Asset Management Plan

Municipality of Port Hope

Facilities

2024

This Asset Management Program was prepared by:

psdcitywide

Empowering your organization through advanced asset management, budgeting & GIS solutions

Key Statistics

Replacement cost of Buildings

$186.1 million

Replacement cost of infrastructure per household

$24,460 (2021)

Percentage of assets in fair or better condition

17%

Percentage of assets with assessed condition data

0%

Annual capital infrastructure deficit

$1.9 million

Recommended timeframe for eliminating annual infrastructure deficit

10 Years

Target reinvestment rate

2.0%

Actual reinvestment rate

1.0%

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Executive Summary

Municipal infrastructure provides the foundation for the economic, social, and environmental health and growth of a community through the delivery of critical services. The goal of asset management is to deliver an adequate level of service in the most cost-effective manner. This involves the development and implementation of asset management strategies and long-term financial planning.

Scope

This AMP identifies the current practices and strategies that are in place to manage public infrastructure and makes recommendations where they can be further refined. Through the implementation of sound asset management strategies, the Municipality can ensure that public infrastructure is managed to support the sustainable delivery of municipal services.

This AMP includes the following asset category:

Asset Category

Facilities (non-core)

With the development of this AMP the Municipality has achieved compliance with O. Reg. 588/17 to the extent of the requirements that must be completed by July 1, 2024 for Facilities. There are additional requirements concerning proposed levels of service and growth that must be met by July 1, 2025.

Findings

The overall replacement cost of Facilities included in this AMP totals $186.1 million. 17% of all assets analysed in this AMP are in fair or better condition and assessed condition data was available for 0% of assets. Facilities condition is based on the estimated useful life of each non-core Facility. This data gap highlights the requirement for future Facility Condition Assessments (FCA) throughout the Municipality. Completing FCAs will provide updated condition, but also more accurate replacement costs. An excellent example of this is Fire Station #2, which has an estimated replacement cost of $2,392,592 in Citywide. However, the estimated replacement cost of Fire Station #2, supplied by Protective Services, estimates the true replacement cost to be $9,900,000.

The development of a long-term, sustainable financial plan requires an analysis of whole lifecycle costs. This AMP uses replacement-only strategies.

To meet capital replacement and rehabilitation needs for existing infrastructure, prevent infrastructure backlogs, and achieve long-term sustainability, the Municipality’s average annual capital requirement totals $3,721,000. Based on a historical analysis of sustainable capital funding sources, the Municipality is committing approximately $1,789,000 towards capital projects per year. As a result, there is currently an annual funding gap of $1,933,000.

It is important to note that this AMP represents a snapshot in time and is based on the best available processes, data, and information at the Municipality. Strategic asset management planning is an ongoing and dynamic process that requires continuous improvement and dedicated resources.

Annual Increase
Per Household

Recommendations

A financial strategy was developed to address the annual capital funding gap. The following graphic shows annual tax change required to eliminate the Municipality's infrastructure deficit based on a 10-year plan:

Average Annual Tax Change
To Achieve Target Reinvestment Rate for Facilities

0.8%

Recommendations to guide continuous refinement of the Municipality's asset management program can include:

- Review data to update and maintain a complete and accurate dataset.
- Develop a condition assessment strategy, that include the calculation of a Facility Condition Index, with a regular schedule.
- Review and update lifecycle management strategies.
- Development and regularly review short- and long-term plans to meet capital requirements.
- Measure current levels of service and identify sustainable proposed levels of service.

1 Introduction & Context

Key Insights

- The Municipality of Port Hope is a community located on the shore of Lake Ontario and has identified the strategic decision making for infrastructure as a priority.

- The goal of asset management is to minimize the lifecycle costs of delivering infrastructure services, manage the associated risks, while maximizing the value ratepayers receive from the asset portfolio.

- The Municipality's asset management policy provides clear direction to staff on their roles and responsibilities regarding asset management.

- An asset management plan is a living document that should be updated regularly to inform long-term planning.

- Ontario Regulation 588/17 outlines several key milestone and requirements for asset management plans in Ontario between July 1, 2022 and 2025.

1.1 Port Hope Community Profile

Census Characteristic	Municipality of Port Hope	Ontario
Population 2021	17,294	14,223,942
Population Change 2016-2021	3.2	5.8
Total Private Dwellings	7,607	5,929,250
Population Density	62/km^2	15.9/km^2
Land Area	278.80 km^2	892,411.76 km^2

Beyond the town proper, the Municipality extends to include Campbellcroft, Canton, Dale, Elizabethville, Garden Hill, Knoxville, Morrish, Osaca, Perrytown, Port Britain, Rossmount (partially), Tinkerville, Thomstown, Welcome, Wesleyville, Zion, Decker Hollow (ghost town) and Davidson's Corners (partially).

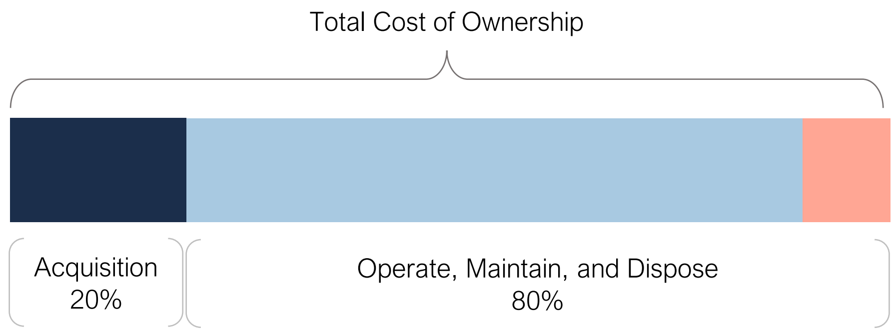
The Ganaraska River, flowing through the town and into nearby Lake Ontario, has always been a vital life source. This strategic location played a key role in Port Hope's early development, fostering trade and transportation. While manufacturing once dominated Port Hope's economy, the landscape has evolved. Smaller manufacturers remain, and the nuclear industry continues to be a key employer. The surrounding fertile lands nurture a vibrant agricultural scene, ensuring access to fresh, local produce. This dedication to sustainable practices aligns perfectly with Port Hope's commitment to preserving its heritage while embracing a dynamic future. Looking forward, Port Hope actively attracts new businesses in sectors like tourism and professional services, fostering a diversified and thriving economy.

The Municipality has experienced punctuated growths in year over year population. Over the last decade, the Municipality has seen a 3.2% increase in population. The Municipality has a population skewed to an aging population with 28% of the population being 65+, which is above the approximate 19% proportion for the rest of Ontario.

1.2 An Overview of Asset Management

Municipalities are responsible for managing and maintaining a broad portfolio of infrastructure assets to deliver services to the community. The goal of asset management is to minimize the lifecycle costs of delivering infrastructure services, manage the associated risks, while maximizing the value ratepayers receive from the asset portfolio.

The acquisition of capital assets accounts for only 10-20% of their total cost of ownership. The remaining 80-90% derives from operations and maintenance. This AMP focuses its analysis on the capital costs to maintain, rehabilitate and replace existing municipal infrastructure assets.



These costs can span decades, requiring planning and foresight to ensure financial responsibility is spread equitably across generations. An asset management plan is critical to this planning, and an essential element of broader asset management program. The industry-standard approach and sequence to developing a practical asset management program begins with a Strategic Plan, followed by an Asset Management Policy and an Asset Management Strategy, concluding with an Asset Management Plan.

This industry standard, defined by the Institute of Asset Management (IAM), emphasizes the alignment between the corporate strategic plan and various asset management documents. The strategic plan has a direct, and cascading impact on asset management planning and reporting.

1.2.1 Strategic Asset Management Policy

An asset management policy represents a statement of the priorities guiding the Municipality’s approach to asset management activities. The 2019-2022 Strategic Plan is in the process of updating for 2023-2027. The following six pillars have been identified to move forward with public engagement:

- More Homes
- Strong Local Economy
- Welcoming and Livable Community
- Healthy Natural Environment
- Safe and Well-Maintained Infrastructure
- Good Governance

Priority	Goal Statement
More Homes	Take action to address the urgent need for more housing options for residents of all ages and incomes.
Strong Local Economy	Leverage our competitive advantages to facilitate business growth and attract new local jobs.
Welcoming & Livable Community	Pursue community projects and partnerships that enhance sense of belonging, improve happiness and ensure a high quality of life.
Healthy Natural Environment	Continually strive to protect, conserve and enhance our natural environment while enhancing our capacity to mitigate and adapt to the impacts of climate change.
Safe & Well Maintained Infrastructure	Embrace best practices in asset management to continuously maintain and improve our municipal infrastructure assets contributing to long-term sustainability.
Good Government	Provide friendly, responsive, and citizen-focused services encouraging meaningful community engagement and demonstrating transparent decision-making, and provide a safe, inclusive and exceptional working environment for Staff and Council.

1.2.2 Asset Management Plans

Asset management plans (AMP) present the outcomes of the Municipality's asset management program and identifies the resource requirements needed to achieve a defined level of service. An AMP typically includes the following content:

- State of Infrastructure
- Asset Management Strategies
- Levels of Service
- Financial Strategies

Asset management plans are living documents that should be updated regularly as additional asset and financial data becomes available. This will allow the Municipality to re-evaluate the state of infrastructure and identify how the organization's asset management and financial strategies are progressing.

1.3 Key Concepts in Asset Management

Effective asset management integrates several key components, including lifecycle management, risk management, and levels of service. These concepts are applied throughout this asset management plan and are described below in greater detail.

1.3.1 Lifecycle Management Strategies

The condition or performance of most assets will deteriorate over time. This process is affected by a range of factors including an asset's characteristics, location, utilization, maintenance history and environment. Asset deterioration has a negative effect on the ability of an asset to fulfill its intended function, and may be characterized by increased cost, risk and even service disruption.

To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

There are several field intervention activities that are available to extend the life of an asset. These activities can be generally placed into one of three categories: maintenance, rehabilitation and replacement. The following table provides a description of each type of activity and the general difference in cost.

Lifecycle Activity	Description	Example (Roads)	Cost
Maintenance	Activities that prevent defects or deteriorations from occurring	Crack Seal	**$**
Rehabilitation/ Renewal	Activities that rectify defects or deficiencies that are already present and may be affecting asset performance	Mill & Re-surface	**$$**
Replacement/ Reconstruction	Asset end-of-life activities that often involve the complete replacement of assets	Full Reconstruction	**$$$**

Depending on initial lifecycle management strategies, asset performance can be sustained through a combination of maintenance and rehabilitation, but at some point, replacement is required. Understanding what effect these activities will have on the lifecycle of an asset, and their cost, will enable staff to make better recommendations.

The Municipality's approach to lifecycle management is described in Section 0. Developing and implementing a proactive lifecycle strategy will help staff to determine which activities to perform on an asset and when they should be performed to maximize useful life at the lowest total cost of ownership.

1.3.2 Risk Management Strategies

Municipalities generally take a 'worst-first' approach to infrastructure spending. Rather than prioritizing assets based on their importance to service delivery, assets in the worst condition are fixed first, regardless of their criticality. However, not all assets are created equal. Some are more important than others, and their failure or disrepair poses more risk to the community than that of others. For example, a road with a high volume of traffic that provides access to critical services poses a higher risk than a low volume rural road. These high-value assets should receive funding before others.

By identifying the various impacts of asset failure and the likelihood that it will fail, risk management strategies can identify critical assets, and determine where maintenance efforts, and spending, should be focused.

This AMP includes a high-level evaluation of asset risk and criticality. Each asset has been assigned a probability of failure score and consequence of failure score based on available asset data. These risk scores can be used to prioritize maintenance, rehabilitation and replacement strategies for critical assets.

1.3.3 Levels of Service

A level of service (LOS) is a measure of what the Municipality is providing to the community and the nature and quality of that service. Within each asset category in this AMP, technical metrics and qualitative descriptions that measure both technical and community levels of service have been established and measured as data is available.

These measures include a combination of those that have been outlined in O. Reg. 588/17 in addition to performance measures identified by the Municipality as worth measuring and evaluating. The Municipality measures the level of service provided at two levels: Community Levels of Service, and Technical Levels of Service.

Community Levels of Service

Community levels of service are a simple, plain language description or measure of the service that the community receives. For core asset categories (roads, bridges and culverts, water, wastewater, Storm Sewer) the Province, through O. Reg. 588/17, has provided qualitative descriptions that are required to be included in this AMP. For non-core asset categories, the Municipality has determined the qualitative descriptions that will be used to determine the community level of service provided.

These descriptions can be found in the Levels of Service subsection within each asset category.

Technical Levels of Service

Technical levels of service are a measure of key technical attributes of the service being provided to the community. These include mostly quantitative measures and tend to reflect the impact of the Municipality's asset management strategies on the physical condition of assets or the quality/capacity of the services they provide.

For core asset categories (roads, bridges and culverts, water, wastewater, storm sewer) the Province, through O. Reg. 588/17, has provided technical metrics that are required to be included in this AMP. For non-core asset categories, the Municipality has determined the technical metrics that will be used to determine the technical level of service provided. These metrics can be found in the Levels of Service subsection within each asset category.

Current and Proposed Levels of Service

This AMP focuses on measuring the current level of service provided to the community. Once current levels of service have been measured, the Municipality plans to establish proposed levels of service over a 10-year period, in accordance with O. Reg. 588/17.

Proposed levels of service should be realistic and achievable within the timeframe outlined by the Municipality. They should also be determined with consideration of a variety of community expectations, fiscal capacity, regulatory requirements, corporate goals and long-term sustainability. Once proposed levels of service have been established, and prior to July 2025, the Municipality must identify a lifecycle management and financial strategy which allows these targets to be achieved.

1.4 Climate Change

Climate Change is a global phenomenon impacting human and natural systems worldwide. The effects of climate change include increasing temperatures, higher levels of precipitation, droughts, and extreme weather events.

The Canada's Changing Climate Report by the Environment and Climate Change Canada in 2019 indicated that in between 1948 and 2016, the average temperature increase across Canada was 1.7°C, with a more significant rise of 2.3°C in Northern Canada. Looking ahead, the projections are concerning. If significant emission reductions are not achieved, Canada is expected to have a temperature rise by a staggering 6.3°C by the year 2100 compared to 2005 levels.

Climate change not only affects temperatures but also disrupts precipitation patterns. Canada has witnessed an increase of approximately 20% in precipitation between 1948 and 2012 according to the CCCR. These trends are expected to continue, with projections indicating an additional 24% increase in precipitation by the late 21st century. However, this won't be evenly distributed. Southern Canada, for instance, might experience more frequent droughts during the summer months.

Canadians are already experiencing the consequences of climate change through an increase in extreme weather events. These include droughts, floods, heatwaves, cold snaps, wildfires, and shrinking Arctic sea ice. These events not only disrupt daily life but also cause significant damage to infrastructure and the environment. Canada's infrastructure, including roads, bridges, buildings, and power grids, is particularly vulnerable to climate change. Extreme weather events like droughts, floods, and freeze-thaw cycles can damage and accelerate wear on this infrastructure. Additionally, extended periods of high temperatures, strong winds, and wildfires pose further threats.

The burden of protecting communities from the impacts of climate change falls heavily on municipalities. Canadian cities and towns are on the front lines, facing the challenge of safeguarding their local economies, residents, environment, and physical assets. Developing and implementing adaptation strategies is crucial for Canadian municipalities to build resilience in the face of our changing climate.

1.4.1 Port Hope Climate Profile

The Municipality of Port Hope, situated in Northumberland County, Ontario is expected to face several challenges due to climate change. According to Climatedata.ca, a collaboration supported by Environment and Climate Change Canada (ECCC), suggests the following trends for Port Hope:

Higher Average Annual Temperature:

- Between the years 1971 and 2000 the annual average temperature was 7.2 ºC.
- Under a high emissions scenario, the annual average temperatures are projected to increase by 9.9 ºC by the year 2050 and by 13.7 ºC by the end of the century.

Increase in Total Annual Precipitation:

- Under a high emissions scenario, Port Hope is projected to experience a 13% increase in precipitation by the year 2080 and an 18% increase by the end of the century.

Increase in Frequency of Extreme Weather Events:

- Port Hope is expected to experience more frequent and intense weather events.

- Additionally, due to close proximity to Lake Ontario and Ganaraska River, Port Hope is expected to experience a stronger impact of extreme weather events.

1.4.2 Great Lakes

The Great Lakes, one of the largest sources of fresh water on Earth, contain 21 percent of the world's surface freshwater and support 35 million people living in the watershed. Between 1998 and 2013, the Laurentian Great Lakes experienced prolonged low water levels, followed by a significant rise starting in 2013, which led to Lake Ontario reaching its highest level since 1918 in spring 2017. This fluctuation, influenced by changes in precipitation and evaporation, presents complexities for infrastructure and urban planning.

High water levels increase the risk of flooding, which can damage infrastructure and necessitate repairs. Prolonged high water levels can also cause shoreline erosion, impacting properties and requiring erosion control measures. Addressing these issues involves investments in both immediate flood responses and long-term adaptation strategies.

Environmental and public health considerations arise from increased runoff, potentially leading to higher pollutant levels in the lake and necessitating enhancements to water treatment facilities. The uncertainty in projecting future lake levels adds complexity to long-term planning, emphasizing the need for flexible management strategies. Therefore, investment in adaptive infrastructure and robust emergency response capabilities is essential to effectively manage these challenges.

The physical impacts of climate change are most noticeable through flooding, extreme weather events such as windstorms and tornadoes, and rising water levels eroding shorelines and natural spaces. Erosion and flooding pose a threat to surrounding built infrastructure such as park assets, bridges, and roads. Communities in the Great Lakes region may also experience more severe windstorms or tornadoes as a result of climate change, causing damage to both the natural and built environment.

1.4.3 Integration of Climate Change and Asset Management

Asset management practices aim to deliver sustainable service delivery - the delivery of services to residents today without compromising the services and well-being of future residents. Climate change threatens sustainable service delivery by reducing the useful life of an asset and increasing the risk of asset failure. Desired levels of service can be more difficult to achieve as a result of climate change impacts such as flooding, high heat, drought, and more frequent and intense storms.

The 2010 Climate Action Plan is a strategic document proposed initiatives to reduce carbon intensive fuel consumption and GHG emissions from fleets through initiative 3: Implement a Fleet Energy Management Strategy and initiative 4: Evaluate and implement bio-based fuels.

In order to achieve the sustainable delivery of services, climate change considerations should be incorporated into asset management practices. The integration of asset management and climate change adaptation observes industry best practices and enables the development of a holistic approach to risk management.

1.5 O. Reg 588/17 Timeline

As part of the *Infrastructure for Jobs and Prosperity Act, 2015*, the Ontario government introduced Regulation 588/17 - Asset Management Planning for Municipal Infrastructure (O. Reg 588/17). Along with creating better performing organizations, more liveable and sustainable communities, the regulation is a key, mandated driver of asset management planning and reporting. It places substantial emphasis on current and proposed levels of service and the lifecycle costs incurred in delivering them.

The diagram below outlines key reporting requirements under O. Reg 588/17 and the associated timelines.

2019

Strategic Asset Management Policy

2024

Asset Management Plan for Core and Non-Core Assets (same components as 2022) and Asset Management Policy Update

2022

Asset Management Plan for Core Assets with the following components:

- Current levels of service
- Inventory analysis
- Lifecycle activities to sustain LOS
- Cost of lifecycle activities
- Population and employment forecasts
- Discussion of growth impacts

2025

Asset Management Plan for All Assets with the following additional components:

- Proposed levels of service for next 10 years
- Updated inventory analysis
- Lifecycle management strategy
- Financial strategy and addressing shortfalls
- Discussion of how growth assumptions impacted lifecycle and financial

1.6 O. Reg. 588/17 Compliance Review

The following table identifies the requirements outlined in Ontario Regulation 588/17 for municipalities to meet by July 1, 2024. Next to each requirement a page or section reference is included in addition to any necessary commentary.

Requirement	O. Reg. Section	AMP Reference	Status
Summary of assets in each category	S.5(2), 3(I)	3.1	Complete
Replacement cost of assets in each category	S.5(2), 3(II)	3.1	Complete
Average age of assets in each category	S.5(2), 3(III)	3.2	Complete
Condition of core assets in each category	S.5(2), 3(IV)	3.2	Complete
Description of Municipality's approach to assessing the condition of assets in each category	S.5(2), 3(V)	3.2.1	Complete
Current levels of service in each category	S.5(2), 1(I-II)	3.5	Complete
Current performance measures in each category	S.5(2), 2	3.5	Complete
Lifecycle activities needed to maintain current levels of service for 10 years	S.5(2), 4	3.3	Complete
Costs of providing lifecycle activities for 10 years	S.5(2), 4	Appendix A: 10-Year Capital Requirements	Complete
Growth assumptions	S.5(2), 5(I-II) S.5(2), 6(I-VI)	4.1	Complete

2 Scope and Methodology

Key Insights

- This asset management plan covers the Facilities category, for non-core Facilities.
- The source and recency of replacement costs impacts the accuracy and reliability of asset portfolio valuation.
- Accurate and reliable condition data helps to prevent premature and costly rehabilitation or replacement and ensures that lifecycle activities occur at the right time to maximize asset value and useful life.

2.1 Asset Category Included in This AMP

This asset management plan for the Municipality of Port Hope is produced in compliance with Ontario Regulation 588/17. The July 2024 deadline under the regulation—the second of three AMPs—requires analysis of both core assets (Transportation, Drinking Water, Wastewater, and Stormwater) and non-core assets (Facilities, Fleet & Fleet Equipment, Machinery & Equipment, Land Improvements) . This AMP as part of a series and covers Facilities. Facilities are funded by tax levy.

This AMP summarizes the state of the infrastructure for the Municipality's Facilities, establishes current levels of service and the associated technical and customer oriented key performance indicators (KPIs), outlines lifecycle strategies where necessary for optimal asset management and performance, and provides financial strategies to reach sustainability.

2.2 Deriving Replacement Costs

There are a range of methods to determine the replacement cost of an asset, and some are more accurate and reliable than others. This AMP relies on two methodologies:

- **User-Defined Cost and Cost/Unit**: Based on costs provided by municipal staff which could include average costs from recent contracts; data from engineering reports and assessments; staff estimates based on knowledge and experience.
- **Cost Inflation/CPI Tables**: Historical cost of the asset is inflated based on Consumer Price Index or Non-Residential Building Construction Price Index

User-defined costs based on reliable sources are a reasonably accurate and reliable way to determine asset replacement costs. Cost inflation is typically used in the absence of reliable replacement cost data. It is a reliable method for recently purchased and/or constructed assets where the total cost is reflective of the actual costs that the Municipality incurred. As assets age, and new products and technologies become available, cost inflation becomes a less reliable method.

2.3 Estimated Useful Life and Service Life Remaining

The estimated useful life (EUL) of an asset is the period over which the Municipality expects the asset to be available for use and remain in service before requiring replacement or disposal. The EUL for each asset in this AMP was assigned according to the knowledge and expertise of municipal staff and supplemented by existing industry standards when necessary.

By using an asset's in-service data and its EUL, the Municipality can determine the service life remaining (SLR) for each asset. Using condition data and the asset's SLR, the Municipality can more accurately forecast when it will require replacement. The SLR is calculated as follows:

$$Service\ Life\ Remaining\ (SLR) = In\ Service\ Date + Estimated\ Useful\ Life(EUL) - Current\ Year$$

2.4 Reinvestment Rate

As assets age and deteriorate they require additional investment to maintain a state of good repair. The reinvestment of capital funds, through asset renewal or replacement, is necessary to sustain an adequate level of service. The reinvestment rate is a measurement of available or required funding relative to the total replacement cost.

By comparing the actual vs. target reinvestment rate the Municipality can determine the extent of any existing funding gap. The reinvestment rate is calculated as follows:

$$Target\ Reinvestment\ Rate = \frac{Annual\ Capital\ Requirement}{Total\ Replacement\ Cost}$$

$$Actual\ Reinvestment\ Rate = \frac{Annual\ Capital\ Funding}{Total\ Replacement\ Cost}$$

2.5 Deriving Asset Condition

An incomplete or limited understanding of asset condition can mislead long-term planning and decision-making. Accurate and reliable condition data helps to prevent premature and costly rehabilitation or replacement and ensures that lifecycle activities occur at the right time to maximize asset value and useful life.

A condition assessment rating system provides a standardized descriptive framework that allows comparative benchmarking across the Municipality's asset portfolio. The table below outlines the condition rating system used in this AMP to determine asset condition. This rating system is aligned with the Canadian Core Public Infrastructure Survey which is used to develop the Canadian Infrastructure Report Card. When assessed condition data is not available, service life remaining is used to approximate asset condition.

Condition	Description	Criteria	Service Life Remaining (%)
Very Good	Fit for the future	Well maintained, good condition, new or recently rehabilitated	80-100
Good	Adequate for now	Acceptable, generally approaching mid-stage of expected service life	60-80
Fair	Requires attention	Signs of deterioration, some elements exhibit significant deficiencies	40-60
Poor	Increasing potential of affecting service	Approaching end of service life, condition below standard, large portion of system exhibits significant deterioration	20-40
Very Poor	Unfit for sustained service	Near or beyond expected service life, widespread signs of advanced deterioration, some assets may be unusable	0-20

The analysis in this AMP is based on assessed condition data only as available. In the absence of assessed condition data, asset age is used as a proxy to determine asset condition. Appendix C: Condition Assessment Guidelines includes additional information on the role of asset condition data and provides basic guidelines for the development of a condition assessment program.

2.6 Deriving Asset Risk

2.6.1 Qualitative Risk

Risk is defined as the effect of uncertainty on objectives. Inherent in the management of infrastructure assets is the assumption of risks. Often, asset risks are specific and measurable. Sometimes, however, risks are impractical to quantify, but are recognized for the threats they pose to assets and their ability to provide their intended service. These are qualitative risks.

Qualitative risks can indicate key trends, challenges, and risks to service delivery that the Municipality faces. Qualitative risks were identified as applicable to Municipality of Port Hope's assets. The application of these risks to the Municipality's assets are further discusses in Section 3.4.3.

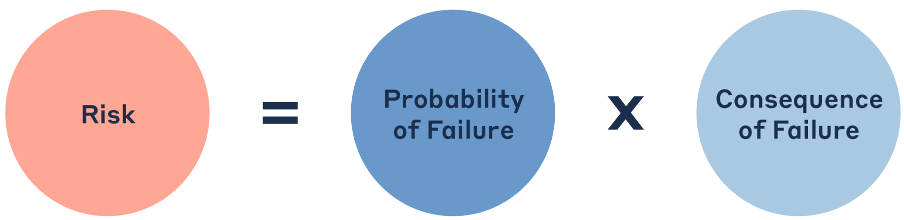
Identifying what qualitative risks are applicable to the Town and which asset categories may be most impacted is a critical first step in the management of risk.

2.6.2 Quantitative Risk

Asset risks may also be specific and measurable against an asset based on attribute features like condition, material, and the cost to replace. When risk can be quantified against an asset it is a quantitative risk.

Quantitative risk is a product of two variables: the **probability** that an asset will fail, and the resulting **consequences** of that failure event. To calculate risk, the probability and consequence of failure are each scored from 1 to 5, producing a minimum risk rating of one (1) for the lowest risk assets, and a maximum risk rating of 25 for the highest risk assets.

Formula to Assess Risk of Assets



Probability of Failure

Various parameters may be used to estimate the probability or likelihood of an asset's failure. Typically, a model is selected for a group of similar assets (e.g., all roads, water distribution system etc.). Often parameters for estimating probability of failure include asset condition, service life remaining, and/or asset material.

For each risk model, probability of failure (PoF) is determined through the following steps:

1. Identification of *available* attribute data *suitable* for determining the probability of failure for selected assets. In some instances, available asset data may be limited requiring a more simplified PoF model, at least initially.
   - This process often identifies opportunities for asset data enhancements and/or data collection. Asset enhancement considerations commonly relate to data quality dimensions which are outlined in Appendix B: Data Quality Dimensions.
2. Determination of the type of consequence that applies to the selected attribute.
   - Condition, Design Capacity, Economic, Environmental, Health and Safety, Operational, Social, Strategic
3. Where there are multiple parameters included in the PoF model, determine suitable weighting of each parameter.

- Weighting allows the model to recognize that each factor may impact the probability of failure to a different degree. Where the weight is higher, the impact that factor has on the model increases too.

Consequence of Failure

The consequence of failure describes the anticipated effect of an asset's failure to an organization and its stakeholders. There are different types of consequences of failure which can range from insignificant to severe. For example, failure of an infrequently used road may affect only a few residents and/or inconvenience them slightly (i.e., minimal detour distance). Conversely, failure of a more significant road could create significant issues to the transportation networks and affect many residents' ability to access critical community services (i.e., hospitals and schools).

The CoF parameters selected for each risk model aim to measure relevant consequences of an asset's failure. For each risk model, consequence of failure is determined through the following steps:

1. Identification of available attribute data suitable for determining the consequence of failure for selected assets.
    - Again, the data available to calculate consequence of failure may be limited, requiring a simplified model at least for a period.
2. Determination of the type of consequence that applies to the selected attribute.
    - Condition, Design Capacity, Economic, Environmental, Health and Safety, Operational, Social, Strategic
3. Where there are multiplied parameters included in the CoF model, determine suitable weighting of each parameter.
    - Weighting allows the model to recognize that each factor may impact the consequence of failure to a different degree. Where the weight is higher, the impact that factor has on the model increases too.

Risk Scores

Risk Scores are derived from the total PoF multiplied by the total CoF. In this model, risk scores may range from 0-25. The table below provides some examples of respective PoF and CoF scores and the resultant risk rating.

Probability of Failure	Consequence of Failure	Risk Rating
1 – Rare	1 – Insignificant	1 - 4 – Very Low
2 – Unlikely	2 – Minor	5 - 7 – Low
3 – Possible	3 – Moderate	8 - 9 – Moderate
4 – Likely	4 – Major	10 - 14 – High
5 – Almost Certain	5 – Severe	15 - 25 – Very High

3 Facilities

Key Insights

- Facilities are valued at $186.1 million.
- 17% of Facilities are in fair or better condition. This condition is derived based on Estimated Useful Life, not condition assessments.
- The average annual capital requirement to sustain the current level of service for Facilities is approximately $3,721,000.
- In order to maintain the high quality of public infrastructure and support the delivery of core services, Municipality staff own and employ various types of Facilities. This includes:
    - Town Hall
    - Fire Stations
    - Maintenance facilities
    - Recreation facilities
    - Cemetery facilities

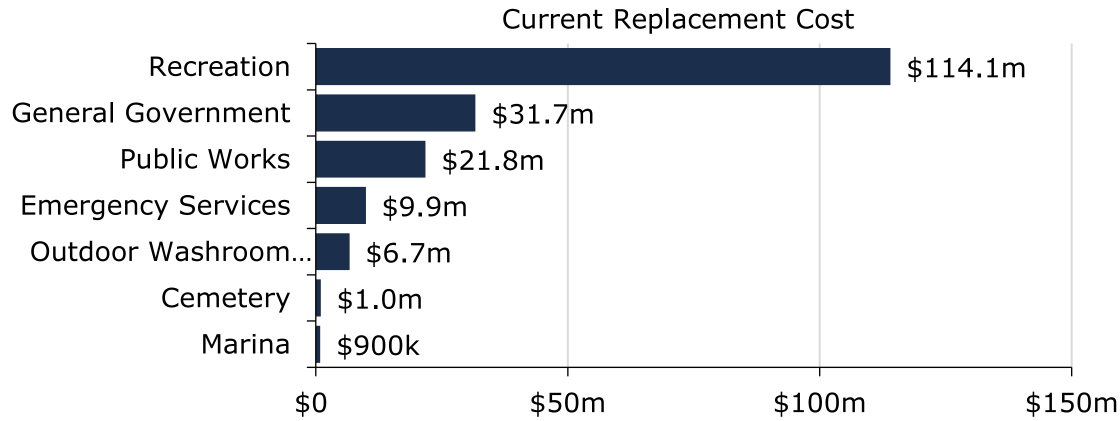
The state of the infrastructure for Facilities is summarized in the following table.

Replacement Cost	Condition	Financial Capacity	
$186,069,000	Very Poor (16%)	Annual Requirement:	$3,721,000
		Funding Available:	$1,789,000
		Annual Deficit:	$1,933,000

3.1 Asset Inventory & Costs

The table below includes the quantity, total replacement cost and annual capital requirements of each asset segment in the Municipality's Buildings inventory.

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Cemetery	2	$1,021,000	$20,000
Emergency Services	3	$9,937,000	$199,000
General Government	5	$31,682,000	$634,000
Marina	1	$900,000	$18,000
Outdoor Washroom Facilities	7	$6,718,000	$134,000
Public Works	7	$21,757,000	$435,000
Recreation	11	$114,054,000	$2,281,000
Total		**$186,069,000**	**$3,721,000**

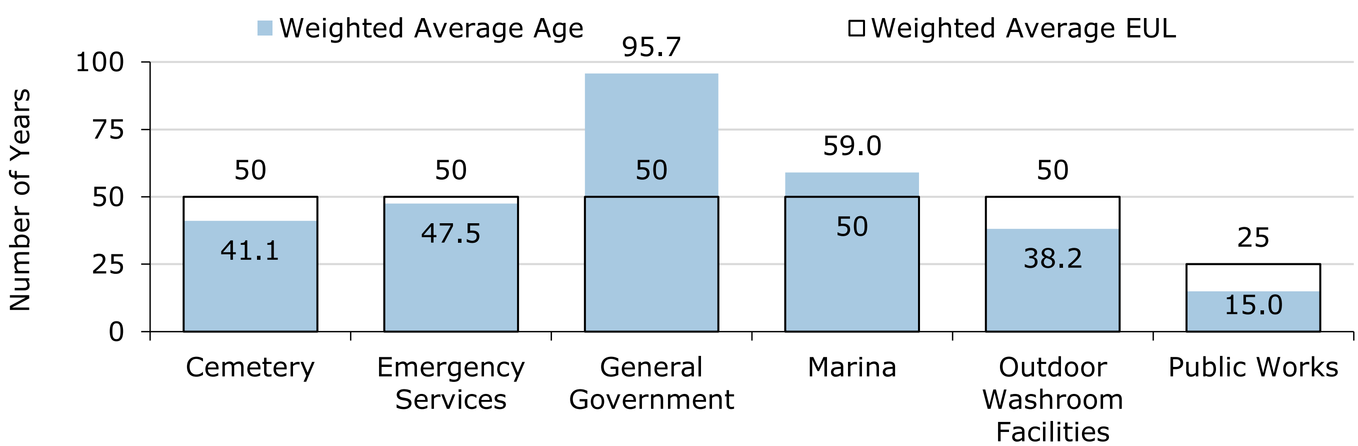


Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

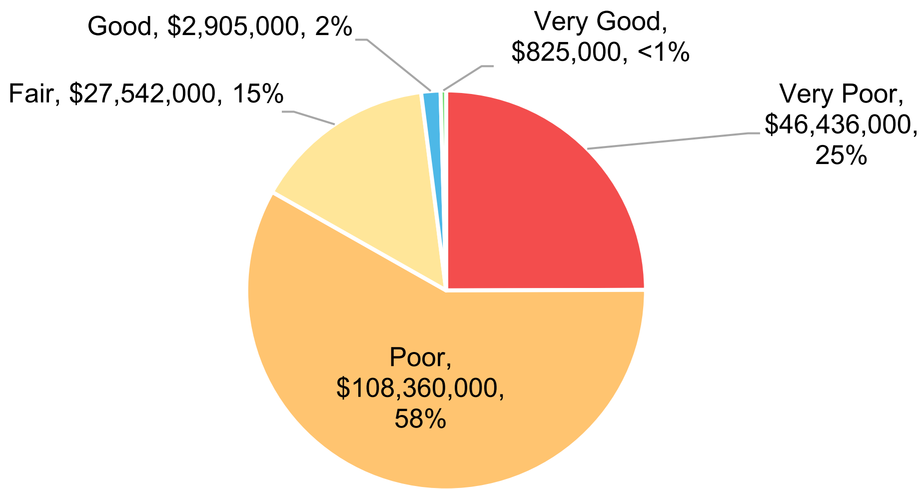
3.2 Asset Condition & Age

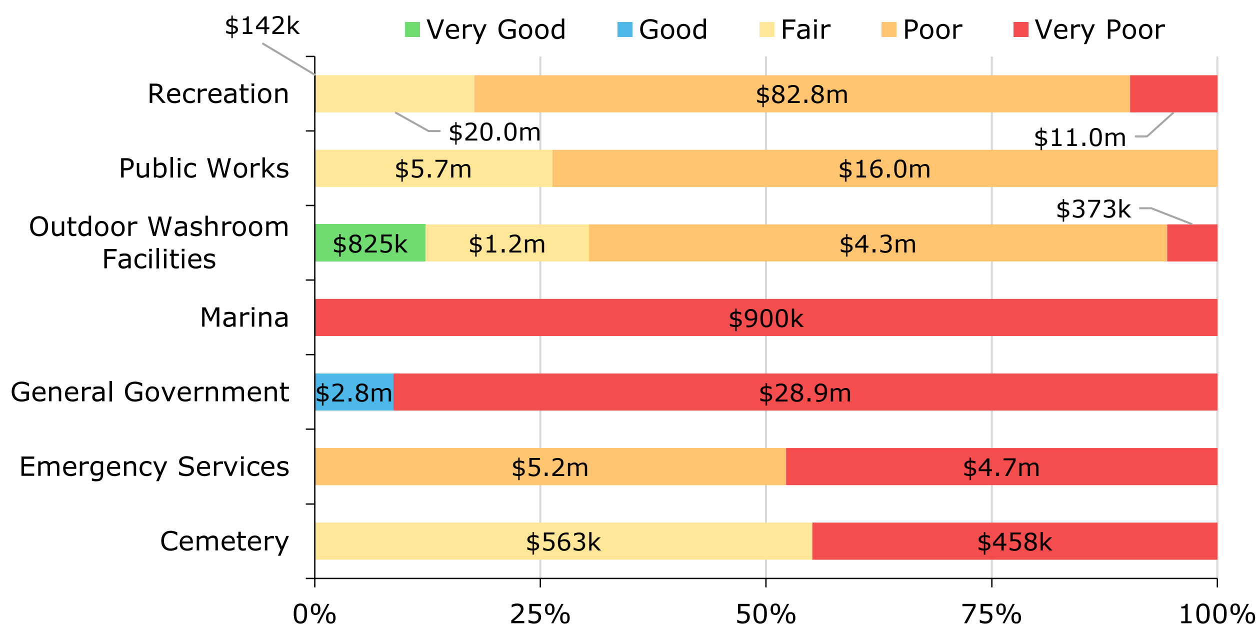
The table below identifies the current average condition, the average age, and the estimated useful life for each asset segment. The average Condition (%) is a weighted value based on replacement cost.

Asset Segment	Weighted Average Estimated Useful Life (Years)	Weighted Average Age (Years)	Average Condition
Cemetery	50	41	Poor (33%)
Emergency Services	50	48	Very Poor (7%)
General Government	50	98	Very Poor (7%)
Marina	50	59	Very Poor (0%)
Outdoor Washroom Facilities	50	38	Poor (23%)
Public Works	25	15	Very Poor (19%)
Recreation	50	41	Very Poor (19)
Average			**Very Poor (16%)**



The following charts display the average condition for the Facilities category as a whole and then each segment on a very good to very poor scale.



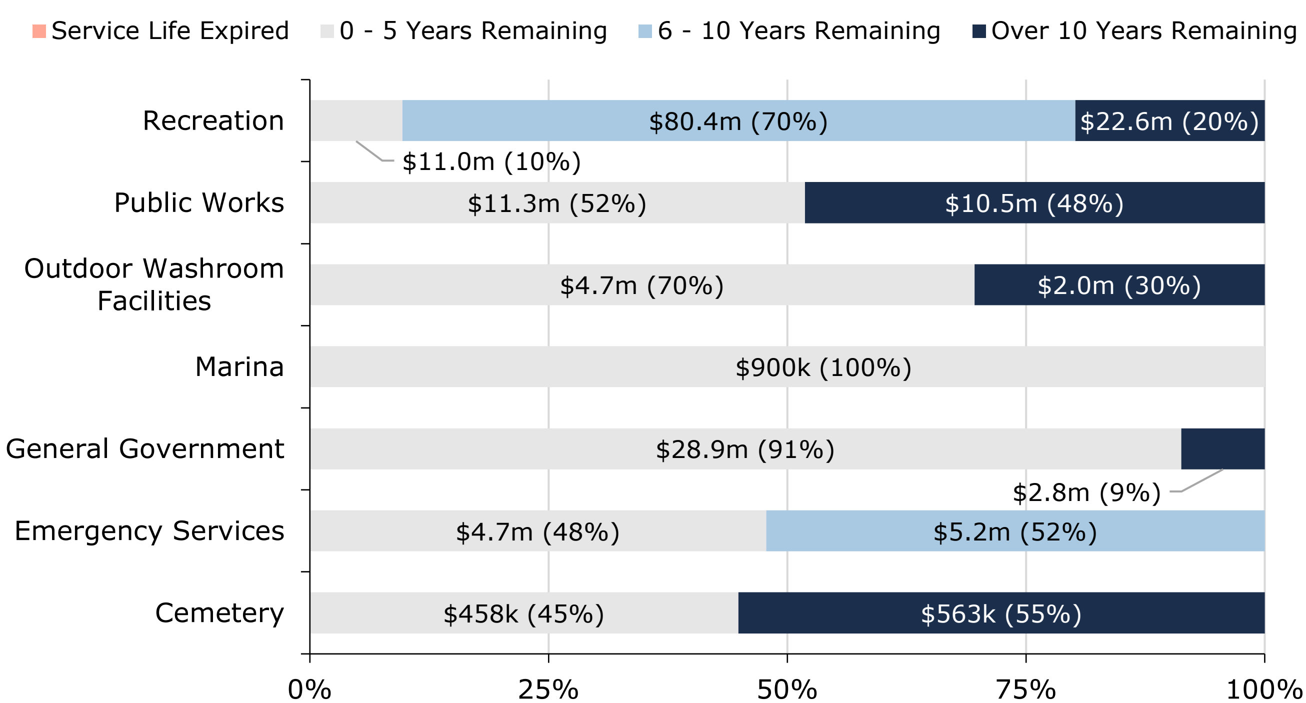


To ensure that the Municipality's Facilities continue to provide an acceptable level of service, the Municipality should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance, rehabilitation and replacement activities is required to increase the overall condition of the Facilities.

Each asset's estimated useful life should also be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

Based on asset age, available assessed condition data and estimated useful life, 79% of the Municipality's Facilities will require replacement within the next 10 years. Capital requirements over the next 10 years are identified in Appendix A: 10-Year Capital Requirements. Service life remaining is outlined by replacement value below.

Asset Segment	Service Life Expired	0 - 5 Years Remaining	6 - 10 Years Remaining	Over 10 Years Remaining
Cemetery	-	$458k (45%)	-	$563k (55%)
Emergency Services	-	$4.7m (48%)	$5.2m (52%)	-
General Government	-	$28.9m (91%)	-	$2.8m (9%)
Marina	-	$900k (100%)	-	-
Outdoor Washroom Facilities	-	$4.7m (70%)	-	$2.0m (30%)
Public Works	-	$11.3m (52%)	-	$10.5m (48%)
Recreation	-	$11.0m (10%)	$80.4m (70%)	$22.6m (20%)
Total	**-**	**$62.0m (33%)**	**$85.6m (46%)**	**$38.5m (21%)**



3.2.1 Current Approach to Condition Assessment

Accurate and reliable condition data allows staff to more confidently determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The following describes the Municipality's current approach:

- Detailed structural assessments have been completed for a number of facilities to provide a comprehensive breakdown of the facilities components.

- Structural assessments are conducted by external contractors as a part of major project. Assessments indicate reactive needs for the facility asset.
- Gaps in assessments, or ad hoc assessments are conducted by staff who utilize their expertise and familiarity with assets to report on condition and maintenance needs.
- There are preliminary discussions to expand condition assessments in the master planning process and possibly establishing a standard operating procedure.

In this AMP the following rating criteria is used to determine the current condition of assets and forecast future capital requirements, ranging from 0-100:

Condition	Rating
Very Good	>80
Good	>60
Fair	>30
Poor	>1
Very Poor	0

The condition ratings align with the recent facility assessments. The condition methodology used in the Facility Condition Assessments (FCAs) is as follows:

Good / Fair Condition:	Capital expenditure not expected within next 10-years. Reasonable condition, areas/items need attention
Fair Condition:	Reasonable condition as whole; deterioration and/or damage noted. Capital expenditure is anticipated within 5 – 10 years.
Fair / Poor Condition:	Deterioration and/or damage noted; component is nearing end of service life. Capital expenditure is recommended in 2 – 5 years.
Poor Condition:	Deterioration and/or damage noted; component at end of service life. Capital expenditure is recommended in 1 – 2 years.
Very Poor:	This includes structural components and hazardous conditions which cannot be deferred and which could lead to loss of life or to a critical or extremely severe injury. Recommended in Year 0.

Repair and replacement prioritization for activities required within the next five years is based on health and safety, structural integrity, code requirement, building functionality, and cost-effective upgrades.

3.3 Lifecycle Management Strategy

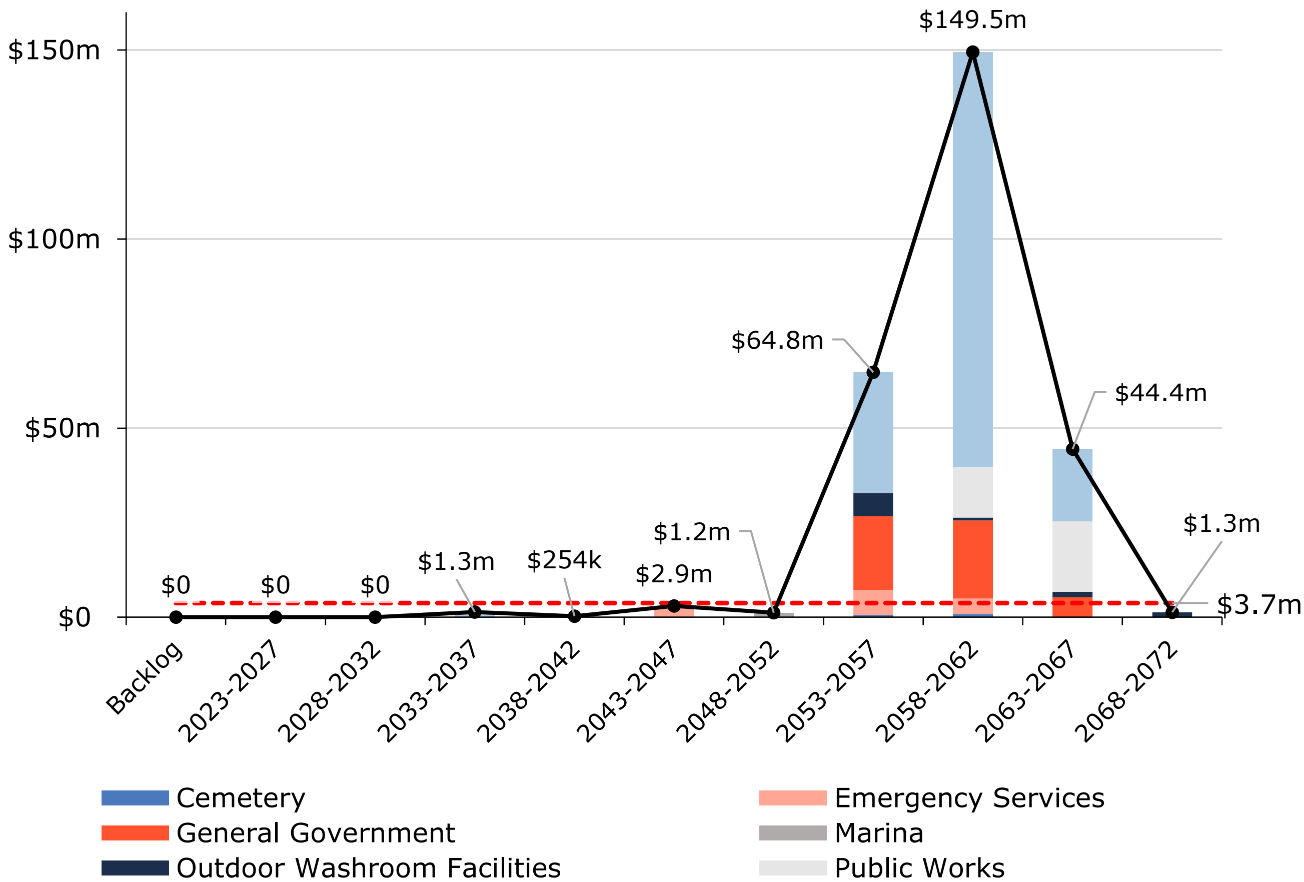
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

The following table outlines the Municipality's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance	All facility assets are maintained reactively by staff during normal use or in response to a community members report. In addition to reactive maintenance, the Municipality also employs the following maintenance programs: • HVAC Systems (Quarterly) • Fire and Safety Systems (Annually) • Refrigeration Devices (Biannually)
	Routine maintenance for electrical and plumbing infrastructure is based on both condition and age, while facility shells are based on condition only.
	Age and/or condition of an asset are used as triggers for asset maintenance activities. Actions may also be triggered by safety concerns, equipment failure, staff observation, along with typical preventative maintenance and scheduling requirements.
Replacement/ Rehabilitation	Assets are replaced in line with annual capital budgets that take into consideration the estimated useful lives of assets and their condition. Ad hoc risk assessment is conducted by staff to determine replacement criticality.
	Reactive replacement and rehabilitation may occur in the case of uncharacteristic failure or the inability to maintain public safety standards.

3.3.1 Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs. The graph identifies capital requirements over the next 20 years as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average annual capital requirements.



It should be noted that most of the assets in the inventory encompass the entire building, resulting in either very low or very high forecasted requirements in a given 5-year bin.

The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found Appendix A: 10-Year Capital Requirements.

3.4 Risk & Criticality

3.4.1 Risk Criteria & Scores

The following table outlines the probability of failure and consequence of failure metrics used to calculate each asset's overall risk score.

	Risk Classification	Risk Criteria	Value/Range	Score
Probability of Failure	Economic (100%)	Condition (100%)	>80	1
			>60	2
			>30	3
			>1	4
			0	5
Consequence of Failure	Economic (50%)	Replacement Cost (100%)	$0 – $10,000	1
			$10,000 – $25,000	2
			$25,000 – $50,000	3
			$50,000 – $100,000	4
			$100,000+	5
	Strategic (50%)	Building Type (100%)	Cemetery, Recreation and Cultural Facility	1
			Administrative Facility, Standpipe, Water Reservoir	2
			Booster Station, Fire Facility, Police Facility, Transportation Facility, Water Tower	3
			Wastewater Treatment	4
			JOC Facility, Wastewater Treatment Plant, Water Treatment Plant	5

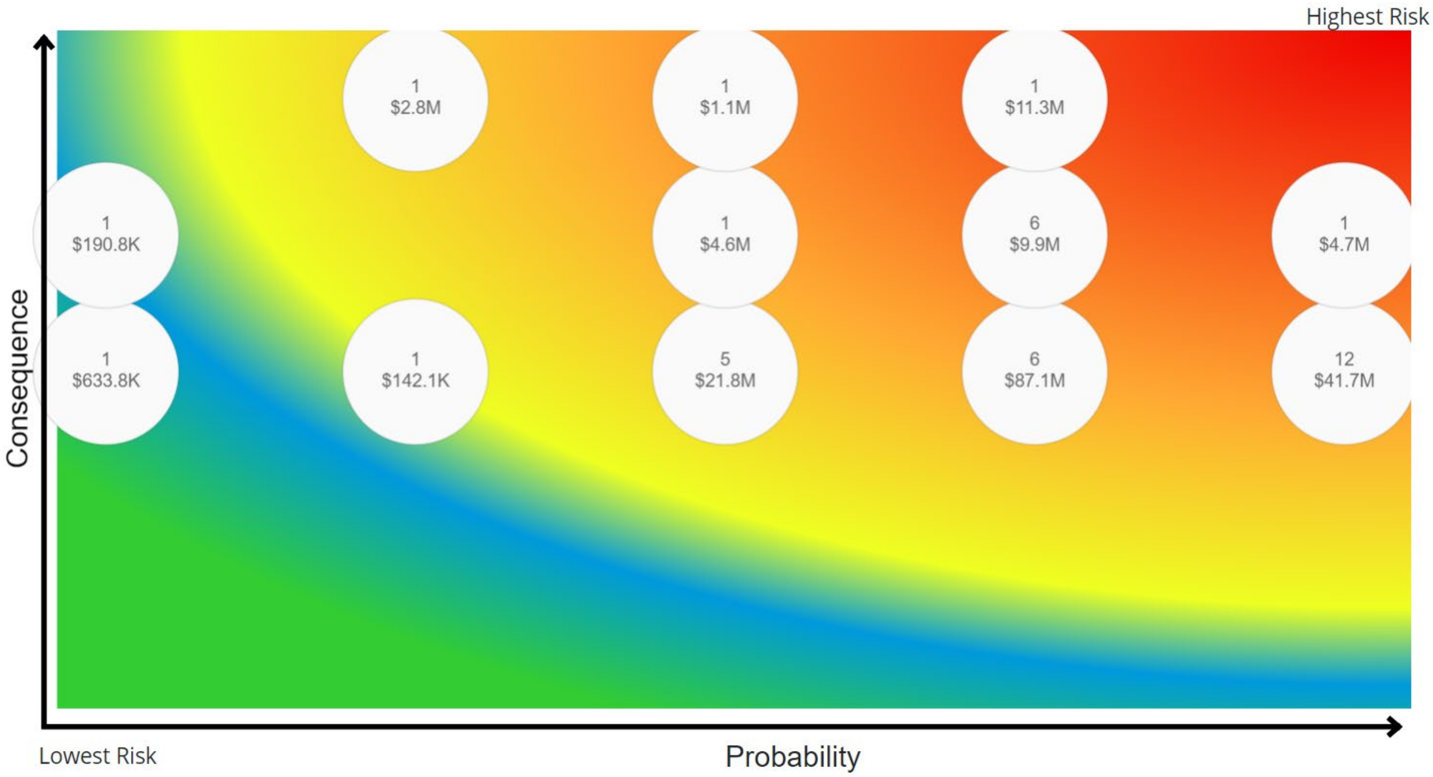
The results of the risk analysis are as follows:

Asset Segment	Average Probability of Failure	Average Consequence of Failure	Average Risk Score
Cemetery	3.90 / 5	3.00 / 5	11.69 / 25
Emergency Services	4.48 / 5	4.00 / 5	17.91 / 25
General Government	4.74 / 5	3.41 / 5	15.73 / 25
Marina	5.00 / 5	3.00 / 5	15.00 / 25
Outdoor Washroom Facilities	3.51 / 5	3.06 / 5	10.69 / 25
Public Works	3.74 / 5	4.57 / 5	17.18 / 25
Recreation	3.92 / 5	3.00 / 5	11.76 / 25
Average	**4.06 / 5**	**3.31 / 5**	**13.37 / 25**

Overall, the Buildings assets have an average risk score of 13.37, which is considered High.

3.4.2 Risk Heatmap

The following risk heatmap provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2023 inventory data. The upper value indicates the number of assets encompassed in each bubble and the lower value is the related replacement cost.



This is a high-level model developed for the purposes of this AMP and Municipality staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure.

The identification of critical assets allows the Municipality to determine appropriate risk mitigation strategies and treatment options. Risk mitigation may include asset-specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

3.4.3 Risks to Current Asset Management Strategies

The following section summarizes key trends, challenges, and risks to service delivery that the Municipality is currently facing:

Climate Change & Extreme Weather Events

Extreme weather events can have a notable impact on the maintenance needs and lifecycle management of facility assets. Intense storms, floods, and strong winds can lead to extensive physical damage, necessitating immediate repairs to ensure functionality and safety. Such events can also increase the wear and tear on assets, resulting in shorter lifespans and increased maintenance cost and frequency.

Moreover, changing climate patterns can lead to variable demand for heating and cooling systems, placing additional strain on facility infrastructure. These disruptions can cause unexpected expenses and complicate budget planning and resource allocation efforts. Therefore, proactive planning and investment in resilience measures, such as new materials and repair methods, are imperative to mitigate the adverse effects of extreme weather on facility assets and operations.

Roof Damage at Water Treatment Plant: An extreme windstorm caused extensive damage to the roof of the water treatment plant, despite it being relatively young (20 years old). This highlights vulnerability to extreme weather events and the need for robust infrastructure design to withstand such occurrences.

Data Confidence

Currently the Municipality does not have facility condition assessments for all of its facilities. These reports can be beneficial to asset management planning as they can help the Municipality prioritize maintenance and repairs, ensuring that limited resources are allocated efficiently. These assessments provide a comprehensive understanding of the current state of the buildings, allowing for proactive management and early identification of potential issues, thus preventing costly emergency repairs. While current lifecycle management strategies may be proactive and effective, developing a standardized operating procedure would create better efficiency for building asset management.

Infrastructure Design & Installation

Municipal facilities face risks due to accessibility inadequacies, outdated building designs, space limitations, and aging or insufficient equipment. These issues manifest in various contexts. For example, many municipal buildings must achieve AODA compliance, yet older constructions often lack the necessary space for accessibility modifications. The archives building exemplifies this problem, requiring substantial modifications to accommodate an accessible ramp due to design and location constraints. Similarly, Fire Station 2's layout precludes compliance with current accessibility regulations, necessitating its replacement.

Historical structures and cost-saving measures in new infrastructure design further complicate these challenges. Heritage buildings pose significant difficulties in achieving compliance with modern accessibility standards due to the need to preserve historical integrity while making substantial structural changes. This balance is complex and costly.

Legal and regulatory non-compliance due to these accessibility issues poses substantial risks to municipalities. Failure to meet building codes or accessibility standards can lead to legal liabilities and penalties. For instance, non-compliance with accessibility regulations in public buildings may result in complaints, legal actions, or exclusion from funding opportunities.

Space constraints in municipal facilities, such as administrative buildings, fire stations, and recreation facilities, also present considerable risks. Limited storage and workspace in administrative buildings hampers operational efficiency and affects staff productivity. The renovations of facilities may change its intended usage, reducing available options for use of its previous functionality. The renovation of the Joint Operation Center, which resulted in a reduction of meeting space, exemplifies the operational challenges posed by space constraints, necessitating alternative venues for meetings. Space limitations in fire stations and recreation facilities can compromise the municipality's ability to provide essential services effectively, as cramped conditions may delay response times or hinder equipment storage and maintenance.

Moreover, aging and inadequate building systems equipment can hinder municipal operations. For example, various HVAC issues across municipal buildings, including malfunctioning rooftop units, lead to increased maintenance costs and occupant discomfort. Fire Station 3's extensive renovation needs, including addressing generator failures, cistern issues, drainage problems, and heating and air conditioning deficiencies, highlight the challenges of maintaining aging infrastructure and the necessity for ongoing upkeep.

Capital Funding Strategies

Insufficient reinvestment in municipal facilities may present several potential risks that warrant careful consideration. Firstly, while grants and fundraising efforts are valuable supplementary funding sources, relying on them for infrastructure updates can be precarious. For instance, recreational center and fire hall projects have depended on both grants and fundraising, indicating the need for a more stable and predictable funding strategy. The delay in replacing Fire Station 2, which was initially planned for 2014 but only initiated ten years later, exemplifies the challenges of relying on intermittent funding. This delay resulted in continued operation under suboptimal conditions, leading to increased maintenance issues.

From a financial perspective, inefficient asset management, including delayed maintenance or unexpected repairs, can significantly increase operational costs and strain municipal budgets. Inaccurate budgeting or underestimating repair costs can lead to budget deficits, necessitating the reallocation of funds from other important programs. For example, unforeseen complications during infrastructure repairs can unexpectedly escalate costs, impacting the Municipality's financial resources and its ability to deliver essential services effectively.

Service continuity is also at risk when facilities are not adequately maintained. Poorly maintained infrastructure is more prone to breakdowns and service disruptions, which can inconvenience users and pose safety hazards. Such disruptions can affect essential services, including emergency response, utilities, and public transportation, thereby impacting the overall well-being of the community.

Furthermore, long-term sustainability is compromised without sufficient investment in maintenance and renewal of assets. Infrastructure deterioration over time reduces its lifespan, leading to the need for costly replacements or upgrades.

While addressing the risks associated with insufficient reinvestment in municipal facilities, it is essential to prioritize consistent and strategic investment in infrastructure. This approach will help maintain operational efficiency, uphold safety standards, and ensure the Municipality's capacity to meet future demands and growth.

Community Growth

Community growth presents several potential risks for the Municipality, primarily due to the increasing demands placed on recreation facilities, shifting demographic patterns, and heightened public expectations for infrastructure quality and services.

Firstly, as the community grows, recreation facilities experience heightened demand, necessitating expansions and renovations to accommodate the evolving needs of the population. This increased utilization can strain existing infrastructure, requiring the Municipality to invest in upgrades and new facilities to ensure they can meet the community's recreational needs. For instance, changing demographics may necessitate different types of recreational services and spaces, further complicating infrastructure planning and allocation of resources.

Secondly, remote work trends and demographic shifts are influencing migration patterns, with more people choosing smaller communities for lifestyle reasons. This influx of new residents can significantly impact facility usage and infrastructure planning. Communities that suddenly experience population growth may find their existing infrastructure insufficient, leading to overcrowding and overuse of facilities. This can result in accelerated wear and tear, increased maintenance costs, and the need for rapid expansion of services and amenities to keep pace with the growing population.

Additionally, meeting public expectations for infrastructure quality and services becomes more challenging when residents migrate from larger urban centers with higher infrastructure budgets. New residents often bring expectations shaped by their experiences in larger cities, where the infrastructure may be more robust and with a higher rate of funding. The Municipality may face pressure to enhance the quality and scope of its services to match these expectations, which can be difficult to achieve within the constraints of a lesser budget. This disparity can lead to dissatisfaction among residents and increased demands for improvements, further straining municipal resources.

Addressing these risks requires proactive planning, investment, and community engagement to ensure that the Municipality can effectively accommodate growth and maintain a high standard of living for its residents.

Low-Level Radioactive Waste Remediation

The Port Hope Area Initiative is aimed at remediating low-level radioactive waste. Remediation efforts present several challenges to the Municipality, impacting capital projects, asset management, and necessitating collaboration with Canadian Nuclear Laboratories (CNL).

Remediation efforts affect the planning and timelines of upcoming capital projects. Asset management and decision-making are significantly challenged by such efforts. The ambiguity in remediation timelines creates a "hurry up and wait" scenario. The uncertainty surrounding the completion of remediation efforts complicates the coordination of infrastructure upgrades. For example, the need to replace the marina building's roof, despite the possibility of demolition due to remediation, highlights the challenge of aligning investments with uncertain timelines, leading to potential resource inefficiencies and project delays.

Furthermore, close collaboration with CNL for project management adds complexity. Effective coordination and communication between the municipality and CNL are crucial to ensure municipal projects align with remediation efforts. This collaboration can lead to delays and complications in project implementation due to differing priorities and timelines.

As remediation efforts are a necessity, careful planning and coordination helps to mitigate these challenges.

3.5 Levels of Service

The following tables identify the Municipality’s current level of service for Facilities. These metrics include the technical and community level of service metrics that are required as part of O. Reg. 588/17 as well as any additional performance measures that the Municipality has selected for this AMP.

3.5.1 Community Levels of Service

The following table outlines the qualitative descriptions that determine the community levels of service provided by Facilities.

Service Attribute	Qualitative Description	Current LOS (2023)
Scope	Description of the types of facilities that the Municipality operates and maintains	The Municipality of Port Hope has an inventory of 37 facilities, these include: 18 Administrative structures, 10 Maintenance buildings, 3 Multi-use Recreational, 3 Fire/EMS Stations, 1 Performing Arta Building, 1 Library, 1 Community Aquatic Facility.
Quality	Describe criteria for rehabilitation and replacement decisions and any related long-term forecasts	Facility asset rehabilitation and replacement decisions are predominantly based on opportunities for accessibility improvement, risk to occupant health and safety, legislative compliance, and cost and construction feasibility. Currently, decisions to replace components of facilities through capital investment projects are planned on an as needed basis and are typically forecasted one year in advance.

3.5.2 Technical Levels of Service

The following table outlines the quantitative metrics that determine the technical level of service provided by the Facilities.

Service Attribute	Technical Metric		Current LOS (2023)
Accessibility	Providing Facility Management Services that are AODA Compliant	% of facilities that are AODA compliant where technically feasible	97%
Security	Provide facility management services to ensure that facilities are safe	% of facilities that meet security requirements	100%
Quality	Average facility condition value for facilities in the municipality		Very Poor (16%)
	% of facilities in good or very good condition		2%
	% of facilities in poor or very poor condition		83%
	Actual annual capital budget: average annual capital requirement		$1,789,000 : $3,721,000 (0.48 : 1)

3.6 Recommendations

Asset Inventory

- The Municipality's Facility inventory could be further componentized for more accurate asset management planning. Buildings consist of several separate capital components that have unique estimated useful lives and require asset-specific lifecycle strategies. Staff should work towards further breaking down the inventory to allow for more component-based lifecycle planning.
- Continue to review and validate inventory data, assessed condition data and replacement costs for all assets. Incorporate any information from studies, reports, or other investigations into the asset management inventory.

Replacement Costs

- Regularly gather and update replacement costs to ensure the accuracy of capital projections. Replacement costs should be updated according to the best available information on the cost to replace the asset in today's value. Consider developing a framework for the frequency of replacement cost updates.

Condition Assessment Strategies

- Proceed with plans to expand condition assessments in the master planning process and establish a standard operating procedure.
- Consider developing a condition assessment program that identifies assessment methodology, persons responsible, frequency of assessment, and updates of assessment information to the asset management database. Where resources are limited, consider prioritizing assessments to assets based on their criticality to the organization or another means of prioritization.
- If a FCA is not obtained, request condition information from contractors who service critical building systems like the elevator, HVAC, and fire protection systems. Record this information in Citywide and use it to inform asset management decisions including capital planning.
- Review assets that have surpassed their estimated useful life to determine if immediate replacement is required or whether these assets are expected to remain in-service. Adjust the service life and/or condition ratings for these assets accordingly.

Risk Management Strategies

- Implement risk-based decision-making as part of asset management planning and budgeting processes. This should include the regular review of high-risk assets to determine appropriate risk mitigation strategies.
- Review risk models on a regular basis and adjust according to an evolving understanding and/or changes in data available to calculate the probability and consequences of asset failure.

Lifecycle Management Strategies

- This AMP only includes capital costs associated with the reconstruction of assets. Port Hope should work towards identifying projected capital rehabilitation and renewal costs for assets, especially where they may be significant, and integrate these costs into long-term planning.
- If a FCA is procured, obtain recommendations for capital rehabilitations to building components, including the estimated cost and recommended date. Incorporate this information into the database.
- If a FCA is not procured, work to refine estimated capital investment requirements at least for major components and reflect this information in asset management analysis and decisions.

Levels of Service

- Continue to measure current levels of service in accordance with the metrics that the Municipality has established in this AMP. Additional metrics can be established as they are determined to provide meaningful and reliable inputs into asset management planning and budgeting decisions.
- If there are additional metrics that would provide valuable insights, consider their reporting requirements against the reporting efforts
- Work towards identifying proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

4 Impacts of Growth

Key Insights

- Understanding the key drivers of growth and demand will allow the Municipality to more effectively plan for new infrastructure, and the upgrade or disposal of existing infrastructure.

- Healthy population and employment growth is expected.

- The costs of growth should be considered in long-term funding strategies that are designed to maintain the current level of service.

4.1 Description of Growth Assumptions

The demand for infrastructure and services will change over time based on a combination of internal and external factors. Understanding the key drivers of growth and demand will allow the Municipality to more effectively plan for new infrastructure, and the upgrade or disposal of existing infrastructure. Increases or decreases in demand can affect what assets are needed and what level of service meets the needs of the community.

4.1.1 Port Hope’s Economic Development Strategic Plan (2023) and Council's Strategic Plan (2019-2022) includes a goal and key focus for "Intentional Growth Planning." This means strategically managing future development to strengthen the Municipality's economic engine. Service reviews and strategies, including the Economic Development Strategic Plan (2023) includes encouraging reinvestment and diversifying the tax base. By doing this, the Community Development Department aims to revitalize the downtown's commercial sector and create opportunities for new businesses to flourish throughout Port Hope.

As of 2020, Port Hope's population sits at 17,902, representing 20% of Northumberland County's total (91,548). The Growth Management Strategy (2006) forecasts a significant increase, reaching 22,145 by 2034 and 24,299 by 2041, for a total projected growth of 4,243 residents. To accommodate this influx, the Municipality aims for 50% of new housing units to be built within the existing developed area (Built Boundary). Six Major Intensification Areas are designated to achieve this target, alongside limited intensification planned within Established Residential Areas and Heritage Conservation Districts, and mixed-use development planned for the Waterfront Area.

Employment is also expected to grow, with an additional 1,370 jobs anticipated between 2011 and 2034. Fortunately, currently designated lands seem sufficient to accommodate both population and job growth until 2034. However, some uncertainties remain. The proportion of serviced and readily developable land, particularly for employment purposes, is unclear. Additionally, the timeframe for adding new developable land to the inventory is unknown. The factors considered when developing these projections include the Provincial Growth Plan's expectations, historical building activity, Port Hope's share of the County's population, and its geographic location relative to the Greater Toronto Area.

4.2 Impact of Growth on Lifecycle Activities

The growth of the Municipality will present challenges to the service delivery, and service delivery assets of the Municipality. The Municipality understands this and has laid out in plans and communication documents their strategies for mitigating impact to service and ensuring long term viability for the inhabitants of the Municipality. This includes their commitment to growing existing townships and population centres. This will lower the cost of increasing capacity as they are able to leverage the current infrastructure, staff, and processes. In addition to this, there will be long-term funding obligations to ensure that lifecycle activities can be continued and enhanced in the face of a larger population.

Appendices

Key Insights

- Appendix A identifies projected 10-year capital requirements.
- Appendix B identifies data quality dimensions.
- Appendix C provides additional guidance on the development of a condition assessment program.

Appendix A: 10-Year Capital Requirements

The following tables identify the capital cost requirements for each of the next 10 years in order to meet projected capital requirements and maintain the current level of service.

Buildings											
Asset Segment	Backlog	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Cemetery	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Emergency Services	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
General Government	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Marina	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Outdoor Washroom Facilities	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Public Works	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Recreation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Appendix B: Data Quality Dimensions

The quality of data affects the reliability of its outputs, and the trust organizations have in those outputs, especially when used to inform decisions. As a best practice, the quality of data can be evaluated based on the six data quality dimensions. These quality dimensions are as follows:

1. **Accuracy**: The information collected reflects reality and can be confirmed with a verifiable source (i.e., VIN information). An example of accuracy not being met is the in-service year on record is 1950 & the Asset model indicates a service year of 1980. Accurate reporting assists in powerful and trusted reporting.

2. **Completeness**: Data is comprehensively collected so that it can deliver meaningful inferences and effectively inform decisions. E.G.: Required fields are populated for all assets

3. **Consistency:** Data on the same asset is consistent across multiple sources if applicable. For example, information in the Asset Management System matches information in finance system.

4. **Timeliness:** Data is available when it is needed. This often requires limited lag time between the event that generates the asset data (i.e., condition assessment) and the updates to the system to reflect the event.

5. **Validity**: Consistent Data Format that is supported by any associated standards or structures. For example, the asset in service date is consistently formatted YYYY-MM-DD and not sometimes YYYY-DD-MM and month value is never greater than 12.

6. **Uniqueness:** Each asset appears only once in the system and there is no data duplication or overlaps. For example, each asset has a unique asset ID, no duplication of asset information.

Appendix C: Condition Assessment Guidelines

The foundation of good asset management practice is accurate and reliable data on the current condition of infrastructure. Assessing the condition of an asset at a single point in time allows staff to have a better understanding of the probability of asset failure due to deteriorating condition.

Condition data is vital to the development of data-driven asset management strategies. Without accurate and reliable asset data, there may be little confidence in asset management decision-making which can lead to premature asset failure, service disruption and suboptimal investment strategies. To prevent these outcomes, the Municipality's condition assessment strategy should outline several key considerations, including:

- The role of asset condition data in decision-making
- Guidelines for the collection of asset condition data
- A schedule for how regularly asset condition data should be collected

Role of Asset Condition Data

The goal of collecting asset condition data is to ensure that data is available to inform maintenance and renewal programs required to meet the desired level of service. Accurate and reliable condition data allows municipal staff to determine the remaining service life of assets, and identify the most cost-effective approach to deterioration, whether it involves extending the life of the asset through remedial efforts or determining that replacement is required to avoid asset failure.

In addition to the optimization of lifecycle management strategies, asset condition data also impacts the Municipality's risk management and financial strategies. Assessed condition is a key variable in the determination of an asset's probability of failure. With a strong understanding of the probability of failure across the entire asset portfolio, the Municipality can develop strategies to mitigate both the probability and consequences of asset failure and service disruption. Furthermore, with condition-based determinations of future capital expenditures, the Municipality can develop long-term financial strategies with higher accuracy and reliability.

Guidelines for Condition Assessment

Whether completed by external consultants or internal staff, condition assessments should be completed in a structured and repeatable fashion, according to consistent and objective assessment criteria. Without proper guidelines for the completion of condition assessments there can be little confidence in the validity of condition data and asset management strategies based on this data.

Condition assessments must include a quantitative or qualitative assessment of the current condition of the asset, collected according to specified condition rating criteria, in a format that can be used for asset management decision-making. As a result, it is important that staff adequately define the condition rating criteria that should be used and the assets that require a discrete condition rating. When engaging with external consultants to complete condition assessments, it is critical that these details are communicated as part of the contractual terms of the project.

There are many options available to the Municipality to complete condition assessments. In some cases, external consultants may need to be engaged to complete detailed technical assessments of infrastructure. In other cases, internal staff may have sufficient expertise or training to complete condition assessments.

Developing a Condition Assessment Schedule

Condition assessments and general data collection can be both time-consuming and resource-intensive. It is not necessarily an effective strategy to collect assessed condition data across the entire asset inventory. Instead, the Municipality should prioritize the collection of assessed condition data based on the anticipated value of this data in decision-making. The International Infrastructure Management Manual (IIMM) identifies four key criteria to consider when making this determination:

1. **Relevance**: every data item must have a direct influence on the output that is required
2. **Appropriateness**: the volume of data and the frequency of updating should align with the stage in the assets life and the service being provided
3. **Reliability**: the data should be sufficiently accurate, have sufficient spatial coverage and be appropriately complete and current
4. **Affordability**: the data should be affordable to collect and maintain