Dufferin County
2022 Asset Management Plan

May 2022
Revision 0

Executive Summary

Introduction

Dufferin County provides a range of services to its residents, businesses, and visitors, including Public Works, Facilities Management, Information Technology, Dufferin Oaks (Long Term Care), Paramedic Services, Housing Services, and Museum of Dufferin. To deliver these services, the County relies on $765.5 million of infrastructure assets, including roadways, bridges and structural culverts, stormwater infrastructure, information technology, facilities, and vehicles and equipment.

As infrastructure ages and demands increase, the County manages the challenge of ensuring the needs of the community are effectively met with the limited resources available. This Asset Management (AM) Plan describes the actions required to manage this portfolio of assets in a way that maintains current service levels, while managing risks and costs. The AM Plan directly supports three County Strategic Priorities: Sustainable Environment and Infrastructure, Good Governance, and Service Efficiency and Value.

Table ES-1 summarizes the value of the County's assets by Service Area. Public Works accounts for 77.6% of the County's overall asset portfolio.

Table ES-1 Inventory of the County's Assets

County Committee	Service Area	Asset Category	Replacement Value ($M)	% of Total
Infrastructure & Environment	**Public Works**	Roads, Structures, Other Roads-Related Assets, Stormwater, Fleet, Trails	$594.3	77.6%
	Facilities Management	Facilities, EV Charging Stations, Communication Towers	$55.5	7.2%
General Government Services	**Information Technology**	End User Devices, IT Infrastructure, Communication Systems	$1.6	0.2%
Health & Human Services	**Dufferin Oaks**	Facilities, Fleet, Equipment	$50.5	6.6%
	Paramedic Services	Facilities, Fleet, Equipment	$6.5	0.9%
	Housing Services	Facilities	$49.8	6.5%
Development and Tourism	**Museum of Dufferin**	Facilities, Equipment	$7.5	1.0%
		Total	**$765.6**	**100.0%**

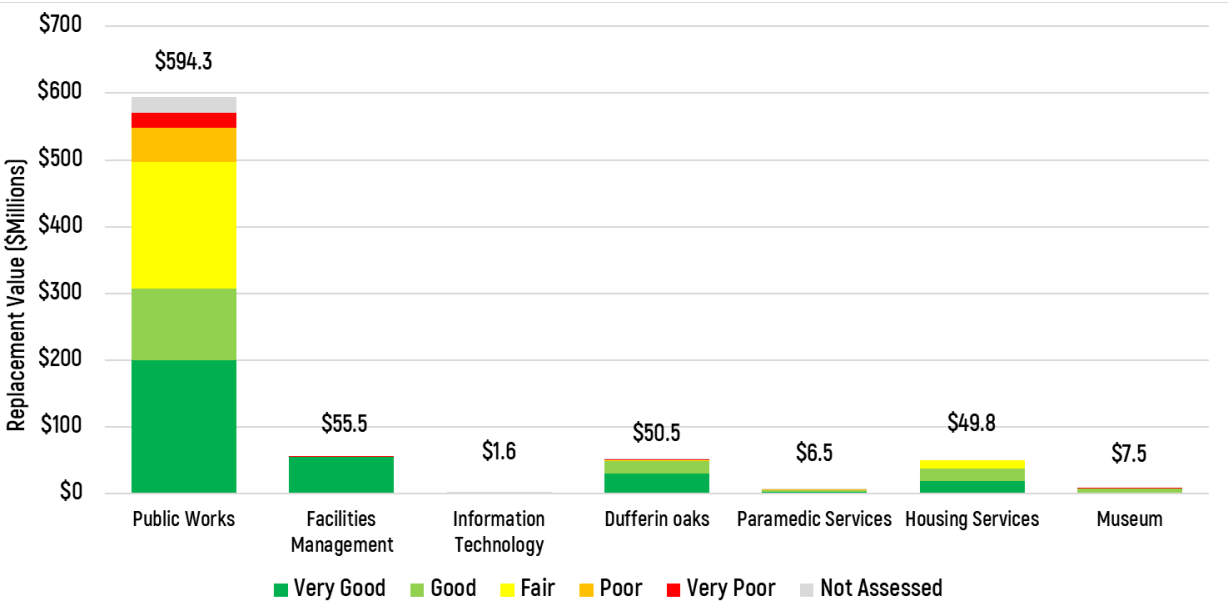
The 2022 AM Plan forecasts the expenditures required over the next 10-year period from 2022 to 2031. This document fulfils the AM Plan requirements defined by Ontario Regulation (O.Reg.) 588/17 Asset Management Planning for Municipal Infrastructure for years 2022 as well as 2024.

State of the Infrastructure

Figure ES-1 summarizes current (2021) condition of the County's assets across the Service Areas by replacement value. 89.5% of the County's assets are in Fair condition or better based on currently available data. The condition for facilities is assessed for the building as a whole, and therefore individual building assets different than the overall facility rating are not represented in this summary. 3.1% ($23.6M) of assets were not assessed for condition. These assets included those with undocumented installation dates,

assets routinely replaced through the Operating Budget, assets soon to be disposed and not replaced, and hand-me-down vehicles.

Figure ES-1: Condition Overview – All Services



Assets in Very Poor condition, mainly roads within Public Works, are due or overdue for rehabilitation or replacement and represent the County's Renewal Backlog. This condition information is used in the AM Plan's risk assessment to identify the high-risk assets that should be prioritized for renewal in the capital forecast.

Levels of Service

Levels of Service (LOS) and current performance on these various measures are tracked in each service area. Measures include those defined by O.Reg.588/17 for roads, structures, and stormwater infrastructure, as well as measures defined by the County to reflect specific priorities and concerns related to service delivery across Public Works, Facilities Management, Information Technology, Dufferin Oaks, Paramedic Services, Housing Services, and the Museum.

In general, the LOS measures can be categorized into three categories:

- **Capacity & Use LOS** demonstrate if services have enough capacity and are accessible to the customers. For example, Paramedic Services tracks average response time to ensure that the number of ambulances is sufficient to meet call volume demands.
- **Functional LOS** demonstrate if services meet the community's needs and meet their intended or required purpose. Typical functional LOS for the County include meeting legislative requirements and energy efficiency initiatives for facilities and fleet.
- **Quality and Reliability LOS** demonstrate if services are reliable and responsive to customers. These LOS measures focus on ensuring that assets are kept in a state of good repair and that maintenance work is being performed on time.

Risk Management Strategy

A key asset management principle is to meet expected service levels while managing risk and minimizing lifecycle costs. The County's risk strategy is a framework for quantifying the risk exposure of assets to

enable prioritization of activities across asset classes and service areas. The relative importance of the assets to support service delivery, referred to as asset criticality, is a key driver in selection of the most appropriate asset management strategy for each asset. Criticality is evaluated on an asset's impact upon failure to service delivery, health and safety, the environment, the County's financial position, and the County's reputation. Risk exposure is the multiplication of the criticality or consequence of failure by the probability of failure, which is the likelihood or chance that an asset failure may occur.

Based on a risk analysis of those assets with known condition, Figure ES-2 shows that 0.9% or $6.7 million of the County's assets are in the Very High-risk category related to provision of reliable services. These assets consist of two road segments scheduled for renewal over the next two years, a major culvert scheduled for renewal in 2024, and five ambulances and one emergency response unit scheduled for replacement over the next two years.

Figure ES-2: Reliability Risk Exposure of the County's Core Assets

PoF						
	5	$0.4	$0.1	$18.7	$4.1	$0.4
	4	$0.5	$5.6	$23.6	$18.3	$2.2
	3	$1.1	$0.9	$75.4	$90.6	$16.1
	2	$0.9	$3.1	$45.4	$86.8	$5.1
	1	$1.2	$10.0	$171.3	$72.1	$46.4
		1	2	3	4	5
		CoF				

Risk Category	Replacement Value ($M)	%
Very High	$6.7	0.9%
High	$53.1	6.9%
Medium	$119.4	15.6%
Low	$260.9	34.1%
Very Low	$260.2	34.0%
Not assessed	$65.4	8.5%
Total	$765.6	100%

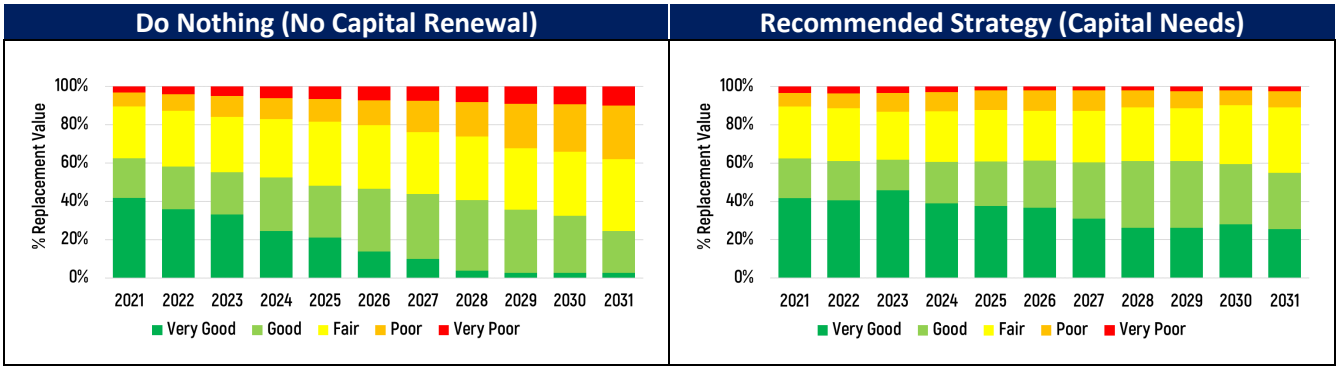
Lifecycle Management Strategy

Lifecycle management strategies are the planned lifecycle-based actions that the County needs to undertake to manage its service levels and the risk of asset failure. The County performs hundreds of inspections, maintenance actions, and repair responses to ensure that infrastructure performs reliably. These activities are funded through the County's Operating Budget.

Lifecycle activities also include rehabilitation and replacement activities funded through the Capital Budget, such as the renewal activities mentioned in the risk strategy that mitigate risks to acceptable levels. Rehabilitation strategies also extend asset service lives and lower overall lifecycle costs. In addition to meeting reliability service levels through renewals, the County also plans for expansion and upgrade strategies to support capacity and functional service levels through the Capital Budget.

The County's total forecasted capital needs (growth, upgrade, and renewal) for maintaining its service levels is estimated at an average of $12.97 million per year for the period 2022-2031. The recommended strategy supports the County's ability to achieve its service levels while balancing risk and minimizing lifecycle costs. If the County does not invest in renewing its infrastructure, there is a significant deterioration in asset condition over time. The recommended strategy of capital needs therefore ensures that assets are maintained and renewed in a state of good repair, as shown in Figure ES-3.

Figure ES-3: Asset Condition Forecast Comparison – Do Nothing versus Recommended Strategy

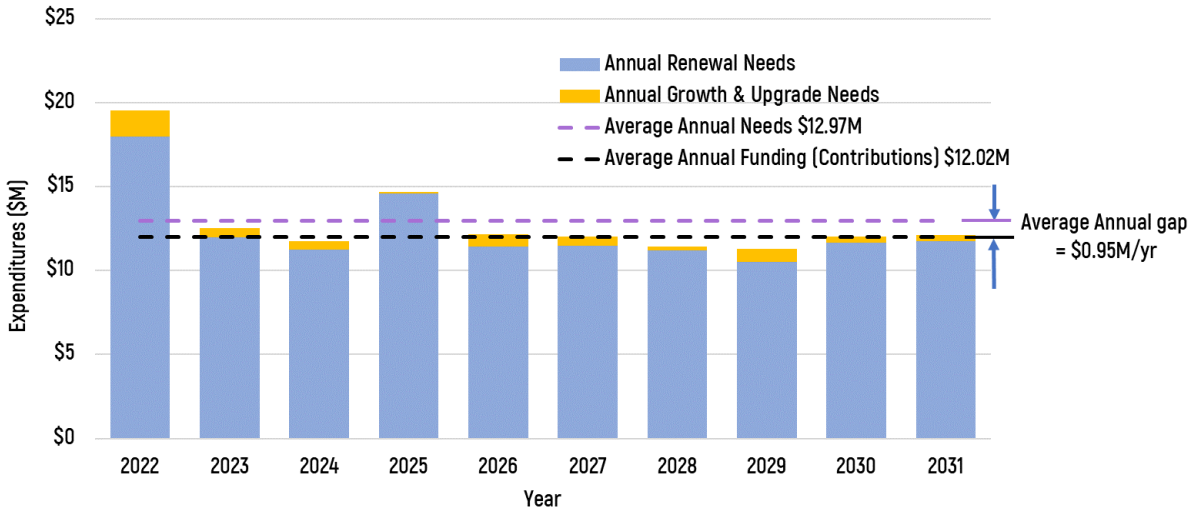


Financial Strategy

The financial strategy is informed by the preceding sections of the Asset Management Plan: the state or condition of the assets, the current levels of service, the risks to service delivery, and the lifecycle activities needed to reduce the risks to acceptable levels. The Financial strategy considers how the County will fund the recommended asset management actions.

The County's main sources of revenue include property tax, debt, federal gas tax, grants, user fees, asset sales and rent. Over the next ten years, the average annual funding contributions for the County's current Capital Plan is estimated at $12.02 million per year. As shown in Figure ES-4, when compared to the forecasted average annual need of $12.97 million per year, the County has an average annual funding gap of $0.95 million per year over the next ten years. This estimate does not consider additional projects that are currently in planning or development stages, such as facility security and space upgrades as well as electrification of fleet.

Figure ES-4: Estimated Funding Gap



The estimated capital forecast and funding shortfall do not consider rising costs due to the current economic environment. Recent tender prices suggest that road projects, for example, may cost 35% more than originally planned. In this scenario, the estimated funding shortfall would be expected to increase to an annual average of $3.1 million per year over the next 10 years.

The following strategies are possible options to close the funding gap for the Capital Budget:

- Draw down on reserves
- Increase other available funding sources such as Property Tax, debt, or leveraging third party grants
- Reduce renewal needs by deferring capital projects for lower risk assets
- Finding cost efficiencies from other projects
- Developing other rehabilitation strategies to further extend asset life and defer more expensive renewals

Monitoring and Improvement

Specific improvements recommended for the next AM Plan include:

- Most installation year data is tracked in GIS; continue to improve GIS datasets and improve installation year data for critical assets and infrastructure that cannot be tied to the forecast of other assets
- Include natural assets and the waste services building in the next AM Plan.
- For facility assets, maintain an inventory with up-to-date condition data based on the building condition assessments, ideally to Uniformat II Standard
- Gain further understanding of resiliency of properties and the stormwater system to 100-year and 5-year storms, respectively, for reporting on O.Reg. 588/17 stormwater technical measures and in support of the County's Climate Action Plan
- Improve forecasted growth and upgrade needs by incorporating recommendations from the Transportation Master Plan currently in development
- Update Operating budget forecast as the impacts of on-going pressures, such as COVID 19 and increasing costs are better understood
- Incorporate costs of upgrade projects and Climate Action Plan recommendations into the Capital Plan forecast once their scope and costs are determined

Development of AM Plans is an iterative process that includes improving data, processes, systems, staff skills, and organizational culture over time, and the County will continue to work on improvement initiatives to its asset management practices to best realize value from its infrastructure.

Table of contents

List of Tables

List of Figures

1 Introduction

Dufferin County provides a range of services to its residents, businesses, and visitors, including Tourism, Public Works, facilities management, Information Technology, Dufferin Oaks (Long Term Care), Paramedic Services, Housing Services, and Museum of Dufferin. To deliver these services, the County relies on $765.5 million of infrastructure assets, including roadways, bridges and structural culverts, stormwater infrastructure, information technology, facilities, and vehicles and equipment.

The AM Plan directly supports three County Strategic Priorities:

-Sustainable Environment and Infrastructure

-Good Governance

-Service Efficiency and Value

As infrastructure ages and demands increase, the County manages the challenge of ensuring the needs of the community are effectively met with the limited resources available. This Asset Management Plan (AM Plan) seeks to address that concern by providing a framework for prioritizing Asset Management (AM) efforts and providing direction for effective management of the County's infrastructure to best achieve established goals and objectives. As an integrated Plan, it considers the lifecycles and needs of all infrastructure assets and classes within the AM Plan's scope, providing a sustainable and holistic view of the asset portfolios.

1.1 Purpose of the Plan

The 2022 AM Plan describes the actions required to manage the County's portfolio of assets in a way that supports established service levels, while managing risks and costs. It establishes transparency and prudent financial management of limited resources. The 2022 AM Plan focuses on the 10-year period from 2022 to 2031 and provides a framework for continuously improving the County's AM practices.

1.2 Alignment with Regulatory Requirements

This AM Plan fulfils the requirements of the Ontario Regulation (O.Reg.) 588/17 Asset Management Planning for Municipal Infrastructure for AM Plans to 2022 as well as most of the requirements for 2024. Specifically, this AM Plan establishes current Levels of Service (LOS) and recommends actions and financial strategies to maintain current service levels within a manageable level of risk over the next 10 years.

O.Reg. 588/17 requires municipalities to report current LOS performance of core assets (2022) and non-core assets (2024), and the costs associated with sustaining current service levels. The regulation defines core assets as roads and bridges, as well as water, wastewater, and stormwater assets. Of these, the County's inventory consists of roads, bridges, and stormwater infrastructure. Non-core assets include all other assets owned by the County. To meet year 2024 requirements, all non-core assets are also included in this AM Plan, except for green infrastructure assets, which will be included in the next update to this AM Plan. For details on how this AM Plan complies with content requirements defined by O.Reg. 588/17, refer to Section 7.2.

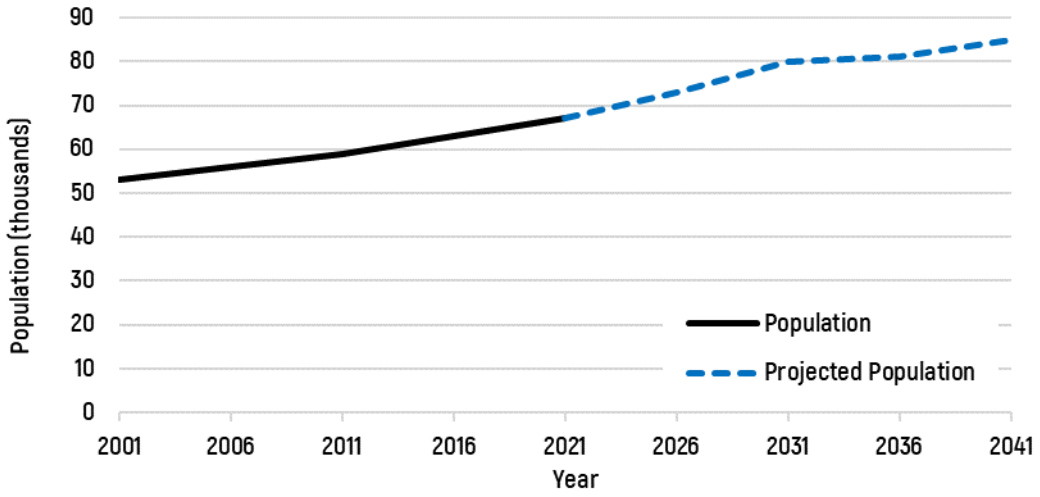
This AM Plan meets O.Reg. 588/17 Core asset (2022) requirements, and additionally meets year 2024 requirements for the non-Core assets included in this AM Plan.

In accordance with the requirements of O.Reg. 588/17, this AM Plan is posted on the County's website. Going forward, O.Reg. 588/17 requires that progress implementing the AM Plan be reported to Council by July 1 each year, and that the AM Plan be updated every 5 years or more frequently. Background information and reports for the State of Infrastructure section may be provided by the County upon request.

1.3 Growth at the County

The County monitors trends in its population to ensure that its impacts on service levels are well understood and strategies are developed to address additional demands due to growth and changes in demographics. In accordance with the 2017 Growth Plan for the Greater Golden Horseshoe, the County's population is expected to be 80,000 persons in 2031, with employment at 29,000 jobs, as shown in Figure 1-1.

Figure 1-1: County Population History and Forecast to 2031



1.4 Relationship with Other Municipal Documents

AM Planning is a key tactical (medium term) planning activity that relies on input from strategic planning activities and informs shorter-term decision making. The AM Plan provides a framework to validate the County's budgeting processes and assists in prioritizing work activities, including capital projects, based on risk while supporting the County's strategic priorities.

The AM Plan is intended to be read with other County planning documents, including the following:

- County Official Plan
- 2021-2022 Strategic Action Plan
- 2020 Road Needs Study
- 2020 Bridge and Culvert Inspections – Final Action Report
- Dufferin Climate Action Plan
- Operating and Capital Budgets

1.5 Scope

This AM Plan includes all assets owned by the County for which asset data was currently available, and provides recommendations for the period 2022-2031, inclusive. Where data gaps were encountered, recommendations for closing data gaps are provided. This will enable the County to continually improve its AM Planning capabilities.

1.6 Asset Hierarchy and Data Sources

This AM Plan discusses the County's assets by the service areas the assets support. Table 1-1 summarizes the service areas and their link to their associated assets. It also summarizes the main data sources used for the master inventory, replacement cost, and condition data.

Table 1-1: Service Area and Asset Hierarchy

Service Area	Asset Type	Inventory	Replacement Cost	Condition
Infrastructure & Environment				
Public Works	Roads	GIS	Unit Construction Costs	PCI based on Road Needs Study
	Structures	GIS	Adjusted OSIM Report values	BCI based on OSIM Report
	Other Transportation Assets			
	-Signals	MS Excel	Unit Costs	Age-based
	-Entrances, Guiderails, Flashing Beacons	GIS	Unit Costs	Age-based
	-Signs	GIS	Unit Costs	GIS condition attribute
	Stormwater Infrastructure			
	-Storm sewers, Catchbasins, Culverts	GIS	Unit Costs	Not available
	Fleet			
	-Heavy and Light Vehicles & Equipment	GIS	Unit Costs	Age-based
	Trails	GIS	-	Not available
Facilities Management	Facilities	Capital Plan	Insurance valuation	Facility Condition Index
	EV Charging Stations	MS Excel	Unit Costs	Age-based
	Communication Towers	MS Excel	Unit Costs	Age-based
General Government Services				
IT	End User Devices	MS Excel	Unit Costs	Age-based
	IT Infrastructure	MS Excel	Unit Costs	Age-based
	Communication Systems	MS Excel	Unit Costs	Age-based
Health & Human Services				
Dufferin Oaks	Facilities	Capital Plan	Insurance valuation	Facility Condition Index
	Fleet	MS Excel	Unit Costs	Age-based
	Equipment	MS Excel	Unit Costs	Age-based
Paramedic Services	Facilities	Capital Plan	Insurance valuation	Facility Condition Index
	Fleet	MS Excel	Unit Costs	Age-based
	Equipment	MS Excel	Unit Costs	Age-based
Housing Services	Facilities	Capital Plan	Insurance valuation	Facility Condition Index
Development and Tourism				
Museum	Facilities	Capital Plan	Insurance valuation	Facility Condition Index

	Equipment	MS Excel	Unit Costs	Age-based

1.7 Assets Not Included

This AM Plan does not include green infrastructure (natural) assets. The County plans on including these assets in the next update to this AM Plan as the data and understanding of costs for these assets is improved.

1.8 Organization of the Document

The AM Plan is organized to meet the requirements of Ontario Regulation 588/17 (Current Levels of Service) and the Province's "Guide for Municipal Asset Management Plans". The contents of this AM Plan follow the recommended elements of a detailed AM Plan:

- **Executive Summary:**
  Summarizes key findings and recommendations of the AM Plan.
- **Chapter 1 – Introduction:**
  Outlines scope, background information, relationship to other Municipal documents and plans, and applicable legislation
- **Chapter 2 – State of the Infrastructure:**
  Summarizes the inventory, condition and remaining life of the assets in the inventory by service and asset type
- **Chapter 3 – Levels of Service:**
  Defines levels of service through performance indicators and targets, and outlines current performance
- **Chapter 4 – Risk Management Strategy:**
  Defines the framework for identifying critical assets and quantifying risk to enable prioritization of lifecycle activities
- **Chapter 5 – Lifecycle Management Strategy:**
  Summarizes the asset management strategies (i.e., planned actions) that will enable the assets to provide the required levels of service in a sustainable way, while managing risk, at the lowest lifecycle cost
- **Chapter 6 – Expenditure Forecasts and Financing Plan:**
  Summarizes the financial planning and budgeting associated with asset management planning
- **Chapter 7 – AM Plan Monitoring and Improvement:**
  Summarizes the next steps including monitoring of AM Plan implementation progress, and improving future iterations of the AM Plan.

2 State of the Infrastructure

2.1 Overview

Dufferin County's range of services depend on a wide portfolio of infrastructure assets managed by the County. Understanding the assets owned by the County is the starting point to developing a plan to best manage them. The replacement value represents the expected cost to replace an asset to the same functional standard with a new version based on current market conditions and construction standards. Replacement value estimates assume that replacements are conducted as part of planned and bundled capital projects where applicable, rather than as individual unplanned replacements, which would typically be more costly. Table 2-1 shows a breakdown of the inventory by service area

Table 2-1: Replacement Value of County's Assets ($M)

County Committee	Service Area	Replacement Value
Infrastructure & Environment	**Public Works**	$594.3
	Facilities Management	$55.5
General Government Services	**IT**	$1.6
Health & Human Services	**Dufferin oaks**	$50.5
	Paramedic Services	$6.5
	Housing Services	$49.8
Development and Tourism	**Museum**	$7.5
		$765.6

The County's portfolio of assets has an estimated replacement value of $765.6 million (2022$). Public Works assets account for 77.6% of the County's overall asset

Understanding an asset's remaining life and condition informs the County on the timing for required lifecycle activities to maintain service levels. The remaining life is determined by estimating a useful life for each asset and comparing this value to its age. Observed condition provides more confidence in the state of the assets than the age-based analysis and is used in this AM Plan where condition data is available. The condition ratings are defined in Table 2-2 and are aligned with the International Infrastructure Management Manual's (IIMM) 5-point condition scale.

Table 2-2: Condition Grading Criteria

Description	Condition Criteria
Very Good	Asset is physically sound and is performing its function as originally intended. Required maintenance costs are well within standards & norms. Typically, asset is new or recently rehabilitated.
Good	Asset is physically sound and is performing its function as originally intended. Required maintenance costs are within acceptable standards and norms but are increasing. Typically, asset has been used for some time but is within mid-stage of its expected life.
Fair	Asset is showing signs of deterioration and is performing at a lower level than originally intended. Some components of the asset are becoming physically deficient. Required maintenance costs exceed acceptable standards and norms and are increasing. Typically, asset has been used for a long time and is within the later stage of its expected life.
Poor	Asset is showing significant signs of deterioration and is performing to a much lower level than originally intended. A major portion of the asset is physically deficient. Required maintenance costs significantly exceed acceptable standards and norms. Typically, asset is approaching the end of its expected life.

Description	Condition Criteria
Very Poor	Asset is physically unsound and/or not performing as originally intended. Asset has higher probability of failure or failure is imminent. Maintenance costs are unacceptable, and rehabilitation is not cost effective. Replacement / major refurbishment is required.

For this AM plan, condition assessment data was incorporated where available, specifically for:

- Roads (2020 Road Needs Study)
- Bridges and structural culverts (2020 Bridge & Culvert Inspections)
- Buildings (2018 Building Condition Assessment)

For the remaining assets, condition was estimated based on age and estimated service life.

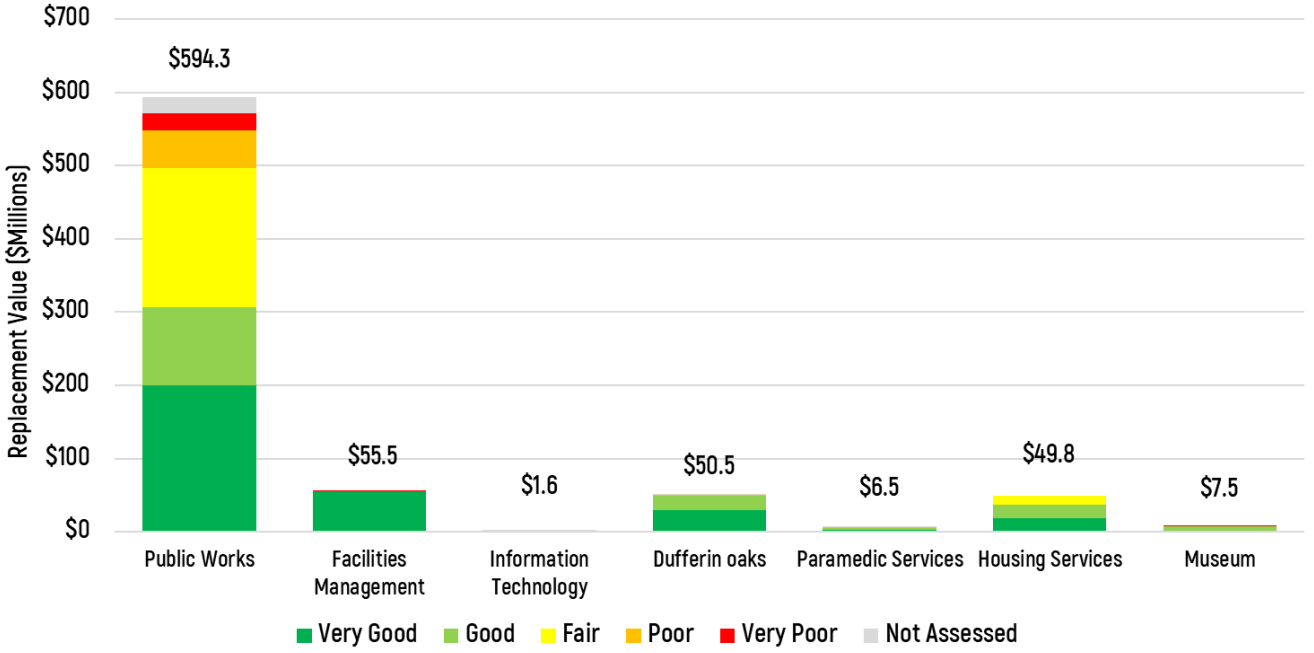
Table 2-3 shows how the five-point scores from Very Good to Very Poor were determined from the available asset data, including remaining useful life and the other condition scoring systems, such as Pavement Condition Index (PCI) and Bridge Condition Index (BCI). Condition scores were adjusted based on staff input, as required. Adjustments were made primarily to reflect renewals and repairs completed since the time of the condition assessments.

Table 2-3: Conversion Table for Condition Grades

Condition Grade	% Remaining Useful Life (all asset types)	Pavement Condition Index (roads)	Bridge Condition Index (bridges & culverts)	Facility Condition Index (facilities)
Very Good	>75 – 100%	85.0 – 100.0	90 – 100	0% to 5%
Good	>50 – 75%	70.0 – 85.0	70 – 89.9	>5 to 10%
Fair	>25 – 50%	55.0 – 69.9	60 – 69.9	>10% to 30%
Poor	>0 – 25%	40.0 – 54.9	40 – 59.9	>30% to 60%
Very Poor	<= 0%	< 40	< 40	> 60%

The condition distribution of the County's assets is shown in Figure 2-1. 89.5% of the County's assets are estimated to be in Fair condition or better and 11.5% of assets are estimated in Poor or Very Poor condition. Assets in Very Poor condition are overdue for rehabilitation or replacement and represent the County's Renewal Backlog. The condition for facilities is assessed for the condition of the building as a whole, and therefore individual building elements that are in Poor or Very Poor condition do not show up in this assessment. Refer to Section 2.3.2 for a more detailed discussion. Due to a range of asset portfolio replacement values in Figure 2-1, condition profiles are not easily visible for some services. Sections 2.2 to 2.8 provide more detail on asset condition by service.

Figure 2-1: Condition Overview by Services



3.1% ($23.6M) of assets were not assessed for condition due to missing installation dates, assets routinely replaced under the Operating Budget (such as paramedic battery chargers), assets to be disposed, and hand-me-down vehicles.

2.2 Public Works

Public Works assets include roads, structures, other transportation-related assets, stormwater infrastructure, and fleet. By replacement value, roads comprise the largest proportion of assets that support this service, accounting for $415.4M (69.9%) of the $594.3M estimated value of Public Works assets. Table 2-4 shows a detailed breakdown of the quantity and estimated replacement value of each asset type within the County's Public Works asset portfolio.

Table 2-4: Inventory of Public Work Assets

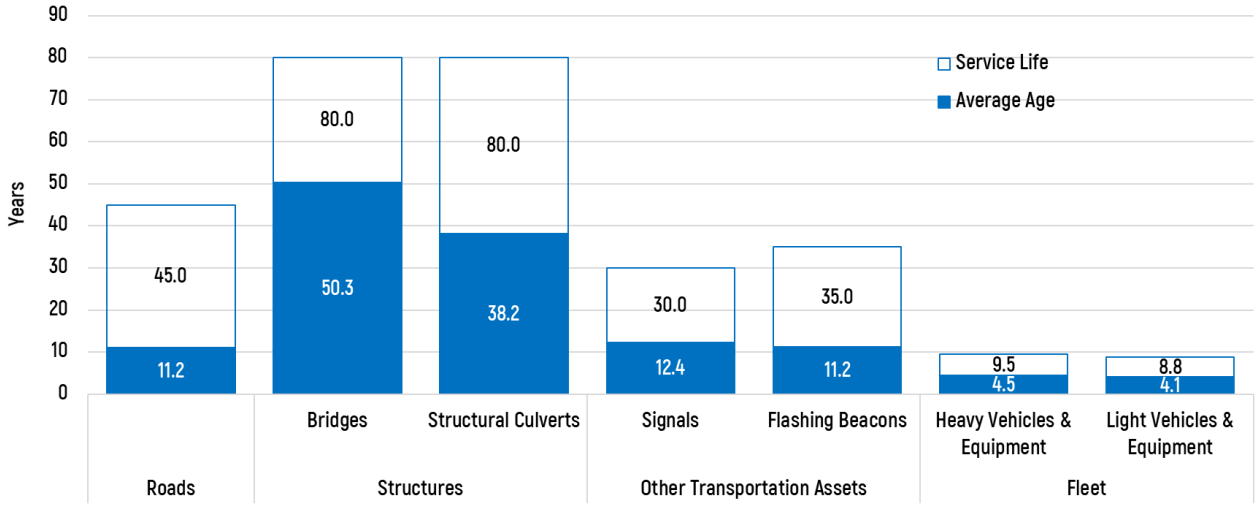
Asset Class	Asset Type	Quantity	Unit	Replacement Value ($M)
Roads		315.9	centre-line km	$415,388,672
Structures	Bridges	39	assets	$73,319,816
	Structural Culverts	71	assets	$64,471,566
Other Transportation Assets	Signals	11	assets	$3,300,000
	Entrances	2,636	assets	$10,056,265
	Guiderails	27.9	km	$5,588,345
	Flashing Beacons	11	assets	$110,000
	Signs	3,371	assets	$519,450
Stormwater Infrastructure	Storm Sewers	3.7	km	$2,000,632
	Ditch Inlet Catchbasins	45	assets	$240,660
	Catchbasins	109	assets	$437,199
	Cross culverts	12.5	km	$10,198,825
	Rail trail culverts	0.9	km	$807,831
Fleet	Heavy Vehicles & Equipment	21	assets	$6,150,000
	Light Vehicles & Equipment	59	assets	$1,674,000
Trails		101.7	km	Not assessed
Total				$594,263,260

2.2.1 Asset Age

The average age and estimated service life of the County's Public Work assets, weighted by replacement value, is summarized in

Figure 2-2. Only those assets with installation date information are shown. On average, the County's assets are in the first half of their service lives except for bridges and heavy vehicles & equipment. Road age is estimated based on the last rehabilitation year, and therefore the 11.2 average age represents the average surface age rather than the full age of the road base.

Figure 2-2: Average Age and Estimated Service Life – Public Works



2.2.2 Asset Condition

A 2020 Road Needs Study was conducted to identify deficiencies in the network and prepare rehabilitation strategies to maintain the road network. An overall Pavement Condition Index (PCI) is calculated for each road segment to represent the road condition based on a survey of the number and types of distresses on the pavement. Descriptions for each of the PCI rating categories is provided in Table 2-5.

Table 2-5: Condition Rating System for Roads

Condition Grade	PCI	Road Condition Description
Very Good	85.0 – 100.0	The road segment is relatively new, or recently reconstructed. There are no visible cracks and no structural issues. The ride is smooth.
Good	70.0 – 85.0	The road segment is starting to exhibit few, if any, signs of surface deterioration, random cracks, and rutting. The ride is relatively smooth.
Fair	55.0 – 69.9	The road segment is exhibiting signs of surface deterioration, random cracks, rutting, and some patching of surface defects. The ride is becoming rough.
Poor	40.0 – 54.9	The road segment shows signs of deterioration, cracks, rutting, and patching of surface defects that occurs over 50 percent of the surface. Some structural issues are starting to show. The ride is uncomfortable.
Very Poor	< 40	The road segment is reaching the end of its useful life. There are significant structural issues with large visible cracks, rutting and patching surface defects that occurs over 75 percent of the surface. The road is difficult to drive at the posted speed limit.

For Structures, the County retains a consultant to complete inspections in compliance with current legislation. The most recent inspections for the County were completed in 2020. A Bridge Condition Index (BCI) is calculated for each bridge and structural culvert based on an assessment of the condition of individual elements. Similar to PCI, BCI ranges from a rating of 100 to 0, with 100 representing a new structure with no deficiencies immediately following construction.

Table 2-6: Condition Rating System for Structures

Condition Grade	BCI	Bridge / Culvert Condition Description
Very Good	90 – 100	Structure condition is as constructed, with no visible deterioration
Good	70 – 89.9	Minor defects are visible, but these do not affect overall performance and would not normally trigger remedial action. E.g. Light corrosion, light scaling, narrow cracks in concrete.
Fair	60 – 69.9	Medium defects are visible and may trigger preventive maintenance and remedial action. E.g. Medium corrosion with up to 5% section loss, medium cracks in concrete.
Poor	40 – 59.9	Medium defects are visible, requiring. E.g. Medium corrosion with up to 10% section loss, medium cracks in concrete.
Very Poor	< 40	Severe defects are visible, affecting the overall performance of the structure. E.g. severe corrosion with over 10% section loss, spalling, delamination.

All other Public Works asset condition is estimated based on age and estimated service life. The condition distribution of the County's Public Works non-fleet assets is shown in Figure 2-3. The figure shows the relative replacement value, by asset category, and the proportion of assets by condition grade. Roads are generally in good condition, with 86.9% of road assets in fair or better condition. The County does not have any bridges or structural culverts in Very Poor condition. Closed bridges were not included in the OSIM inspections, and for stormwater assets and some of the peripheral transportation assets such as guiderails, signs, and entrances, condition is not estimated due to missing installation year data.

Figure 2-3: Condition Overview – Public Works (non-Fleet)

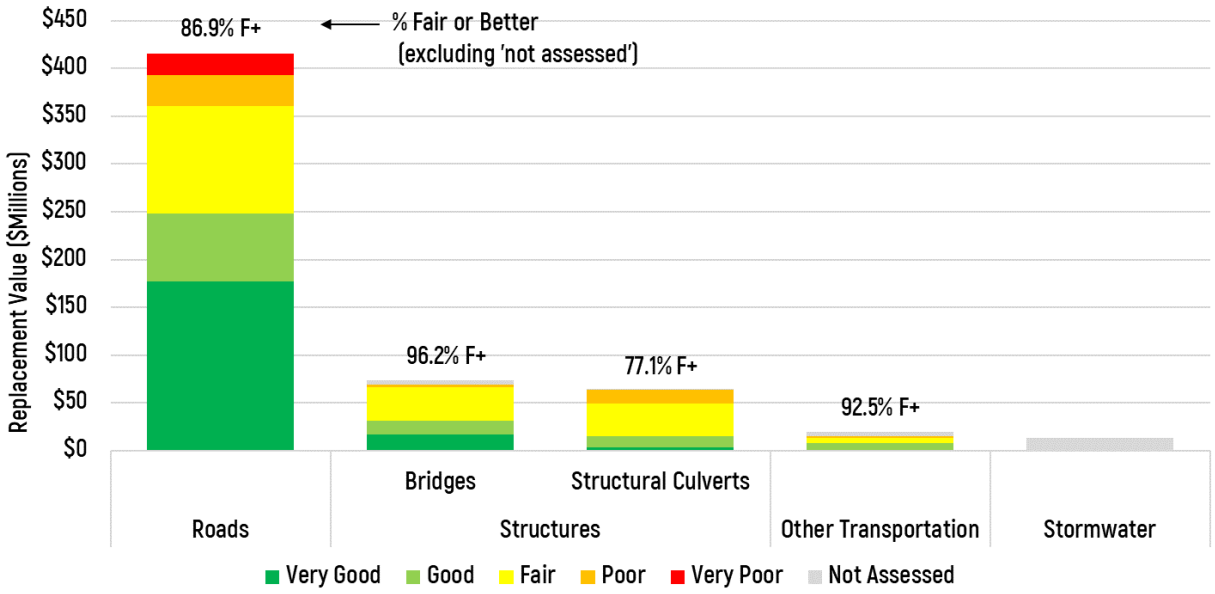
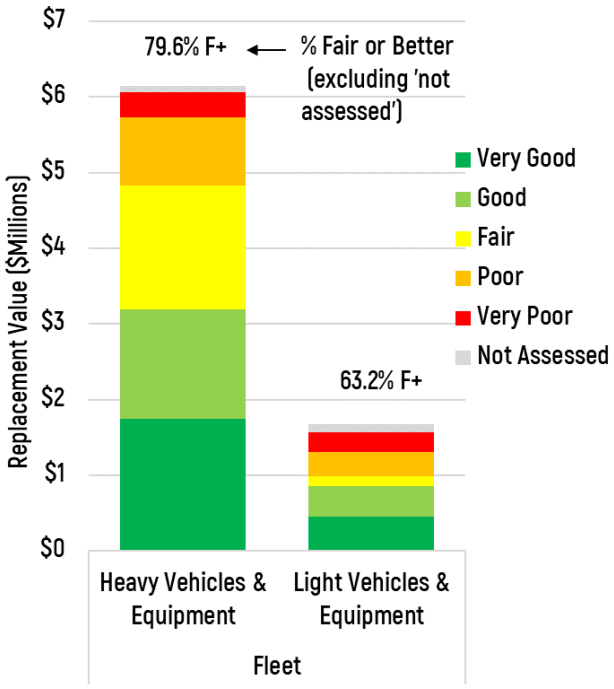


Figure 2-3 summarizes the condition distribution of the County's Public Works (fleet) assets, separately for Heavy and Light Vehicles & Equipment. Heavy Vehicles & Equipment consist of more critical and higher value fleet assets such as snow plows, one ton stake truck, grader, excavator, backhoe, and front end loaders. The criticality of assets is discussed in more detail in Section 4. Light Vehicles & Equipment consist of pickups, vans, and equipment such as smaller-scale tractors, trailers, lifts, and attachments. Hand-me-down vehicles have an undefined service life and are not assessed for condition.

Figure 2-4: Condition Overview – Public Works (Fleet)



2.3 Facilities Management

Facilities Management assets include three facilities (Courthouse, Edelbrock Centre, and Primrose Operations Centre), electric vehicle (EV) charging stations, and three communication towers with associated equipment and small buildings. The three facilities account for $54.6 (98.5%) of the $55.5M estimated value of Facilities Management assets. One of the communication towers is owned by Rogers, but the County owns the associated equipment and building. Table 2-7 provides a breakdown of the quantity and estimated replacement value of each asset type within the County's Facilities Management asset portfolio.

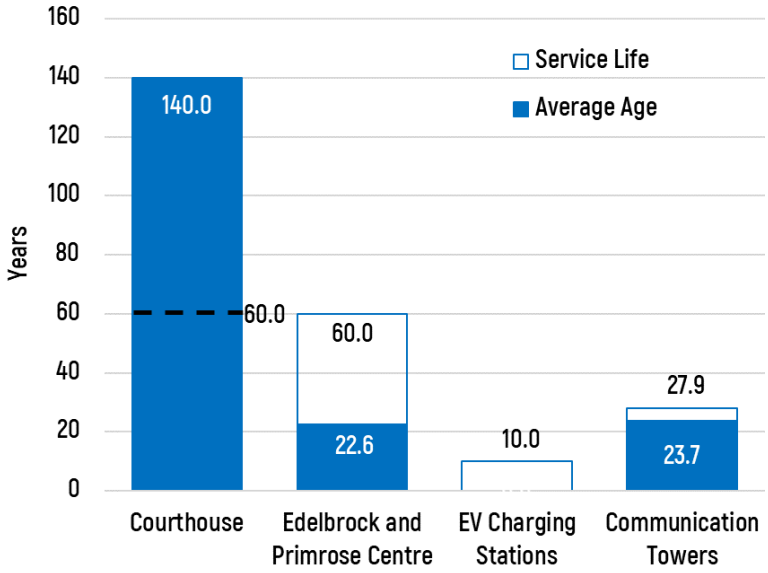
Table 2-7: Inventory of Facilities Management Assets

Asset Class	Quantity	Unit	Replacement Value
Facilities (Courthouse, Edelbrock, Primrose)	**3**	**facilities**	**$54,627,500**
EV Charging Stations	**24**	**assets**	**$420,000**
Communication Towers	**3**	**towers**	**$430,000**
Total			**$55,477,500**

2.3.1 Asset Age

The average age and estimated service life of the County's Facilities Management assets, weighted by replacement value, is summarized in Figure 2-5. The average age of the three facilities is past the expected life due to the Courthouse, which was originally constructed in the 1880s. The facility has undergone expansions in 1973, 1988, and 2011. The communication towers are, on average, close to expected life due to the Whitfield Tower which is assumed to have been installed in the 1990s.The County's electric vehicle (EV) charging stations are new as they were installed in 2021.

Figure 2-5: Average Age and Estimated Service Life – Facilities Management



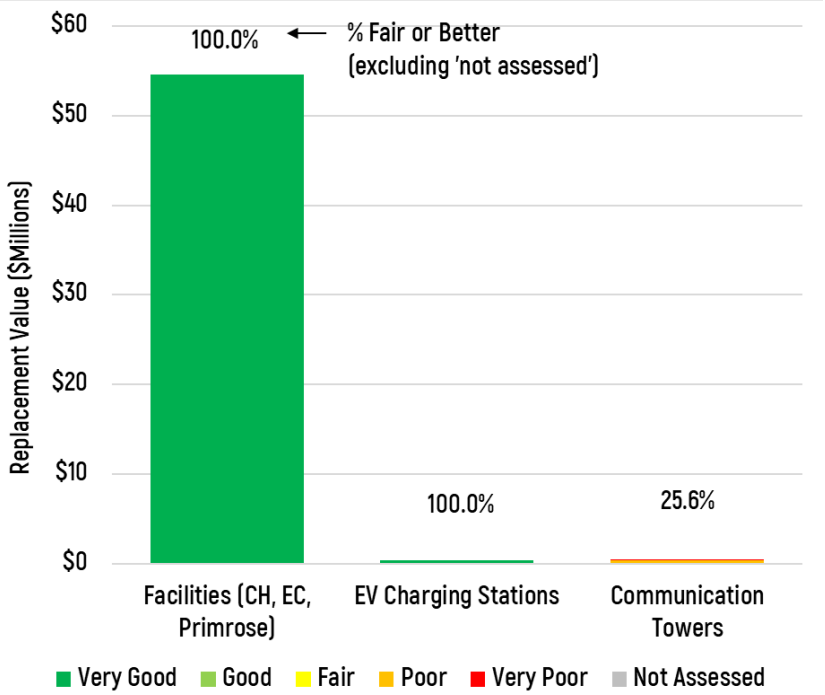
2.3.2 Asset Condition

The County completed building condition assessments on all its facilities, including the Courthouse, Edelbrock Centre, and Primrose Operations Centre in 2018. The condition assessments indicated the condition by building element, organized per Uniformat II standard. The condition rating was supplemented with a 25-year forecast of recommended repairs, rehabilitations, and replacements. The County has completed work since the assessments and updated the forecast based on more recent staff information where applicable. Over the years, the condition data is not maintained at the same Uniformat II standard detail provided in the condition assessment, and therefore, each building is assessed an overall condition rating based on Facility Condition Index (FCI), which estimates condition by the extent of work required on the facility over the current and following two years, and is calculated as:

$$\textbf{Facility Condition Index} = \frac{\textbf{Current Need + (Planning Years 1 \& 2 Needs)}}{\textbf{Current Replacement Cost}}$$

The FCI, therefore, provides an overall facility condition rating but is not a detailed element by element condition analysis, as individual building components may still be in any of the five condition states from Very Good to Very Poor. The FCI also focuses on the building itself and does not consider site works such as landscaping needs. The condition distribution of the County's Facilities Management assets is shown in Figure 2-6. The three facilities are in overall Very Good condition based on FCI, though certain elements may be in Poor or Very Poor condition. EV charging station and communication tower asset condition is estimated based on age and estimated service life. As shown with the age assessment for the communication tower assets, a significant portion of tower infrastructure is in Poor or Very Poor condition (74.4% by asset value).

Figure 2-6: Condition Overview – Facilities Management



2.4 Information Technology

Information Technology (IT) assets include end user devices; IT infrastructure such as servers, switches, and access points; and communication systems such as wireless radios and voice gateways. Table 2-8 shows a detailed breakdown of the County's $1.6M IT asset portfolio.

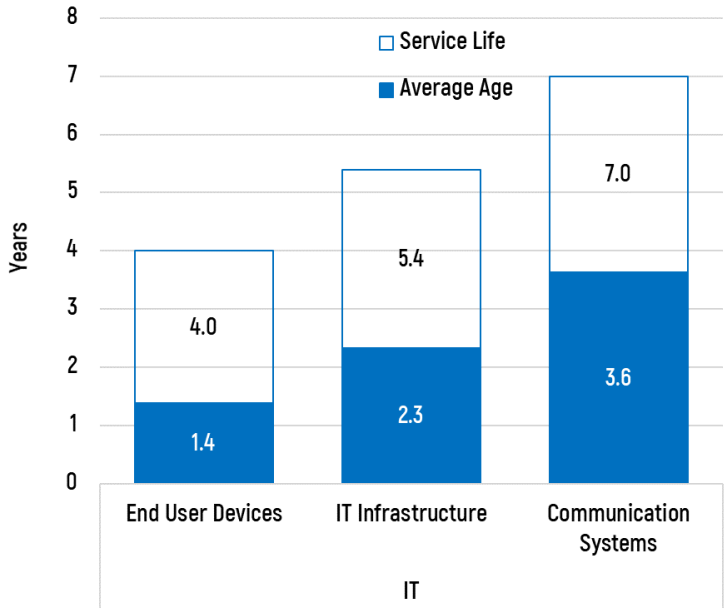
Table 2-8: Inventory of IT Assets

Asset Class	Quantity	Unit	Replacement Value
End User Devices	**501**	**assets**	**$739,380**
IT Infrastructure	**149**	**assets**	**$698,600**
Communication Systems	**212**	**assets**	**$137,000**
Total			**$1,574,980**

2.4.1 Asset Age

The average age and estimated service life of the County's IT assets, weighted by replacement value, is summarized in Figure 2-7. IT assets generally have a short expected life and are replaced on a regular interval. On average, IT assets are at or less than mid-life.

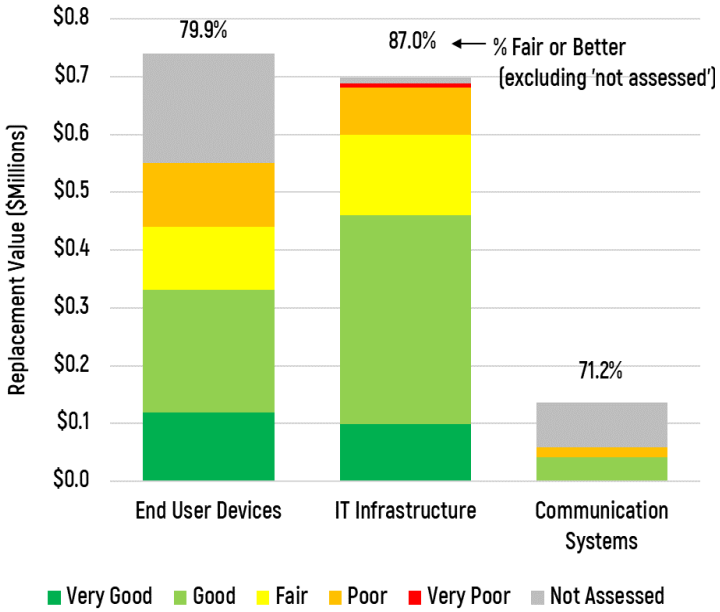
Figure 2-7: Average Age and Estimated Service Life – Information Technology



2.4.2 Asset Condition

The condition of IT assets is estimated based on age and service life. Some IT assets are not assessed as they will be disposed and not replaced, such as workstations lent to a health clinic and an off-line server. Desk phones (Communication Systems) are replaced as needed through the operating budget, are not tracked with purchase dates, and therefore are also not assessed. The condition distribution of the County's IT assets is shown in Figure 2-8. The proportion of assets in Poor condition represent assets approaching their end-of-life replacement and are mostly planned for replacement in next year or two.

Figure 2-8: Condition Overview – Information Technology



2.5 Dufferin Oaks (Long Term Care)

The County owns and operates Dufferin Oaks, a non-profit long term care (LTC) home. It is also connected to Mel Lloyd Centre including the McKelvie Burnside Village, a 22-unit apartment complex for seniors living independently who do not yet need the care of a long term care home. Assets for the Dufferin Oaks service area consist of the Dufferin Oaks and Mel Lloyd Centre facility, equipment used to operate the facilities, and fleet. Most fleet assets are for delivering Community Support Services. Table 2-9 summarizes the Dufferin Oaks inventory, valued at $50.5 million.

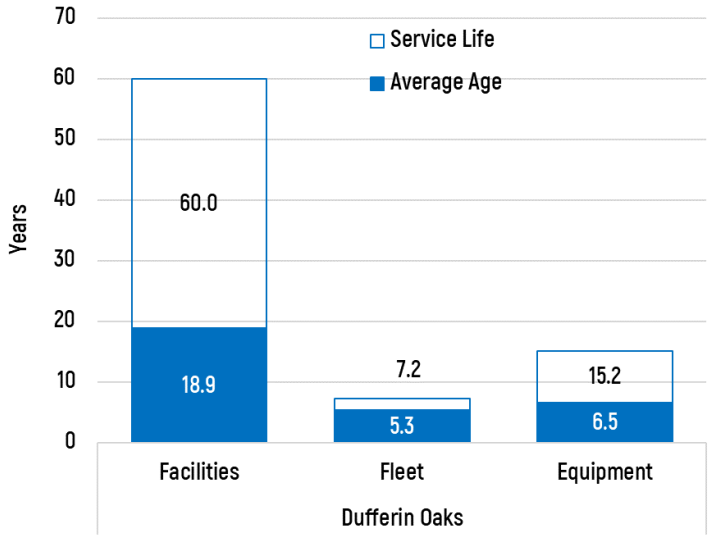
Table 2-9: Inventory of Dufferin Oaks Assets

Asset Class	Asset Type	Quantity	Unit	Replacement Value
Facilities		**2**	**facilities**	**$47,389,700**
Fleet		**10**	**assets**	**$580,000**
Equipment	**Beds and Bedroom Furniture**	**320**	**assets**	**$768,000**
	House keeping Equipment	**5**	**assets**	**$52,500**
	Kitchen Equipment	**148**	**assets**	**$321,200**
	Laundry Equipment	**8**	**assets**	**$159,100**
	Lifts	**49**	**assets**	**$233,000**
	Macerators	**10**	**assets**	**$100,000**
	Nurse Call System/Point of Care	**1**	**assets**	**$400,000**
	Resident Lounge Furniture	**6**	**assets**	**$120,000**
	Tub Replacement/Resident Bathing	**11**	**assets**	**$385,000**
Total				**$50,508,500**

2.5.1 Asset Age

The average age and estimated service life of Dufferin Oaks assets, weighted by replacement value, is summarized in Table 2-9. The average age of the facilities is still in the first half of its expected life. Fleet assets are, on average, approaching end-of-life.

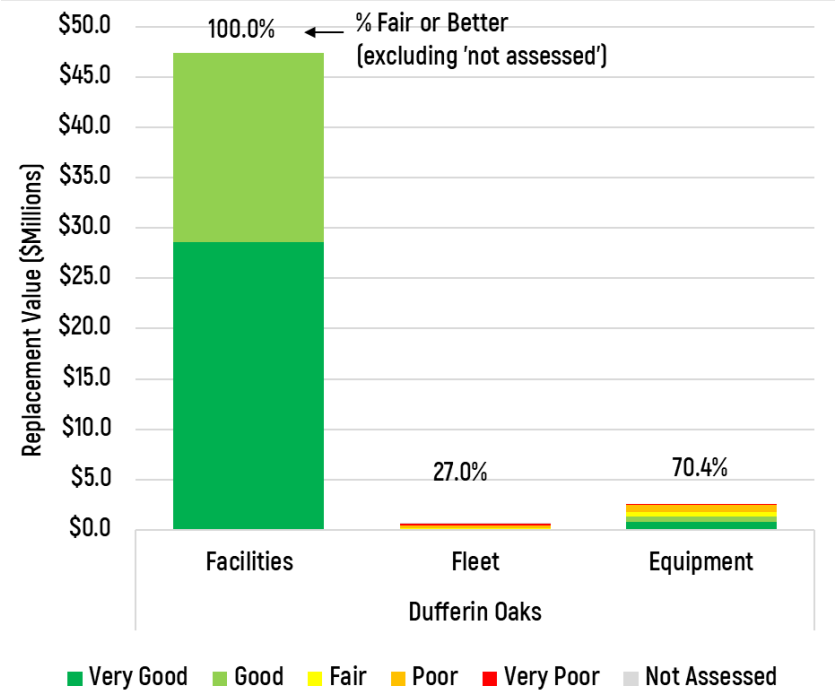
Figure 2-9: Average Age and Estimated Service Life – Dufferin Oaks



2.5.2 Asset Condition

As indicated in Section 2.3.2, the County completed building condition assessments on all its facilities, including Dufferin Oaks and Mel Lloyd Centre in 2018. Similar to other County facilities, for this AM plan, Facility Condition Index (FCI) is used to estimate the overall facility condition rating, and as noted in Section 2.3.2, individual building elements may still be in any of the five condition states from Very Good to Very Poor. The condition distribution of the County's Dufferin Oaks assets is summarized in Figure 2-3. The two facilities are in overall Very Good or Good condition based on FCI. For fleet assets, there are three vans that are currently at end-of-life, which represent 30% of the overall fleet value for the service area. The majority of long term care equipment is in fair or better condition. Very Poor equipment for long term care consist mainly of resident lounge furniture. The Nurse Call system, which is a critical asset, is approaching end-of-life (Poor condition) and is due for replacement in 2022. The criticality of assets is discussed in more detail in Section 4.

Figure 2-10: Condition Overview – Dufferin Oaks



2.6 Paramedic Services

Paramedic Services operates with 3 stations: headquarters located in Orangeville and satellite stations in Shelburne and Grand Valley. In addition to the three facilities, the County owns nine ambulances and four emergency response units, as well as supporting equipment including defibrillators and power loaders and stretchers. Table 2-9 summarizes the $6.5 million inventory for Paramedic Services.

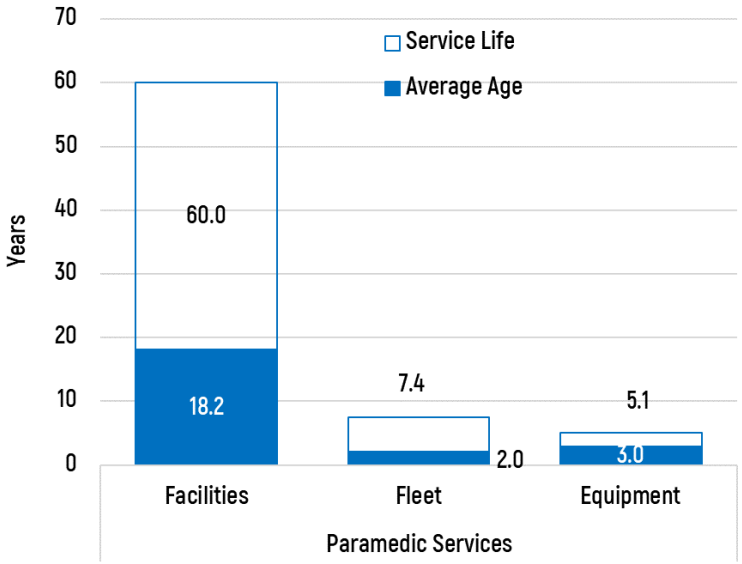
Table 2-10: Inventory of Paramedic Services Assets

Asset Class	Asset Class	Quantity	Unit	Replacement Value
Facilities		**3**	**facilities**	**$3,070,524**
Fleet	**Ambulance**	**9**	**assets**	**$1,800,000**
	Emergency Response Unit	**4**	**assets**	**$332,000**
Equipment	**Battery Chargers**	**6**	**assets**	**$12,000**
	Defibrillators	**14**	**assets**	**$490,000**
	In-vehicle laptops	**13**	**assets**	**$80,000**
	Patient Care Bags	**15**	**assets**	**$48,000**
	Power Loader	**9**	**assets**	**$270,000**
	Power Stretcher	**10**	**assets**	**$320,000**
	Stair-chairs	**20**	**assets**	**$75,000**
	Suction Units	**14**	**assets**	**$29,400**
Total				**$6,526,924**

2.6.1 Asset Age

The average age and estimated service life of the assets for Paramedic Services, weighted by replacement value, is summarized in Figure 2-11. The average age of the facilities is still in the first half of the expected life, as are fleet assets.

Figure 2-11: Average Age and Estimated Service Life – Paramedic Services

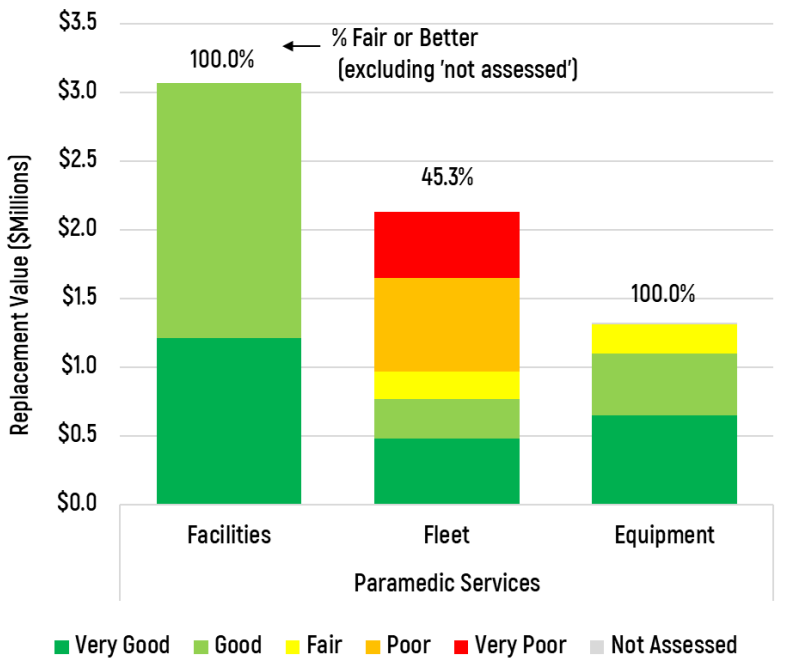


2.6.2 Asset Condition

As indicated in Section 2.3.2, the County completed building condition assessments on all its facilities, including the three Paramedic facilities in 2018. Similar to other County facilities, for this AM plan, Facility Condition Index (FCI) is used to estimate the overall facility condition rating, and as noted in Section 2.3.2, individual building elements may still be in any of the five condition states from Very Good to Very Poor. Fleet and equipment asset condition is estimated based on age and useful life.

The condition distribution of the County's Paramedic Services assets is summarized in Figure 2-12. The three facilities are in overall Very Good or Good condition based on FCI. For fleet assets, there are two ambulances and one emergency response unit that are currently at end-of-life and therefore assessed as Very Poor and represent 23% of the Paramedic Services vehicle inventory value. These vehicles are planned to be replaced in 2022 (lifecycle activities are discussed further in Section 5).

Figure 2-12: Condition Overview – Paramedic Services



2.7 Housing Services

Dufferin County Housing offers housing units across 10 facilities in Shelburne, Grand Valley, and Orangeville. Fleet used by Housing services are covered in Section 2.2 for Public Works. Table 2-11 summarizes the Housing Services inventory which is valued at $49.8 million.

Table 2-11: Inventory of Housing Services Assets

Asset Class	Quantity	Unit	Replacement Value
Facilities	**10**	**facilities**	**$49,773,923**

2.7.1 Asset Age & Condition

The average age and estimated service life of Housing facilities, weighted by replacement value, is summarized in Figure 2-13. The average age of the facilities is approximately 58% of the expected service life. The County completed building condition assessments on all its facilities in 2018. Similar to other County facilities, for this AM plan, Facility Condition Index (FCI) provides an overall facility condition rating for each housing facility but does not represent a detailed condition analysis, as individual building elements may still be in any of the five condition states from Very Good to Very Poor. The condition distribution of the County's Housing facilities is shown in Figure 2-14. Though no facilities are in overall Poor or Very Poor condition, five facilities are in Fair condition and will require a considerable amount of renewal work over the next two years. These five facilities are 207 Williams Street, 227 William Street, and 250 Simon in Shelburne; 56 Bythia Street in Orangeville; and 71 Emma Street South in Grand Valley.

Figure 2-13: Average Age and Estimated Service Life – Housing Services

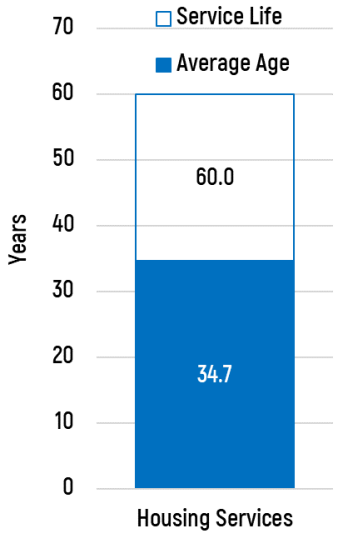
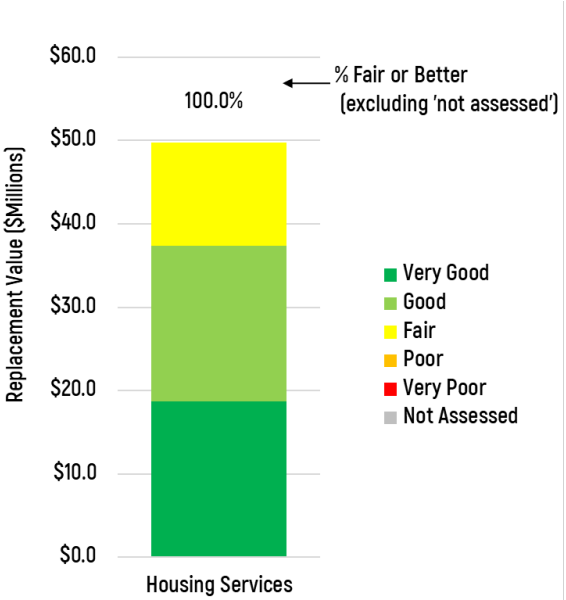


Figure 2-14: Condition Overview – Housing Services



2.8 Museum of Dufferin

The Museum of Dufferin is located in Mulmur Township. The main asset for this service area is the barn-style facility which opened in 1994. Fleet used by Museum of Dufferin are covered in Section 2.2 for Public Works. Other assets that support Museum services include some equipment such as scanners and rolling shelves. Table 2-9 summarizes the inventory, valued at $7.5 million.

Table 2-12: Inventory of Museum Assets

Asset Class	Quantity	Unit	Replacement Value
Facilities	**1**	**facility**	**$7,089,700**
Equipment	**3**	**assets**	**$429,000**
Total			**$7,518,700**

2.8.1 Asset Age & Condition

The average age and estimated service life of Museum assets, weighted by replacement value, is summarized in Figure 2-15. The Museum of Dufferin is now 27 years old, and the rolling shelves, which account for most of the equipment assets are original to the building. The County completed a building condition assessment on the Museum along with other County facilities in 2018. The Facility Condition Index (FCI) is currently estimated at 6.6% and indicates an overall Good condition rating for the Museum facility. The condition distribution of the Museum assets is summarized in Figure 2-16.

Figure 2-15: Average Age and Estimated Service Life – Museum

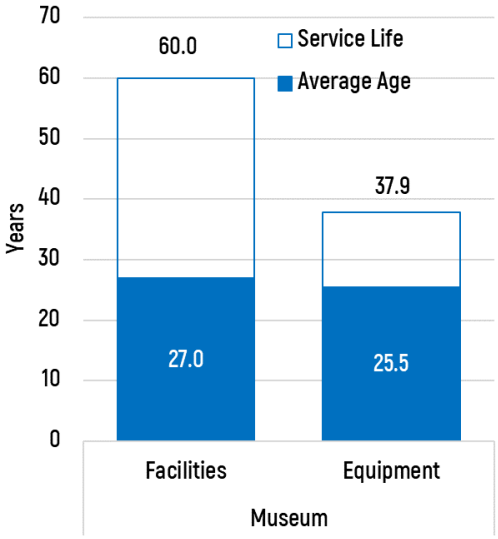
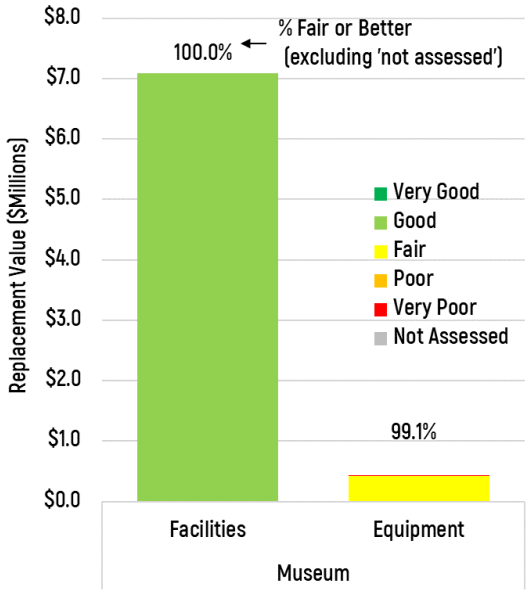


Figure 2-16: Condition Overview – Museum



3 Levels of Service

3.1 Understanding Levels of Service

In the State of Infrastructure Section, the value and condition of the County's infrastructure assets were discussed. In this chapter, the Levels of Service (LOS) discussion builds on the previous chapter by defining the performance that the County's assets are intended to deliver over their expected service lives. For example, the County's Dufferin Oaks facility is expected to be maintained such that residents can use the facility while experiencing a reasonable level of comfort or performance level.

LOS are statements that describe the outputs and objectives the County intends to deliver to its residents, businesses, and other stakeholders.

In general, LOS are guided by a combination of customer expectations; legislative requirements; internal guidelines, policies, and procedures; and affordability. Effective asset management requires that LOS be formalized and supported through a framework of performance measures, targets, and timeframes and that the costs to deliver the service levels are understood.

Developing, monitoring, and reporting on LOS as part of an overall performance management program supports Good Governance of infrastructure, one of the County's main strategic priorities.

3.2 Line of Sight

Figure 3-1 shows the LOS framework and line of sight from high-level Corporate initiatives to detailed asset-specific Technical LOS. Corporate commitments, along with legislated LOS drive the definition of more specific Community LOS that describe the services that the assets need to deliver to the County's residents. Community LOS can be categorized as relating to one of the following service attributes:

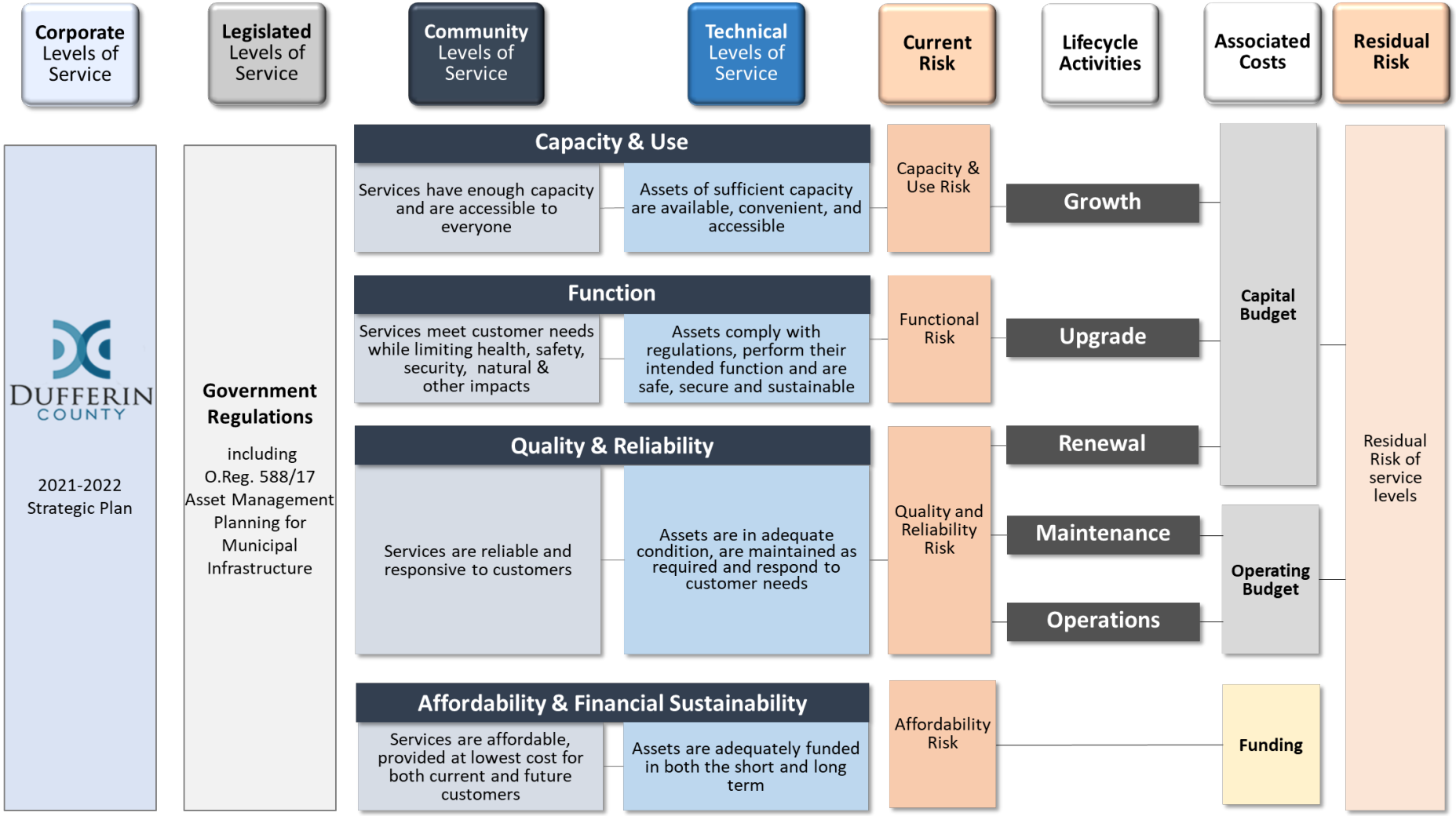
- **Capacity & Use:** Services have enough capacity and are accessible to the customers
- **Function:** Services meet customer needs and the intended function while limiting health, safety, security, and environmental impacts
- **Quality and Reliability:** Services are reliable and responsive to customers
- **Affordability:** Services are affordable and provided at the lowest cost for both current and future customers

Community LOS are translated into Technical LOS that define asset performance levels, which in turn define asset needs and drive the required lifecycle activities to mitigate risk. As shown in Figure 3-1:

- Capacity & Use LOS drive **Growth** needs
- Function LOS drive **Upgrade** needs
- Quality LOS drive **Renewal, Operations and Maintenance** needs
- Affordability LOS drive **funding** strategies

Lifecycle management activities balance the cost of service with the risk to meeting service levels. This Line of Sight establishes the connection of how the day-to-day management of County assets contributes to the success of achieving corporate strategic goals.

Figure 3-1: Levels of Service Framework



3.3 Corporate Levels of Service

The Corporate, or Strategic LOS establish service levels that describe the main vision or objective of service delivery for the County. The County's 2021-2022 Strategic Action Plan supports five key strategic priorities adopted in June 2019:

- **Economic Vitality** – promote an environment for economic growth and development;
- **Good Governance** - ensure transparency, clear communication, prudent financial management;
- **Sustainable Environment and Infrastructure** - protect assets both in the natural and built environment;
- **Service Efficiency and Value** - determine the right services for the right price;
- **Inclusive and supportive community** – support efforts to address current and future needs for a liveable community

These priorities set a framework for the required actions that will enable the County to provide relevant and high quality services that contribute to a connected community. In particular, the priorities for Good Governance, Sustainable Environment and Infrastructure, and Service Efficiency and Value have a direct influence on driving efficient resource management and transparent asset management processes at the County.

3.4 Legislated Levels of Service

Legislated requirements define the standards according to which the County is legally obligated to provide services to the community, and these standards typically relate to asset safety and reliability. For example, for Transportation assets, roads maintenance is proposed to meet the Minimum Maintenance Standards and bridges are regulated to be inspected every two years. Paramedic Services is responsible for meeting legislated response time standards and publicly reports these service levels to the Ministry of Health.

3.5 Community and Technical Levels of Service

The Community and Technical LOS discussed in this AM Plan are focused on those required by O.Reg. 588/17, as well as a summary of the percentage of assets in fair or better condition across most asset types. Other measures are also included where the County has identified service levels that demonstrate and support sustainable infrastructure and service efficiency. As discussed in Section 3.2, these asset performance measures support achievement of the County's higher level strategic objectives and sustainable infrastructure goals.

3.5.1 Facilities (Corporate Perspective)

Facilities are managed corporately across several County service areas: Public Works, Paramedic Services, Housing Services, and the Museum. As indicated in Section 2.3.2, the County completes regular building condition assessments to help maintain these facilities in a state of good repair. In addition to this quality service level, the County complies with building legislative requirements and tracks energy usage as part of its organizational goals to support a corporate culture of conservation and improvements in energy efficiency.

Table 3-1 summarizes the general Community and Technical LOS related to facilities. For Community and Technical LOS specific to the service area, refer to Sections 3.5.3 to 3.5.8.

Table 3-1: Levels of Service – Facilities (Corporate Perspective)

Community Levels of Service	Technical Levels of Service	
	Description	2021 Performance*
Function LOS		
Facilities are in compliance with legal and regulatory requirements	% Facilities in compliance with Life Safety inspection requirements	95%
	% Facilities in compliance with TSSA compliance, Electrical Requirements, AODA, Air Quality, Water Quality	90%
Facilities are managed to support energy conservation and efficiency improvements	GHG Emissions (tCO2e)	2016 performance: Facilities Management: 448 Dufferin Oaks: 822 Paramedic Services: 37 Housing Services: 390 Museum of Dufferin (and Church): 42
	# of Electric Vehicle Charging Stations	24
Quality / Reliability LOS		
Facility assets kept in a state of good repair	Average Facility Condition Index	5.0% (Very Good)
Maintenance work is done on time and when required	% of outstanding to total Work Orders	15%
	Response time to work orders - Critical	Immediate
	Average Response time to work orders – Non Critical	10 days

*2021 performance unless otherwise noted

3.5.2 Fleet (Corporate Perspective)

Fleet, similar to facilities, are managed across several County service areas: Public Works, Facilities Management, Dufferin Oaks, Paramedic Services, Housing Services, and the Museum. In support of the County's Climate Action Plan, the County is considering transitioning to low-emission and electric vehicles. Regular operations and maintenance activities are also tracked to minimize unexpected downtime and to support continuous service delivery. Table 3-2 summarizes the general Community and Technical LOS related to fleet.

Table 3-2: Levels of Service – Fleet (Corporate Perspective)

Community Levels of Service	Technical Levels of Service	
	Description	2021 Performance
Capacity & Use LOS		
Adequate capacity to maintain fleet vehicles and rolling stock	Fleet storage capacity for critical assets (area of indoor vehicle storage available / area needed)	50%
Function LOS		
Fleet assets are compliant with all standards and regulations (i.e. H&S)	% of Fleet assets in compliance with standards and regulations (i.e. H&S) - annual inspections and daily circle checks	100%
Fleet assets are equipped with latest automotive technology	% of licensed vehicles with latest automotive technology (i.e. dash-cameras, reverse cameras, GPS, etc.)	50%
Fleet assets minimize natural impacts	# tonnes GHG emissions for fleet	1016 tCO2e/yr
	# of green fleet/total fleet	0
	# of EV stations at the County	24
Quality / Reliability LOS		
Fleet assets are kept in state of good repair	% of fleet inventory under 200,000 kms	87%
	% of critical equipment under 250,000 km (snowplows)	92%
Operations work is done on time and when required	Average downtime for critical equipment (snowplows) during winter season	10%
	% of vehicles serviced internally/total vehicles serviced	54%

3.5.3 Public Works

Table 3-3 summarizes Community and Technical LOS related to roads and structures. Technical LOS are focused on condition-related Quality measures. These assets are generally performing well, though three bridges are currently closed and not assessed for condition. The County also has three bridges that currently have load restrictions. One restriction is expected to be lifted by the end of 2022 as one of the structures is currently planned for rehabilitation. Averages related to pavement condition index and bridge condition index are weighted by replacement value.

Table 3-3: Levels of Service – Roads and Structures

Community Levels of Service	Technical Levels of Service		
	Description		2021 Performance
Capacity and Use LOS			
Description/maps of the road network and its level of connectivity*: The County provides for a range of systems and networks for the movement of goods and people, including roads, cycling and trails. The County's road system consists of a network arterial, collector and local roads which provide access through and to the eight local area municipalities within Dufferin County. Refer to Figure 3-2 for a map of the road network.	Number of lane-kilometres of each of arterial roads, collector roads and local roads as a proportion of square kilometres of land area of the municipality*		Arterial: 1 lane-km per 5.6 sq.km. (265.4 km / 1486.3 sq.km.)
			Collector: 1 lane-km per 4.8 sq.km. (308.7 km / 1486.3 sq.km.)
			Local: 1 lane-km per 23.7 sq.km. (62.6 km / 1486.3 sq.km.)
Description of the traffic that is supported by municipal bridges (e.g. heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists)*: The County's bridges and major culverts have been designed in accordance with the Bridge Design Code current at the time of construction to carry heavy transport vehicles, motor vehicles, emergency vehicles, cyclists, and pedestrians.	Percentage of bridges in the municipality with loading or dimensional restrictions*		2.7% (3 of 110 structures)
Quality / Reliability LOS			
Description/images that illustrate the different levels of road class pavement condition*: Refer to "Condition Rating System for Roads" in Section 2.2.2	For paved roads in the municipality, the average pavement condition index value*		75.5
	For unpaved roads in the municipality, the average surface condition (e.g. excellent, good, fair or poor)*		50.7
Description/images of the condition of bridges/culverts and how this would affect use of the bridges*: Refer to "Condition Rating System for Structures" in Section 2.2.2	For bridges in the municipality, the average bridge condition index value*		76.4
	For structural culverts in the municipality, the average bridge condition index value*		66.5
Assets are maintained in a state of good repair	Percentage of assets in Fair or Better Condition	Roads	86.9%
		Bridges	96.2%
		Structural Culverts	77.1%

*O.Reg. 588/17 LOS reporting requirement.

Figure 3-2: County Network – Roads and Structures

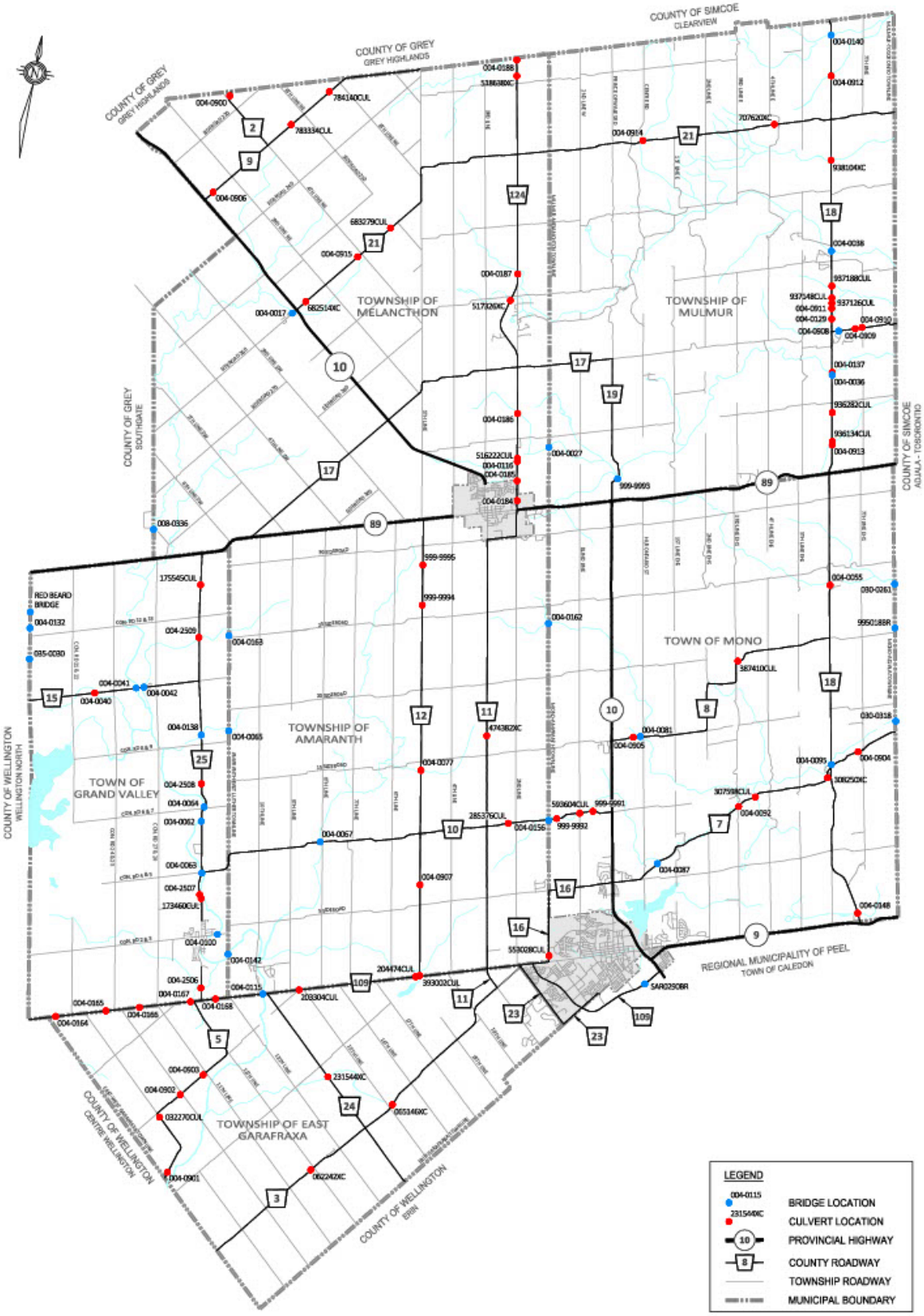


Table 3-4 summarizes Community and Technical LOS related to other transportation assets and stormwater assets. The County has a relatively small stormwater network as most stormwater management infrastructure is owned and managed by the local area municipalities. The infrastructure is expected to have been designed to the 5-year storm and is likely 100% resilient to the 5-year storm. The County will gain further understanding of the resiliency of properties and the system to 100-year and 5-year storms, respectively, as it updates floodplain mapping and works on developing natural stormwater management plans to ensure there is no increase in vulnerability. This initiative is part of the County's Climate Action Plan.

Table 3-4: Levels of Service – Other Transportation and Stormwater Assets

Community Levels of Service	Technical Levels of Service		
	Description		2021 Performance
Capacity and Use LOS			
Description of the user groups or areas of the municipality that are protected from flooding, including the extent of protection provided by the municipal stormwater management system* The County owns a limited network storm sewers and storm culverts to direct stormwater runoff. The County will continue to work on understanding the increasing impacts of climate change and building its flood resiliency as necessary through improvements to its built infrastructure and collaboration with local area municipalities and Conservation Authorities.	Percentage of properties in municipality resilient to a 100-year storm*		Under review
	Percentage of the municipal stormwater management system resilient to a 5-year storm*		Under review
Function LOS			
Traffic assets are fully operational with minimal outages	# of Traffic Control Signal Outages per annum		2
	# of Street Light Outages per annum		8
Traffic assets are in compliance with legal and regulatory requirements	% of streetlights in compliance with legal and regulatory requirements (repair frequencies)		99%
	% of traffic signals in compliance with legal and regulatory requirements (MMS)		100%
Quality / Reliability LOS			
Assets are maintained in a state of good repair	Percentage of assets in Fair or Better Condition (age-based)	Signals	100%
		Entrances	82%
		Guiderails	100%
		Flashing Beacons	100%
		Signs	100%

*O.Reg. 588/17 LOS reporting requirement.

3.5.4 Information Technology

The Information Technology Division services all County service areas with IT infrastructure, end user devices, and communication systems. These assets are maintained to minimize service downtime and are regularly updated with security patches, manufacturer updates, and repaired or replaced on set lifecycles or as necessary. Table 3-5 summarizes Community and Technical LOS for Information Technology assets. Information Technology Services is currently developing Service Level Agreements which will provide additional measures related to response times to customers.

Table 3-5: Levels of Service – Information Technology

Community Levels of Service	Technical Levels of Service	
	Description	2021 Performance
Capacity & Use LOS		
IT assets have sufficient capacity and are readily available	Storage capacity of network (on-site and off-site)	100%
	% uptime of County servers	100%
Function LOS		
IT assets are safe and secure	% IT assets equipped with critical security patches according to best practice (24-48 hrs)	100%
	% IT assets in compliance with recommended manufacturer updates (1 week)	100%
Quality / Reliability LOS		
IT assets are kept in state of good repair	% of IT Equipment within expected life (age-based)	99.5%
Operations work is done on time and when required	Average response time to high priority work order request tickets	Less than a day
	Average response time to low priority work order request tickets	24 - 48 hours
Maintenance work is done on time and when required	% up-time of printers per annum	90%

3.5.5 Dufferin Oaks (Long Term Care)

Dufferin Oaks' vision is to be a centre of excellence for non-profit, long term care programs and community services. It values quality, cost-effective, and client-centered services and manages its assets to provide a safe and comfortable home-like environment. To support these values, the County complies with provincial regulations and maintains equipment in a state of good repair. Table 3-6 summarizes the Community and Technical LOS for Dufferin Oaks assets.

Table 3-6: Levels of Service – Dufferin Oaks

Community Levels of Service	Technical Levels of Service	
	Description	2021 Performance
Capacity and Use LOS		
LTC assets are sufficient to provide the required services to its residents	# of residents and applicants in need of acuity equipment/total number of acuity equipment	100%
Function LOS		
LTC Assets are compliant with provincial standards	% of LTC Equipment compliant with provincial regulations	100%
Quality / Reliability LOS		
Facility assets kept in a state of good repair	Average Facility Condition Index	5.4% (Good)
LTC assets are kept in a state of good repair	% of LTC Equipment within expected life (age-based)	97%
Operations work done is on time and when required	% of Outstanding to Total Work Orders	0%
LTC customers are kept informed and satisfied	Customer Satisfaction Survey Score	98%
Maintenance work is done on time and when required	% of Outstanding to Total Work Orders	0%

3.5.6 Paramedic Services

Paramedic Services provides emergency medical coverage to over 60,000 residents covering 1,482 square kilometers, and strives to provide the best possible care in a timely manner. To support these goals, the County monitors response call volumes and response times, and complies with all applicable legislative standards. Table 3-7 summarizes the Community and Technical LOS for Paramedic Service assets. Though some vehicles are just past their end-of-life, they are planned for immediate replacement and reflect the impacts of delivery delays and supply chain shortages throughout the pandemic.

Table 3-7: Levels of Service – Paramedic Services

Community Levels of Service	Technical Levels of Service	
	Description	2021 Performance
Capacity and Use LOS		
Paramedic assets have sufficient capacity and are readily available	Average response time per annum (minutes : seconds)	6:52
	Total call volume per annum	10,926
Function LOS		
Paramedic assets are compliant with legislative standards	% of paramedic equipment which comply with legislative/provincial standards	100%
	% of ambulance vehicles which comply with legislative standards (Provincial Land Ambulance & Emergency Response Vehicle Standard)	100%
Quality / Reliability LOS		

Community Levels of Service	Technical Levels of Service	
	Description	2021 Performance
Facility assets kept in a state of good repair	Average Facility Condition Index	3.6% (Very Good)
Paramedic assets are kept in state of good repair	% of paramedic equipment within expected service life	100%
	% of paramedic vehicles within expected service life	77%
Maintenance work is done on time and when required	% compliance with regulatory maintenance/inspection requirements	100%

3.5.7 Housing Services

Dufferin County Housing works with Co-operatives (co-op), Non-profits, and private landlords in Dufferin County to provide affordable housing for seniors, singles, and families. It offers a range of rent options and is dedicated to improving the well-being of individuals and families in the community. As indicated in Section 2.3.2, the County completes regular building condition assessments to help maintain its facilities in a state of good repair. The Facility Condition Index for Housing Services is outlined in Table 3-8. Housing Services also monitors the turnover time between residents to ensure units are available to meet community demand. For other measures related to the overall corporate service levels required of County facilities and fleet, refer to Section 3.5.1 and Section 3.5.2, respectively.

Table 3-8: Levels of Service – Housing Services

Community Levels of Service	Technical Levels of Service	
	Description	2021 Performance
Capacity & Use LOS		
Facilities are available for use	Average Response time to get units ready for Community Housing Tenant Turnover	88 days
Quality / Reliability LOS		
Facility assets kept in a state of good repair	Average Facility Condition Index (Housing)	7.4% (Good)

3.5.8 Museum of Dufferin

The Museum of Dufferin's Vision is to have people engaged in an unexpected experience in the cultural centre of community life. The facility was designed to reflect the rural and agricultural heritage of the region. The facility features four galleries and four historic buildings that host permanent, long-term and short-term exhibitions and art shows, and is also home to the Dufferin County Archives. As indicated in Section 2.3.2, the County completes regular building condition assessments to help maintain its facilities in a state of good repair. The Facility Condition Index for the Museum is 6.6%, as outlined in Table 3-8. For other measures related to the overall corporate service levels required of County facilities, refer to Section 3.5.1.

Table 3-9: Levels of Service – Museum

Community Levels of Service	Technical Levels of Service	
	Description	2021 Performance
Quality / Reliability LOS		

Facility assets kept in a state of good repair	Average Facility Condition Index (Museum)	6.6% (Good)

4 Risk Management Strategy

4.1 Overview

A key asset management principle for the County is to meet service levels and manage risk, while minimizing lifecycle costs. The relative importance of the assets to support service delivery, referred to as asset criticality, is a key driver in selection of the most appropriate asset management strategy for each asset. Critical assets include assets that are key contributors to performance and have the highest consequences of failure to provide required service levels.

Risk events, such as an asset's failure to have sufficient capacity, function, or reliability, are events that may compromise the delivery of the County's strategic objectives. Lifecycle activities are used to manage the risk of failure by reducing the chance of asset failure to acceptable levels. The impact of asset failure on the County's ability to meet its strategic objectives dictates the type and timing of lifecycle activities.

The County's risk strategy develops the framework for quantifying the risk exposure of its assets to enable prioritization of projects across asset classes and service areas. Risk exposure is the multiplication of the criticality or consequence of failure (CoF), which is the direct and indirect impact on the County if an asset failure were to occur, by the probability of failure (PoF), which is the likelihood that an asset failure may occur:

Risk Exposure = Consequence of Failure x Probability of Failure

4.2 Consequence of Failure Matrix

The focus in this section is on asset criticality or consequence of failure which reflects the importance of an asset to the County's delivery of services. The following impacts of a potential asset failure are considered:

Service Delivery considerations ranging from a disruption of non-essential service to widespread and long-term disruption of essential service

Health and Safety considerations including the ability to meet health and safety related regulatory requirements, and degree and extent of injury, ranging from negligible injuries to loss of life

Environmental considerations such as length and extent of damages to the natural environment

Financial impact considerations such as damages to County or private property and infrastructure, loss of revenue, and fines.

Reputational considerations such as residents' reduced trust and confidence in the County.

Table 4-1 summarizes the above listed impacts against an asset criticality rating scale from 1 to 5, with a higher score indicating a higher consequence of failure.

Table 4-1: Asset Criticality (Consequence of Failure) Ratings

Consequence Categories (Triple Bottom Line)		1	2	3	4	5
		Insignificant	Minor	Moderate	Major	Catastrophic
Economic	Financial	Damages, losses (including 3rd party) or fines from $1k to $10k	Damages, losses (including 3rd party) or fines $10k to $100k	Damages, losses (including 3rd party) or fines $100k to $500k	Damages, losses (including 3rd party) or fines $500k to $5M	Damages, losses (including 3rd party) or fines > $5M
Social	Health & Safety	No obvious potential for injury or affects to health.	Potential for minor injury or affects to health of an individual. Full recovery is expected; or minor medical attention may be required	Potential for serious injury or affects to health. May affect many individuals and / or result in short term disability; or Hospitalization may be required for a short period of time.	Potential for serious injury or affects to health of one or more individuals with a possibility of loss of a life and the certainty of long-term disability; or Emergency hospitalization required for one or more individuals.	Potential for death or multiple deaths with probable permanent damage; or Emergency and long-term hospitalization required for several individuals.
	Service Delivery	Small number of customer experiencing disruption / impact (less than 100 people or up to a few hours)	Localized service disruption / impact (100 to 500 people or up to 1 day)	Significant localized disruption / impact (500 to 5,000 people or less than 1 week)	Major or Critical service disruption / impact (5,000 to 20,000 people or for more than a week)	County wide or Critical service disruption / impact (greater than 20,000 people or permanent loss of services)
	Reputational	No Media Exposure	Minor or no media exposure	Moderate local media exposure lasting for several days	Intense local media exposure lasting several days and/or Municipality wide exposure	Significant Provincial exposure lasting several days or weeks
Environmental	Environment	Very negligible impact or can be restored within 1 week	Minor (within 1 month) very isolated damage / impact to the environment, local importance	Significant short-term impact (up to 2 months), local importance	Significant long-term impact (up to 1 year), Provincial importance.	Major long-term impact (greater than 1 year), Federal importance.

The above criticality profiles enable risk to be incorporated into the development of asset management strategies. More critical assets are prioritized for expansion, inspection, cleaning, maintenance, and renewal, depending on their current and forecasted performance (condition).

4.3 Risk to Levels of Service – Approach

Asset criticality is determined based on the degree to which the failure of the asset would impact the following three community levels of service attributes:

Capacity and Use: Assets of sufficient capacity are available, convenient, and accessible

Function: Assets comply with regulations, perform their intended function and are safe, secure, and sustainable

Quality/Reliability: Assets are in adequate condition and are maintained as required.

4.3.1 Risk to Capacity LOS

As indicated in Section 1.3, the County has experienced some growth in the past few years and will continue to grow at a modest rate through to 2031. This modest rate of growth is just one of the factors being considered in development of the County's pending Transportation Master Plan, which will provide recommendations on growth and expansion activities. The major project currently planned to address capacity issues is the reconstruction of County Road 109 between Highway 10 and Peel Road 136. Details on growth activities are discussed in Section 5.2.2.

4.3.2 Risk to Function LOS

In general, the County is keeping to status quo service levels. New services or service enhancements proposed in 2022 have been kept to a minimum and are based on critical needs outlined by the Service Areas. Planned improvements to functional service levels include retaining a spacing consultant to complete an assessment of various facilities to provide recommendations on space configuration upgrades, including possible renovations and lighting improvements. The front office at Dufferin Oaks is already undergoing an office space renovation to improve staff accessibility and add functional space improvements. Additional future facility upgrades will likely include security system upgrades to address potential physical security risks identified in a recent assessment.

In Public Works, the main County Rail Trail will be upgraded to a gravel surface from the existing sand/dirt surface. For fleet, a significant expected upgrade is the electrification of vehicles in support of the County's Strategic Action Plan and Climate Action Plan. This initiative also drives the addition of new assets such as electric vehicle charging stations. Lifecycle activities related to upgrade activities are discussed further in Section 5.2.2.

4.3.3 Risk to Service Reliability

The Reliability Level of Service refers to the County's aim to ensure that its assets are kept in a state of good repair to reduce the incidence of unplanned service interruptions due to poor asset condition. Depending on the asset, unplanned failures can have wide-ranging consequences including service disruption, damage to surrounding infrastructure and property, risks to public safety, and environmental impacts. Probability of Failure is estimated based on the condition of the asset from Section 2 (State of Infrastructure), as shown in Table 4-2.

Table 4-2: Probability of Failure Ratings for Reliability

PoF Rating	PoF Description	Corresponding Asset Condition
1	Rare	Very Good
2	Unlikely	Good
3	Moderate	Fair
4	Probably	Poor
5	Almost Certain	Very Poor

CoF is estimated based on the expected impact of an asset failure. Each asset's criticality is assessed based on the rating scale provided in Table 4-1. For this AM Plan, a high-level assessment was completed by assigning CoF ratings to groups of assets, categorized based on attributes such as road class.

After assessing the criticality and probability of each asset's risk, the results are plotted on a risk map, a graphic representation of probability and consequence of failure. Colours on the map denote different levels of risk and help to prioritize the County's resources, time, and effort for renewal activities.

- Risks that appear in the light red (very high) zone are significant to the County and therefore need to be actively managed and monitored in a more comprehensive manner than other risks (i.e., prioritized)
- Risks that appear in the orange (high) or green (medium) zones will also be actively managed depending on their nature
- Risks that appear in the light blue (low) or grey (very low) zones are generally acceptable without significant mitigation strategies being implemented, although monitoring may still occur in some form.

Current Risk: As shown in Figure 4-1, $6.7 million (0.9%) of County assets are currently in the Very High risk category. These assets consist of two road segments scheduled for renewal over the next two years, a major culvert scheduled for renewal in 2024, and five ambulances and one emergency response unit scheduled for replacement over 2022 and 2023. It should be noted that facilities are rated for risk at an overall facility level rather than for the individual assets within each building, and therefore individual elements that may be in very poor condition and high criticality do not show up in this assessment. Forecasting of facility renewal is still performed at the building element level and account for very poor components needed work even if the overall facility is in good condition. The higher level risk analysis shows that several housing facilities are in moderate risk due to their overall condition (based on FCI), and therefore will need significant renewal work over the coming years.

Assets that are not assessed for risk include those without a condition assessment or age-based condition estimate, as well as some assets that are not assigned a criticality rating. Bridges on local area municipality roads were not assessed for condition as additional information would be needed regarding road class or other key data points from the applicable municipality.

Figure 4-1: Current Reliability Risk – All Assets (by Asset Replacement Value in 2022 $M)

PoF		CoF				
	5	$0.4	$0.1	$18.7	$4.1	$0.4
	4	$0.5	$5.6	$23.6	$18.3	$2.2
	3	$1.1	$0.9	$75.4	$90.6	$16.1
	2	$0.9	$3.1	$45.4	$86.8	$5.1
	1	$1.2	$10.0	$171.3	$72.1	$46.4
		1	2	3	4	5

Risk Category	Replacement Value ($M)	%
Very High	$6.7	0.9%
High	$53.1	6.9%
Medium	$119.4	15.6%
Low	$260.9	34.1%
Very Low	$260.2	34.0%
Not assessed	$65.4	8.5%
Total	$765.6	100%

4.4 Climate Change Risk Considerations

Climate change risks such as more intense and frequent rainfalls, rain on snow events, heat waves, and ice-storms can have significant implications on County infrastructure. An increase in extreme weather events will likely lead to increased investment in maintenance and system improvements. Understanding the severity and frequency of these climate change events and incorporation of climate change considerations into the City's asset management planning approach is critical to maintaining service levels and managing risk.

The County has several initiatives aiming to adapt to and mitigate climate change risks. These initiatives include a Climate Action Plan that outlines a strategy to achieve net-zero greenhouse gas emissions by 2050 and build resilience to the impacts of climate change. These activities are described in further detail in Section 5.3.

5 Lifecycle Management Strategy

5.1 Overview

To achieve its program objectives and maintain service levels, the County builds new infrastructure assets to meet capacity needs, upgrades assets to meet functional needs, and manages existing assets to meet reliability needs – all with limited funds. Asset lifecycle management strategies are planned activities that enable assets to provide the service levels in a sustainable way, while managing risk at the lowest lifecycle cost. Asset lifecycle management strategies are typically organized into the categories listed in Table 5-1, and are driven by the levels of services defined in Section 4.

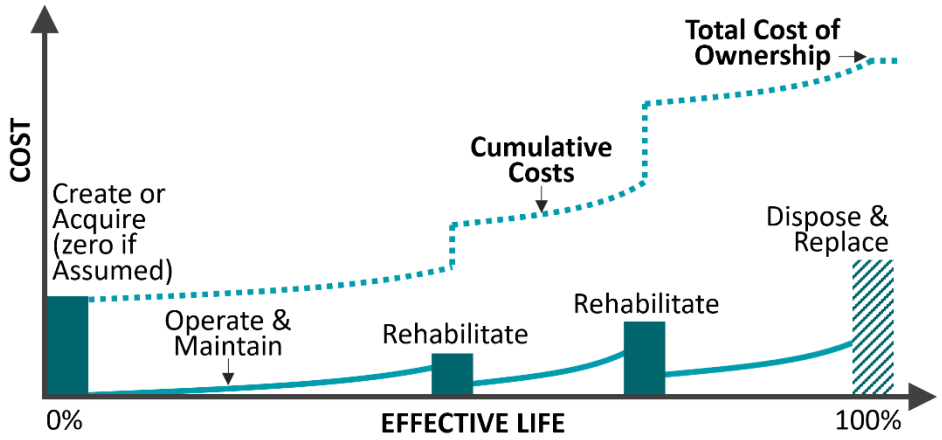
Table 5-1: Asset Lifecycle Management Categories

Lifecycle Management Category	Description	Examples of Associated Activities
Operate	Regular activities to provide services	inspect, clean, energy usage
Maintain	Activities to retain asset condition to enable it to provide service for its planned life	repair, replace component
Renew	Activities that return the original service capability of an asset	rehabilitate (minor), rehabilitate (major), replace asset
Upgrade	Activities to provide a higher level of service capability from an existing asset to achieve better fit for purpose or meet regulatory requirements	update system to be more energy efficient, improve environmental sustainability
Grow	Activities to provide a new asset that did not exist previously or an expansion to an existing asset	acquire new asset, expand existing asset

In addition to the above asset strategies, non-asset solutions are also considered which are actions or policies that can lower costs, lower demands, or also extend asset life (e.g. better integrated infrastructure planning and land use planning, demand management, insurance, process optimization, and education of the public).

The County assesses the costs of potential lifecycle activities to determine the lowest lifecycle cost strategy to manage each asset type while still meeting service levels. The total cost of ownership is the sum of lifecycle activity costs to sustain each asset type over the asset lifecycle. (See Figure 5-1 for a conceptual lifecycle cost model.) Sufficient investment of the right type and at the right time minimizes the total cost of ownership for each asset and also mitigates other potential risks such as interruption to service delivery or damage to other nearby infrastructure. Operations, maintenance, and renewal activities are timed to reduce the risk of service failure from deterioration in asset condition and are part of the total cost of ownership.

Figure 5-1: Conceptual Lifecycle Cost Model



5.2 Lifecycle Management Needs

The County uses its understanding of risks associated with different service levels to inform the timing and level of investments needed in infrastructure assets. The County aims to provide sufficient service capacity to meet demand and manages the upgrade, operations, maintenance, and renewal of assets to meet defined service levels, including legislated and other corporate requirements. This section of the AM Plan outlines the County's expansion and upgrade strategies to support capacity and functional service levels, and the County's operations, maintenance, and renewal activities to support reliability service levels.

5.2.1 Operations and Maintenance Needs

Along with timely renewal of assets, operations, and maintenance (O&M) work directly enables the County to meet state of good repair service levels (percentage of assets in fair or better condition) to support the reliable/quality service delivery objective. The distinction between renewals (capital programs) and operations and maintenance (operating expenses) is defined by the County's accounting policies and standard operating procedures.

Operations and maintenance activities ensure the asset continues to deliver defined levels of services, while renewal activities discussed in Section 5.2.3 extend the useful life of the asset.

Renewals, operations, and maintenance are strongly linked; operations and maintenance strategies can accelerate or delay the need for renewals, and if renewals are deferred, operations and maintenance needs will often have to increase to ensure that assets are kept in a state of good repair.

Table 5-2 summarizes the County's main asset-related operations and maintenance activities. Facilities and Fleet activities cover the buildings, vehicles, and equipment across the various service areas: Public Works, Facilities Management, Dufferin Oaks, Paramedic Services, Housing Services, and the Museum.

Table 5-2: Main Operations and Maintenance Activities

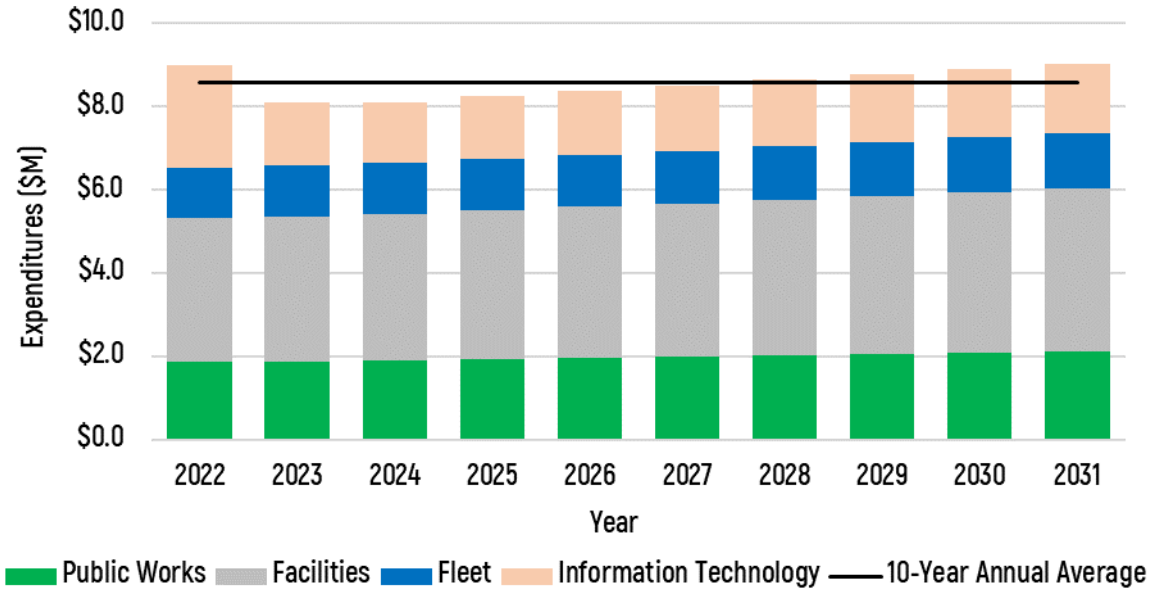
Asset Type	Operations & Maintenance	Maintenance
Public Works		
Roads	• Winter control– per MMS • Road Patrol – per MMS • Sweeping • Roadside mowing	• Pot-hole filling as-needed/complaint • Ditching (not associated with a re-surface) • Washout repairs • Condition assessment (Road Needs Study)

Asset Type	Operations & Maintenance	Maintenance
	• Brushing – remove trees & branches	
Roads – Gravel	• Winter control • Dust control • Roadside mowing • Brushing – remove trees & branches	• Grading - Add maintenance gravel • Ditching (not associated with a re-gravel)
Bridges	• Brushing • Sweep	• Inspection every 2 years • Maintenance/repair as needed
Structural Culverts	• Brushing • Sweep • Clear inlet & outlet	• Inspection every 2 years • Maintenance/repair as needed
Other Transportation Assets		• Maintenance/repair/replacement as needed (signs, signal components, guiderails, flashing beacons, entrances)
Trails	• Weed control, grass cutting	• Repair/replacing signs
Stormwater Infrastructure	• Catchbasin cleaning • Debris pickup	• Maintenance/repair as needed
Facilities (Corporate Perspective)		
Overall Facility	• Utilities: Gas, hydro, water • Cleaning	• Building Condition Assessments
Elevators, Life Safety Devices	• Inspections and testing per regulations	• Maintenance/repair as needed
HVAC, Plumbing, Electrical		• Maintenance/repair as needed
Site	• Snow clearing	• General grounds and parking lot maintenance
Fleet - Vehicles & Equipment (Corporate Perspective)		
Vehicles	• Fuel, licensing	• Vehicle GPS installations • Inspections and PM activities • Maintenance/repairs as needed
Equipment	• Testing of equipment per applicable regulations	• Repair as needed • Replacements of some equipment such as battery chargers for Paramedic Services
Information Technology		
End User Devices, IT infrastructure, Communication Systems	• Software licences, annual fees, subscriptions	• Replacement of some IT equipment such as cell phones • Security updates • Software updates • Maintenance contracts • Firewall renewals

Figure 5-2 summarizes the forecasted operations and maintenance expenditures related to asset activities for the period 2022-2031, at an annual average of $8.6 million. A nominal growth rate of 1.5% is forecasted

from years 5 to 10 reflecting increasing needs as the County's asset portfolio grows. The 2022 budget for information technology is higher than other years as it includes a $1 million investment in Human Resources and Finance software. In general, Figure 5-2 is focused on asset activities, and does not include non-asset related expenses such as salaries, programming, office supplies and insurance. Some accounts within the operating budget are increasing significantly in costs and should be considered in future updates to this forecast based on additional analysis. These pressures on the operating budget are discussed further in Section 6.3.1. This forecast also does not include the significant potential cost increases due to the pandemic and current economic environment. The County will monitor price increases and adjust future forecasts as necessary.

Figure 5-2: Operations and Maintenance Needs Forecast ($M)



5.2.2 Capital Growth and Upgrade Needs

As indicated in Section 4.3.1 and Section 4.3.2, the County has critical initiatives planned over the next 10 years, with additional projects pending from potential recommendations from the Transportation Master Plan currently in development. Planned upgrade projects are estimated to cost a total of $5.8 million, or $0.58 million averaged annually over the next 10 years. Additional projects are also being planned but the scope and costs of the work are still under development.

The County recently completed a security risk assessment and will be developing a policy to implement a range of security features at its facilities. The current scope of security varies between facilities and additional features such as alarm systems, perimeter card access fob systems, and cameras will be considered depending on the needs at each facility. The County will also be seeking to complete a review of facilities for a space needs assessment. This review could result in various recommendations and affect facilities including 30 Centre Street, 55 Zina Street, the Museum, and Primrose Operations Centre.

The County plans on installing an additional 7 to 10 EV charging stations by the end of 2022. This additional infrastructure supports the County's plans to start electrifying its light vehicles. The County is currently completing a business case/lifecycle assessment and will develop a formal policy as applicable.

Other upgrade projects include those that are a mix of both upgrade and the renewal of existing assets. The portion of road projects that have an upgrade or expansion portion that is expected to be funded through development charges are included in this section, and the renewal portion of the road project

cost is separated and included in the next sub-section under renewal needs (Section 5.2.3). Other growth/renewal hybrid projects which do not have a development charge portion are included fully under Section 5.2.3. These projects include building automation upgrades and HVAC efficiency upgrades that replace existing equipment.

Table 5-3 summarizes growth and upgrade projects planned or expected over the next 10 years with estimated costs for those that have been fully developed in scope. New software systems and upgrades for Information Technology are typically included under the Operating Budget.

Table 5-3: Growth & Upgrade Needs – 2022 to 2031

Service Area	Growth / Upgrade Project	Project Cost	Timing
Facility (Corporate Perspective)	Security system upgrades	Under development	To be scheduled
	Space needs assessment	Under development	To be scheduled
	HVAC efficiency upgrades	Included under renewal	Various
Fleet (Corporate Perspective)	Electrification of vehicles	Under development	To be scheduled
Public Works	Various road projects	$4,809,889	2022 to 2031
	New Operations Centre (South)	Under development	To be scheduled
	Truck for Hot Mix Asphalt	$45,000	2022
	Graveling of main County Rail Trail	$800,000	2022
	Additional EV Charging Stations	$100,000	2022
Dufferin Oaks	Front office upgrades	$55,000	2022
	Two additional lifts for LTC	$10,000	2022
	Landscaping, walkway, canopy upgrades	Included under renewal	2022
	Building automation system upgrade	Included under renewal	2022
Total		$5,819,889	

5.2.3 Capital Renewal Needs

Renewal efforts focus on rehabilitation and replacement activities to enable the County to meet its quality and reliability objectives. The renewal activities forecasted in this AM Plan are expected to be needed to sustain asset condition over the next 10 years. Over time, as the County refines the asset management strategies through tracking of actual condition and actual costs and benefits of the strategies, the County will improve its understanding of the deterioration rates and the lowest lifecycle cost for each asset type. For renewal projects, the County considers coordinating multiple activities through project bundling where possible to reduce total costs.

Rehabilitation activities extend the life of an asset and reduce its risk of failure. These activities and associated benefits are deemed more cost effective than allowing the asset to reach its end of life. An example of a rehabilitation activity is concrete repair work on a bridge or culvert, which will improve the condition of the structure and extend its life such that the overall lifecycle cost is minimized.

At a certain point in an asset's lifecycle, it is no longer cost-effective to rehabilitate the asset, and replacement is required. The County has identified estimated service lives for each of its assets. These replacement intervals are developed to minimize lifecycle costs while considering service levels and the

associated risk. The renewal forecast considers the asset's current condition or age, the County's planned rehabilitation and replacement activities, as well as the recommended strategies from the following specific studies:

2020 Road Needs Study) – This study identified the need and recommended timing for road improvements, rehabilitation, reconstruction, and associated costs. The recommendations have been updated by County staff to reflect work and updated information since the 2019 assessment.

2020 Bridge and Culvert Inspections – Final Action Report– As indicated in Section 2.2.2, structure inspections are completed every two years. In addition to determining a BCI for each asset, the report provides timing for bridge and structural culvert rehabilitations and replacements, as well as associated costs over the next 10 years.

2018 Building Condition Assessments – The building condition assessments provided a 25-year outlook on recommended repairs, rehabilitations, and replacements of building elements including associated costs. The timing was based on the consultant's estimate of the condition, remaining service life, and priority of the building element. As work has been completed on these buildings since the assessment, the County has updated the planned schedule of work and also updated costs as necessary in the County's Capital Plan.

Figure 5-3 shows the renewal needs over the next 10 years by service area. The average renewal need is estimated at $12.39 million per year for the period 2022-2031.

Figure 5-3: Capital Renewal Needs Forecast

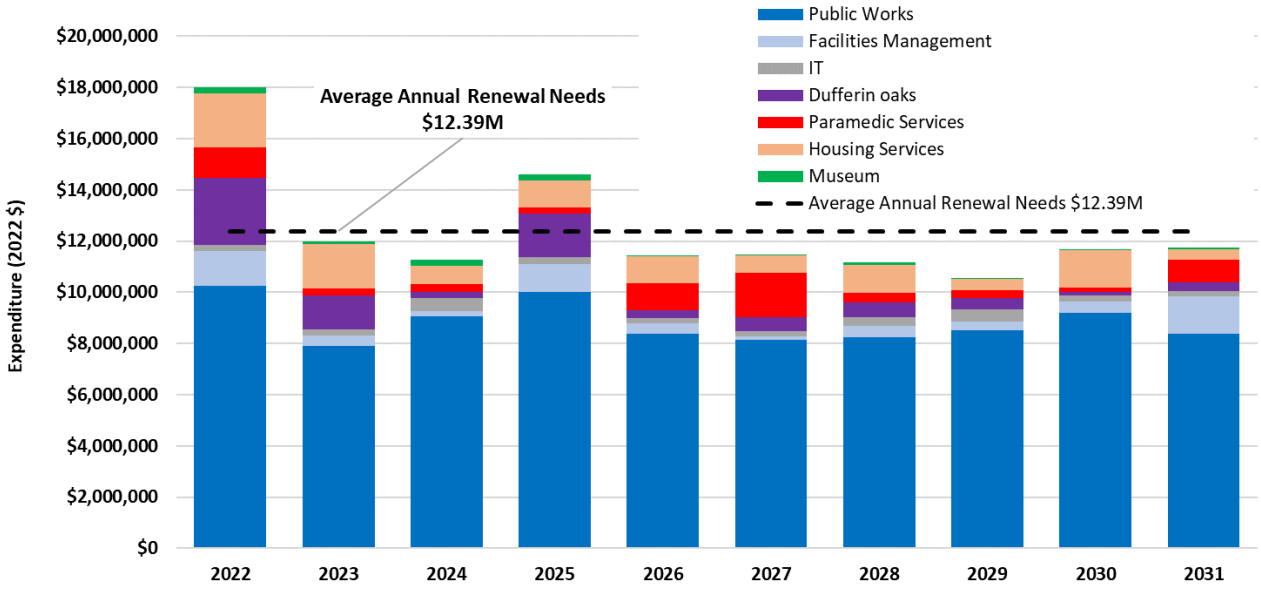


Table 6-2 summarizes the renewal activities in more detail by asset category for each of the next 10 years.

Table 5-4: Renewal Needs Forecasts (in $M)

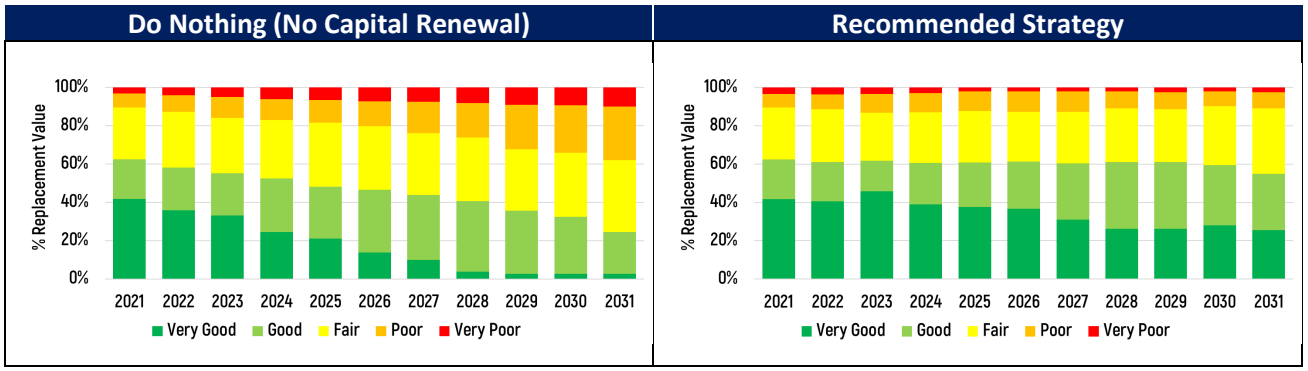
Service	Category	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	10-Yr Annual Average
Public Works	Roads	$5.73	$5.63	$6.00	$6.45	$5.35	$5.18	$5.61	$5.51	$5.90	$5.33	$5.67
	Structures	$2.97	$1.85	$1.50	$1.83	$1.86	$1.86	$1.85	$1.85	$1.62	$1.79	$1.90
	Other Transportation Assets	$0.21	$0.21	$0.21	$0.21	$0.21	$0.21	$0.21	$0.21	$0.21	$0.21	$0.21
	Stormwater Infrastructure	$0.10	$0.10	$0.10	$0.10	$0.10	$0.10	$0.10	$0.10	$0.10	$0.10	$0.10
	Fleet	$1.25	$0.11	$1.24	$1.41	$0.85	$0.80	$0.50	$0.86	$1.38	$0.94	$0.93
Facilities Management	Facilities (CH, EC, Primrose)	$1.03	$0.41	$0.22	$1.09	$0.40	$0.14	$0.44	$0.31	$0.43	$1.05	$0.55
	EV Charging Stations	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.42	$0.04
	Communication Towers	$0.32	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.03
IT	End User Devices	$0.11	$0.11	$0.21	$0.12	$0.11	$0.11	$0.21	$0.12	$0.11	$0.11	$0.13
	IT Infrastructure	$0.09	$0.11	$0.28	$0.10	$0.07	$0.08	$0.08	$0.32	$0.09	$0.06	$0.13
	Communication Systems	$0.02	$0.00	$0.00	$0.03	$0.01	$0.00	$0.00	$0.02	$0.00	$0.00	$0.01
	Other: Printers, Phones, Court Equipment	$0.03	$0.03	$0.03	$0.03	$0.03	$0.03	$0.03	$0.03	$0.03	$0.03	$0.03
Dufferin Oaks	Facilities	$1.74	$1.10	$0.06	$1.56	$0.12	$0.35	$0.49	$0.07	$0.08	$0.14	$0.57
	Fleet	$0.30	$0.12	$0.06	$0.00	$0.00	$0.06	$0.04	$0.30	$0.00	$0.18	$0.11
	Equipment	$0.58	$0.09	$0.11	$0.16	$0.20	$0.11	$0.06	$0.07	$0.07	$0.04	$0.15
Paramedic Services	Facilities	$0.03	$0.06	$0.03	$0.08	$0.12	$0.01	$0.07	$0.03	$0.08	$0.03	$0.05
	Fleet	$1.17	$0.20	$0.20	$0.08	$0.28	$1.37	$0.20	$0.20	$0.08	$0.28	$0.41
	Equipment	$0.00	$0.03	$0.08	$0.07	$0.65	$0.37	$0.11	$0.10	$0.00	$0.55	$0.20
Housing Services	Facilities	$2.13	$1.73	$0.72	$1.04	$1.04	$0.69	$1.10	$0.42	$1.46	$0.42	$1.08
Museum	Facilities	$0.22	$0.08	$0.21	$0.23	$0.01	$0.02	$0.10	$0.01	$0.03	$0.06	$0.10
	Equipment	$0.00	$0.00	$0.00	$0.00	$0.03	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

Annual Renewal Needs	**$18.00**	**$11.97**	**$11.26**	**$14.60**	**$11.43**	**$11.47**	**$11.19**	**$10.53**	**$11.67**	**$11.75**	**$12.39**

Overall Impact of Recommended Strategy

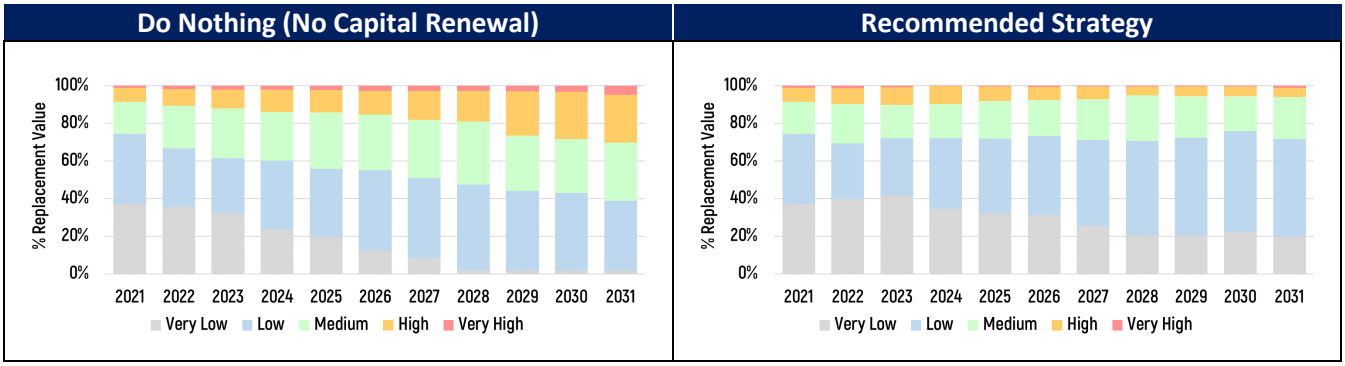
The recommended strategy associated with the average $12.39 million per year in expenditures supports the County's ability to achieve its service levels while balancing risk and minimizing lifecycle costs. If the County does not invest in renewing its infrastructure, there is a significant deterioration in asset condition over time. The recommended strategy ensures that assets are maintained and renewed in a state of good repair, as shown in Figure 5-4.

Figure 5-4: Asset Condition Forecast Comparison – Do Nothing versus Recommended Strategy



The recommended strategy also has a significant impact on managing risk. If the County does not invest in renewal of its assets, there is a significant risk exposure to asset failure on factors such as health and safety and service delivery. The recommended strategy mitigates very high risks and results in lower risk exposure compared to an increasing risk profile if the County did not perform any capital renewal activities, as shown in Figure 5-5.

Figure 5-5 Asset Risk Forecast Comparison – Do Nothing versus Recommended Strategy



5.3 Climate Change Strategies

As indicated in Section 4.4, climate change risks can have significant implications on County infrastructure. The County is currently pursuing various initiatives through its Climate Action Plan related to planning as well as mitigation and adaptation strategies to address climate change risks. The Climate Action Plan outlines 34 primary actions and 99 sub actions that the County will take to build a net-zero and resilient community. While many of the initiatives focus on building community engagement and education, some key actions related to County infrastructure and assets include:

- **Electrification of County fleet**: The County will partner with municipalities to develop a regional Electric Vehicle Strategy to achieve network connectivity. An EV policy at the County level has already been developed to ensure consistency throughout the development of a County charging

network, and as indicated in Section 5.2.2, additional EV charging stations are already planned for installation in 2022.

- **Improve energy efficiency of County facilities:** In addition to educating residents and landlords on energy retrofit programs, the County is evaluating its housing stock and energy upgrade potential to determine the cost benefit of different types of retrofits related to reducing energy usage.
- **Improving community resilience:** A future action is to update floodplain mapping and to develop natural stormwater management plans to ensure there is no increase in vulnerability to climate change impacts such as flooding. Other future actions related to improving infrastructure resiliency include enhancing the amount of green space/permeable surfaces and increasing the uptake of low impact development technologies on private and public properties.

The County recognizes that though these actions will require additional costs that will need to be incorporated into future forecasts, the long-term cost of not acting is greater than the investments being planned today.

6 Financial Strategy

6.1 Overview

The financial strategy is informed by the preceding sections of the Asset Management Plan: the value and condition of the assets, the current levels of service, the risks to service delivery, and the lifecycle activities needed to reduce the risks to acceptable levels. The Financing strategy considers how the County will fund the planned asset management actions to meet the current service levels.

A municipality is in a financially sustainable position if it:

- Provides a level of service commensurate with willingness and ability to pay
- Can adjust service levels in response to changes in economic conditions
- Can adjust its implementation plans in response to changes in the rate of growth
- Has sufficient reserves and/or debt capacity to replace infrastructure when it needs to be replaced to keep its infrastructure in a state of good repair.

The key challenges to financial sustainability are:

- A discrepancy between level of service decisions and fiscal capacity
- Possible future changes in the cost of infrastructure investments
- Unforeseen impacts to funding

Per O.Reg. 588/17, this section of the AM Plan identifies the annual funding projected to be available to undertake the recommended lifecycle activities and discusses strategies to address potential funding shortfalls.

6.2 Available Funding Amounts and Sources

Through the County's annual budget process, capital project and operating activity expenditure information is gathered from service areas, including investment needs, trends, and priorities to enable preparation of the capital and annual operating plans. Once the expenditure plans are finalized, a financing plan is developed which includes several key sources of funding as outlined in the table below.

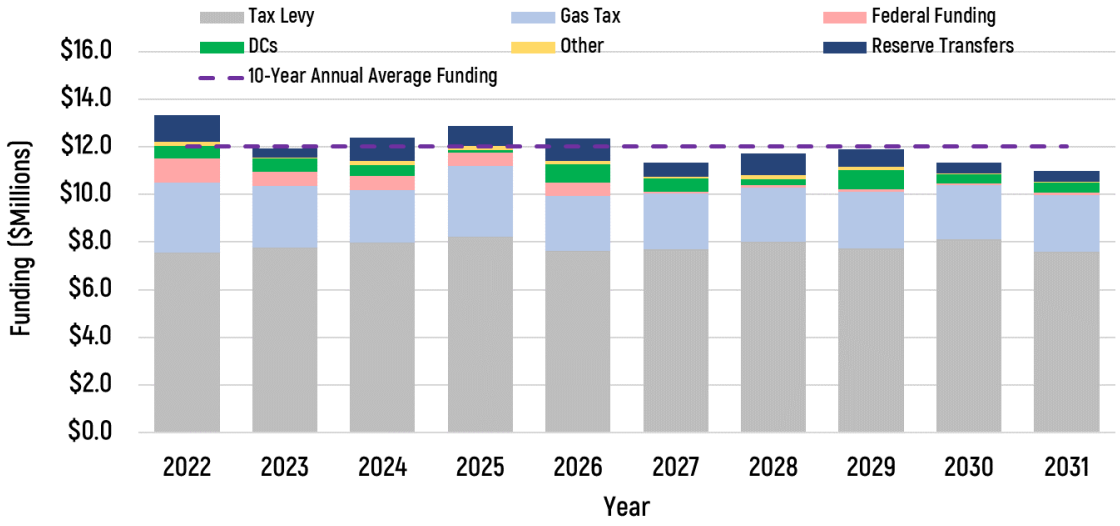
Table 6-1: Key Sources of Funding and Financing

Funding Source	Description
Tax Levy	• County property owners pay an annual tax to the County
Debt	• Long term borrowing, to be paid for by future taxpayers
Canada Community Building Fund (formerly Federal Gas Tax)	• A long-term grant agreement with the Association of Municipalities of Ontario (AMO), that provides a portion of the Federal gas tax revenues to municipalities for revitalization of infrastructure that achieves positive environmental results
Grants	• Project specific grants / subsidies
User Fees	• Funds collected for the use of County services or infrastructure. For example, Museum admission fees.
Rent Revenue	• Rent paid by tenants and residents. For example, rent revenue for Housing Services.
Asset Sales	• Sales of assets no longer required by the County

In addition to the above sources, capital reserves are established as a source of pay-as-you-go funding for the County's capital program. Funding for these reserves is obtained through annual contributions. These annual reserve contributions sustain reserve balances at appropriate levels to address infrastructure replacement costs in the future and inherent uncertainties in capital funding needs. Reserve contributions are evaluated annually to ensure adequate funds are raised to meet future capital requirements and to smooth out the impact on the annual operating budget.

The County minimizes impacts on residents through maximizing other revenue sources such as grants. The projected 10-year contributions to the Capital Budget are shown in Figure 6-1. The average annual contributions from 2022 to 2031 is estimated to be $12.02 million per year.

Figure 6-1: 10-Year Capital Contributions Funding Forecast, 2022 to 2031



6.3 Financial Sustainability

6.3.1 Financial Sustainability for Operations and Maintenance

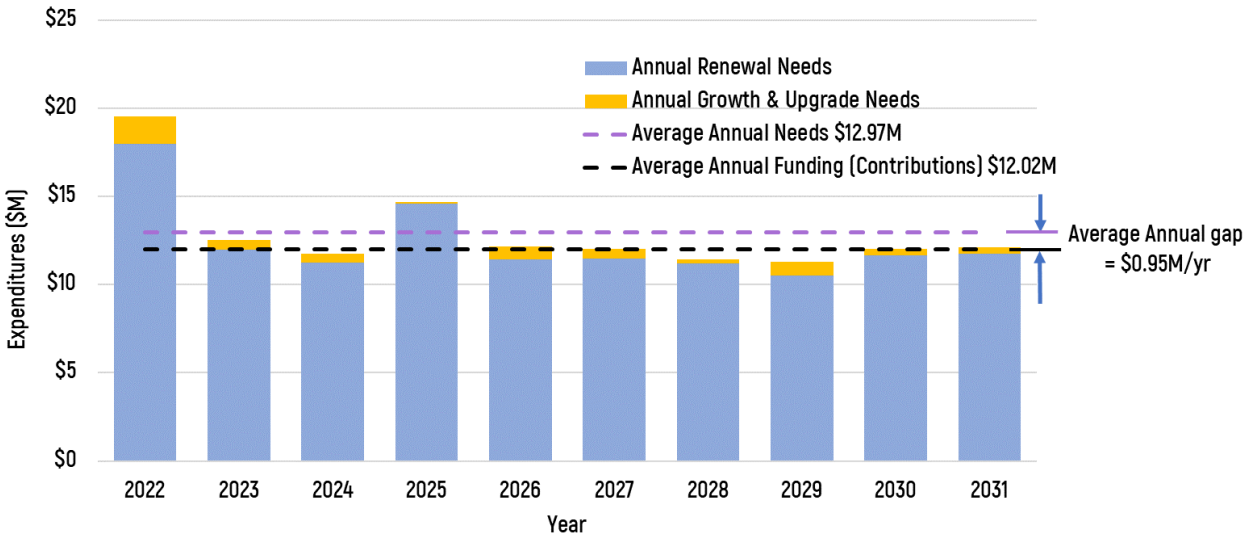
As indicated in Section 5.2.1, this AM Plan estimates an average spend of $8.6 million per year on asset-related operations and maintenance activities, excluding non-asset expenditures such as salaries and programming costs. The needs for Operations and Maintenance may exceed what is currently forecasted in this AM Plan due to various pressures such as the impacts of COVID 19 and increasing IT maintenance contract costs. The pandemic will continue to impact operational needs, in particular, for Dufferin Oaks and Paramedic Services. Rising costs, also due in part to the pandemic, are expected for facility utility costs and in particular, for fuel for vehicles. In general, the County anticipates mitigating the impacts of inflation by funding overages from the Rate Stabilization Reserve.

6.3.2 Financial Sustainability for Capital Growth, Upgrade, and Renewal

This section compares the planned capital funding (Section 6.2) against the forecast needs for the recommended capital lifecycle activities (Section 5.2.2) to determine if there is a funding shortfall in the Capital Budget to maintain current service levels. All values are in 2022 dollars.

Figure 6-2 shows the forecasted average annual need over the next ten years of **$12.97 million per year** (dashed black line, including both growth/upgrade and renewal) and the average annual funding of **$12.02 million per year** (dashed purple line). This results in an estimated average annual funding gap of **$0.95 million per year** over the next ten years ($9.5 million total from 2022 to 2031).

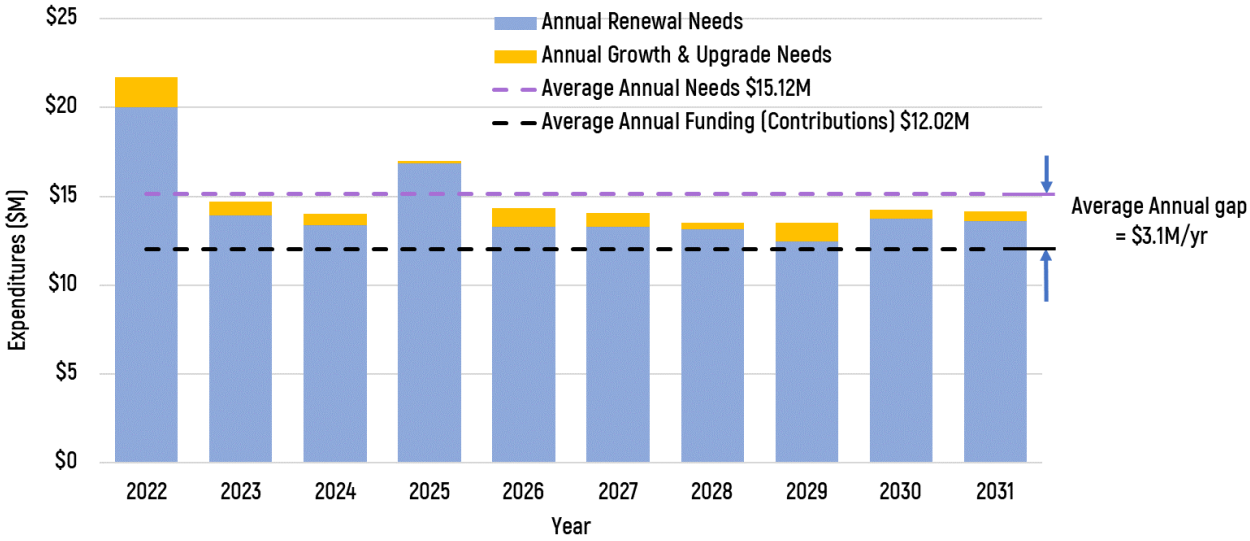
Figure 6-2: Capital Budget Funding Gap



As indicated in Section 5.2.2, the County has other service enhancement initiatives planned over the next 10 years for which the costs of the work are still under development and are not included in the funding gap analysis above. In addition, the next AM Plan update will include consideration of costs for natural assets such as those within the County Forest.

Similar to the Operating budget, the estimated capital forecast and funding shortfall do not consider potential rising costs due to the current economic environment. Recent tender prices suggest that road projects, for example, may cost 35% more than originally planned. Figure 6-3 shows the potential impact on the estimated forecast incorporating a 35% increase on all road projects. In this scenario, the estimated funding shortfall would be expected to increase to an annual average of $3.1 million per year.

Figure 6-3: Capital Budget Funding Gap (35% Road Project Increase)



6.3.3 Strategies to Close Funding Gap

The following strategies may be considered in closing the funding gap for the Capital Budget:

- **Draw down on reserves:** There is already some drawdown of reserves planned in the Capital Budget. The funding gap analysis in this AM Plan indicates a reserve drawdown of at least $9.5 million over the next 10 years based on the currently assumed contributions to the Capital Budget.
- **Increase other available funding sources:** Property tax, debt, or leveraging third party grants
- **Reduce near term renewal needs:** Defer capital renewal projects on lower risk assets, thereby reducing service levels by allowing assets to deteriorate to lower standards before renewal. Note that this may increase overall lifecycle costs in the long-term.
- **Finding cost efficiencies from other projects:** Some projects may cost less than anticipated, freeing up budget for other planned projects. For example, housing unit upgrades are dependent on resident turnover and may occur less frequently than anticipated.
- **Further extend asset life and reduce lifecycle costs:** consider additional rehabilitation strategies to defer more expensive renewals

One of the associated factors to managing the Capital Budget is the County's current capacity and resource constraints in being able to carry out capital projects. These constrains have inevitably led to deferral of some projects into subsequent years. The County approved several new positions throughout 2021 to help address these ongoing capacity constraints.

7 AM Plan Monitoring & Improvement

7.1 Overview

Development of AM Plans is an iterative process that includes improving data, processes, systems, staff skills, and organizational culture over time. This section provides an overview of the compliance of this AM Plan with Ontario Regulation 588/17 for current levels of service and recommends improvements to the County's asset management practices.

Table 7-1: O.Reg. 588/17 Compliance Status and Other Opportunities

AM Plan Section	O.Reg. 588/17 Compliance (Current LOS)
State of Local Infrastructure	**Compliance:** For each asset category, the AM Plan provides a summary of the assets, the replacement cost of the assets, the average age of the assets, the condition of the assets, and the approach to assessing condition of assets. **General Improvements:** • Continue to improve knowledge of asset replacement costs and current condition of the assets. Target efforts on highest risk assets and assets with unknown condition. **Specific improvements:** • Include natural assets, waste services building as assets in the next AM Plan • Continue to improve GIS datasets and improve installation year data for critical assets and infrastructure that cannot be tied to the forecast of other assets • Ensure a master inventory is maintained for non-GIS assets with up-to-date asset description, installation/purchase year, cost, and condition (if applicable) data. The excel files developed through this AM Plan can be used as a starting point for those areas currently without an official inventory. • For facility assets, maintain an up-to-date inventory based on the building condition assessments, ideally to Uniformat II Standard. Currently, the Capital Plan is up-to-date showing future renewal needs and takes into account work completed and new information made available since the assessment. However, this new information is not updated in terms of assigning an updated condition score, and the Capital Plan elements are not in the same hierarchy structure as the condition assessment. Updated condition data, therefore, is not available and cannot be easily linked back to the original data set even if available. It is recommended that updated condition data is documented and tied to the original condition assessment asset structure (Uniformat II Standard). This will enable a detailed snapshot of facility condition to be generated at the building element level, in addition to the FCI analysis in this AM Plan. Replacement costs, in addition to condition, should also be assigned for each building element. • Implement automation and AM software for maintaining asset inventory datasets

AM Plan Section	O.Reg. 588/17 Compliance (Current LOS)
Levels of Service	**Compliance:** For each asset category, the AM Plan reports the current LOS performance. For core assets, the 2022 AM provides the qualitative community descriptions and technical metrics as required by O.Reg. 588/17, and the current performance. For non-core assets, qualitative descriptions and technical metrics established by the County are discussed. **General Improvements:** • Continue to review levels of service measures that support lifecycle asset planning activities for specific asset types and adjust or develop new measures as required. • Continue to improve accuracy of reporting performance, particularly related to outstanding operations and maintenance work orders outstanding. • For 2025 O.Reg. 588/17, develop Proposed LOS (target performance for each measure over each of the next 10 years)
Levels of Service (continued)	**Specific improvements:** • Gain further understanding of resiliency of properties and system to 100-year and 5-year storms for O.Reg. 588/17 stormwater technical measures. This analysis will be supported by future actions identified in the County's Climate Action Plan, including updating floodplain mapping and developing natural stormwater management plans to ensure no increase in vulnerability. • Paramedics: Improve data on vehicle breakdown and downtime and consider reporting on these measures • IT: Develop Service Level Agreements with customers to define response time service levels
Lifecycle Management Strategy	**Compliance:** The AM Plan provides the population and employment forecasts as set out in Schedule 3 to the 2017 Growth Plan. For each asset category, the AM Plan provides the lifecycle activities that would need to be undertaken to maintain the current LOS for each of the next 10 years, based on risk and lowest lifecycle cost analyses. **General Improvements:** • Continue to optimize the lifecycle activities by searching out and testing various operations, maintenance and renewal activity and timing options, and then evaluating the benefits against the costs of each option over time to determine the lowest cost option for the required benefits. **Specific improvements:** • Improve understanding of growth and upgrade needs by incorporating recommendations from the Transportation Master Plan • Continue to develop scope of work and costs for upcoming upgrade projects, such as facility security and space upgrades and electrification of fleet. • Review and incorporate additional strategies related to Climate Action Plan recommendations • Include AM strategies and costs for natural assets in the next AM Plan

AM Plan Section	O.Reg. 588/17 Compliance (Current LOS)
Financial Strategy	**Compliance:** The AM Plan provides the estimated 10-year capital expenditures and significant operating costs required to maintain the current levels of service to accommodate projected increases in demand caused by growth as set out in Schedule 3 to the 2017 Growth Plan. For each asset category, the AM Plan provides the costs of providing the lifecycle activities that would need to be undertaken to maintain the current LOS for each of the next 10 years.
Financial Strategy (continued)	**General Improvements:** • Update Operating budget forecast as impact of on-going pressures, such as COVID 19 and increasing costs, are better understood • Incorporate costs of upgrade projects and Climate Action Plan recommendations into the Capital Plan forecast once their scope and costs are developed • Continue to maximize funding sources such as grants to mitigate funding shortfalls • Prepare 10-year operating and capital plans and budgets as required by O.Reg. 588/17 for AM Plans for Proposed LOS (due by July 1, 2025), and evaluate the funding shortfall to the Proposed LOS

7.2 Monitoring and Review Procedures

The AM Plan will be updated every five years to ensure it reports an updated snapshot of the County's asset portfolio and its associated value, age, and condition. It will ensure that the County has an updated 10-year outlook including the proposed service levels by year 2025, the costs of the associated lifecycle strategies and an assessment of funding shortfalls.

Per O.Reg. 588/17, the County will conduct an annual review of its asset management progress in implementing this AM Plan and will discuss strategies to address any factors impeding its implementation.