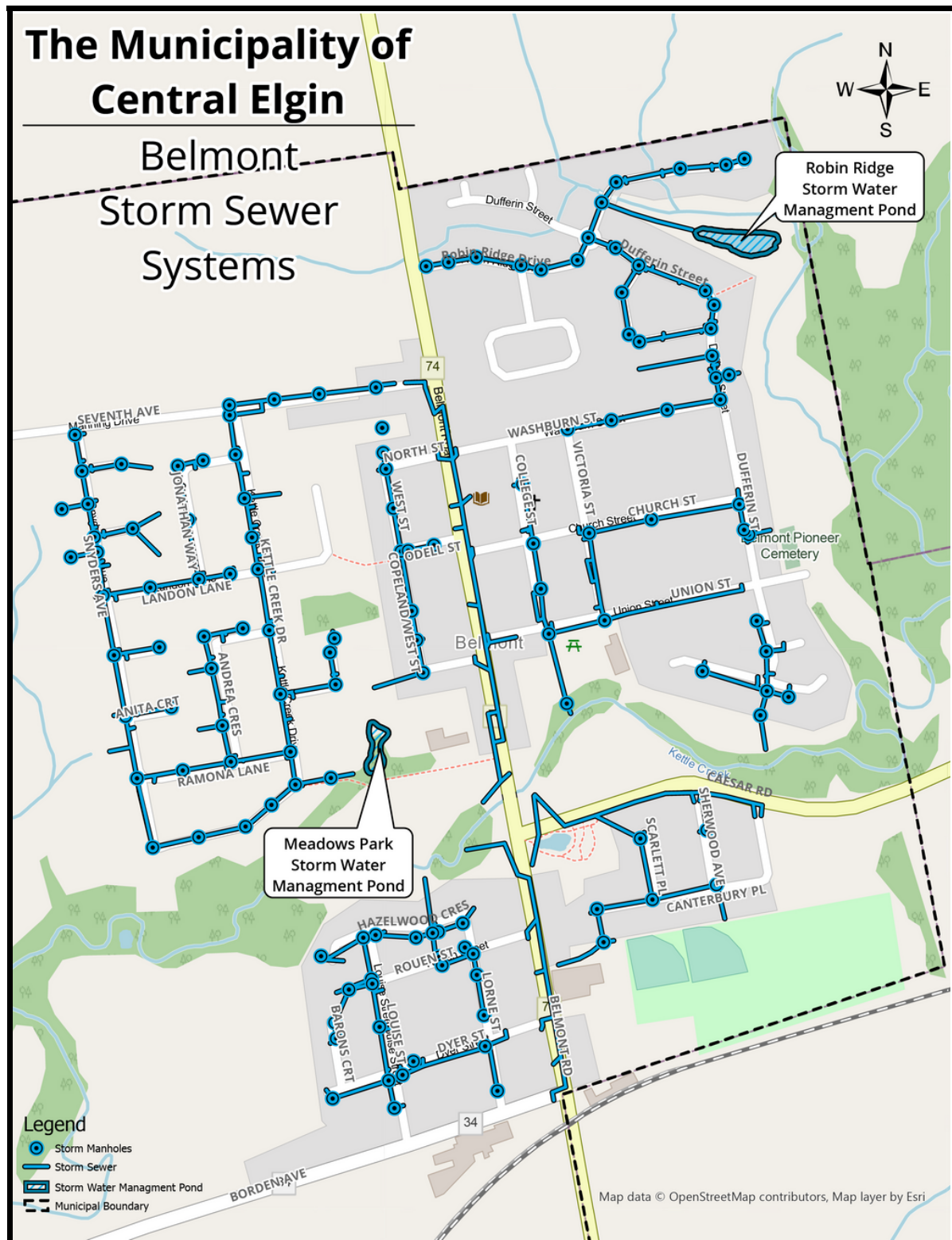
## *1.8 Monitoring and Improvement Program*

To improve Central Elgins asset management practices the municipality will:

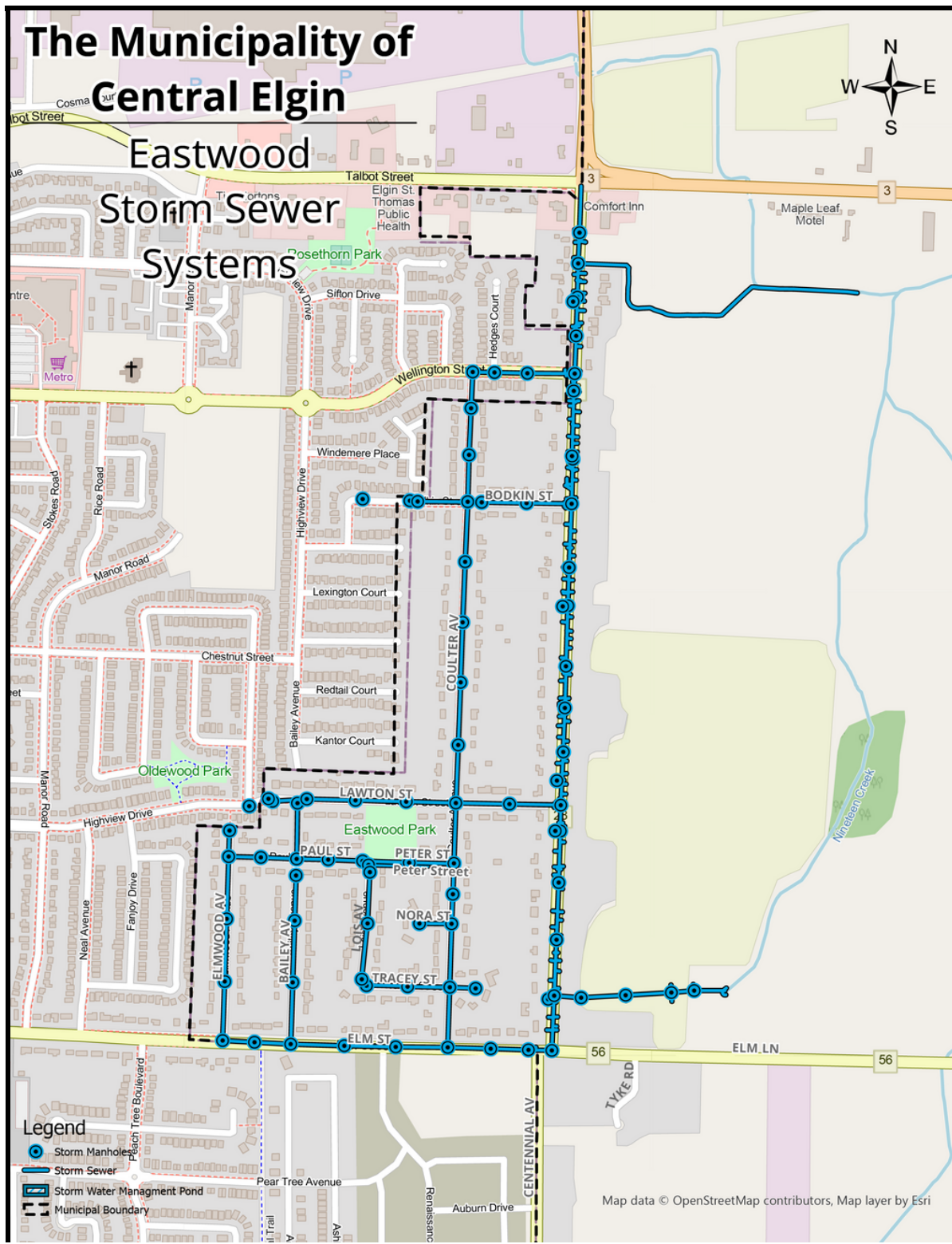
- Undertake condition assessments of all asset subclasses to improve data quality and support decision making
- Develop storm water asset condition rating, and improve demand driver data
- Advance development standards to recognize impacts of climate change
- Develop Level of Service survey and reporting to improve customer engagement
- Develop Storm Water Management Pond Operational Guide

## 1.9 Central Elgin Storm Sewer Systems

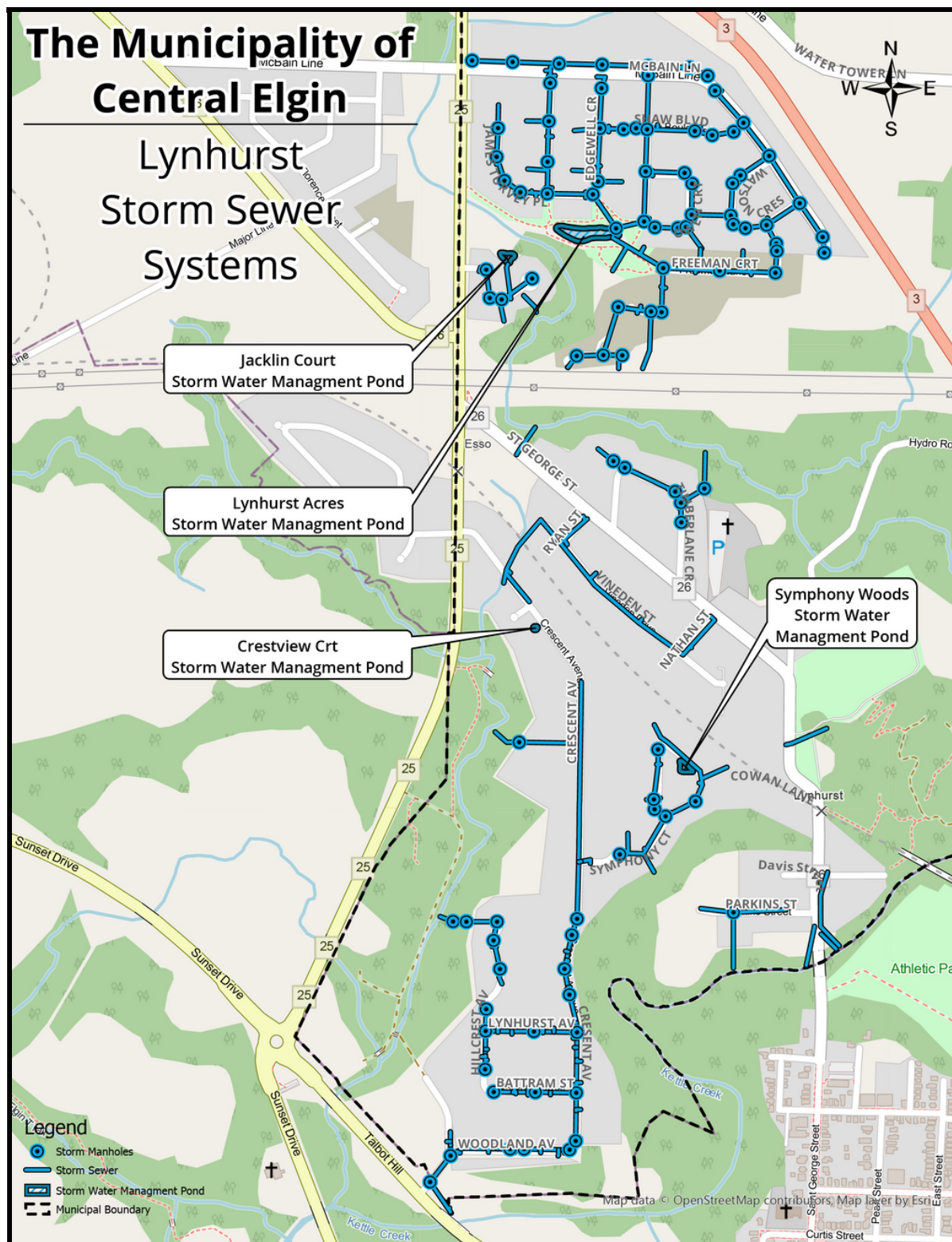


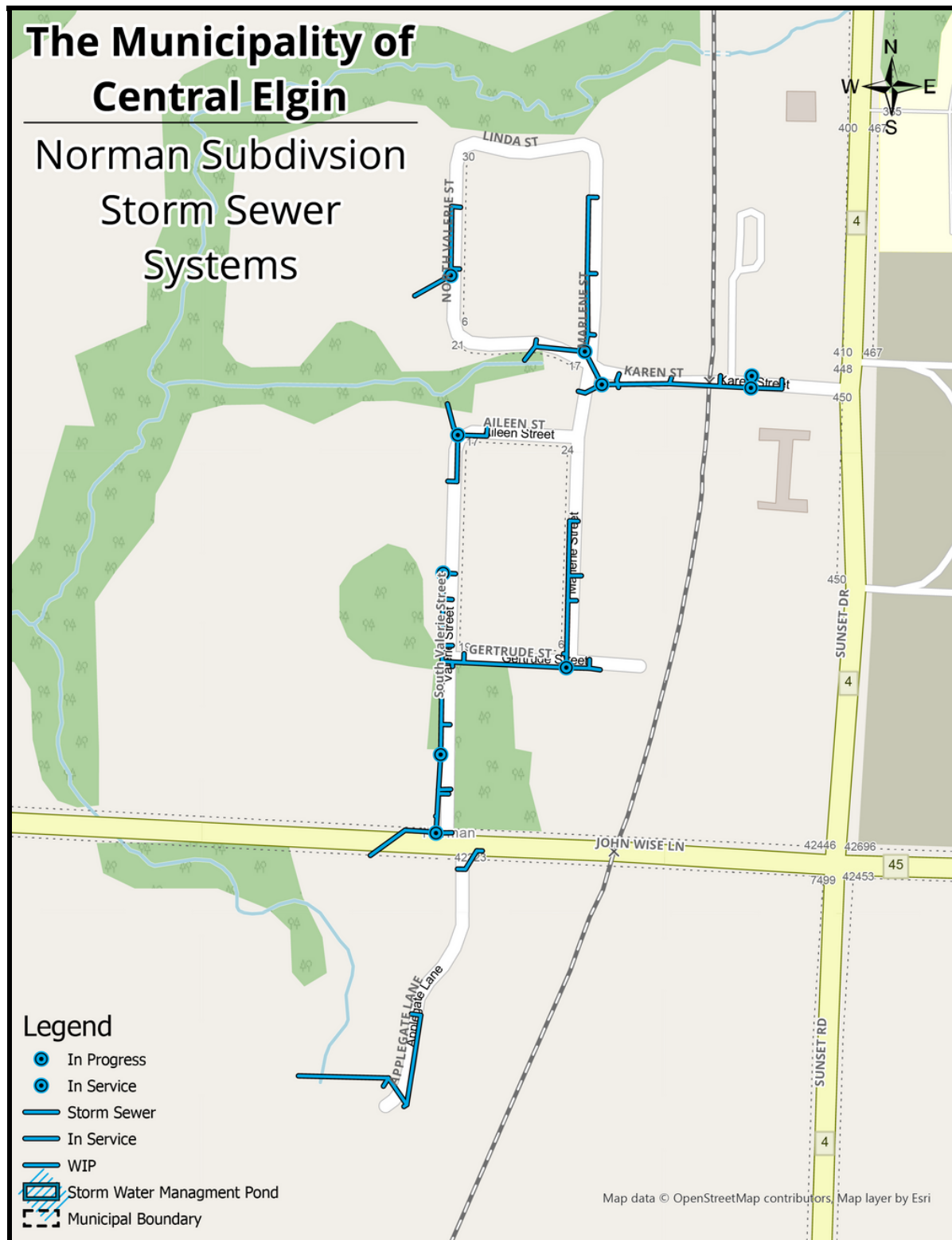


















# INTRODUCTION

## 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 2019 State of Infrastructure
- Detailed Asset Management Plan for Roads Executive Summary Report

The infrastructure assets covered by this Detailed Asset Management Plan includes the major components required to deliver effective storm water management services for Central Elgin customers. The majority of the storm water infrastructure is located within the urban areas of Central Elgin. Over **90%** of storm water assets are located in Belmont, Eastwood subdivision, Lynnhurst, Port Stanley, Sparta, and Union. Within these urban areas there is conveyance pipe personal drain connections, catch basins, manholes, storm water management ponds, infiltration galleries and water quality devices.

For a detailed summary of the storm water assets refer to Figure 5.1.1 in Section 5.

These assets are used to minimize the nuisance of flooding, to protect people and property from the adverse effects of extreme storm events, to protect the environment and public health by reducing storm water pollution and managing storm water volumes and peak flows in receiving environments.

The infrastructure assets included in this plan have a total replacement value of **\$44,567,000**.

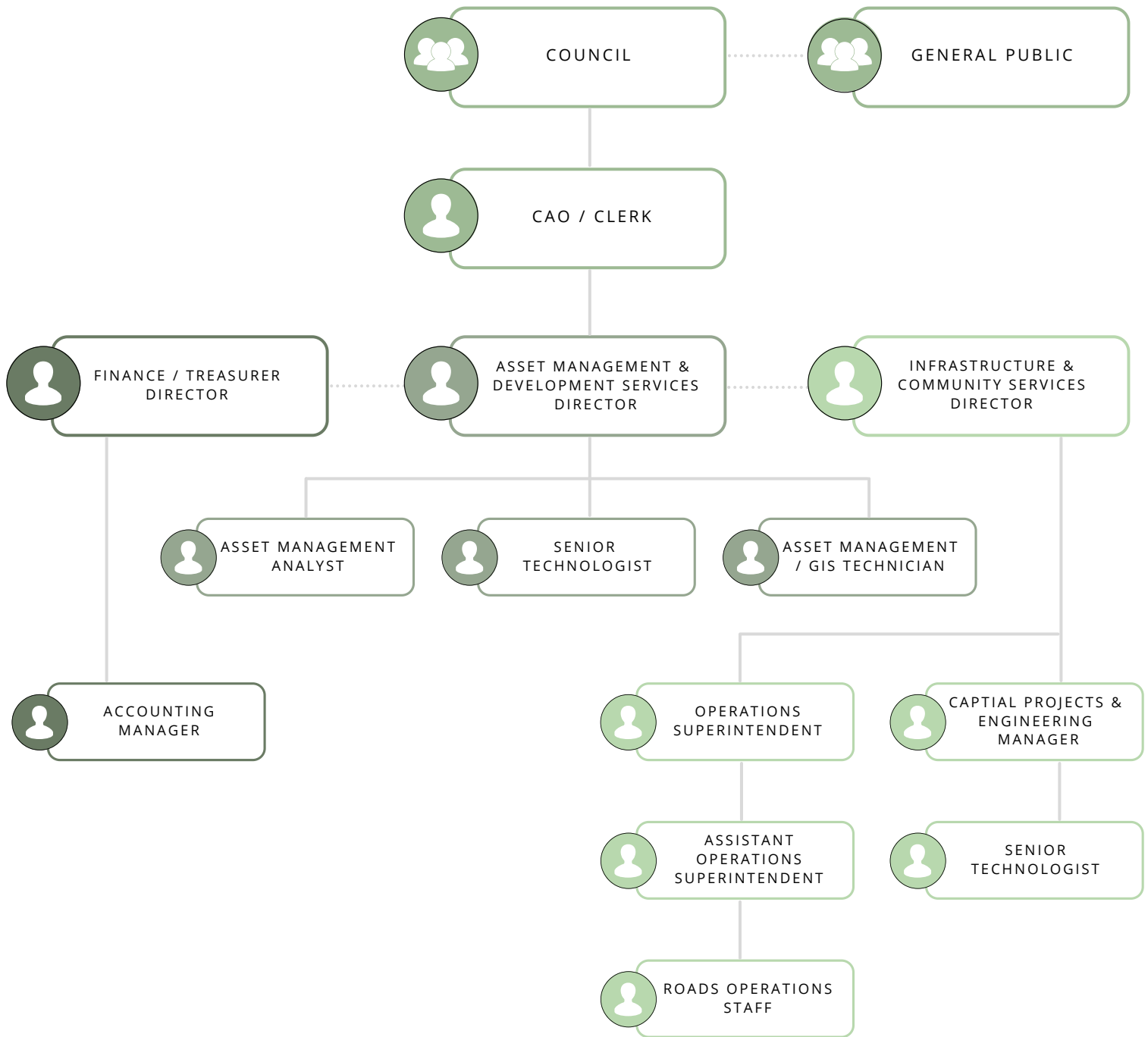
TABLE 2.1 - KEY STAKEHOLDERS IN THE ASSET MANAGEMENT PLAN

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



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 goal is to deliver safe and effective storm 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
- Align the Detailed Asset Management Plans and the future Long Term Financial Plan to plan for present and future costs and provide alternatives for funding
- Ensure legislative compliance

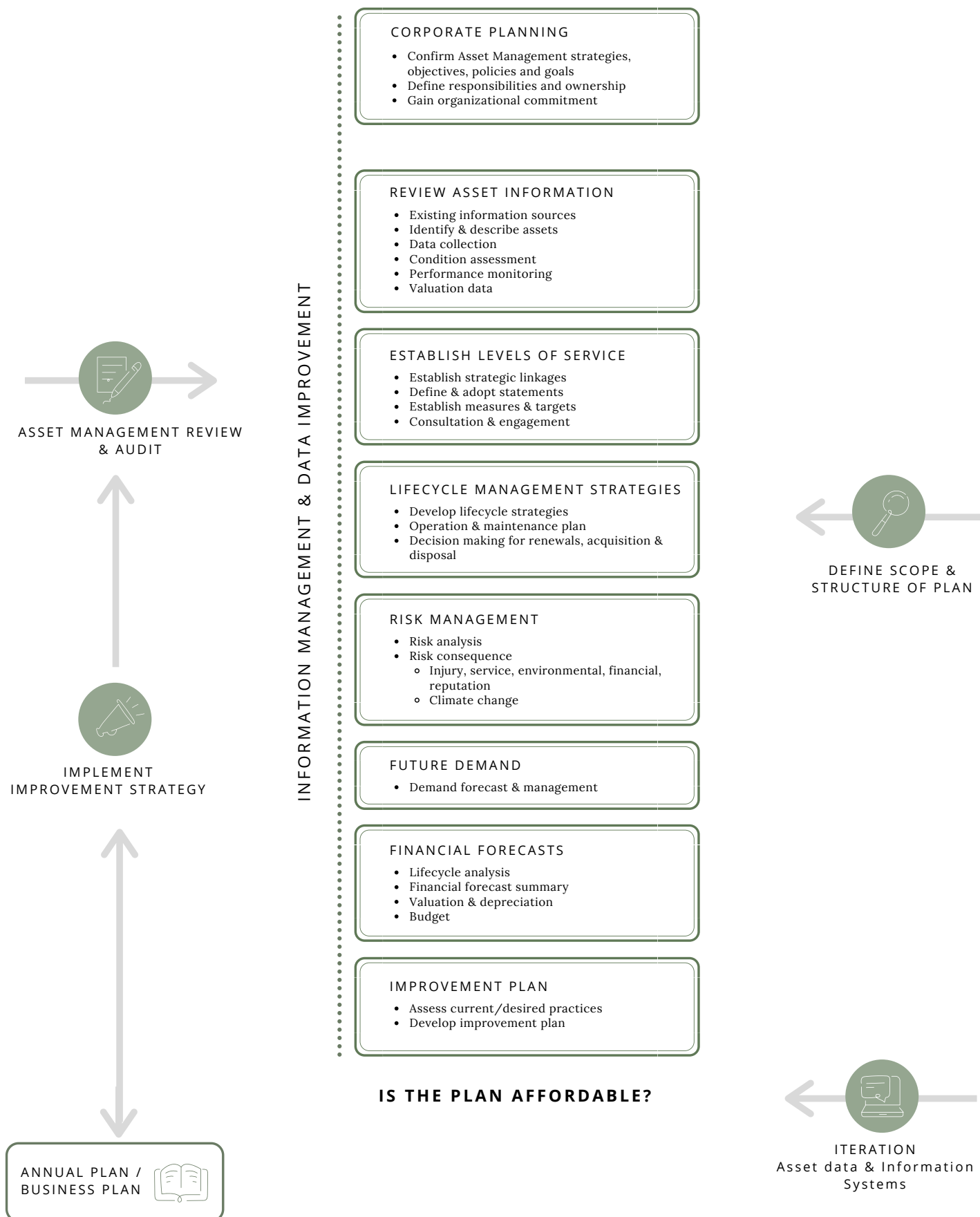
Key elements of the planning framework are:

- Levels of Service – specifies the services and agreed upon Levels of Service to be provided
- Risk Management – Resiliency, Environmental, Climate, Human Safety, Financial, Reputation and Reputation and Functional
- Future Demand – how this will impact on future service delivery and how this is to be met
- Lifecycle Management – how to manage its existing and future assets to provide defined levels of service
- Financial Summary – what funds are required to provide the defined services
- Asset Management Practices – how Central Elgin manages provision of the services
- Monitoring – how the plan will be monitored to ensure objectives are met
- Asset Management Improvement Plan – how to 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](http://www.centralelgin.org) and the municipality's Community Engagement Website, [www.letstalkcentralelgin.org](http://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 six 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 storm water 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	SATISFACTION LEVEL				
	VERY SATISFIED	FAIRLY SATISFIED	SATISFIED	SOMEWHAT SATISFIED	NOT SATISFIED
Overall satisfaction with storm water services		✓			
Municipal response time to request for service		✓			
Storm water adequately drains on municipal roads		✓			

### 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 Councils 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 DETAILED ASSET MANAGEMENT PLAN
SAFE COMMUNITIES	<ul style="list-style-type: none"> <li>Reduce risk to Central Elgin communities including people, property and infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>Flood risk from new development is minimized/mitigated while ensuring development cannot occur where storm water effects cannot be adequately managed</li> </ul>
ADEQUATE, SUSTAINABLE & AFFORDABLE INFRASTRUCTURE	<ul style="list-style-type: none"> <li>Ensure service is adequately sized for both current and future use</li> <li>Understanding network whole life costs</li> </ul>	<ul style="list-style-type: none"> <li>Identify underserved areas and consider servicing capacity of the Storm water Network when extension of services are undertaken</li> <li>Lifecycle costs of assets will be considered with the goal of reducing whole life costs</li> </ul>
STRONG LOCAL ECONOMY & SUSTAINABLE COMMUNITY	<ul style="list-style-type: none"> <li>Provide effective storm water mitigation and minimize the impacts of property damage as a result of flooding</li> </ul>	<ul style="list-style-type: none"> <li>Ensure the Storm water Network is adequately operated, maintained and renewed as identified in the Detailed Asset Management Plan and generally accepted engineering and maintenance principles</li> </ul>
CONSERVATION & APPRECIATION OF OUR NATURAL ENVIRONMENT	<ul style="list-style-type: none"> <li>Healthy connected waterways</li> </ul>	<ul style="list-style-type: none"> <li>Ensure water being returned to watercourses are treated and environmental impacts are mitigated to the appropriate levels</li> <li>Expansion of the storm water system will be conducted under the Municipal Class Environmental Assessment</li> </ul>
GOOD GOVERNANCE	<ul style="list-style-type: none"> <li>Engage regularly with customers to identify the desired level of service</li> </ul>	<ul style="list-style-type: none"> <li>Perform an annual level of service survey with customers and report back to the customers</li> </ul>

### 3.3 Legislative Requirements

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

TABLE 3.3 - LEGISLATIVE REQUIREMENTS

LEGISLATIVE	REQUIREMENT
ONTARIO PROVINCIAL <u>O. REG 406/19</u>	Storm water management pond soil removal requirements
ONTARIO FISH & WILDLIFE CONSERVATION ACT <u>S.O.1997</u>	Consult conservation authorities for fish and wildlife recommendations in accordance with all acquisition, operational, maintenance and disposal activities
ONTARIO WATER RESOURCES ACT <u>R.S.O. 1990 C. O.40</u>	Regulates groundwater and surface water. Regulates disposal and prohibits the discharge of polluting materials that may impair water quality
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
ONTARIO CONSERVATION AUTHORITIES ACT <u>R.S.O. 1990 C.C.27</u>	Regulations regarding lakes, rivers, streams and groundwater to promote watershed stewardship practices
ONTARIO LAKES & RIVERS IMPROVEMENT ACT <u>R.S.O. 1990 C.L.3</u>	Protection of natural amenities such as lakes, rivers, riparian zones, shores and banks
ONTARIO ENDANGERED SPECIES ACT <u>S.O. 2007, C.6</u>	Guidelines for species of plants and animals at risk of disappearing



### 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 and
- The likely trend over time based on the current available funding

TABLE 3.4 - CUSTOMER VALUES

CUSTOMER VALUES	CUSTOMER SATISFACTION MEASURE	CURRENT FEEDBACK	EXPECTED TREND BASED ON PLANNED BUDGET
RELIABLE STORM WATER NETWORK THAT PREVENTS PROPERTY DAMAGE	<ul style="list-style-type: none"> <li>• Annual Level of Service survey</li> <li>• Annual number of customer complaints</li> </ul>	Fairly Satisfied  < 1 / year / 1000 households	Customer satisfaction may decline without increased budget for renewal
RESPONSIVE TO SERVICE INTERRUPTIONS	<ul style="list-style-type: none"> <li>• Annual Level of Service survey</li> </ul>	Fairly Satisfied	Customer satisfaction may decline without increased budget for renewal
PROTECT THE ENVIRONMENT	<ul style="list-style-type: none"> <li>• Annual Level of Service survey</li> </ul>	Fairly Satisfied	Customer satisfaction may decline without increased budget for renewal

### 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*      It is 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 measures 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 are measures of fact related to the service delivery outcome (e.g. 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 ON PLANNED BUDGET
CONDITION	Customers expect system to be in good condition to minimize flooding events	Annual Level of Service Survey & Customer Complaint per year	Fairly Satisfied (> 2/1000 households/year)	Maintain - Fairly Satisfied (<2/1000 households/year)
	Confidence levels		Low	Low Projected confidence levels in data will increase due to processes being developed
FUNCTION	Customers expect minimal interruptions to the service	Customers expect sufficient asset acquisitions to ensure flood impacts are mitigated	Fairly Satisfied	Maintain - Fairly Satisfied (<2/1000 households/year)
	Confidence levels		Low	Low Projected confidence levels in data will increase due to processes being developed
CAPACITY	Customers expect sufficient asset acquisitions to ensure flood impacts are mitigated	Customer Level of Service survey & % of acquisitions & renewals meeting climate design standard	Fairly Satisfied (< 2/1000 households/year)	Maintain - Fairly Satisfied (<2/1000 households/year)
	Confidence levels		Low	Low Projected confidence levels in data will increase due to processes being developed

### *3.6 Technical Levels of Service*

Operational or technical performance measures are used to deliver customer values and effectively achieve Customer Levels of Service. 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. replacement of municipal drains in urban areas with properly designed storm sewers, assumption of new developments.)

#### *Operation*

The planned and unplanned activities to provide services (i.e. catch basin cleaning, storm water asset inspections, cleaning manholes, and water quality testing.)

#### *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. storm water management pond clean out, catch basin and manhole repairs.)

#### *Renewal*

The activities that return the service capability of an asset up to that which it had originally provided (i.e. replacement of existing infrastructure that has reached the end of its useful life.)

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	Provide drainage systems to urban road network previously serviced by open ditched or no piped system	Installation of storm sewer system for road renewal in urban areas	On road renewal bases	On a road renewal bases
		Budget	\$0	\$ 493,108
	Ensure assets are sustainable and fit for purpose	Inspection to ensure donated assets conform to expected standards for condition, quality, resiliency and function	90%	100% of all assumed storm water assets
		Budget	\$0	\$ 12, 000
OPERATION	Minimize risk of flooding impacts to properties	Manhole condition survey completed every 4 years	Ad hoc inspections	25% of total network annually
		Budget	\$ 1, 500	\$ 8, 700
	Ensure environmentally friendly (mitigating contaminants entering natural water courses)	Annual condition survey completion for storm water management ponds	Not currently being done	100% completion annually
		Budget	\$0	\$ 5, 000 annually
MAINTENANCE	Mitigate risk of flooding impacts (ensure manholes are free from debris)	% of work orders completed annually for manhole maintenance	80%	100%
		Budget	\$ 29, 000	\$ 36, 250 annually
	Protect storm water receiving environments - (remove contaminants from storm water management ponds to ensure they function within tolerable levels)	Percentage of storm water management ponds maintenance completed within 1 year of condition survey recommendation.	0%	90%
		Budget	\$0	\$ 50, 000 annually

LIFECYCLE	PURPOSE OF ACTIVITY	ACTIVITY MEASURE	CURRENT PERFORMANCE *	RECOMMENDED PERFORMANCE **
RENEWAL	Manage storm water network to minimize the risk of flooding	Critical assets identified with condition grade of 4 (poor) are given priority of identification. See table 5.1.3.	Unknown	85%
		Budget	None	\$ 220, 000
DISPOSALS	Remove pipe when renewal or upgrade is on a different alignment or increased pipe size	Km of planned renewals or upgrade requiring alignment change	2.8 km	2.8 km
		Budget	\$0	\$ 180, 000/km
	Ensure network is financially sustainable. (removing asbestos pipe during construction opportunities)	Length of known Asbestos pipe (Abandoned & Active) within network	Unknown	Unknown
		Budget	\$0	Unknown

\* Current activities related to planned budget

\*\* Expected performance related to forecast lifecycle costs.

It is important to monitor the service levels regularly as circumstances change. Current performance is based on existing resource provision and work efficiencies. It is acknowledged that changing circumstances such as technology and customer priorities, will evolve 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, agricultural practices, 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 to meet demand and demand management. Demand management practices will 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	14, 000	15,700 (10 Year Horizon)	Increased acquisitions to mitigate impact of increased volume of impervious surfaces	Ensure future acquisitions are appropriately sized for population size
GROWTH (EXTENSION OF SERVICES)	Estimated at 1,900 buildings without service	Approx. 1,900 buildings without services	Unable to financially support extension to rural residents	Examine rural level of service interest for additional funding levels required to add services.
CLIMATE CHANGE	Current rainfall pattern (23 mm/30 min storm)	Increased storm severity (projected 43 mm by 2040)	Storm water assets will require appropriate sizing to deal with higher intensity storm events	Examine rural level of service interest for additional funding levels required to add services

## 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 5.5.

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*

The impacts of 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
SEVERITY OF STORMS	Increasing severe rainfall	Demand for properly sized conveyance pipes to handle increased storm severity	<ul style="list-style-type: none"> <li>Future development and renewal will size conveyance pipes to 1-5 year storm capacity</li> </ul>
PROJECTED INCREASED LAKE LEVELS	Will result in submerged outlets	Reduce hydraulic capacity of existing storm sewer system (critical in low lying areas)	<ul style="list-style-type: none"> <li>Monitor and close roads as appropriate</li> <li>Increase public awareness to migration strategy</li> </ul>

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
CONVEYANCE PIPE	Assets will need to be sized appropriately to handle more severe storms (1-5 year storm capacity)	Acquisitions and renewals will be appropriately sized to ensure severity of storms can be mitigated without impacting natural watercourse
STORM WATER MANAGEMENT PONDS	Increased severity of rainfall events impact detainment capability of contaminants	Future ponds will be appropriately sized and design solutions implemented to ensure contaminants are retained and to protect natural watercourses
CATCH BASINS	Catch basins will handle greater volume of storm water during rain events	Catch basins may require increased frequency of maintenance and operations (cleanout and inspections)

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

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:

# 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.

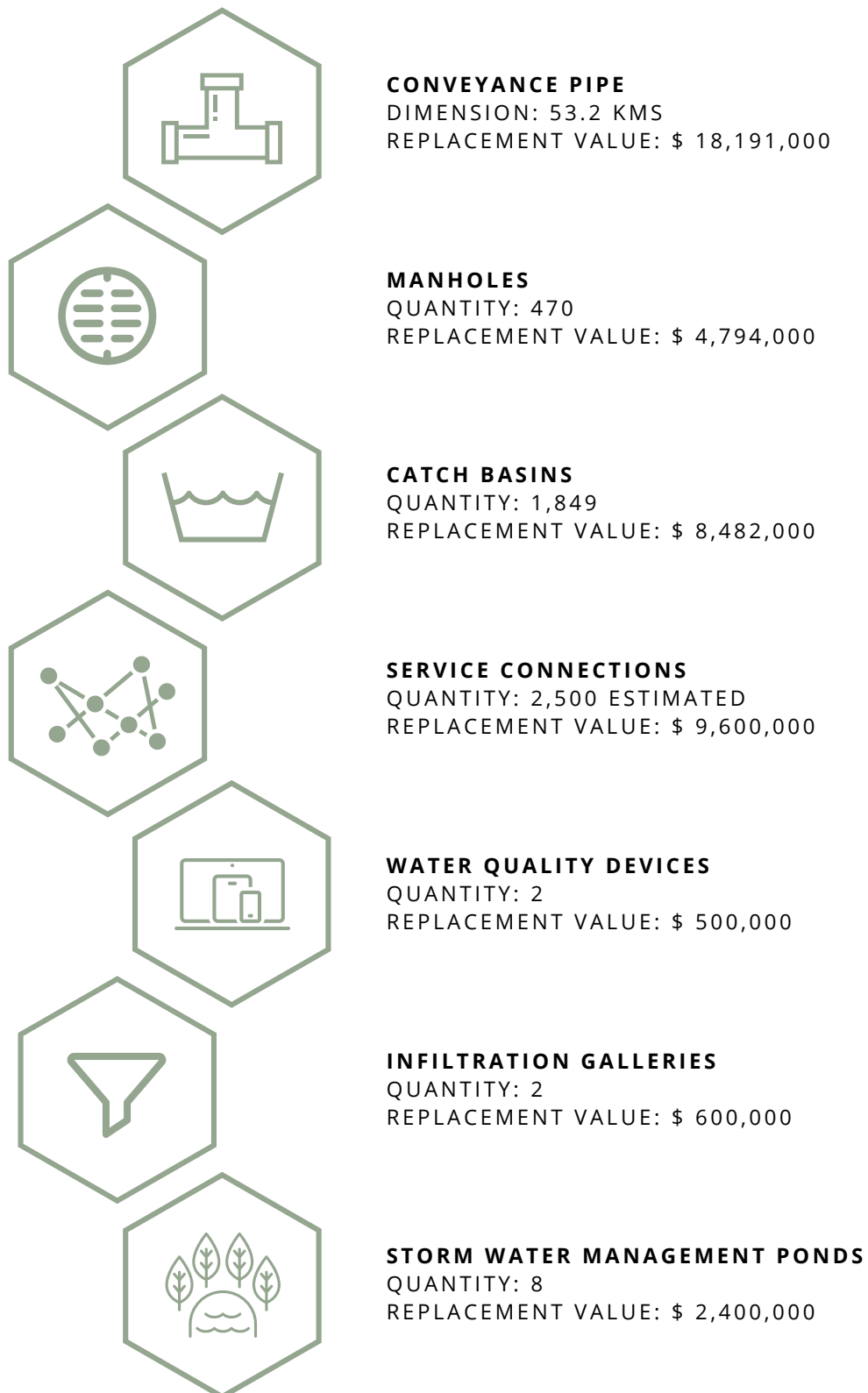
The Municipality of Central Elgin is a geographically large municipality comprised of approximately 39,350 hectares. Central Elgin borders the City of London, St. Thomas and the North shore of of Lake Erie. Storm water assets consist of approximately 53.2 km's of conveyance pipes which are mostly located in urban areas. The conveyance pipes are supported by additional assets which include 470 manholes, 1,849 catch basins, estimated at over 2,500 personal drain connections, 2 water quality devices, 2 infiltration galleries and 8 storm water management ponds. The majority of these assets were acquired after 1990, and are found mainly in the housing developments occurring after that time. These developments include Belmont, Eastwood subdivision, Lynnhurst, Port Stanley, Sparta, and Union. The majority of issues surrounding these assets originate from maintenance obligations and required operations.

These include removal of contaminated sediment from storm water management ponds, conditional inspection of infrastructure and planning for climate impacts.

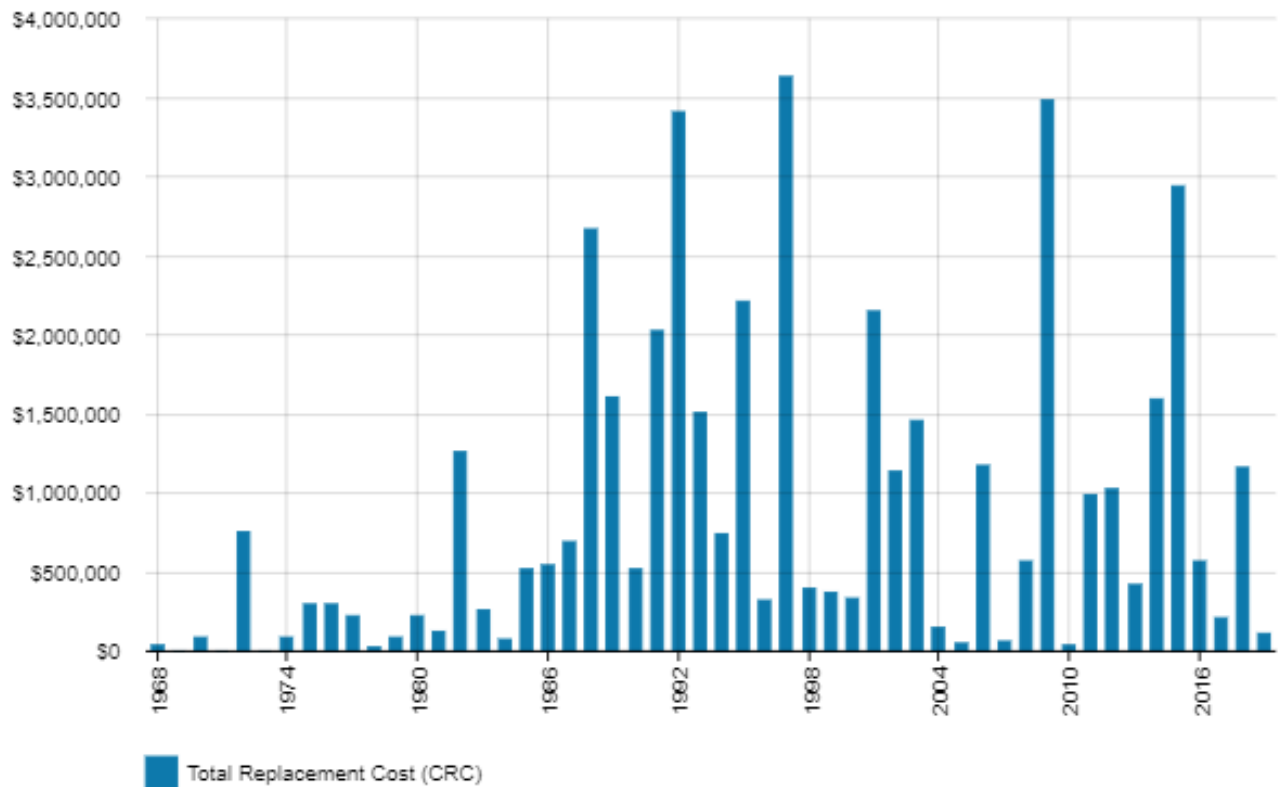
The age profile of the assets included in the Detailed Asset Management Plan are shown in Table 5.1.1.



FIGURE 5.1.1 - ASSETS COVERED BY THIS PLAN

**TOTAL COST \$ 44,567,000**

GRAPH 5.1.1 - ASSET AGE PROFILE



Graph values are shown in current day dollars.

The majority of storm water assets were acquired after 1988 which created a large 'peak' of infrastructure investment by installing services within Lynhurst. From 1999 to 2008 there were significantly less assets acquired compared to the previous decade. However, in 2008 the federal government invested in infrastructure to spur the economy from the recession. This investment, along with further development acquisitions, increased the asset portfolio by nearly \$14 million (from 2009-2019). As these assets continue to age there is a need to ensure sufficient funds are placed in reserves to ensure the peaks of 1988-1998 and 2009-2019 are planned for. The useful lives of the infrastructure will be reviewed by 2022 to ensure they align with the organizational objectives.

### 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
STORM WATER MANAGEMENT POND (LITTLE CREEK)	Requires cleanout as it exceeds operational limitations
WATER QUALITY DEVICE	Requires operational cleanout to return to functional capacity

The above service deficiencies were identified from the condition inspection performed in 2021.

### 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

Condition is not consistently monitored in a formal way. Central Elgin intends to develop a formal condition rating system for storm water assets in 2022.

## 5.2 *Operations and Maintenance Plan*

Operations include the planned and unplanned activities to provide services including regular ongoing day-to-day work necessary to keep assets operating. Examples of typical operational activities include catch basin cleaning, storm water asset inspections, cleaning manholes, and water quality testing.

Planned and reactive maintenance activities include all actions necessary for retaining an asset as near as practicable to an appropriate service condition. Examples of typical maintenance activities include stormwater management pond clean out, and catch basin and manhole repairs.

The maintenance budget trends are shown in Table 5.2.1.

TABLE 5.2.1 - MAINTENANCE BUDGET TRENDS

YEAR	MAINTENANCE BUDGET
2021	\$ 16,500
2022	\$ 16,500
2023	\$ 16,500

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.

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



### *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 5.2.2 - ASSET SERVICE HIERARCHY

SERVICE HIERARCHY	SERVICE LEVEL OBJECTIVE
ASSET CLASS	Asset network to provide storm services for customers
ASSET SUB CLASS	Specific components of infrastructure that enables the asset class to deliver its service. These major components of the storm water network ensure the delivery of storm water services
Catch basins, conveyance pipe, manholes, water quality devices, storm water management ponds, infiltration galleries, personal drain connections	

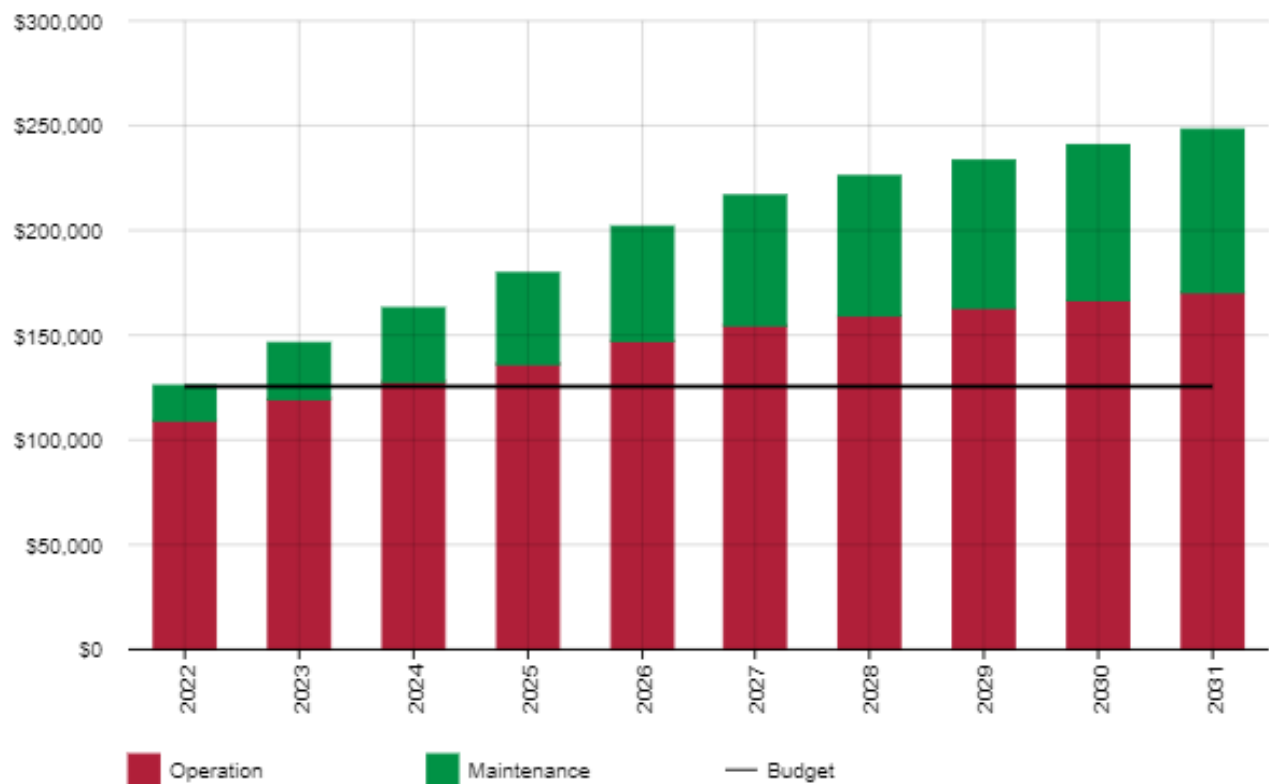


### *Summary of Forecast Operations and Maintenance Costs*

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 relative to the proposed operations and maintenance planned budget.

GRAPH 5.2.2 - OPERATION AND MAINTENANCE SUMMARY



Graph values are shown in current day dollars.

At the current funding level there will be a need to delay planned maintenance. Delays in maintenance will directly impact the overall condition of the network which will rely upon higher cost reactive maintenance repairs. At the current funding level there will be sufficient funding to maintain operations, however, this may also be impacted by insufficient funding for planned maintenance.

### 5.3 *Renewal Plan*

Renewals are 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 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 costs) and renewal timing (acquisition years 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 LIFE

ASSET SUB CATEGORY	USEFUL LIFE
STORM WATER CONVEYANCE PIPES	100 Years
MANHOLES	100 Years
CATCH BASINS	100 Years
STORM WATER MANAGEMENT PONDS	Perpetual with maintenance
WATER QUALITY DEVICES	75 Years
PERSONAL DRAIN CONNECTIONS	100 Years
INFILTRATION GALLERY	50 Years

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.

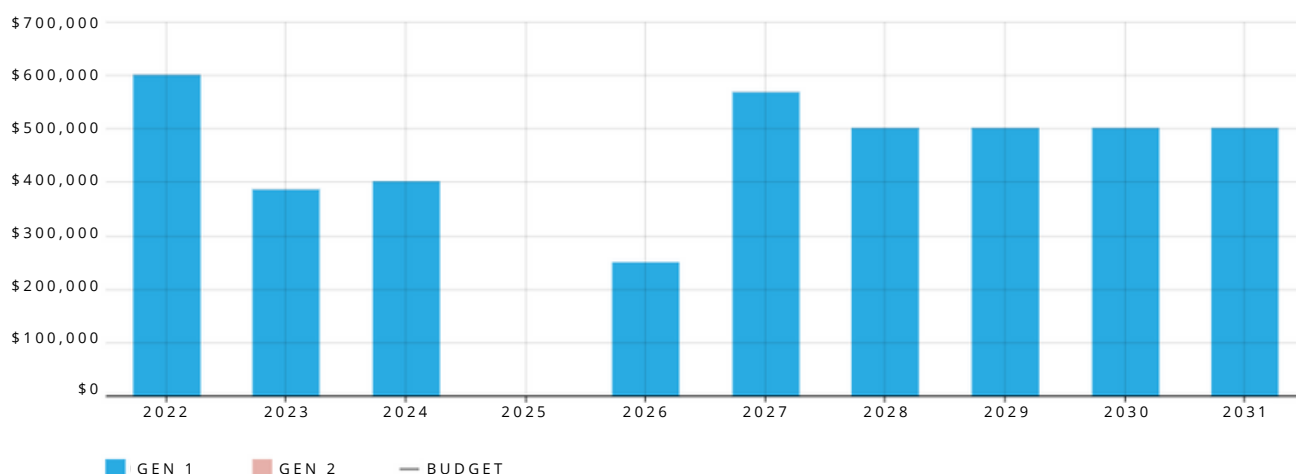
TABLE 5.3.1 - RENEWAL PRIORITY RANKING CRITERIA

CRITERIA	WEIGHING
ASSET FAILURE	50%
COORDINATED WITH OTHER ASSET REPLACEMENT	30%
CONDITION IS 4 OR LESS (GRADING SCALE 5.1.3)	10%
CAPACITY IMPROVEMENTS	10%
<b>TOTAL</b>	<b>100%</b>

## 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 relative to the proposed renewal budget in figure 5.4.1.

GRAPH 5.4.1 - RENEWAL SUMMARY



## 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.

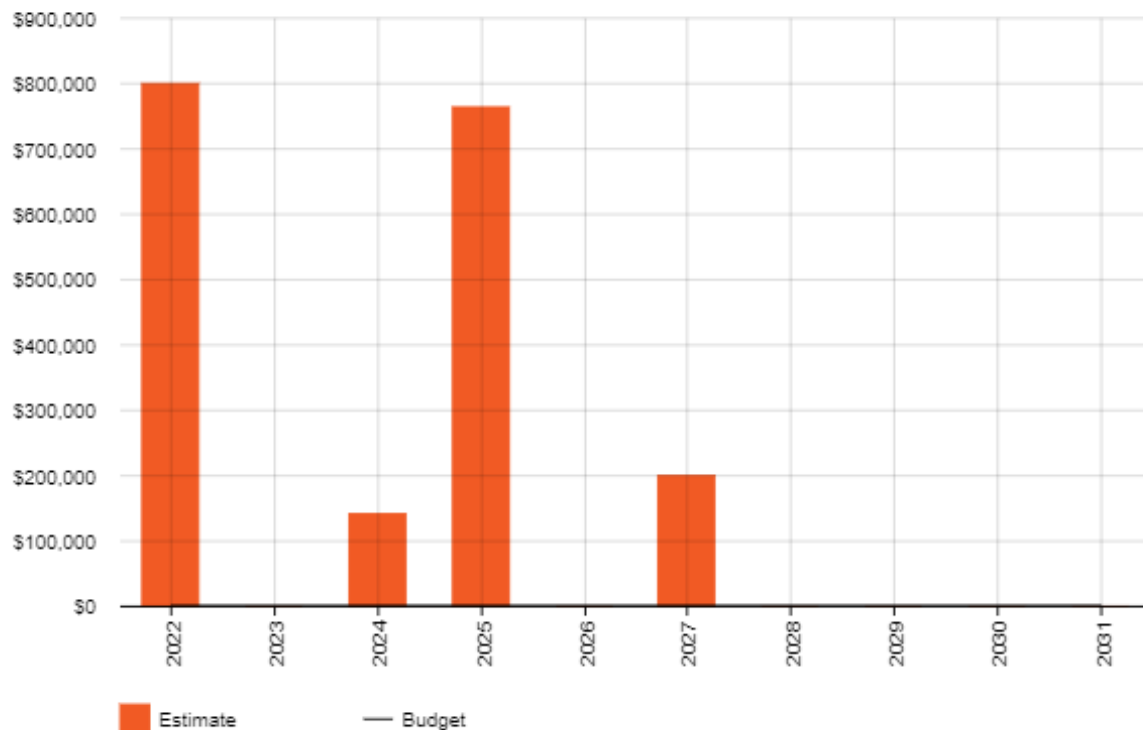
TABLE 5.5.1 - ACQUIRED ASSETS PRIORITY RANKING CRITERIA

CRITERIA	WEIGHING
GROWTH DONATED ASSETS	80%
NEW SERVICE REQUESTS	20%
<b>TOTAL</b>	<b>100%</b>

### *Summary of Future Asset Acquisition Costs*

Forecast acquisition costs are summarized in Graph 5.5.1 and shown relative to the proposed acquisition budget.

GRAPH 5.5.1- ACQUISITION CONSTRUCTED SUMMARY

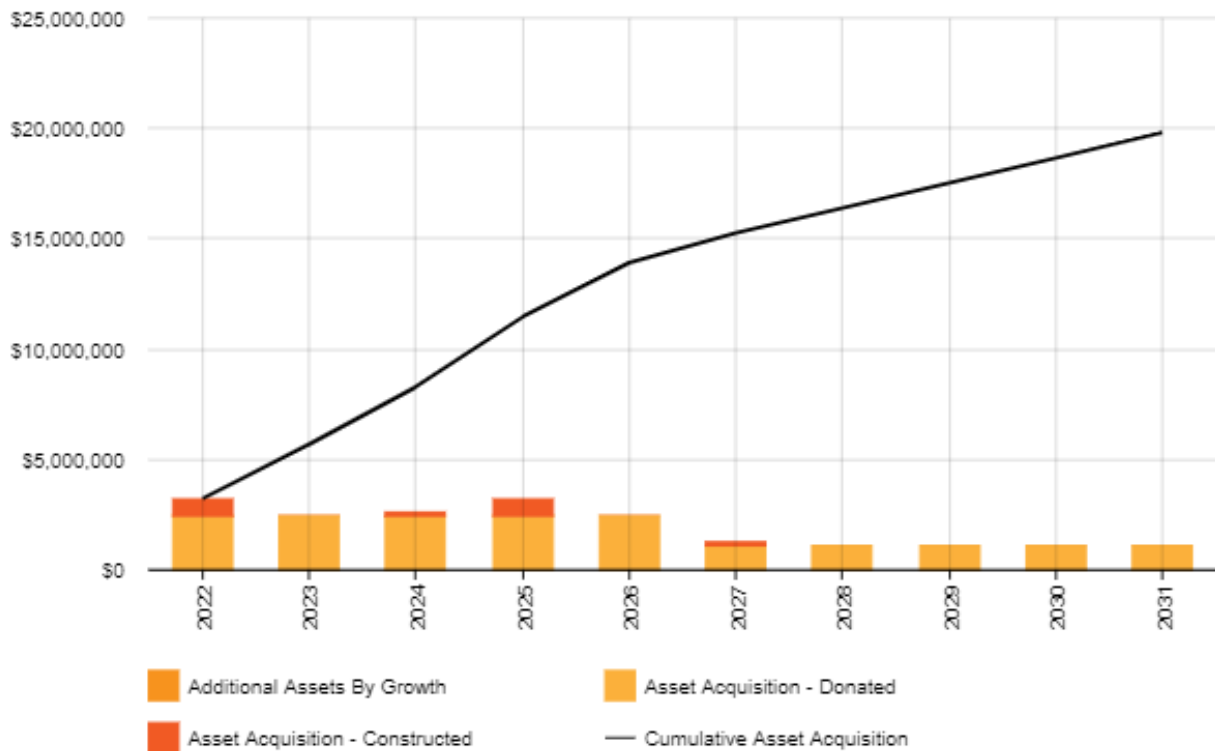


Graph values are shown in current day dollars.

When Central Elgin commits to acquiring new assets, the municipality must be prepared to afford the future costs of operation, maintenance and possible future 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 Central Elgin. The cumulative value of all acquisition work, including assets that are constructed and contributed are identified in Graph 5.5.2.



GRAPH 5.5.2 - AQUISITION SUMMARY



*Graph values are shown in current day dollars.*

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

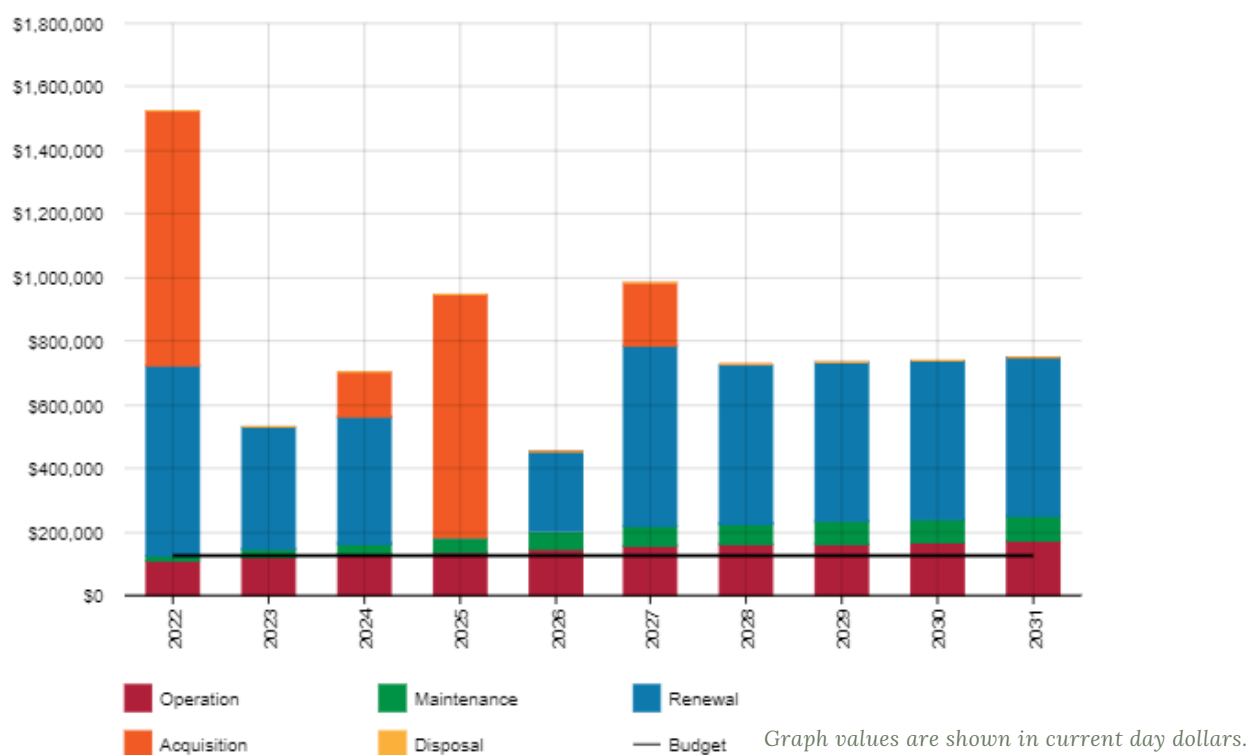
Central Elgin is anticipating an additional 650 homes to be added to the storm water network in the near term. These donated assets are estimated to be valued at \$12,500,000 and will require additional operational and maintenance resources to ensure level of service can be maintained. Continued asset 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.

### *Summary of Asset Forecast Costs*

The financial projections from this asset plan are shown in Figure 5.5.3. These projections include forecast costs for acquisition, operation, maintenance, renewal, and disposal. These forecast costs are shown relative to the proposed budget.

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

GRAPH 5.5.3 - LIFECYCLE SUMMARY



The forecasted trend shows that Central Elgin has insufficient funding to operate and maintain assets at their current level of service. The significant infrastructure acquisitions as a result of development will create an upward financial pressure for resources to enable Central Elgin to operate and maintain the assets at the current level of service. Without increased funding, levels of services will be reviewed and adjusted as they cannot be maintained. The proposed budget is insufficient to ensure maintenance and operations goals are achieved which will increase:

- The likelihood of high cost reactive maintenance and premature renewals
- The risk of contaminating natural watercourses and impacts to the environment
- The financial and risk consequences of not complying with legislative requirements

## 5.6 Disposal Plan

Disposal includes any activity associated with the disposal of a decommissioned asset including sale, demolition or relocation. Assets identified for possible decommissioning and disposal are shown in Table 5.6. A summary of the disposal costs and estimated reductions in annual operations and maintenance of disposing of the assets are also outlined in Table 5.6. Any costs or revenue gained from asset disposals is included in the future financial plan.

TABLE 5.6 - ASSETS IDENTIFIED FOR DISPOSAL

ASSET	None Anticipated
REASON FOR DISPOSAL	None
TIMING	N/A
DISPOSAL COSTS	N/A
OPERATIONS & MAINTENANCE ANNUAL SAVINGS	N/A

# 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 stormwater 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 storm 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 municipality will utilize risk measurements such as frequency, probability, consequence, impact, likelihood and severity to analyze and inform the risk process. The risk assessment will include the development of a risk rating, evaluation of the risks and development of a risk treatment process 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
STORM WATER MANAGEMENT POND	Physical Failure	Environmental contamination of natural watercourse, property damage, damage to natural environment (erosion)

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
STORM WATER	Lack of Council, staff and public awareness of climate change impacts on infrastructure and services	VH	Staff review, develop and implement climate impact scale for each Detailed Asset Management Plan	H	\$ 15, 000 Staff Time
	This can lead to underfunding, lack of availability and missed planning opportunities		Commission climate study and integrate information within each asset class Detailed Asset Management Plan	M-H	\$ 50, 000 Consult Time
STORM WATER	Acquisition of decade old assets with unknown operational and maintenance records.	VH	Staff will develop Pre-Assumption Condition Assessment Checklist	M	\$ 14, 000 Staff Time
	Current practices have us accepting unknown costs and risks		Engage with developers to implement standards for condition quality and timing assumption	M	\$ 10, 000 Staff Time

### 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
CAPACITY CONSTRAINT	Flow monitoring/ Road patrols identifying areas of surcharging or flooding	High
ENVIRONMENTAL CONTAMINATION	Storm Water Management Pond annual assessment	Medium
CLIMATE CHANGE	Annual climate monitoring	Low



## 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:

- Regular catch basin inspections as proposed
- Remove sediment and particulates from storm water management ponds
- Remove debris from manholes proactively
- Improve data on historical acquisitions
- Sufficiently protect storm water receiving environments
- Ensure flood risks are mitigated

### 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:

- Potential flood impacts to property for customers
- Possible roadway flooding impacting transportation network
- Nuisance complaints due to odours

### 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:

- Risk of surcharging and flooding and impacting transportation network
- Increased reactive maintenance costs of storm water management facilities
- Contaminants discharged into a natural watercourse/receiving stream, with long term impact costs
- Financial shocks due to asset failure

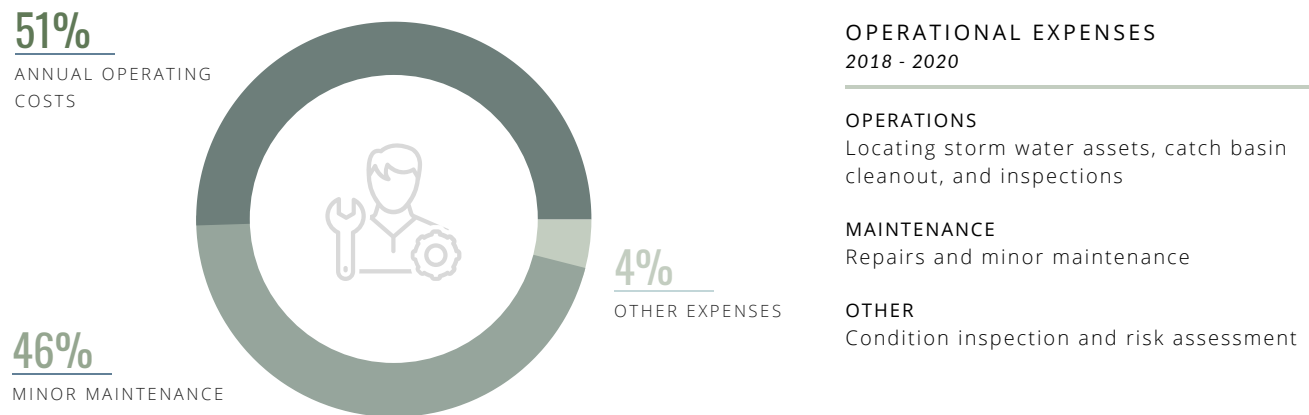
These actions and expenditures are considered and included in the forecast costs.

# 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 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 Central Elgin can expect to have 0% of the funds required for the optimal renewal of assets.

### *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 **\$618,608** on average per year.

The proposed (budget) operations, maintenance and renewal funding is **\$125,500** on average per year giving a 10 year funding shortfall of **\$493,108** per year. This indicates that **20.29%** of the forecast costs needed to provide the services documented in this 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 Planned Budget.

### 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.

Forecast costs are shown in current dollar values.

TABLE 7.1.2 - FORECAST COSTS

YEAR	ACQUISITION	OPERATION	MAINTENANCE	RENEWAL	DISPOSAL
2022	\$ 800,000	\$ 109,000	\$ 16,500	\$ 600,000	\$ 0
2023	\$ 0	\$ 119,704	\$ 27,204	\$ 385,000	\$ 0
2024	\$ 141,000	\$ 127,769	\$ 35,269	\$ 400,000	\$ 0
2025	\$ 765,000	\$ 136,299	\$ 43,799	\$ 0	\$ 0
2026	\$ 0	\$ 146,888	\$ 54,388	\$ 250,000	\$ 0
2027	\$ 200,000	\$ 154,952	\$ 62,452	\$ 567,000	\$ 0
2028	\$ 0	\$ 159,360	\$ 66,860	\$ 500,000	\$ 0
2029	\$ 0	\$ 163,108	\$ 70,608	\$ 500,000	\$ 0
2030	\$ 0	\$ 166,856	\$ 74,356	\$ 500,000	\$ 0
2031	\$ 0	\$ 170,604	\$ 78,104	\$ 500,000	\$ 0

## 7.2 Funding Strategy

The proposed funding for assets is outlined in Central Elgin budget. The financial strategy of the entity 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

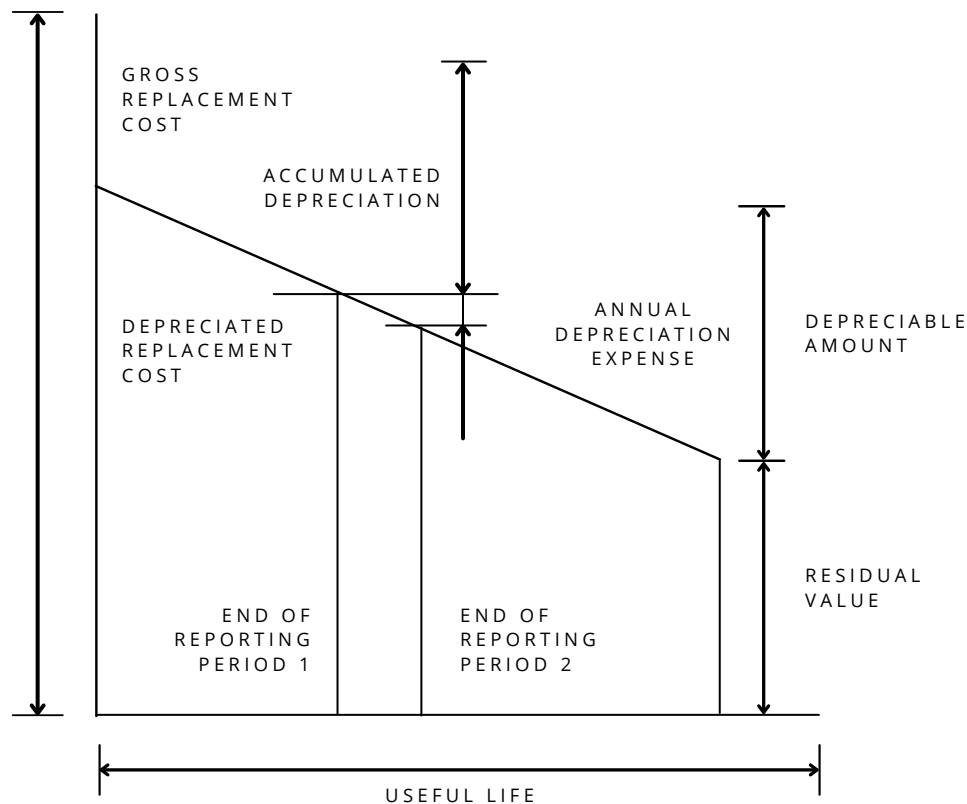
### 7.3.1 Asset Valuations

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)	\$44,567,000
Depreciable Amount	\$44,567,000
Depreciated Replacement Cost	\$32,358,232
Depreciation	\$523,417

FIGURE 7.3.1 - ASSET VALUATION



### 7.3.2 Valuation Forecast

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

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.

With the significant increase of storm water services being acquired over the next 10 years there is a need to increase funding to ensure operational activities such as inspections and planned maintenance can be performed to ensure assets function as intended.

## 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:

- 35% of asset data derived from GIS to supplement missing data elements
- Tangible Capital Asset values are significantly out of date and are not utilized for finance data
- All costs are in current dollars.
- Projections were based on either 2021 budget or 2020 actual values

## 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 a 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 for driver identification and prioritization (regulatory change, technological change, urban development)
GROWTH PROJECTIONS	HIGH	Population based growth data is very high, other drivers require further development
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 for asset values 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	Formal process is currently being developed

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



# PLAN IMPROVEMENT AND MONITORING

## 8.1 *Status of Asset Management Practices*

### 8.1.1 Accounting and Financial Data Sources

The Detailed Asset Management Plan utilizes accounting and financial data. The source of data is;

- The 2021 budget and 2019 & 2020 actuals from published financial statements

### 8.1.2 Asset Management Data Sources

This Detailed Asset Management Plan also utilizes asset management data. The source of the data is;

- Market Price listing from 2020-2021
- Asset registry data from asset management system (Worktech, GIS, TCA)

## 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	<ul style="list-style-type: none"> <li>Pipeline Condition System Wide Condition Assessment Completed – Camera/Report</li> </ul>	Infrastructure & Community Services Department	\$ 120, 000 Total \$ 30, 000 Annual	4 Years (2025)
2	<ul style="list-style-type: none"> <li>Create Storm Water Management Pond Operational Guide:               <ul style="list-style-type: none"> <li>Detailing testing protocols</li> <li>Operational activities (Vegetation Control, Inspections)</li> </ul> </li> </ul>	Infrastructure & Community Services Department	\$ 3, 000 Staff Time	1 Year (2022)
3	<ul style="list-style-type: none"> <li>Develop Condition Rating Model</li> <li>Modelling for All Asset Subclasses</li> </ul>	Asset Management & Development Services	\$ 2, 500 Staff Time	1 Year (2022)
4	<ul style="list-style-type: none"> <li>Develop Demand Driver Data</li> <li>Implement Prioritization Scale</li> </ul>	Asset Management & Development Services	\$ 1, 800 Staff Time	2 Years (2023)
5	<ul style="list-style-type: none"> <li>Implement 3 Financial indicators into Detailed Asset Management Plan</li> <li>Asset Renewal Funding Ratio (ARFR)</li> <li>Operating Surplus Ratio (OSR)</li> <li>Net Financial Liabilities Ratio (NFLR)</li> </ul>	Asset Management & Development Services	\$ 8, 000 Staff Time	2 Years (2023)
6	<ul style="list-style-type: none"> <li>Adopt &amp; Implement minimum development standards pre-design (Quality, Sized appropriately for climate change and affordability)</li> </ul>	Asset Management & Development Services	\$ 30, 000 Total	2 Years (2023)
7	<ul style="list-style-type: none"> <li>Pre assumption Checklist operational</li> </ul>	Asset Management & Development Services	\$ 14, 000 Total	2 Years (2023)
8	<ul style="list-style-type: none"> <li>Network Data Collection (system wide verification process)</li> </ul>	Asset Management & Development Services	\$ 9, 000 Staff Time	1 Year (2022)
9	<ul style="list-style-type: none"> <li>Develop Level of Service Survey (Ongoing)</li> </ul>	Asset Management & Development Services	\$ 2, 500 Annually	Each Year

### ***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 will be incorporated into the long term financial Plan once completed. The Detailed Asset Management Plan has a maximum life of 1 year and is due for complete revision and updating each spring.

### ***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%).