Chatham-Kent

DETAILED ASSET MANAGEMENT PLAN

2025

Stormwater

TABLE OF CONTENTS

Chatham-Kent Stormwater Report Card

12,334 Catch Basins

5,602 Maintenance Holes

420 km of sidewalks

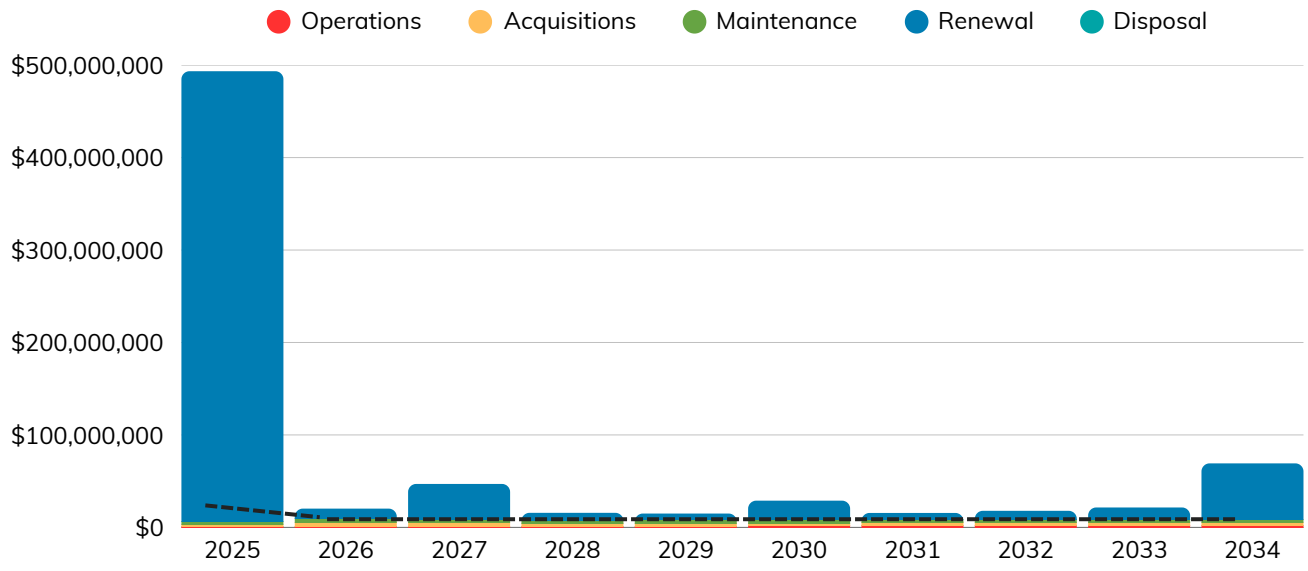
Annual Funding Gap	Asset Renewal Ratio	% of 10-Year Plan Funded
$58,401,000	13 %	22 %

Asset Summary

Assets	Items	Replacement
	Linear pipes and urban tile drains	$1.4 Billion
	Catch basins, catch basin leads, lateral services, maintenance holes	$260 Million
	Stormwater Ponds	$18 Million
	Pumping stations	$38 Million

$1.68 Billon Total Replacement Cost

10 Year Life Cycle Forecast



Data Confidence	Low	Medium	High

2.0 INTRODUCTION

2.1 Background / Purpose of Service

Stormwater servicing is provided to communities across the Municipality through a network of storm sewers that outlet into Municipal drains, rivers, or stormwater management facilities. Many smaller, outlying communities do not have municipal storm sewers but instead rely on tile drains, infiltration, roadside ditches, and Municipal drains that run through the communities. Municipal storm sewers are designed to convey the 1:5-year storm event (reflecting current regulatory requirements and best practices for new and reconstructed storm sewer infrastructure. For rain events more than the 1:5-year event, storm sewers may surcharge and utilize the Municipal Right-of-Way to convey the run-off to the outlet. In areas where stormwater management facilities (ponds) exist, the excess run-off is directed overland to these ponds, where the water is stored until such time that it can be released into the outlet receiver. In areas where no pond exists, these large rain events may result in flooding of the rights-of-way until such time that the storm event has passed, and the storm sewer network and ditching is able to collect convey the remainder of the flows. The effectiveness of the storm sewer network relies heavily on municipal drains, the Thames River, and the Sydenham River.

Over the course of several decades, Chatham-Kent has acquired a significant amount of stormwater assets, which vary greatly in terms of condition, design standards, construction materials, expected lifespan, and intended use. These differences primarily stem from the 1998 amalgamation that formed Chatham-Kent, bringing together Blenheim, Bothwell, Camden, the City of Chatham, the Township of Chatham, Dover, Dresden, Erie Beach, Erieau, Harwich, Highgate, Howard, Orford, Raleigh, Ridgetown, Romney, Thamesville, Tilbury East, Tilbury, Wallaceburg, Wheatley, and Zone. This consolidation resulted in a unique scenario where the existing stormwater networks were merged into one, despite their varying levels of service, design standards, condition, and age.

Stormwater Infrastructure was often designed to meet the standards and environmental conditions prevalent at the time of construction. These designs accounted for historical rainfall patterns, urban development levels, and population densities using available technology. However, as urban areas have grown, land use has Intensified, and climate change has altered precipitation patterns with more frequent and severe storms, many older systems struggle to handle the increased demands. Modern design standards Incorporate advanced modelling techniques, updated rainfall data, and sustainability measures to ensure infrastructure can manage current and future challenges. As a result, these older stormwater assets no longer meet these evolving requirements, highlighting the need for assessment, upgrades, or replacement to mitigate flooding and environmental risks effectively.

The primary objective of stormwater assets is to safeguard community and private properties by offering flood protection against the damaging effects of stormwater runoff. Additionally, these assets play a crucial role in environmental preservation by mitigating the impacts of urban

development on the hydrologic cycle. The introduction of impervious surfaces, such as roads, sidewalks, and buildings, disrupts the natural flow of rainwater. This disruption can lead to various problems, including flooding, habitat destruction, and contamination.

Urban stormwater may also contain elevated levels of suspended solids, nutrients, bacteria, heavy metals, oils, grease, pesticides and sodium and chloride from road salt. These elevated levels can have a serious effect on the 'receiving' water including effects such as:

- Increased turbidity reduces photosynthetic activity
- Sediment can cover fish spawning areas
- Solids in suspension can clog fish gills and interfere with their ability to feed

Stormwater assets work to manage and control the suspended solids, however many of the stormwater management ponds can also help remove the stormwater contaminants as well.

As asset management knowledge matures across Chatham-Kent, the breadth and scope of the plans will be refined to ensure they capture the full cost of delivering the stormwater network. The intention is to update the plan annually to ensure data quality improves and to enable and support evidence-based decisions. This DAMP will have a ten-year planning horizon at a minimum and will connect fully to the Long-Term Financial Plan (LTFP) by 2027.

This DAMP will communicate the requirements for the sustainable delivery of services through the management of assets, program delivery, compliance with regulatory requirements, and funding required to provide the appropriate levels of service over the entire planning period. The stormwater DAMP is guided by the Chatham-Kents Strategic Asset Management Policy as well as other documents such as:

- Policies and Bylaws
- Municipality of Chatham-Kent – Strategic Plan 2022-2026
- 2024 - 2027 Multi-Year Budget
- Short-term and long-term financial plans
- Provincial Legislation

The DAMP addresses infrastructure assets specific to the storm network, which are essential for delivering its expected level of service. For a comprehensive overview of the assets outlined in this

DAMP, please refer to **Table 2.2.2** as it provides a detailed summary. This DAMP does not currently address drainage infrastructure constructed and operated under the Provincial Drainage Act (Drainage Act, R.S.O. 1990). This will be incorporated in future updates to the plan.

The infrastructure assets included in this plan have a total replacement value of **$1.68 Billion**.

Key stakeholders in the preparation and implementation of this DAMP are shown in **Table 2.1.**

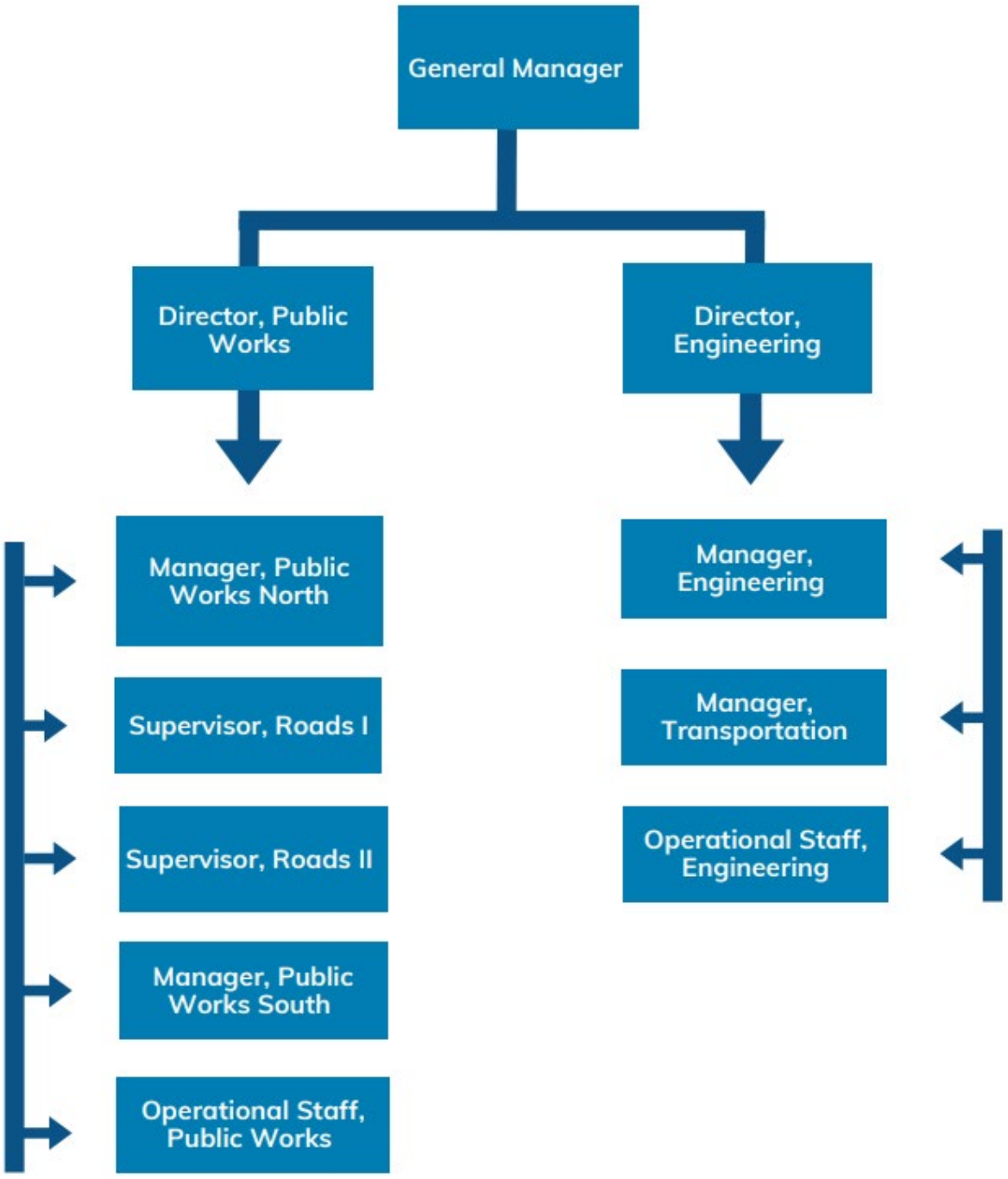
Table 2.1: Key Stakeholders in the DAMP

Key Stakeholder	Role in Asset Management Plan
Mayor & Councillors	▪ **Represent needs of community/shareholders,** ▪ **Allocate resources to meet planning objectives in providing services while managing risks,** ▪ **Ensure service is sustainable.**
General Manager, IES	▪ **Allocate resources to meet the organization's objectives in providing services while managing risks.** ▪ **Overall responsibility for Asset Management, provide leadership in influencing decision-making processes related to Asset Management.**
Director of Engineering	▪ **Allocate resources and directs activities for road assets including renewals and major maintenance projects** ▪ **Develop the Detailed Asset Management Plan and inform them of the strategies required to meet agreed upon levels of service.**
Director of Public Works	▪ **Allocate resources and directs activities for road assets including operational activities and maintenance projects** ▪ **Develop the Detailed Asset Management Plan and inform them of the strategies required to meet agreed upon levels of service.**
Managers in IES	▪ **Reviews, updates, and manages maintenance requirements, risks and stormwater operational matters,** ▪ **Be aware of levels of service and costs,** ▪ **Participate in consultation processes and provide feedback on service needs.**
Community	▪ **Be aware of levels of service and costs,** ▪ **Participate in consultation processes and provide feedback on service.**

Organizational Chart

The organizational structure for service delivery from infrastructure assets for Chatham- Kent Stormwater systems is detailed below in **Figure 2.1**.

Figure 2.1: Organizational Chart



2.2 Asset Hierarchy & Registry

An asset hierarchy provides a framework for structuring data in an information system to assist in data collection, reporting, and decision-making. The hierarchy includes the asset class and components used for asset planning and financial reporting, as well as the service level hierarchy used for service planning and delivery.

An asset registry is a single data source containing an inventory of asset data, including attribute information for each asset. This attribute information includes a record of each individual asset, including condition, age, replacement cost, and asset-specific information (e.g., length, diameter, material, etc.). Currently, the stormwater asset registry is structured in the form of an asset hierarchy, explained below.

The asset hierarchy provides a framework for structuring data in an information system to assist in data collection, reporting, and decision-making. Chatham-Kent is working towards establishing a functional asset hierarchy, which means the hierarchy has been established based on what the asset owner needs or wants the asset or system to do. Generally, assets and systems are organized according to their primary function. The service hierarchy is shown in **Table 2.2.1.**

Table 2.2.1: Asset Service Hierarchy

Service Hierarchy	Service Level Objectives
Linear Pipes	▪ **Pipe serves as a conduit for transporting stormwater from collection points (inlets, gutters, catch basins) to discharge points (rivers, treatment facilities, detention facilities)**
Ditches	▪ **Convey rainwater away from roads and properties to prevent water accumulation and erosion. They also provide flood control, water quality improvement by filtering sediments and replenishing groundwater.**
Stormwater Ponds	▪ **Designed to manage and control rainwater runoff in developed areas. They help manage stormwater by providing elements of flood control, water quality improvement and groundwater recharge.**
Pumping Stations	▪ **Stormwater pumping stations pump stormwater from one location to another, typically to prevent flooding or manage stormwater runoff.**

Asset Registry

The Stormwater assets covered in this plan include all stormwater pipes, drains, pumping stations, catch basins and leads and all required for Chatham-Kent to deliver its stormwater service to the community and its customers. The assets included in this DAMP are shown in **Table 2.2.2.**

Table 2.2.2. Asset Registry

Asset Category	Description	Estimated Service Life in Years	Average Age	Average Condition	Average Remaining Service Life	Current Replacement Cost
Linear pipes	**433.8 kms of linear pipes**	75 Years	41 Years	Fair	34 Years	**$1.1 Billion**
Urban tile drains	**114.4 kms of urban tile drains**	50 Years	50 Years	Poor	0	**$261 Million**
Stormwater ponds	**8 dry ponds, 4 hybrid ponds, 12 wet ponds**	100 + Years	19 Years	Fair	---	**$18 Million**
Pumping Stations	**23 Stations**	60 Years	39 Years	Poor	21 Years	**$38 Million**
Catch Basins	**12,334 Catch Basins**	75 Years	34 Years	Fair	41 Years	**$65 Million**
Catch Basin Leads	**3,036 Catch Basin Leads**	75 Years	34 Years	Poor	41 Years	**$31 Million**
Lateral Services	**15,930 connections from private property to linear pipe.**	75 Years	33 Years	Fair	42 Years	**$92 Million**
Maintenance Holes	**5,602 Maintenance Holes**	80 Years	40 Years	Fair	40 Years	**$72 Million**
Oil & Grit Separators	**4 Separators**	80 Years	8 Years	Good	72 Years	**$350,000**
				Total	**Total**	**$1.7 Billion**

All values are shown in 2025-dollar values.

Historically, age and pipe material for linear storm Infrastructure has not been consistently gathered, resulting in low confidence levels on that data element. Staff will collect age information as new assets are put in place to ensure data quality improves over time. Without either age or material data it is difficult to estimate the remaining service life for linear storm infrastructure. Staff will explore the process of collecting data or estimating useful life in the future and this has been identified as a continuous improvement opportunity.

The initial plan attempts to include all assets defined as stormwater assets within this DAMP. However, it is acknowledged that as this is the first DAMP, additional assets will likely be included in the future. As assets are acquired, disposed of, discovered or considered material enough, they will also be included in future iterations of the DAMP. Various asset parameters such as age, condition, estimated service life and replacement costs will be updated regularly to ensure the data confidence of the plan is sufficient to support evidence-based investment decisions.

2.3. Asset Condition

Condition is the preferred measurement for planning lifecycle activities to ensure assets deliver the agreed-upon levels of service and reach their expected useful life. Condition is measured using a 1 – 5 grading system, as detailed in **Table 2.3.1**. It is important that a consistent approach is used in reporting asset performance, enabling effective decision support. A finer grading system may be used at a more specific level. However, for reporting in the DAMP, results are translated to a 1 – 5 grading scale for ease of communication.

At present, the condition of stormwater assets is assessed using both formal and informal methods. As I.E.S. continues to develop Master Plans for stormwater systems across the municipality, the inventory and condition of the stormwater assets will continue to be updated and will be incorporated into future editions of the plans. For certain assets such as buried pipes, conducting condition assessments may not be cost-effective or practical; however, for many others, routine inspections are carried out to confirm that these assets remain in good order. For assets without known condition information or inspections that were not output in a way that could be converted, the condition was assumed based on remaining service life.

The following conversion assumptions were made:

- For assets where a condition assessment was not completed, but age information was known, the condition has been set based on the % of remaining service life.

For assets where a condition program exists and a condition score was output, those conditions were converted to the scale below in **Table 2.3.1**

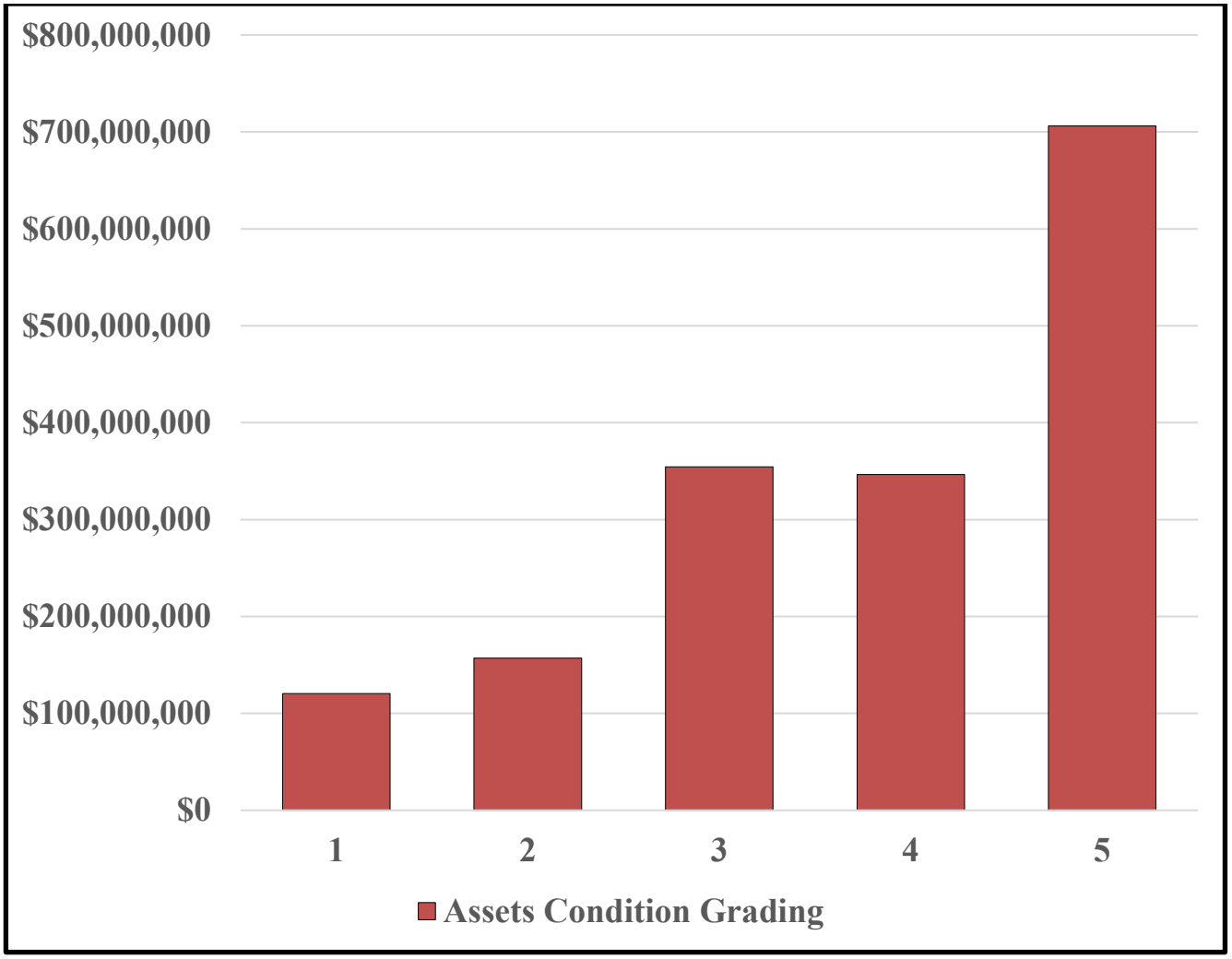
Condition is measured using a 1 – 5 grading system, as detailed in **Table 2.3.1**. It is important that a consistent approach is used in reporting asset performance, enabling effective decision support. A finer grading system may be used at a more specific level. However, for reporting in the DAMP, results are translated to a 1 – 5 grading scale for ease of communication.

Table 2.3.1: Condition Grading System

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

The condition profile of Stormwater assets is shown in **Figure 2.3.2**.

2.3.2: Asset Condition Profile in Replacement Dollars



All figure values are shown in 2025-dollar values.

The majority of the stormwater assets are considered to be **poor to very poor** condition at the time of writing the DAMP. A significant amount of stormwater assets is considered to be in either **poor** or **very poor** condition, which includes:

- **$483 Million** of stormwater pipes
- **$41.5 Millon** of lateral services (stormwater pipes in the municipal right of way)
- **$96 Million** of catch basins and leads

Poor or very poor assets required either renewal or some form of major maintenance to return the asset to a good working order so that it can deliver its intended service.

3.0 LIFECYCLE MANAGEMENT

The lifecycle management plan will detail how Chatham-Kent plans to manage the stormwater assets at the agreed-upon levels of service by managing its lifecycle costs. These costs are categorized by lifecycle phases, which include **acquisition**, **operations**, **maintenance**, **renewal**, and **disposal**. At present, Chatham-Kent employs a budget-based approach to its lifecycle management; however, this approach will evolve into a comprehensive lifecycle approach as the data and organizational knowledge develop and become more suitable.

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

3.1 Acquisition Plan

Acquisitions are lifecycle activities that add new assets or improve an existing asset's capability or function. These acquisitions may result from growth, council priorities, donation, demand, or social or environmental needs. Currently CK is undertaking pump station assessment to determine the need for stand-by power. If there are any acquisitions that are required from these assessments, they will be identified in this section of the DAMP in the future. The costs associated with acquisitions include design, training, consulting, purchase costs, and staff time to ensure the assets are ready for service and can be considered ‘fit for use.

3.1.1 Selection Criteria

Proposed acquisition of new assets and upgrades of existing assets are identified from various sources, such as community requests, development, safety standards and legislative obligations, proposals identified by strategic plans, or partnerships with others. Potential upgrades and new works should be reviewed to verify that they are essential to the communities’ needs and councils’ ability to fund the assets adequately enough to maintain the desired level of service.

The priority ranking criteria are detailed in **Table 3.1.1.**

Table 3.1.1: Acquired Assets Priority Ranking Criteria

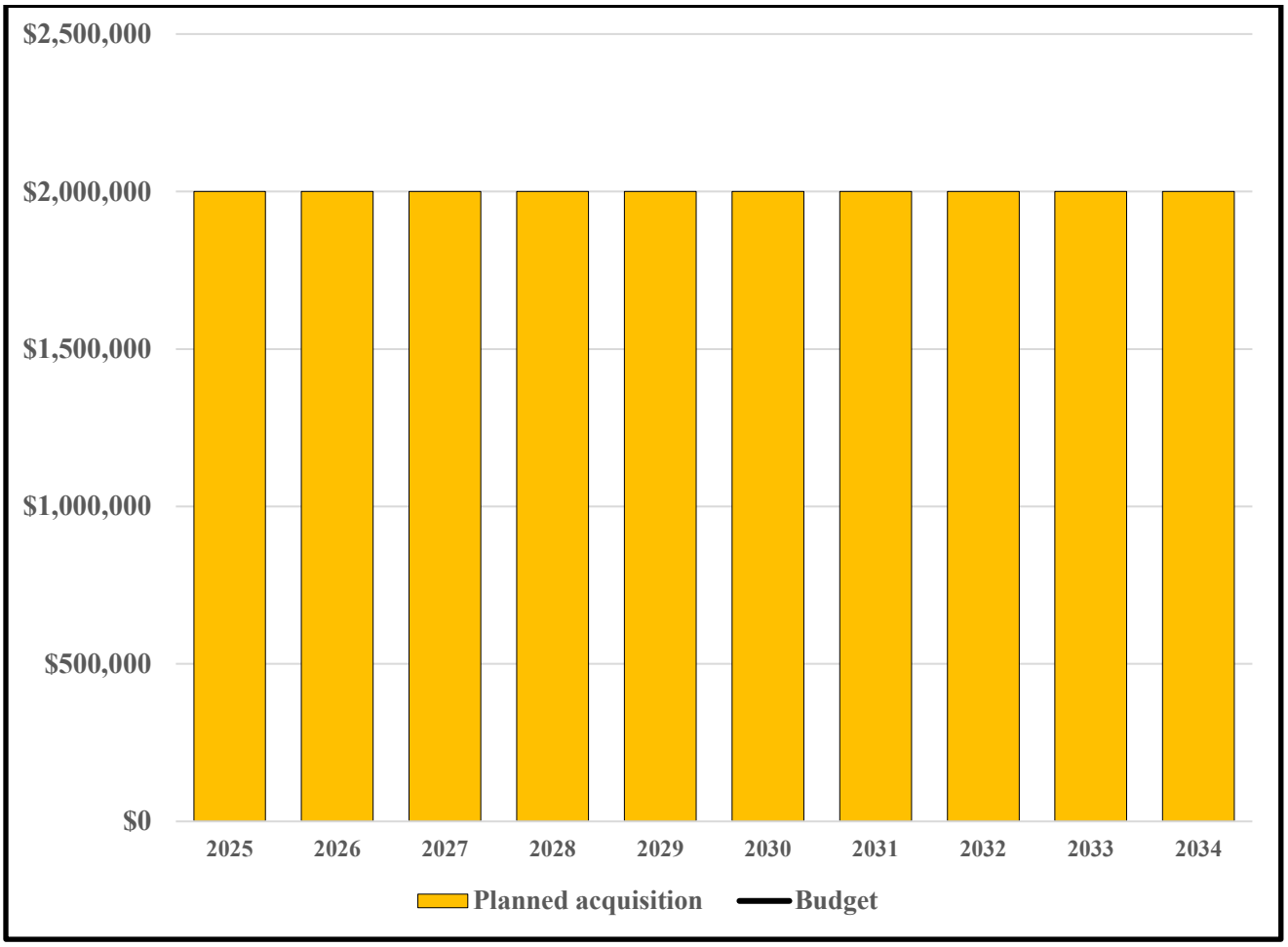
Criteria	Weighting
Growth	80%
Safety	15%
Sufficient Demand	5%
Total	**100%**

Donated Assets

Donated assets are assets built by others and CK becomes the owner of those assets. Generally, for the stormwater service a donated asset most commonly happens when CK assumes a subdivision which is built by a developer and becomes the is donated to the municipality once completed. On average, Chatham-Kents stormwater network grows by 2kms/year of linear pipe and accompanying assets. Over the entire 10-year planning period of this DAMP it estimated that 20 kms of new linear pipes will be acquired.

When Chatham-Kent takes on assets, it also takes on responsibility for all expenses related to operating, maintaining, and eventually renewing the road. It is crucial to ensure that CK allocates enough funds in the budget to effectively manage the stormwater network, including the donated assets, throughout their entire lifecycle. **Figure 3.1.1** shows the anticipated donated assets over the life of the plan

Figure 3.1.1: Summary of Donated Assets

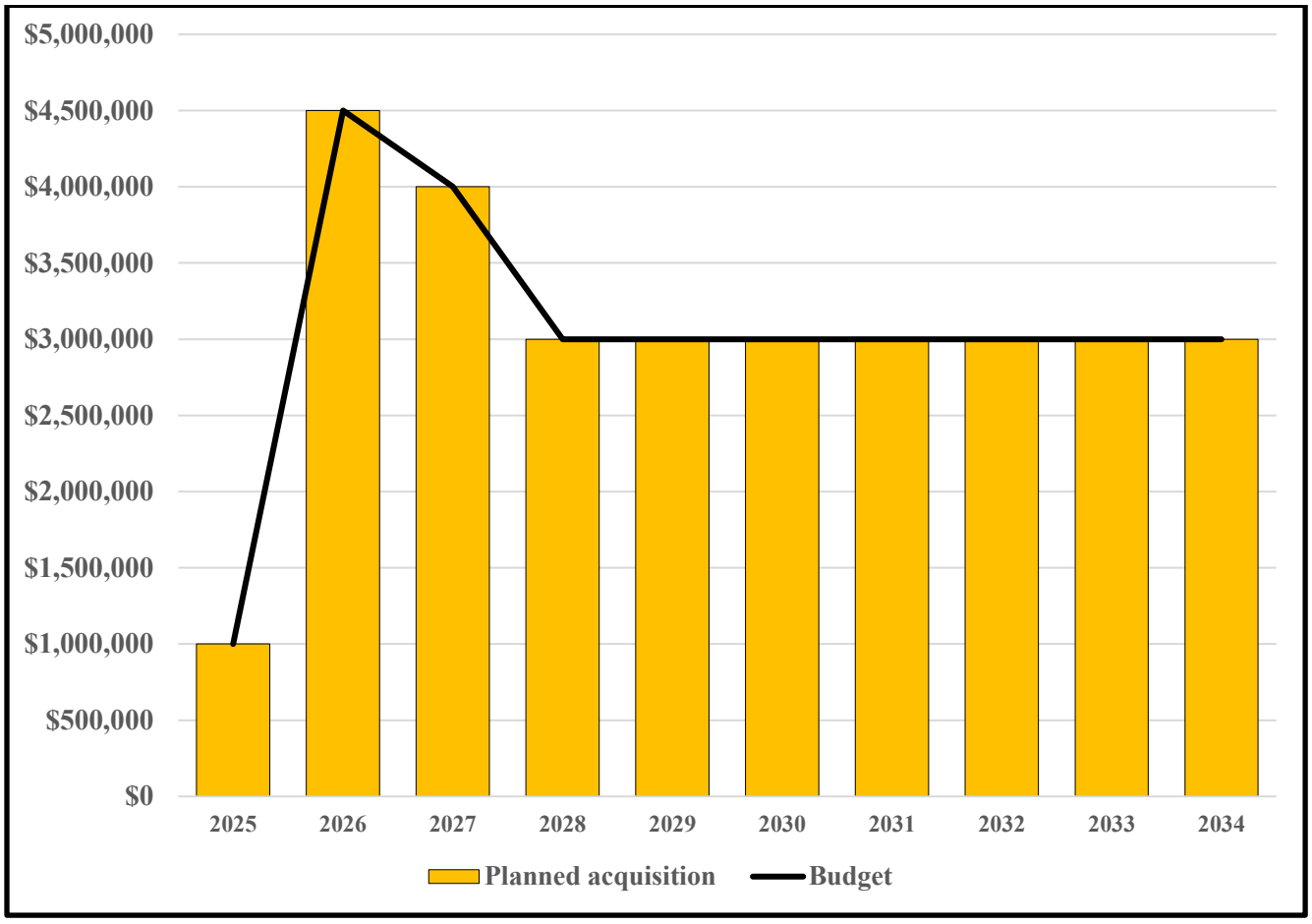


Summary of Constructed Asset Acquisition Costs

Forecast acquisition asset costs are summarized in **Figure 3.1.2** and shown relative to the proposed acquisition budget. Over the next ten years it is projected that the stormwater network will acquire **$30,000,000** of new assets which include:

- **Ridgetown Stormwater Master Plan projects**
- **Tilbury Stormwater Master Plan Projects**
- **Combined Sewer separation and implementation of new storm sewers**
- **Projected projects from future Stormwater Master Plans**
- **Growth such as assumption of newly constructed subdivisions**

Figure 3.1.3: Constructed Acquisition Summary



The long-term financial plan will accommodate expenditure on new assets and services in the capital works program, but only to the extent that funding is available. It is acknowledged that there will also be additional assets such as the assumption of subdivisions which will be included in future iterations of the DAMP.

3.2 Operations Plan

Operations include regular activities to provide services. These activities are necessary to complete the regular day-to-day operations on the stormwater network. Over the 10-year planning horizon CK projects to budget **$10,041,000** for operational costs related to the stormwater network. Examples of typical operational costs and activities include:

- **Pumping stations (Electrical Costs)** – Pumping stations ensure water travels towards outlets and the pumps require hydro to ensure they work as intended. Hydro for the current pumping stations will cost approximately **$910,000** over the 10-year planning horizon.
- **Inspecting and cleaning storm sewer –** CK will invest **$382,000** over the next 10-year planning period to inspect and clean its storm sewers. These inspection programs help to identify structural issues such as joint failures, pipe collapses and cracks to help inform a proactive maintenance plan.
- **Catch Basin cleaning –** Catch basin clean out programs are to ensure that the assets operate as they should. Cleaning them ensures that they are free from debris, which prevents flooding and reduces property damage. Over the 10-year planning horizon, CK will invest **$1.3 Million** in its catch basin cleanout program.
- **Environmental Compliance Approval (CLI-ECA) -** Per Schedule E: Operating Conditions, of the CLI-ECA, Infrastructure and Engineering Services department must develop an Operations and Maintenance (O&M) Manual. All operations and maintenance activities are to be undertaken at the frequency and in conformance with the procedures set out In the Manual.

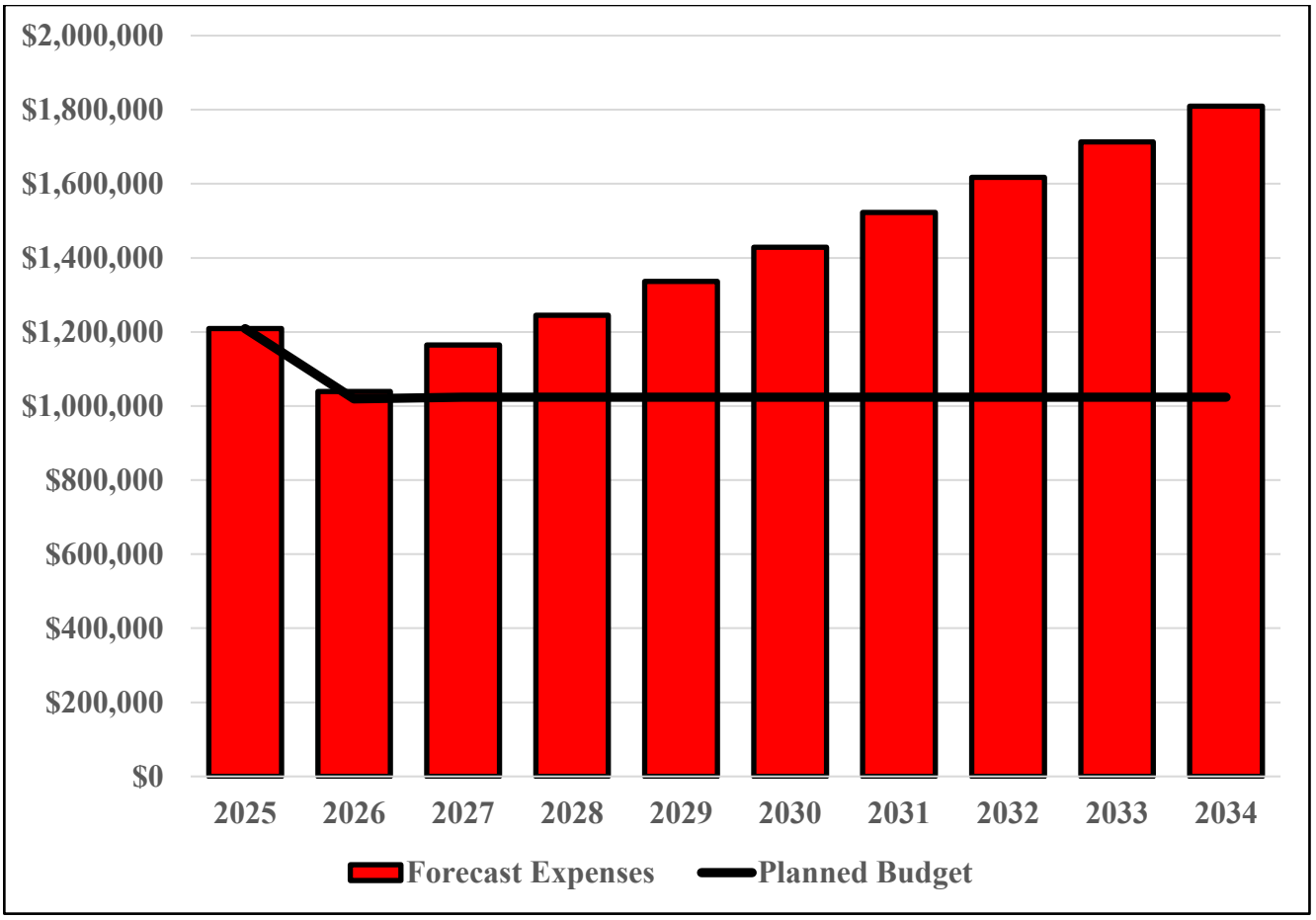
Other operational costs include master planning, staff costs, vehicle charges, software and consulting costs.

Summary of forecast operations costs

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

Figure 3.2.1. shows the forecast operations costs relative to the proposed operations planned budget.

Figure 3.2.1: Operations Summary



Operational budget levels are insufficient to meet projected service levels over the entire 10-year planning period. In the initial years of the plan **(2025 - 2026)** operations are funded adequately enough that there will be no impact. For the remaining planning horizon, funding for the stormwater network will be required to increase budgets to ensure service levels are sustainable and able to complete all operational activities.

Future iterations of the DAMP will need to consider obligations to ensure that required safety and regulatory operational activities are prioritized.

Table 3.2.2: Operations Budget Trends

Year	Operational Budget
2025	**$20,337,216**
2026	**$20,645,172**
2027	**$21,144,580**

3.3 Maintenance Plan

Maintenance should be viewed as the ongoing management of deterioration. The goal of planned maintenance is to proactively apply the appropriate interventions to assets, ensuring they achieve their intended useful life. Maintenance doesn't substantially prolong the life of an asset; they are the actions necessary to enable assets to meet their expected lifespan by restoring them to a preferred 'improved' condition.

Maintenance also includes major activities on the stormwater network such as:

- **Stormwater pond clean out** – Over time, sediment, debris and organic material accumulate stormwater ponds, reducing their ability to hold and slowly release stormwater. Regular clean outs restore the pond's original capacity and ensure that they will function as they are designed. Clean outs also prevent flooding, improve water quality and ensure ponds reach their intended useful life.

- **Repair damaged storm sewers** – Stormwater pipes are susceptible to damage and require repairs. This can be caused by age, defective materials, soil movement/ground shifting, tree root intrusion or hydraulic pressure.

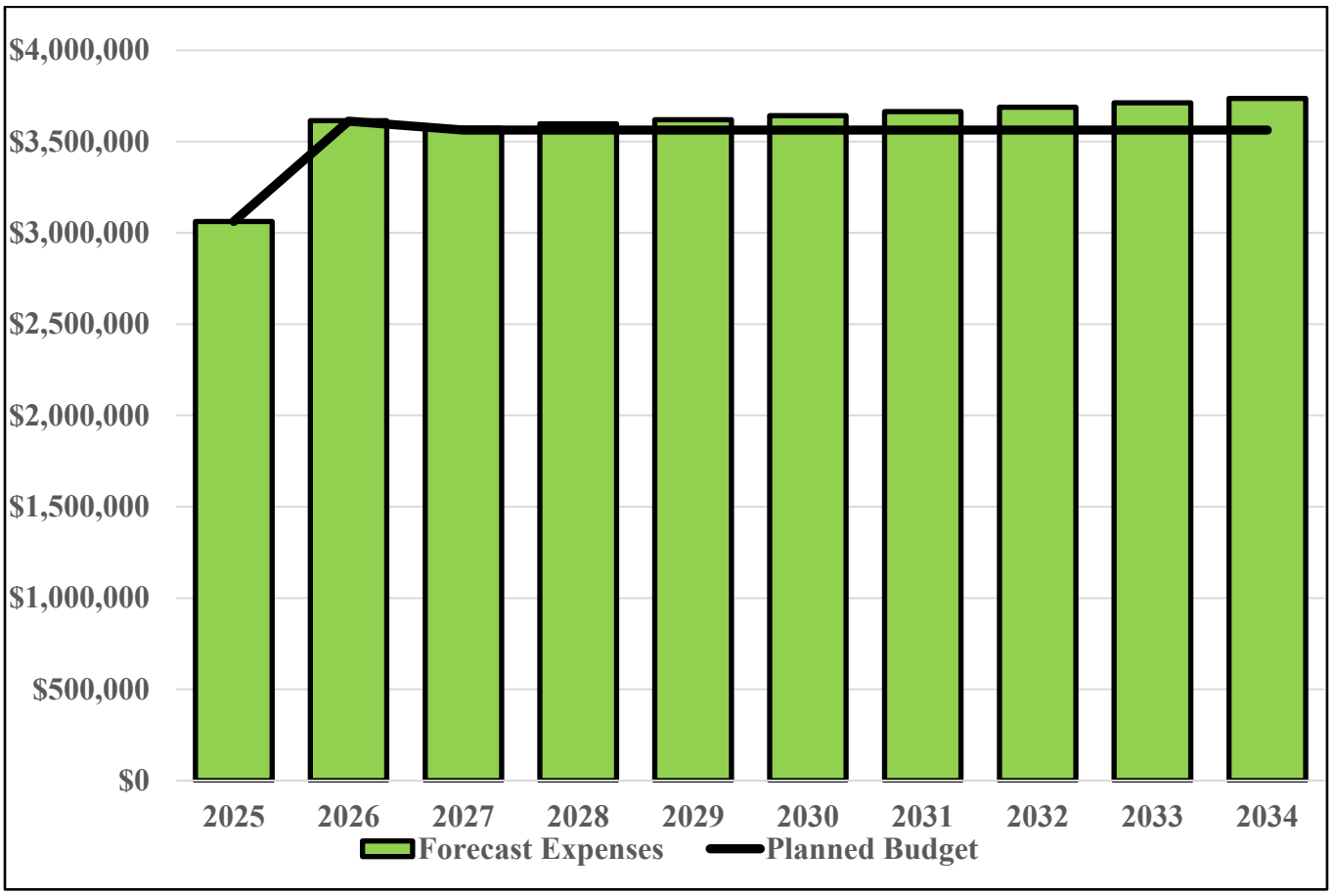
- **Erosion Control** – This maintenance activity reduces high reactive maintenance costs by preventing soil loss and reducing the amount of sediment that can clog or minimize the effectiveness of the stormwater network.

Other maintenance activities include repairs for pump stations, catch basins, flood gates and manholes,

Summary of Forecast Maintenance Costs

Forecast maintenance costs vary with the total value of the asset stock. If additional assets are acquired, future maintenance costs are forecast to increase. If assets are disposed of the forecast operation and maintenance costs are expected to decrease. **Figure 3.3.1** below shows the forecasted maintenance costs relative to the proposed maintenance planned budget.

Figure 3.3.1: Maintenance Summary



Maintenance budget levels are inadequate to meet projected service levels over the entire 10-year planning period. The initial years of the plan **(2025 - 2027)** are sufficiently funded adequately to ensure there will be no impact on service levels. For the remaining planning horizon stormwater will not have sufficient budget to maintain its regular maintenance activities and will be required to either fund the level of service or will need to adjust its planned maintenance activities.

One consideration for maintenance is to recognize that rising costs across most if not all maintenance activities. Since 2020, prices have been rising aggressively, and careful analysis will be required to ensure that sufficient funds are put into place to ensure future maintenance activities can be completed.

Future iterations of the DAMP will need to consider obligations to ensure that required safety and regulatory maintenance is prioritized. 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 DAMP and service risks considered in the Risk Management Plan. Assessment and priority of reactive maintenance is undertaken by staff using experience and judgement.

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

Table 3.3.2: Maintenance Budget Trends

Year	Maintenance Budget
2025	**$34,572,000**
2026	**$34,748,000**
2027	**$35,430,000**

3.4 Renewal Plan

Renewals are the major capital works which do not significantly alter the original service capacity provided by the asset, but restores, rehabilitates, replaces or renews an existing asset to its original service potential. Renewal works over and above restoring an asset to its original service potential is an acquisition resulting in additional future operations and maintenance costs.

Assets requiring renewal are identified from the asset register data to project the renewal costs (replacement cost) and renewal timing (acquisition year plus updated useful life to determine the renewal year). The typical useful lives of assets used to develop projected asset renewal forecasts are shown in **Table 2.2.2.** Asset useful lives related to the Stormwater systems were last reviewed on **April 14, 2025**.

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

3.4.2 Renewal ranking criteria

Asset renewal is typically undertaken to either:

- Ensure the reliability of the existing infrastructure to deliver the service it was constructed to facilitate (e.g. replacing the stormwater pumping station appurtenances)
- To ensure the infrastructure is of sufficient quality to meet the service requirements (e.g. upsizing the stormwater pipes to improve the collection and conveyance of stormwater)

The Stormwater assets prioritize renewals by identifying assets or asset groups that have:

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

Every stormwater asset has a distinct decision point where continuing to undertake maintenance becomes unfeasible, financially burdensome, or regulatory requirements dictate that renewing it becomes the optimum choice for Chatham-Kent. For this DAMP, a stormwater asset is identified as requiring a renewal when a when it reaches either a very poor condition, impacts service delivery or is legislatively required.

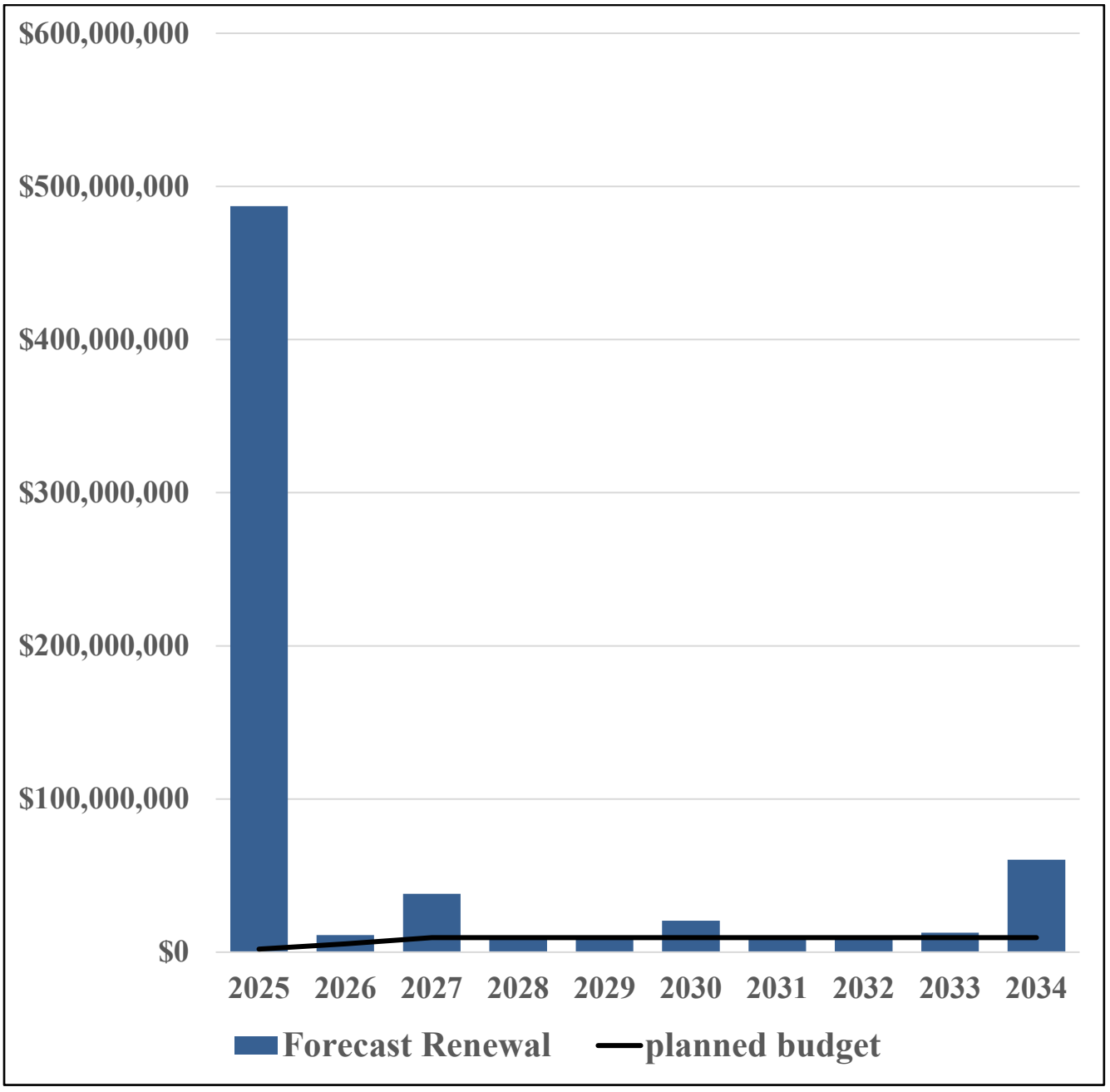
3.5 Summary of future renewal costs

Over the 10-year planning horizon the Stormwater asset class will budget approximately **$74 Million** on renewal activities which will include:

- Full road reconstruction projects, which include replacement and of all stormwater infrastructure (storm sewers, service laterals, maintenance holes, catch basins)

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

Figure 3.5.1: Forecast Renewal Costs (2024 - 2033)



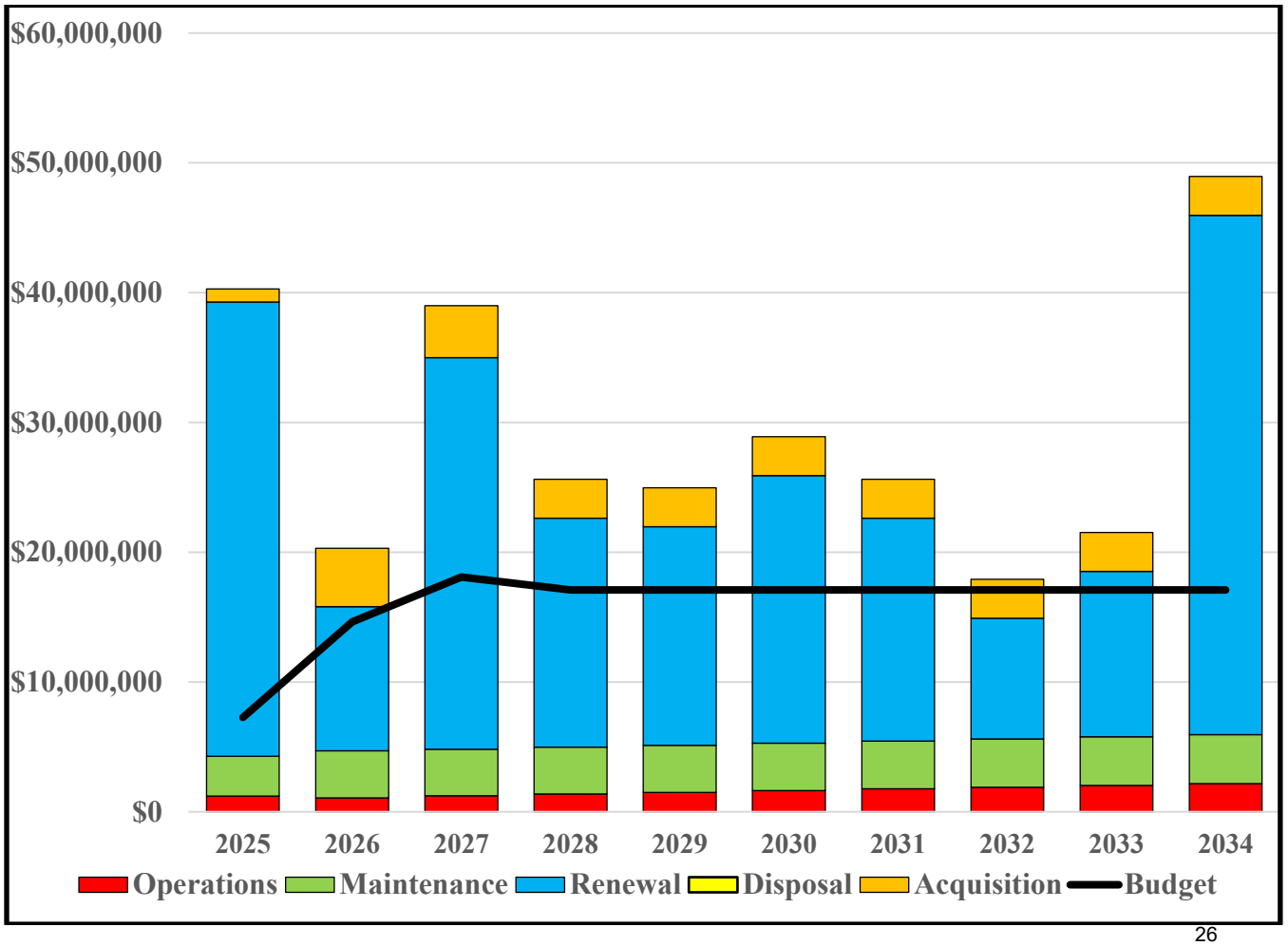
3.6 Disposal Plan

Disposal encompasses activities related to the decommissioning of assets that are not slated for renewal. These activities include the sale, demolition, environmental testing and remediation, soil and remediation, and relocation. Presently, stormwater is reviewing its disposal plans over the next 10-year planning horizon. Any costs or revenues from asset disposals will be accounted for in the long-term financial plan. Should any disposals be identified in the future, they will be reported in this section of the DAMP.

3.7 Summary of Asset Forecast Costs

The summary of the financial projections for this asset plan are shown in **Figure 3.7.1.** 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 life cycle costs associated with the service provision. The proposed budget line indicates the estimate of available funding. The Figure does not include the **$452 million** backlog of work as it distorts the graph too significantly. The gap between the forecast work and the proposed budget is the basis of the discussion on achieving a balance between costs, levels of service and risk to achieve the best value outcome.

Figure 3.7.1: Lifecycle Summary without backlog



With the current funding levels, the stormwater assets **do not** have enough funding for the entire 10-year planning period to maintain the current levels of service. The significant backlog of **$452 Million** will impact future projections and will need to be reviewed regularly to ensure the forecast is reliable. It is unrealistic to assume the large back log will be able to be eliminated in a singular year and will be managed over time as budget allows.

4.0 LEVELS OF SERVICE

Levels of service describe the value that the Stormwater assets provide to the community and are typically spoken about in 'measures. Utilizing service measures allows decision makers to understand what the outcome of investments will be to allow those making choices to clearly understand how a dollar, more or less will impact Chatham Kent's ability to deliver its services. These measures also allow Chatham Kent to communicate with the public as to the cost of the services that they receive today and will be able to afford in the future.

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

4.1 Legislative Requirements

Meeting legislative requirements should be the bare minimum level of service Chatham Kent provides. These requirements often drive many lifecycle costs and staff tasks to ensure that Chatham Kent is compliant with all legislation that range from Federal to Provincial or even Chatham Kent's own bylaws. There are many legislative requirements relating to the management of Stormwater assets. Legislative requirements that impact the delivery of the Stormwater service are outlined in **Table 4.1.1.**

Table 4.1.1: Legislative Requirements

Legislation	Requirement
Canadian Environmental Protection Act (EPA), 1999	Regulates discharges int the environment, including stormwater runoff that discharges into natural bodies of water
Ontario Water Resources Act, R.S.O. 1990	Controls the discharge of stormwater to surface water and ground water. It also governs water-taking activities that may relate to stormwater infrastructure during pond cleanouts.
Clean Water Act, 2006	Stormwater systems are considered in the **Source Water Protection Plans.** Stormwater runoff can be a significant threat to water sources
Environmental Protection Act, R.S.O. 1990	Environmental legislation aimed at preventing pollution and protecting the environment and human health.

4.2 Customer Research and Expectations

The first DAMP is intended to provide a snapshot of the current level of service provided by stormwater assets. Future consultations with the public must be undertaken before the Municipality of Chatham-Kent can adopt the planned level of service. Future iterations of the stormwater DAMP will involve customer consultation, focusing on service levels and associated costs. This approach aims to assist Council and stakeholders in aligning the required level of service, potential service risks, and consequences for the customers' capacity and willingness to financially support the service.

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

4.3 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 are important to the customer
- whether they see value in what is currently provided
- the likely trend over time based on the current budget provision

Current Customer Value

Through previous public consultations, Chatham-Kent has identified elements that customers value from its bridge and culvert assets.

1. **Function** – Customers value a stormwater system that functions properly to minimize or eliminate the chance of flooding and property damage.
2. **Responsible management** – Customers value a storm network that returns stormwater to natural watercourse in an environmentally responsible manner
3. **Affordability** – Customers wish to have an effective stormwater network that is both affordable and sustainable

The stormwater service will undertake community consultation in **2025-2026** to better identify customer values for its stormwater assets. This consultation will help identify expected trends in the planned budget and the values will be addressed in the future iterations of this plan.

4.4 Customer Levels of Service

The Customer Levels of Service are considered in terms of:
Condition - How good is the service… what is the quality of the service
Function - Is It suitable for its Intended purpose… is it the right service?
Capacity/Use - Is the service over or underused … do we need more/less of these assets?

In **Table 4.4.1** 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.

Table 4.4.1: Customer Level of Service Measure

Measure Type	Levels of Service	Performance Measure	Current Performance	Expected Trend Based on Planned Budget
Condition	Ensure stormwater assets are reliable	Customer Survey	TBD in 2026	TBD 2026
Capacity	Ensure there are sufficient stormwater assets to meet customer demands	Customer Survey	TBD in 2026	TBD in 2026
Function	Ensure stormwater assets are fit for purposes and minimize impacts of flooding on personal property	Customer Survey	TBD in 2026	TBD in 2026

Further investigation will be necessary to ensure that customer service levels are regularly measured, allowing Chatham-Kent to consider various options to meet the community's evolving needs and expectations. The goal is to consistently engage in developing baseline community measurements and to continue the process of creating trend analysis data that will guide future decisions.

4.5 Technical Levels of Service

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.

These represent life-cycle performance measures that gauge how the I.E.S. intends to attain desired customer outcomes, showcasing effective performance, legislative compliance, and management. These metrics should illustrate the alignment of the stormwater service delivery with customer values and act as potential levers to affect and influence Customer L.O.S. I.E.S. will track specific lifecycle activities to measure service performance in meeting the desired service level and to shape customer perceptions of the services received from the assets.

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 (e.g., expanding storm pipe size) or a new service that did not exist previously (e.g., new subdivision stormwater assets).

Operation – the regular activities to provide services (e.g., grass cutting, removing wildlife, legislatively required inspections, master plans, 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 (e.g., stormwater pond cleanouts, linear pipe repairs, catch basin repairs etc.),

Renewal – the activities that return the service capability of an asset up to that which it had originally provided (e.g., replacing linear pipes, catch basins),

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

Table 4.5.1 shows the activities expected to be provided under the current 10-year planned budget allocation, and the forecast activity requirements being recommended in this DAMP.

Lifecycle Activity	Level of Service Statement	Activity Measure	Current Performance	Recommended Performance
Acquisitions	Ensure newly acquired assets meet design specifications	% of Stormwater ponds inspected prior to assumption	**100%**	**100%**
Acquisitions	Ensure newly acquired assets meet design specifications	% of storm sewers inspected prior to assumption	**100%**	**100%**
Acquisitions	Complete Stormwater master plans for primary urban centres.	# of Master plans completed	**3**	**8**
Operations	Ensure assets and services are legislatively compliant	Completed all legislatively required Provincial reporting. (2024)	**100% Compliant**	**100% Compliant**
Maintenance	Ensure assets are in safe and acceptable operating condition	# of stormwater management ponds cleanouts completed	**0**	**2 – 3 ponds annually**
Renewal	Ensure assets are in safe and acceptable operating condition	# of Km's of storm sewers replaced annually	**1.5 – 2 km / year**	**4 -5 km / year**

Table 4.5.1: Technical Level of Service

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 efficiency. It is acknowledged changing circumstances such as technology and customer priorities will change over time.

Proposed Level of Service

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

Level of Service Statement	Current LOS	Current Budget	Proposed LOS	Required to achieve the Proposed LOS
Chatham-Kent on average will maintain its stormwater assets in **Fair** conditions over the 10-year planning horizon.	Average conditions are **Poor – Very Poor**	**$16.5 million** on average annually	Average condition is **Fair - Poor**	**+ $12 million** annually on average for the life of the plan **(10 years)**
Chatham-Kent will achieve an Asset Renewal Funding Ratio (ARFR) of **25 %** over a 10-year planning horizon to ensure the stormwater system is sustainable.	**13 % (ARFR)**	**$12.1 million** on average annually (for renewal activities only)	**25 % (ARFR)**	**+ $7.8 million** annually on average for the life of the plan **(10 years)**

5.0 FUTURE DEMAND

5.1 Demand Drivers

Drivers affecting demand include things such as population change, regulations, changes in demographics, seasonal factors, vehicle ownership rates, consumer preferences and expectations, technological changes, economic factors, agricultural practices, environmental awareness, etc.

5.2 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.

5.3 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 5.3.1.**

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

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

Table 5.3.1: Demand Management Plan

Demand driver	Current position	Projection 10 Years	Impact on services	Demand Management Plan
Population Growth/Subdivision Development	**112,993 (2025)**	**117,934 (2035)**	Additional flows (due to increased imperviousness) from new developments being directed to the existing urban and rural stormwater systems.	Ensure development standards are being adhered to for quantity and quality of stormwater systems
Legislative Compliance	**Introduction of CLI-ECA**	**Full implementation of CLI-ECA**	Further changes in legislation/ regulations that require a certain level of quality for stormwater discharged into downstream receiving water bodies	Monitoring program for SWM facilities and Water Quality Units to ensure compliance with legislation of the day. This may require additional resources to ensure legislative compliance

This plan aims to anticipate and address future needs comprehensively. However, the current infrastructure resources are limited and may prove insufficient over the entire planning period and as such before expansion would be recommended it would need to be reviewed to ensure that sustainability can be achieved.

5.4 Asset Programs to meet Demand

The new assets required to meet demand may be acquired, donated or constructed. Acquiring new assets will commit Chatham-Kent 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 long-term financial plan.

6.0 RISK MANAGEMENT PLANNING

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

Chatham Kent is developing and implementing a formalized risk assessment process to identify risks associated with service delivery and to mitigate risks to tolerable levels.

The assessment will identify risks that will result in:

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

The risk assessment process identifies credible risks, the likelihood of the risk event occurring, and the consequences should the event occur. The risk assessment will 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 6.1.1**. Failure modes may include physical failure, collapse or essential service interruption.

Table 6.1.1 Critical Assets

Critical Asset(s)	Failure Mode	Impact
Storm sewers	Degraded condition, insufficient maintenance, design flaws.	Water backups, localized flooding increased customer complaints, disruption to traffic, road erosion, and environmental damage
Stormwater ponds	Poor condition of ponds	Excess water can overwhelm drainage, pollutants flow directly into rivers, lakes and groundwater, Algae blooms, stagnant water
Pump stations	Electricity interruptions,	Flooding can disrupt transportation, damage to public and private property.

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

at critical assets.

6.2 Risk Assessment

The risk management process used by Chatham Kent is an analysis and problem- solving technique designed to provide a logical process for the selection of response plans and management actions to protect the community against unacceptable risks. The process is based on the fundamentals of **International Standard ISO 31000:2018.**

The risk assessment process identifies credible risks, 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 in the infrastructure risk management plan. **Table 6.2.1.** shows initial asset registry risk assessment completed for the DAMP. Future iterations of the risk assessment will include residual risk and treatment costs of implementing the selected treatment plan. It is essential that these critical risks and expenses are reported to management and the Council, these are addressed in **Table 6.2.1**. below.

Table 6.2.1: Risks and Treatment Plans

Asset Providing the Service	What can Happen	Risk Rating	Possible Cause	Existing controls

Storm Sewers	Condition deteriorates to a point of pipe failure	Medium	Lack of network wide inspection program and preventative maintenance program	Reconstruction projects replace aging infrastructure and inspections completed on an "as needed" basis (not proactive)
Storm Sewers	Storm sewers unable to convey minor event flows due to insufficient capacity	Medium	Aging infrastructure was installed to a different standard. In addition, storm events are happening more frequently and at a significantly higher intensity than in the past.	Reconstruction projects to replace aging infrastructure with infrastructure sized to meet standards of the day
Storm Sewers	Pipe blockages	Medium	Lack of sewer flushing program to prevent sediment build-up	None
Stormwater ponds	Capacity of the ponds is reduced	Medium	Lack of maintenance program on SWM facilities	None
Stormwater ponds	Surcharging downstream storm infrastructure and Municipal Drains	Medium	Lack of SWM facilities to alleviate downstream infrastructure	Stormwater Mater Plans identify areas requiring SWM facilities
Storm Pump Stations	Pump failure during loss of power	Medium-High	Lack of backup power at storm pump stations	Municipal wide investigation into existing storm pump stations for the addition of backup power.

6.3 Infrastructure Resilience Approach

The resilience of the stormwater networks critical infrastructure is vital to the ongoing provision of services to customers. To adapt to changing conditions Chatham-Kent needs to understand its capacity to 'withstand a given level of stress or demand', and to respond to possible disruptions to ensure continuity of service. Resilience recovery planning, financial capacity, climate change risk assessment and crisis leadership. Currently, stormwater services do not measure the resilience in service delivery. This will be included in future iterations of the DAMP.

6.4 Service and Risk Trade-Offs

The decisions made to adopt this DAMP 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. These include:

- Increase the levels of operation, maintenance and renewal activities
- Mitigate all risks
- Ensure all reactive maintenance projects can be fully funded
- Ensure that all future renewals outside of the planning period can be completed due to the scope of the plan being limited to a 10-year planning horizon

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 users. These service consequences could include:

- As the condition of infrastructure continues to deteriorate it will result in a lower level of service that could include increased chances of flooding
- Limited effectiveness of stormwater network
- Increased risk of property damage

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:

- Over the long term without sufficient funding and as the condition of assets deteriorates, they may become unsafe
- If buildings and land improvement assets do not meet current standards, the Municipality could be at risk of litigation should an incident occur

These actions and expenditures are considered and included in the forecast costs, and where developed, the risk management plan.

7.0 Climate Change Adaptation

Climate change will have a significant impact on assets and the services they provide. In the context of the 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 well as how the I.E.S. responds to and manages those impacts.

As a minimum, I.E.S. will consider how to manage its existing stormwater assets given potential climate change impacts for the region. Climate change will have a significant impact on the assets CK manages and the services they provide. This can include:

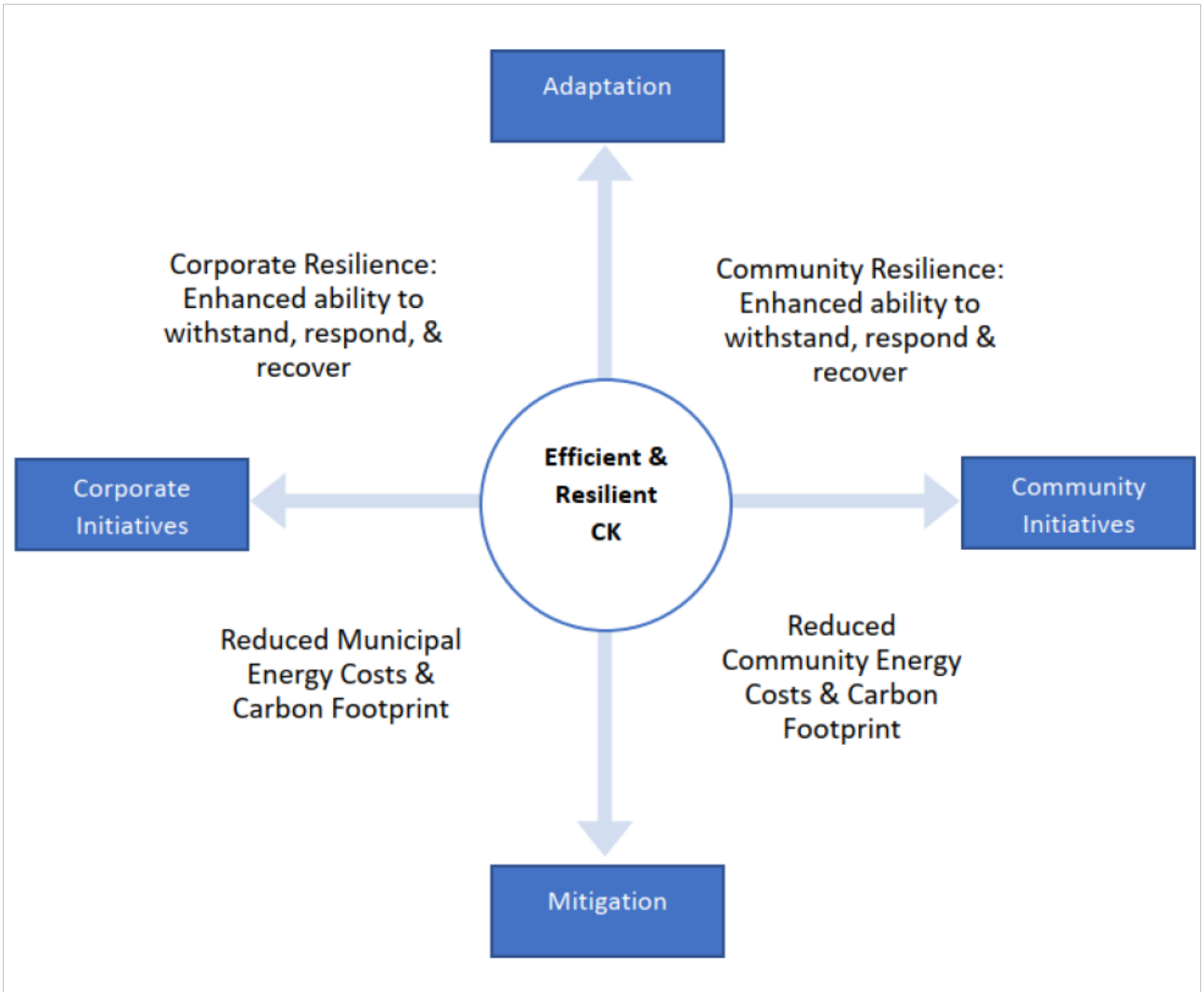
- Impacting asset lifecycle costs
- Affect the level of service that can be provided
- Increase demand for services
- Impact risks involved with delivering services

In the context of the asset management planning process, climate change can be both a demand and a risk. How climate change impacts on assets will vary depending on the location and the type of services provided, as well as the way in which CK responds and manages those impacts. There have been many weather and climate-related impacts on the CK community, including the following:

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

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

The Municipality of Chatham-Kent is currently in the process of completing its CCAP. The CCAP actions that will be presented in the CCAP report document will be used to inform the Climate section of the DAMPs in future updates. The CCAP actions will also be presented within the Departments that will be responsible for their implementation.


Adaptation
Corporate Resilience: Enhanced ability to withstand, respond, & recover
Community Resilience: Enhanced ability to withstand, respond & recover
Corporate Initiatives
Efficient & Resilient CK
Community Initiatives
Reduced Municipal Energy Costs & Carbon Footprint
Reduced Community Energy Costs & Carbon Footprint
Mitigation

Based on the Climate Atlas of Canada, historical climate patterns show that CK's climate has become hotter, wetter and wilder over the last 6 decades and this trend is expected to continue in the future.

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

Wetter: Average annual precipitation has increased by 49.8mm (1.96in) and is expected to increase between 78mm and 127mm (5in) by the 2080s.

Wilder: Rainstorms have increased in frequency and severity and seasonal precipitation patterns have changed and this is expected to continue.

"From 1983 to 2008, insurers spent on average $400 million yearly on catastrophic claims; since 2009, the yearly average has risen to almost $2 billion. These "once in 100 years" events are happening more frequently and are becoming more severe and more costly." (Statistics Canada, 2024)

Risks and opportunities identified to date are shown in **Table 7.0.1.**

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

Climate Impact (Assets level or Service level)	Projected Position (in 10 years)	Potential Impact on Assets & Services	Climate Management Plan
Annual Mean Temperature (degrees Celsius), increase	+2 degrees	Water quality concerns related to SWM facilities, due to warmer and stagnant water	None
Changes in carbon pricing	Increasing annually	Impacts the costs of transporting and purchasing materials related to maintenance and renewal projects	Increase in projects costs for renewal projects and maintenance activities.
Annual Very Hot Days, (+30 degrees Celsius - 14 days)	34 days	Water quality concerns related to SWM facilities, due to warmer and stagnant water	Monitor for impacts

Climate change has become a pressing issue, impacting various elements of the Road network. Additionally, the way in which Chatham-Kent constructs new assets should recognize that there is an opportunity to build resilience to climate change impacts. Building resilience can have the following benefits:

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

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

8.0 FINANCIAL SUMMARY

8.1 Financial Sustainability and Projections

This section outlines the financial requirements derived from the data in the preceding sections of this DAMP. The financial forecasts will be refined through ongoing discussions about the desired service levels and as asset management expertise within Chatham-Kent matures. It is crucial to align the budgeting process, the Long-Term Financial Plan, and the DAMPs to ensure that all the stormwater networks' needs are addressed while the municipality establishes a definitive financial strategy with measurable goals and targets.

Effective asset and financial management will enable I.E.S. to ensure its stormwater services are providing the appropriate level of service for the community to achieve its goals and objectives. Reporting to stakeholders on service and financial performance ensures the Municipality is transparently fulfilling its stewardship responsibilities. Long-term financial planning (LTFP) is critical to ensure the road networks lifecycle activities such as renewals, operations, maintenance, and acquisitions can happen at the optimal time.

8.1.1 Sustainability of service delivery

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

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

Asset Renewal Funding Ratio (ARFR) – 13%

The Asset Renewal Funding Ratio is an important indicator and illustrates that over the next 10 years Chatham-Kent has insufficient renewals funding to address its needs for the current planning period. As the DAMP evolves the planning horizon will extend from 10 years to 20 years and at that time there may be significant renewal activities identified. Each year the Stormwater DAMP will be updated to acknowledge the financial realities of the available budget and how those realities will impact the current level of service set by council.

Lower ARFR typically occurs due to:

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

The ARFR is considered to be a stewardship measure and is an indicator in determining if Chatham-Kent is achieving intergenerational equity. Ensuring sufficient financial resources are allocated to renewing assets is essential to achieve sustainability. Funding the ARFR over time so the

road network can meet its financial target is essential to ensure the service is considered sustainable.

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

- A reduction of the level of service and availability of assets;
- Increased complaints and reduced customer satisfaction;
- Increased reactive maintenance and renewal costs; and
- Damage to the Municipality's reputation and risk of fines or legal costs

Future stormwater DAMPs will align with the planned LTFP. This approach will enable staff to devise options and strategies for addressing future long-term renewal rates challenges. Chatham-Kent plans to reassess its renewal allocations after the full inventory is verified and consolidated.

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

The current **10-year Lifecycle Funding Ratio is 22%.**

This DAMP identifies the forecast operations, maintenance and renewal costs required to provide an agreed, and affordable 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 should be compared to the proposed budget over the first 10 years of the planning period to identify any funding shortfall.

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

Financial Gap Analysis

Budget Projections	Financial Measure
Planned Budget (10 Years)	**$159,592,000**
Forecast Costs (10 Years)	**$743,601,000**
Annual Average Shortfall	**$58,401,000**
Total Shortfall over 10-year planning horizon	**$584,010,000**

The annual 'gap' of **$58.2 Million** indicates that I.E.S. has **22%** of the forecasted costs required in the forecast budget to provide the services documented in this DAMP. The current gap indicates that the current level of service is unaffordable and must be addressed.

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

Options for managing the gap include:

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

These options and others will allow the I.E.S. to ensure that the road network gap would be managed appropriately to ensure the level of service outcomes the customers desire is achieved. Providing sustainable services from infrastructure requires the management of service levels, risks, forecast outlays and financing to eventually achieve a financial indicator of **90-110%** over the next 20 – 30 years**.**

8..2 Forecast Costs (outlays) for the Long-Term Financial Plan

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

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

The forecast costs needed to provide Stormwater services documented in this DAMP are accommodated in the proposed budget and available reserves, and hence there is no current gap for the 10-year planning period. Chatham-Kent will manage any 'gap' by developing this DAMP to provide guidance on future service levels and resources required to provide these services in consultation with the community.

As noted in **Section 3.7** (Forecast Costs), **Table 8.2.1**. reflects a backlog of historically deferred renewal and major maintenance work (particularly for renewals), based on the asset inventory, existing asset conditions and levels of service as discussed in prior sections of this plan. The backlog is currently reflected in the Renewal category, however, this will also be reviewed through further updates to this plan to determine the funding requirements between Critical Maintenance activities, and Renewal activities (including replacement of linear assets), to determine the optimum approach to maintain the levels of service as identified in **Section 4.**

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

Year	Acquisition	Operation	Maintenance	Renewal	Disposal
2025	**$1,000,000**	**$1,209,000**	**$3,062,000**	**$487,145,000**	--
2026	**$4,500,000**	**$1,079,000**	**$3,618,000**	**$11,101,000**	--
2027	**$4,000,000**	**$1,245,000**	**$3,582,000**	**$30,159,000**	--
2028	**$3,000,000**	**$1,365,000**	**$3,610,000**	**$17,651,000**	--
2029	**$3,000,000**	**$1,496,000**	**$3,636,000**	**$16,829,000**	--
2030	**$3,000,000**	**$1,629,000**	**$3,663,000**	**$20,614,000**	--
2031	**$3,000,000**	**$1,762,000**	**$3,690,000**	**$17,161,000**	--
2032	**$3,000,000**	**$1,897,000**	**$3,718,000**	**$9,305,000**	--
2033	**$3,000,000**	**$2,033,000**	**$3,746,000**	**$12,751,000**	--
2034	**$3,000,000**	**$2,169,000**	**$3,775,000**	**$40,000,000**	--

8.3 Funding Strategy

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

8.4 Valuation Forecasts

Asset values are forecast to increase as additional assets are added into service. As projections improve and can be validated with market pricing the net valuations will increase significantly. Additional assets will add to the operations and maintenance needs in the longer term. Additional assets will also require additional costs for future renewals. Any additional assets will also be added to future depreciation forecasts. Any disposal of assets would decrease the operations and maintenance needs in the longer term and would remove the high costs of renewal obligations. At this time, it is not possible to separate the disposal costs from the renewal or maintenance costs, however this will be improved for the next iteration of the plan.

8.4.1 Asset valuations

The best estimate of the value of assets included in this DAMP are shown below. The assets are valued utilizing Current Replacement Cost (Market Prices Index).

Table 8.4.2 Asset valuation table

Assets Valuation	Financial Value
Replacement Cost (Gross)	**$1,684,519,000**
Depreciable Amount	**$513,619,000**
Annual Depreciation Expense	**$32,210,000**

8.5 Key Assumptions Made in Financial Forecasts

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

Key assumptions made in this DAMP are:

- Assumptions were made regarding the existing and planned budget for maintenance, and renewal, using professional judgement.
- Omission of select disposal assets during this budget period; small projects will have a minor impact on disposal projections.
- Budgets have been allocated based on the best available data on assets.
- An annual inflationary amount has been applied to the operational and maintenance forecast to reflect the projections that costs will increase over time. Depending on the activity the forecasted inflation ranges from 0.5% - 4%.

8.6 Forecast Reliability and Confidence

The forecast costs, proposed budgets, and valuation projections in this DAMP 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 8.6.1.**

Table 8.6.1: Data Confidence Grading System

Confidence Grade	Description
A. Very High	Data based on sound records, procedures, investigations and analysis, were documented properly and agreed as the best method of assessment. The dataset is complete and estimated to be accurate ± 2%.
B. High	Data based on sound records, procedures, investigations and analysis, is 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. The dataset is complete and estimated to be accurate ± 10%.
C. Medium	Data based on sound records, procedures, investigations and analysis which is incomplete or unsupported, or extrapolated from a limited sample for which grade A or B data are available. Dataset is substantially complete but up to 50% is extrapolated data and accuracy estimated ± 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 ± 40%.
E. Very Low	None or very little data held.

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

Table 8.6.2: Data Confidence Assessment for Data used in DAMP

Data	Confidence Assessment	Comment

Demand drivers	**Medium**	Continued development of demand drivers will be required in future DAMP's
Growth projections	**High**	Growth projections are reliable. Growth will be reviewed annually to ensure staff is aware and ensure it can be properly resourced.
Acquisition forecast	**Medium**	There is sufficient data to reliably forecast the acquisitions with a medium level of confidence.
Operation forecast	**Medium**	The financial projections are satisfactory, but additional work is needed to provide essential metrics and technical levels of service.
Renewal forecast - Asset values	**Medium**	Master planning process is informing the needs of renewals. There is still more work required to have a full forecast of renewal needs,
Asset useful lives	**Medium**	Must align with TCA practices. Several assets still need additional evaluation to confirm that their useful lives are suitable for financial modeling.
Condition modeling	**Low**	Further information is required. Most assets are based on age.
Disposal forecast	**Low**	Work will be required to improve models and determine if any assets should be considered for disposal.

The estimated confidence level for and reliability of data used in this DAMP is considered to be **medium** confidence Level.

9.0 PLAN IMPROVEMENT AND MONITORING

Status of asset management Practices *

9.1. Accounting and financial data source

This DAMP utilizes accounting and financial data. The source of the data is Chatham Kents 2025 - 2027 Multi-Year Budget (Capital & Operating)

- Internal Market Price Valuations
- AM Software Multi-Year Forecasting Models
- Council Reports
- Financial Exports from various software's and systems.
- Procurement documents

9.2. Asset management data sources

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

- Asset Registers
- AM Data Collection Templates
- Insurance Data
- Tangible Capital Asset Data
- Building Condition Assessment Data
- Fleet Vehicle Data
- Inspection Logs and internal staff reports
- Subject matter expert knowledge and anecdotal Information

9.3. Continuous Improvement Plan

It is important that Chatham-Kent recognizes areas within the DAMP and within its planning processes that require future improvements to ensure effective asset management and informed decision making. The tasks listed below are essential to improving the DAMP and the Municipality's ability to make evidence based and informed decisions. These improvements span from improved lifecycle activities, improved financial planning, and plans to physically improve the assets.

The improvement plan, **Table 9.3.1**, highlights proposed improvement items that will require further discussion and analysis to determine feasibility, resource requirements and alignment to current workplans. Future iterations of this DAMP will provide updates on these improvement plans. The costs and resources to complete each of these tasks have not been included in the lifecycle models to date, and resource requirements would need to be reviewed for internal resource driven projects. The improvement plan generated from this DAMP is shown in **Table 9.3.1.**

Table 9.3.1: Continuous Improvement Plan

Task No.	Task	Responsibility	Resources Required	Timeline
1	Develop Quality and Maintenance procedures	**Eng, P.W.**	700 hours of consultant, other staffing within existing capacity	**2025-2027**
2	Investigate existing Stormwater Management facilities and review need for backup power	**Eng, P.W.**	500 hours of resources that could include consulting or staffing	**2026**
3	Confirm gaps in storm asset inventory and asset data such as useful lives	**Eng, P.W.**	Summer Students required	**2025-2027**
4	Develop and update 10-year capital plan	**Eng, P.W.**	Within existing capacity	**2025 - ongoing**

The improvements detailed above are intended to ensure that the Chatham-Kents stormwater assets are able to achieve a sustainable service level over the next **20 - 30 years**. Some of the initiatives are required to meet legislative requirements and other initiatives are to improve services or data quality. All initiatives are intended to find financial efficiencies or are required to improve planning and lifecycle activities such as operational and maintenance activities.

Certain improvements can be accomplished within staffing capacity and should be included as work plan for staff upon council's approval of the DAMP. Other initiatives necessitate resources beyond those allocated in the current budget. Should resources be inadequate for the identified items, the strategy is to postpone the initiative until it can be funded. Annually, the DAMP will be revised to align Continuous Improvement items with the opportunities and constraints of the budgetary provisions.

9.4 Monitoring and Review Procedures

This DAMP will be reviewed during the annual budget planning process and revised to show any material changes in service levels, risks, forecast costs and proposed budgets as a result of budget decisions. The DAMP 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 essential to ensure the Lont Term Financial Plan can be completed.

The DAMP has a maximum life of **1 year** and will be updated annually. This plan will receive a complete revision and update in **2027** to enable the Chatham Kent Stormwater assets to be prepared for the 2028 four-year budget process.

9.5 Performance Measures

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

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

10. Appendix

Appendix A - Provincially Mandated Levels of Service

As per O.Reg 588/17 there several mandatory levels of service required to be reported within the DAMP.

Provincially Mandated Level of Service

As per O.Reg 588/17 there are several mandatory levels of service required to be reported within the DAMP. Below is a table that outlines these.

Service attribute	Community levels of service (qualitative descriptions)	Technical levels of service (technical metrics)
Scope	Description, which may include maps, of the user groups or areas of the municipality that are protected from flooding, including the extent of the protection provided by the municipal stormwater management system.	1. Percentage of properties in municipality resilient to a 100-year storm. 2. Percentage of the municipal stormwater management system resilient to a 5-year storm.

Required Community L.O.S.

1. **Description of the user groups or areas of the municipality that are protected from flooding, including the extent of the protection provided by the municipal stormwater management system**

   Areas of the Municipality are protected from flooding through a variety of Municipal storm infrastructure. In urban areas, underground storm infrastructure (i.e. stormwater main) provides some degree of flooding protection for private properties and flooding of the road allowance. Stormwater facilities and structures, including wet ponds and storage facilities also allow the Municipality to lower the risk and impacts of flooding. In rural areas, roadside ditches manage road flooding and may offer some property flooding protection, and municipal drains provide formal drainage and flooding considerations. Maps in Section 10 shows the areas of the Municipality which have separated storm sewers and also shows the location of the stormwater ponds.

Required Technical L.O.S.

Service Attribute	Technical Level of Service	Measure
Scope	**% of properties in Chatham-Kent resilient to a 100-year storm?**	**73.5 %**
Scope	**% of municipal stormwater management system resilient to a 1 – 5-year storm**	**47.8 %**

Document Control

Rev No.	Date	Revision Details	Author	Reviewer	Approver
1	April 28, 2025	1st Plan	Sean Hilderley	Edward Soldo	Council

For more information, email
To view all the asset management plans, visit
www.chatham-kent.ca/assetplans