

Asset Management Plan

Town of Englehart

2021

This Asset Management Plan was prepared by:



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

Key Statistics

Replacement cost of
asset portfolio

\$75.2 million

Replacement cost of
infrastructure per household

\$105,000 (2021)

Percentage of assets in fair or
better condition

53%

Percentage of assets with
assessed condition data

18%

Annual capital
infrastructure deficit

\$0.7 million

Recommended timeframe
for eliminating annual
infrastructure deficit

20 Years

Target reinvestment
rate

2.20%

Actual reinvestment
rate

1.25%

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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 Asset Management Plan (AMP) identifies the Town’s current practices and strategies for their public infrastructure and makes recommendations where they can be further refined. Through the implementation of sound asset management strategies, the Town’s public infrastructure is better positioned to sustainably deliver municipal services.

This AMP include the following asset categories:

Asset Category

 Road Network	 Water Network
 Stormwater Network	 Buildings
 Sanitary Network	 Land Improvements
 Machinery & Equipment	 Fleet & Fleet Equipment

With the development of this AMP the Town has achieved compliance with O. Reg. 588/17 to the extent of the requirements that must be completed by July 1, 2024.

Findings

The overall replacement cost of the asset categories included in this AMP totals \$75.2 million. Over half (53%) of all assets analysed in this AMP are in fair or better condition. Assessed condition data was available for 18% of assets. For the remaining 82% of assets, assessed condition data was unavailable, and asset age was used to approximate condition. Generally, age-based condition is much less accurate than assessed condition.

The development of a long-term, sustainable financial plan requires an analysis of whole lifecycle costs. This AMP uses a combination of proactive lifecycle strategies (paved roads) and replacement only strategies (all other assets) to estimate the lowest cost option to maintain the current level of service.

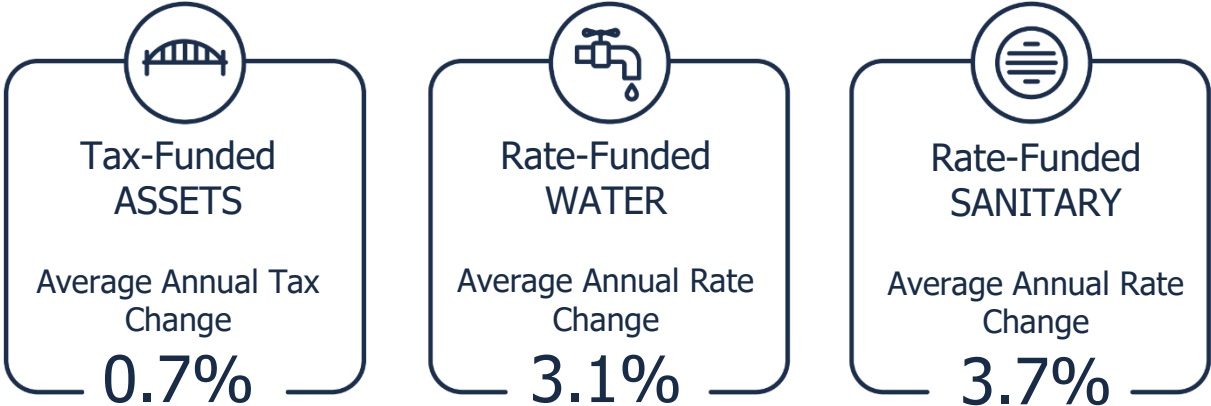
To meet capital replacement and rehabilitation needs for *existing* infrastructure, prevent infrastructure backlogs, and achieve long-term sustainability, the Town's average annual capital requirement totals \$1.65 million. Based on a historical analysis of sustainable capital funding sources, the Town is committing approximately \$0.9 million towards capital projects or reserves per year. As a result, there is currently an annual funding gap of \$0.7 million. Based on the 2021 census reported number of households, an annual increase of \$492 per household is required to close the funding gap.



It is important to note that this AMP is based on *data as of December 2021*; therefore, it represents a snapshot in time using 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.

Recommendations

A financial strategy was developed to address the annual capital funding gap. The following graphics shows annual tax/rate change required to eliminate the Town’s infrastructure deficit based on a 15-year plan for tax funded assets, and a 20-year plan for rate funded assets:



In addition to the funding recommendations above, the Town’s asset management program would benefit from the following actions:

- Complete a thorough review of asset data, especially in-service dates of core assets, and make updates to asset inventory information as necessary. Reliable and complete asset data is integral to effective asset management.
- Work to implement the identified condition assessments programs, especially for core assets, and regularly integrate the collected information into the asset management system. Use this information to better understand asset risks and based on this to help inform asset investment decisions. Review risk models, especially after data updates, to ensure the risk models remain suitable.
- Review the Town’s available staff and information resources towards the asset management program and ensure they are sufficient to meet the program needs and extract value from asset management. If resources are found to be insufficient, work to develop a strategy to mitigate the identified resource constraints.
- Review short- and long-term projected revenues against projected capital requirements; where revenues are less than projected capital requirements work to implement a financial strategy to overcome the identified shortfall.
- Regularly collect and measure current levels of service. Use current levels of service as a tool to help inform and identify sustainable proposed levels of service.

1 Introduction & Context

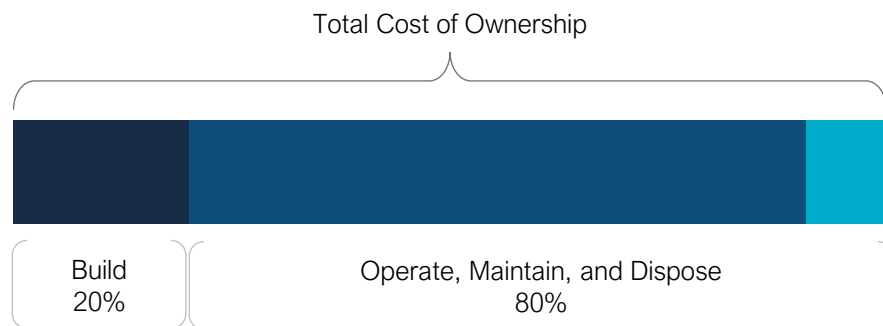
Key Insights

- The goal of asset management is to minimize the lifecycle costs of delivering infrastructure services and manage the associated risks, while also maximizing the value ratepayers receive from the asset portfolio.
- The Town's asset management policy provides clear direction to staff on the principles of asset management the Town wishes to advance.
- An Asset Management Plan (AMP) is a living document; as asset information changes and/or becomes available the AMP should also be updated so that it best informs 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. The Town has made significant advancement in meeting several of the requirements and will need to continue to move forward to meet future years requirements.

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 and manage the associated risks so that the value ratepayers receive from the asset portfolio is maximized.

Typically, the acquisition of capital assets accounts for only about 10-20% of an assets total cost of ownership. The remaining costs of ownership are often associated with the asset's operations and maintenance. This AMP focuses its analysis on the *capital* costs to maintain, rehabilitate and replace existing municipal infrastructure assets.



The total cost of an asset can (and often do) 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.

In this AMP all analysis is based on the Town's asset portfolio as of 2021-year end; future assets acquisitions or disposals is not considered in this AMP.

1.1.1 Asset Management Policy

An asset management policy represents a statement of the principles that guide a municipality's approach to asset management activities. It aligns with the organization's strategic plan and provides clear direction to municipal staff on their roles and responsibilities in the asset management program.

The Town's Strategic Asset Management Policy was approved by Council on September 9th, 2020. The policy defines key asset management terms, and the scope of assets that apply to the policy. Importantly, it also identifies asset management principles to be used when making asset management decisions. Such principles include:

- Long-term sustainability: Consideration of potential vulnerabilities that may be caused by climate change and actions and considerations to manage such risks. This includes mitigation strategies, disaster planning, and contingency funding.
- Holistic Approach: Consideration of asset's total lifecycle costs and service performance impacts of decisions. This will be supported by the collection and maintenance of data to support such analysis.
- Innovation & Continual Improvement: Commitment to regular review and reporting of asset management progress in addition to providing staff with opportunities for professional development in asset management.

1.1.2 Asset Management Strategy

An asset management strategy outlines the translation of organizational objectives into asset management objectives and provides a strategic overview of the activities required to meet these objectives. It provides greater detail than the policy on how the municipality plans to achieve asset management objectives through planned activities and decision-making criteria.

Several of the recommendations throughout this report highlight specific actions and practices that are expected to improve the Municipality's asset management practices, internal capacity and cognizance, and resultant decisions. Thus, these recommendations serve informally as an Asset Management Strategy and provide a framework of planned activities to operationalize and support the delivery of the asset management objectives as defined in the policy.

1.1.3 Asset Management Plan

The asset management plan (AMP) presents the outcomes of the municipality's asset management program and identifies the resource requirements needed to achieve a defined level of service. AMPs typically include the following content:

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

The AMP is a living document 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.

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.

1.1.4 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 lifecycle interventions that seek 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 Town’s approach to lifecycle management is described within each asset category outlined in this AMP. Developing and implementing a proactive lifecycle strategy will help staff to

determine which lifecycle activities to perform, when to perform such activities, the estimated cost of doing so and the expected impact on the assets condition and useful life. This refines the Town's understanding of strategies to maximize an assets useful life at the lowest total cost of ownership.

1.1.5 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. Often investment to critical assets holds more merit than investment to assets that are less critical, despite their poorer condition.

To objectively inform investment priorities asset owners work to measure the consequences of asset failure and the probability of asset failure. This helps inform where maintenance and capital investments are best 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.

1.1.6 Levels of Service

A level of service (LOS) is a measure of what the Town 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 Town as worth measuring and evaluating. The Town 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, Water, Wastewater, Stormwater) 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 Town 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, Water, Wastewater, Stormwater) 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 Town has determined the community and 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 Town 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 Town. 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 Town must identify a lifecycle management and financial strategy which allows these targets to be achieved.

Ontario Regulation 588/17

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)~~
Review & update of Strategic Asset Management Policy

2022

Asset Management Plan for Core Assets with the following components:

1. Current levels of service
2. Inventory analysis
3. Lifecycle activities to sustain LOS
4. Cost of lifecycle activities
5. Population and employment forecasts
6. Discussion of growth impacts

2025

Asset Management Policy update and an Asset Management Plan for All Assets with the following additional components:

1. Proposed levels of service for next 10 years
2. Updated inventory analysis
3. Lifecycle management strategy
4. Financial strategy and addressing shortfalls
5. Discussion of how growth assumptions impacted lifecycle and financial

1.1.7 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, 2022. Next to each requirement a page or section reference is included in addition to any necessary commentary.

Requirement	O. Reg. Section	AMP Section Reference	Status
Summary of assets in each category	S.5(2), 3(i)	4.1.1 - 5.2.1	Complete
Replacement cost of assets in each category	S.5(2), 3(ii)	4.1.1 - 5.2.1	Complete
Average age of assets in each category	S.5(2), 3(iii)	4.1.3 - 5.2.3	Complete
Condition of core assets in each category	S.5(2), 3(iv)	4.1.2 – 5.2.2	Complete
Description of municipality’s approach to assessing the condition of assets in each category	S.5(2), 3(v)	4.1.2 – 5.2.2	Complete
Current levels of service in each category	S.5(2), 1(i-ii)	4.1.6 - 5.2.6	Complete
Current performance measures in each category	S.5(2), 2	4.1.6 - 5.2.6	Complete
Lifecycle activities needed to maintain current levels of service for 10 years	S.5(2), 4	4.1.4 - 5.2.4	Complete
Costs of providing lifecycle activities for 10 years	S.5(2), 4	Appendix B	Complete
Growth assumptions	S.5(2), 5(i-ii) S.5(2), 6(i-vi)	6.1-6.2	Complete

Asset Management Roadmap

As part of the development of this AMP, the Town of Englehart committed to taking the necessary steps towards developing a systemic, sustainable, and well-structured AMP document. This process involved the collaboration of PSD's industry-leading asset management team with municipal staff. The following summarizes key milestones/deliverables achieved throughout this project.

Asset Data Review and Refinement (Completion Date: August 5th, 2022)

Asset data was reviewed and refined to ensure it comprehensively reflected the Townships inventory and accurately reported asset details including asset replacement cost, condition, and as applicable make, and model.

Risk and Criticality Model Development (Completion Date: July 25th, 2022)

Risk models were developed to determine the relative criticality of assets based on their probability and consequence of failure. These models assist with the prioritization and ranking of infrastructure needs.

Lifecycle Model Development (Completion Date: July 15th, 2022)

The Town's lifecycle management strategies were reviewed and documented to determine current practices and identify opportunities for improvement and potential cost avoidance. For paved road assets a lifecycle strategy model was developed in citywide and used to forecast future rehabilitation event costs and schedules.

Level of Service Framework Development (Completion Date: May 4th, 2022)

A framework was developed to determine the current level of service (LOS) provided to the community through municipal infrastructure. LOS metrics were reviewed for core assets as per O. Reg 588/17 requirements and for non-core assets LOS metrics were selected.

AMP & Financial Strategy

This document represents the culminating deliverable of the Asset Management Roadmap. The Town's financial requirements and historical spending was reviewed to determine existing funding shortfalls and to inform financial strategy recommendations.

2 Scope and Methodology

Key Insights

- This asset management plan includes eight (8) asset categories and is divided between tax-funded and rate-funded asset categories
- The source and recency of replacement costs impacts the accuracy and reliability of asset portfolio valuation
- Accurate and reliable condition data is central to lifecycle activities occurring at the right time to the appropriate asset. Reliable condition data therefore may prevent premature and costly rehabilitation or replacement and contribute to asset value maximization and extension of asset useful life.

Asset categories included in this AMP

This asset management plan for the Town of Englehart is produced in compliance with Ontario Regulation 588/17. The July 2022 deadline under the regulation—the first of three AMPs—requires analysis of only core assets (roads, bridges & culverts, water, wastewater, and stormwater). The 2024 deadline requires analysis extend to non-core assets in addition to core (Roads, water, wastewater, stormwater, bridges). In advance of the Asset Management Regulatory deadline this AMP meets the 2024 non-core asset requirements. This is noting however, that updates to asset replacement values and current levels of service alongside any inventory changes between the 2021 and 2023 year-end will be required.

The AMP summarizes the state of the infrastructure for the Town’s asset portfolio, establishes current levels of service and the associated technical and customer oriented key performance indicators (KPIs), outlines lifecycle strategies for optimal asset management and performance, and provides financial strategies to reach sustainability for the asset categories listed below.

Asset Category	Source of Funding
Road Network	
Stormwater Network	
Buildings	
Machinery & Equipment	Tax Levy
Fleet & Fleet Equipment	
Land Improvements	
Water Network	
Sanitary Network	User Rates

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
- **Inflation of User Defined Cost:** Based on user-defined replacement cost previously provided to municipal staff (i.e., 2014 replacement value) and inflated based on Consumer Price Index to the effective date of the AMP.

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 Town incurred. As assets age, and new products and technologies become available, cost inflation becomes a less reliable method.

Estimated Useful Life and Service Life Remaining

The estimated useful life (EUL) of an asset is the period over which the Town 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 Town can determine the service life remaining (SLR) for each asset. Using condition data and the asset's SLR, the Town can more accurately forecast when it will require replacement. The SLR is calculated as follows:

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

For several asset categories accurate in-service dates were not available. Where this occurred, in-service dates were estimated based on known in-service dates of related infrastructures (i.e., valve in-service date assumed to be the same as the related main in-service date) or a weighted average in-service date was calculated based on all known in-service dates of related assets (i.e., in-service date of water hydrants based on weighted average in-service date of all mains). While this strategy does improve the accuracy of inventory information than was otherwise available, it is likely the accuracy of service life remaining calculations is impacted to some extent. The Town of Englehart is working to continuously refine and update their asset

inventory information, including in-service information, which will provide ongoing betterments to data quality and resultantly to asset management decisions.

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 Town can determine the extent of any existing funding gap. The reinvestment rate is calculated as follows:

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

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

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 Town’s asset portfolio. The table below outlines the condition rating system used for most assets 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	60-79
Fair	Requires attention	Signs of deterioration, some elements exhibit significant deficiencies	40-59

Poor	Increasing potential of affecting service	Approaching end of service life, condition below standard, large portion of system exhibits significant deterioration	20-39
Very Poor	Unfit for sustained service	Near or beyond expected service life, widespread signs of advanced deterioration, some assets may be unusable	0-19

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 E includes additional information on the role of asset condition data and provides basic guidelines for the development of a condition assessment program.

3

Portfolio Overview

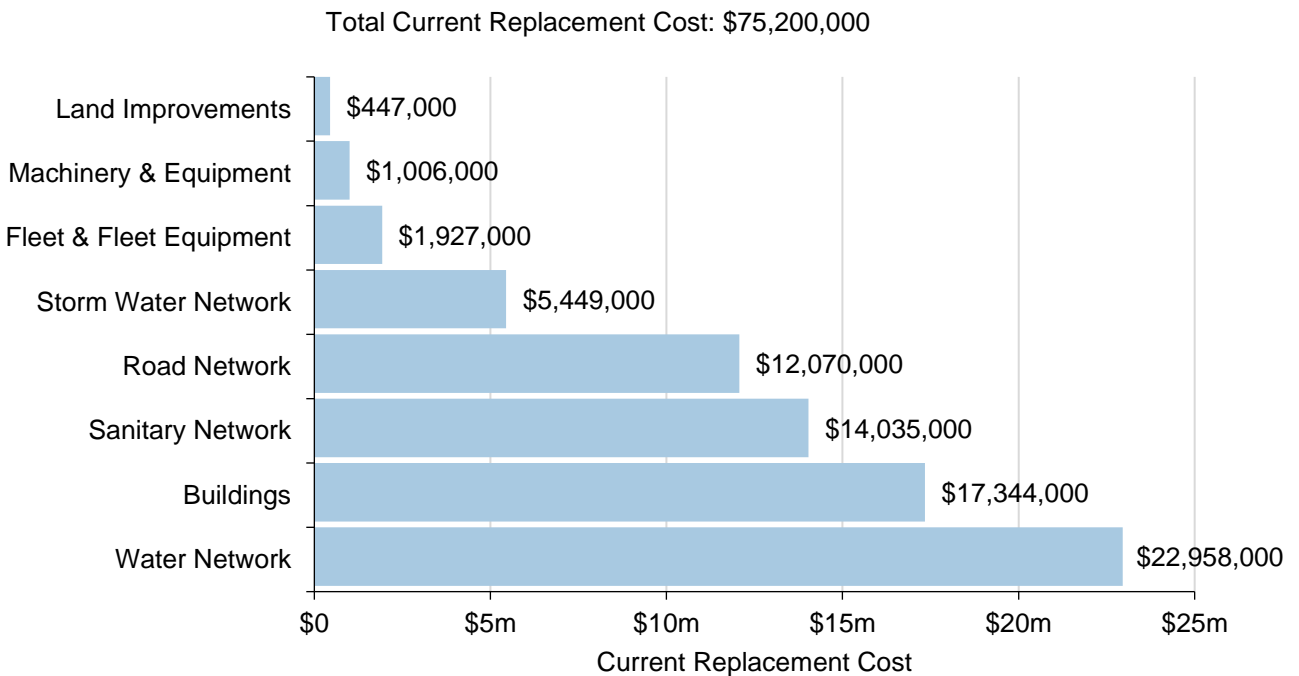
Key Insights

- The total replacement cost of the Town's asset portfolio is \$75 million
- The Town's target re-investment rate is 2.20%, and the actual re-investment rate is 1.25%, contributing to an expanding infrastructure deficit.
- 53% of all assets are in fair or better condition
- 47% of assets are projected to require replacement in the next 10 years
- Average annual capital requirements total \$1.7 million per year across all assets

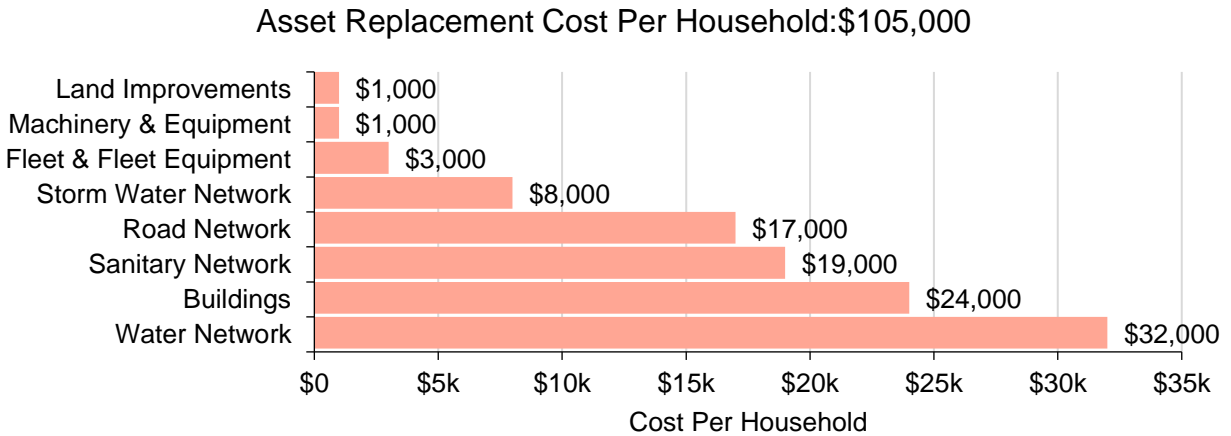
Total Replacement Cost of Asset Portfolio

The asset categories analysed in this AMP have a total replacement cost of \$75 million based on inventory data from 2021. This total was determined based on a combination of user-defined costs, inflation of user-defined costs and historical cost inflation. The replacement cost is an estimate of the cost (as of 2021 year-end) to replace the existing assets with comparable assets available for procurement today.

The Township's portfolio ranges in value by asset category with the water network having the highest value followed by buildings, sanitary and then the road network. Replacement costs by asset category are as follows:

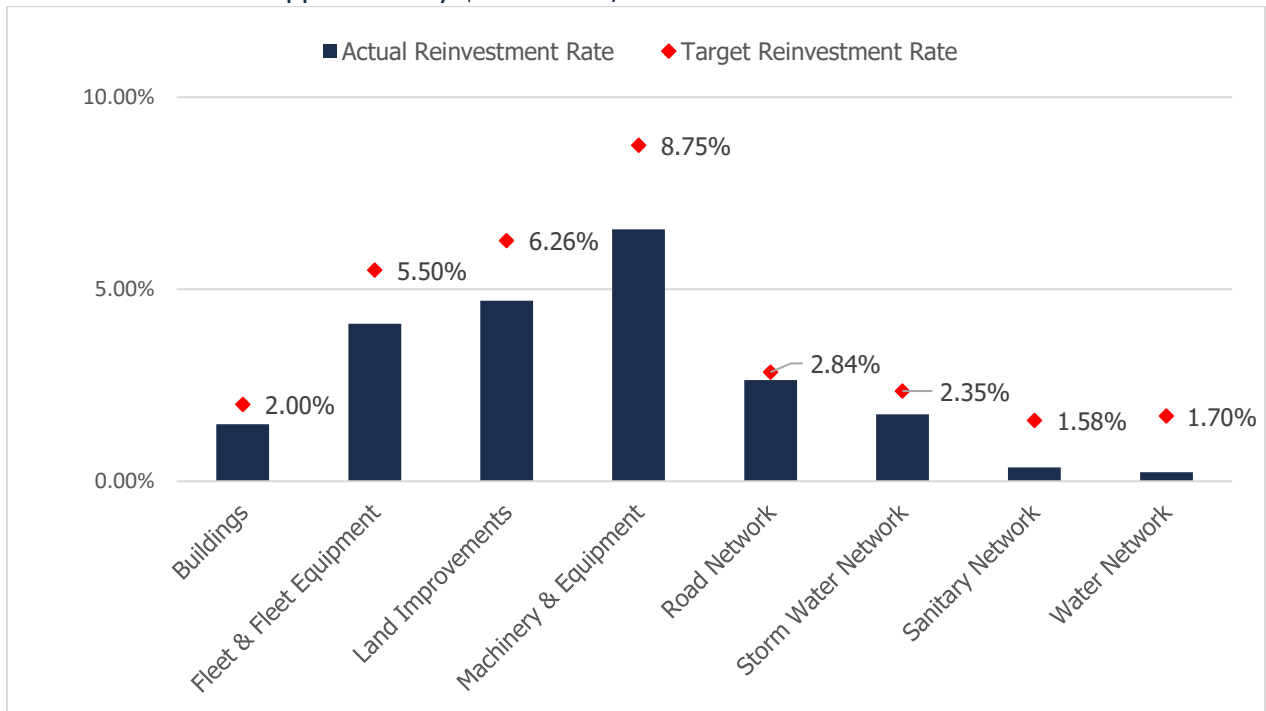


The total replacement value of the Town’s assets can also be viewed on a per household basis. This can be helpful for ratepayers to understand the scale of investment within their Town and the importance of its investment and management. The Town’s total asset portfolio has a current replacement value of \$105,000 per household.



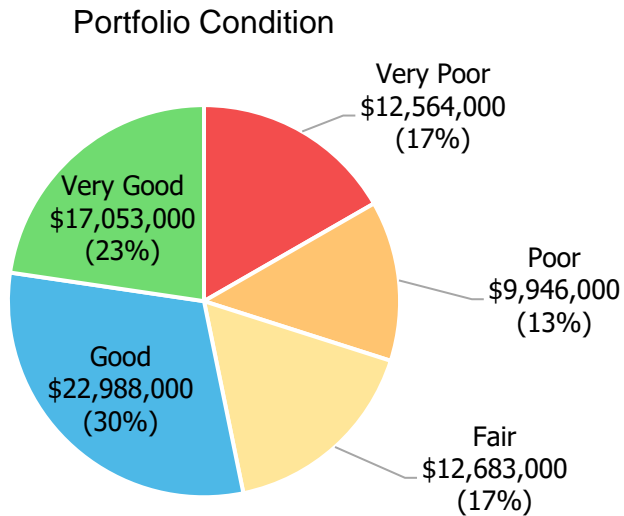
Target vs. Actual Reinvestment Rate

The graph below depicts funding gaps or surpluses by comparing target vs actual reinvestment rate. To meet the long-term replacement needs, the Town should be allocating approximately \$1.7 million annually, for a target reinvestment rate of 2.20%. Actual annual spending on infrastructure totals approximately \$0.9 million, for an actual reinvestment rate of 1.25%.



Condition of Asset Portfolio

The current condition of the assets is central to all asset management planning. Collectively, 53% of assets in Englehart are in fair or better condition. This estimate relies on both age-based and field condition data.

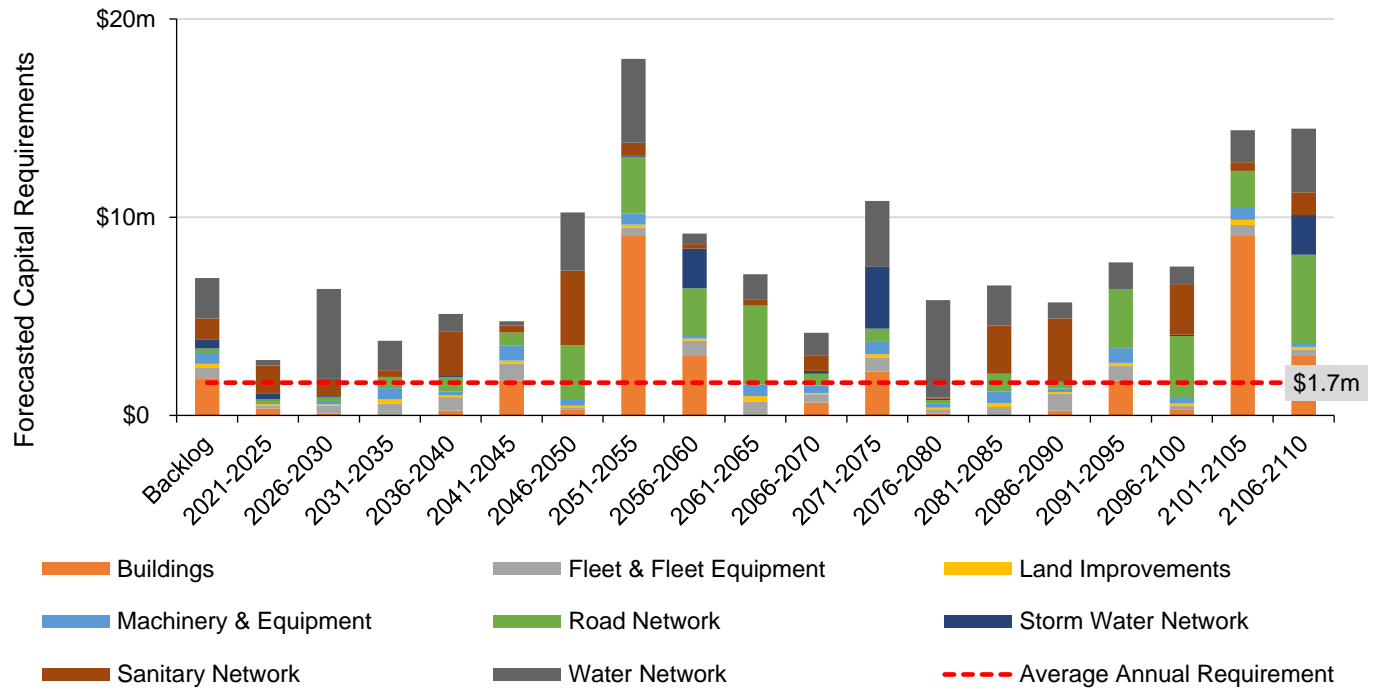


This AMP relies on assessed condition data for its road assets only; for the remaining portfolio, age is used as an approximation of condition. Assessed condition data is invaluable in asset management planning as it better reflects the condition and functionality of assets. The table below identifies the source of condition data used throughout this AMP.

Asset Category	Asset Segment	% of Assets with Assessed Condition	Source of Condition Data
Road Network	Paved Roads	100	2021 Staff Assessments
Stormwater Network	All	0	Age-Based Condition
Buildings	All	0	
Machinery & Equipment	All	0	
Fleet & Fleet Equipment	All	0	
Land Improvements	All	0	
Water Network	All	7	
Sanitary Sewer Network	All	0	

Forecasted Capital Requirements

The development of a long-term capital forecast should include both asset rehabilitation and replacement requirements. With the development of asset-specific lifecycle strategies that include the timing and cost of future capital events, the Town can produce an accurate long-term capital forecast. The following graph identifies capital requirements over the next 90 years.



4 Analysis of Tax-funded Assets

Key Insights

- Tax-funded assets are valued at \$38 million
- 59% of tax-funded assets are in fair or better condition
- The average annual capital requirement to sustain the current level of service for tax-funded assets is approximately \$1.0 million
- Critical assets should be evaluated to determine appropriate risk mitigation activities and treatment options

Road Network

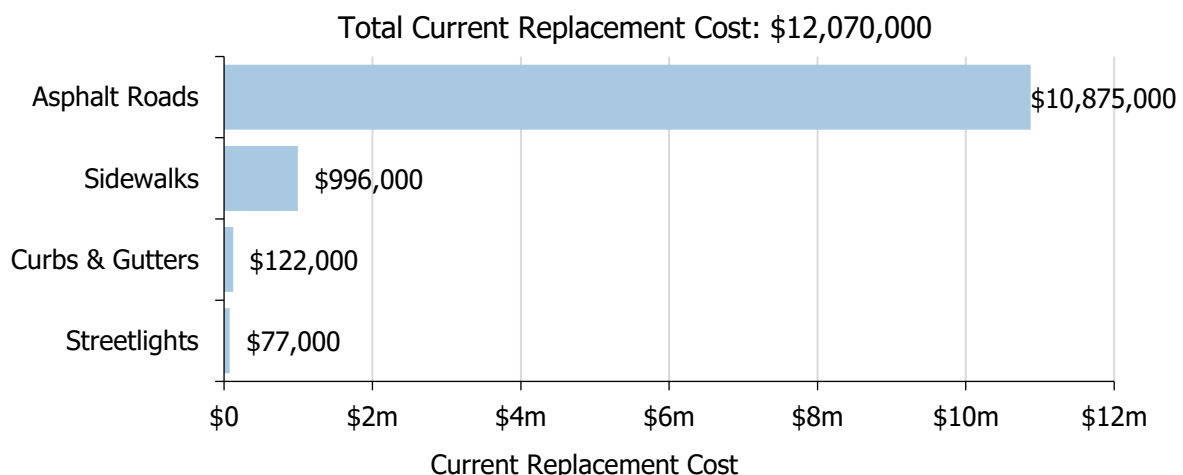
The Road Network is a critical component to the provision of safe and efficient transportation services and holds significant replacement value. The road network includes all municipally owned and maintained roadways in addition to curbs and gutters, sidewalks and streetlights.

The Town’s road network assets are maintained by the Public Works department who is also responsible for winter snow clearing, ice control and snow removal operations.

4.1.1 Asset Inventory & Replacement Cost

The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Town’s Road Network inventory.

Asset Segment	Quantity	Primary Replacement Cost Method	Total Replacement Cost
Gravel Roads	1,254 m	Not Planned for Replacement ¹	
Asphalt Roads	14,162 m	Inflation of User Defined Cost	\$10,875,000
Curbs & Gutters	1,071 m	Cost/Unit	\$122,000
Sidewalks	2,656 m	Cost/Unit	\$996,000
Streetlights	163	Cost/Unit	\$77,000
Total			\$12,070,000

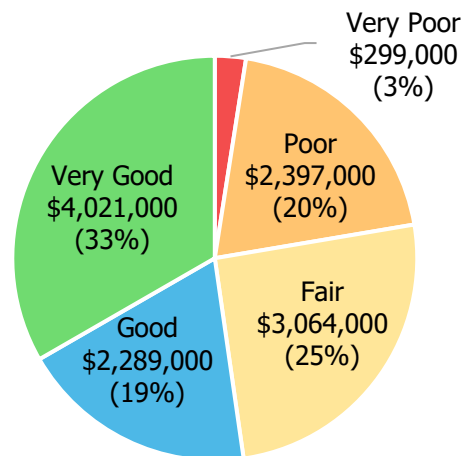


¹ Gravel roads have been included in the road network as they comprise a significant portion of the Town’s road network. However, the lifecycle management strategies for these assets consist of perpetual maintenance activities and do not require capital costs for rehabilitation or replacement.

4.1.2 Asset Condition

The table below identifies the current average condition and source of available condition data for each asset segment. The Average Condition (%) is a weighted value based on replacement cost.

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Asphalt Roads	71%	Good	100% Assessed
Curbs & Gutters	48%	Fair	Age-Based
Sidewalks	73%	Good	99% Assessed
Streetlights	90%	Very Good	Age-based
	71%	Good	98% Assessed



For paved road assets, condition ratings are defined as follows:

Condition	Description
Excellent (5)	Very smooth with no cracking, surface deformation or surface defects
Good (4)	Smooth with a few cracks, surface deformation or surface defects
Fair (3)	Comfortable with intermittent cracks, surface deformations or surface cracks
Poor (2)	Uncomfortable with frequent cracks, surface deformation or surface defects
Very Poor (1)	Uncomfortable with constant cracks, surface deformation or surface defects. Trail roads are included with this pavement condition

Current Approach to Condition Assessment

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

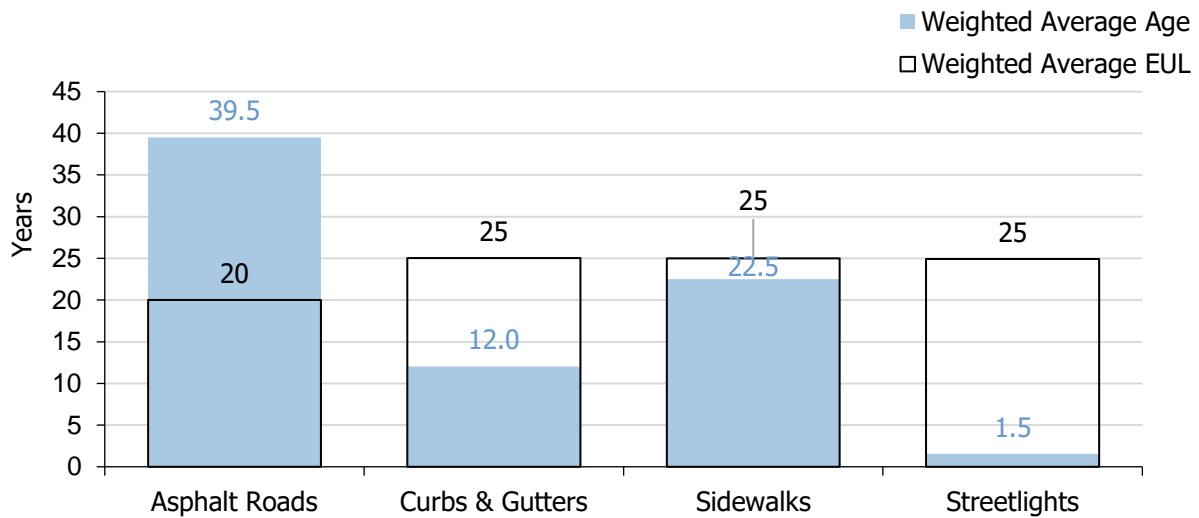
- In late 2021, the Town's Public Works Staff conducted condition assessments for all paved roads, rating the roads on a 1-5 scale based on ride comfort, surface defects and deformations.
- The Town's Public Work Staff also conducted condition assessments on their sidewalk assets also based on a 1-5 scale.
- Moving forward it is the Town's intention to re-assess their roads and sidewalks annually and update Citywide accordingly.

4.1.3 Estimated Useful Life & Average Age

The Estimated Useful Life for Road Network assets has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)
Asphalt Roads	20	39.5
Curbs & Gutters	25	12
Sidewalks	25	22.5
Streetlights	25	1.5

As indicated below, most asphalt roads are beyond their useful life however the asset condition and performance are preserved and enhanced through road rehabilitation projects discussed in the lifecycle strategies section. For the other road segments the average asset age is less than the average asset estimated useful life. For the remaining road segments most assets are replaced and not rehabilitation.



Each asset's Estimated Useful Life should 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. Although Asphalt roads appear to be significantly passed their average useful life, they can realistically last up to 45 years by implementing an appropriate life cycle strategy, as outlined below.

4.1.4 Lifecycle Management Strategy

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.

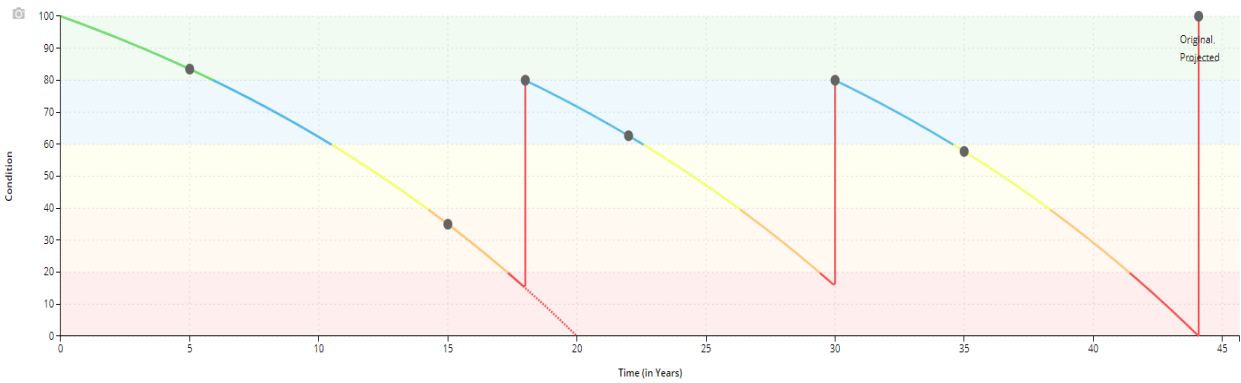
The following table outlines the Town’s current lifecycle management strategy for their road assets.

Activity Type	Description of Current Strategy
Maintenance & Inspection	Crack sealing is performed on the paved roads when the roads reach 5 years, and then again in year 12. Patching is also completed on paved roads as needed.
	The Township is perpetually maintaining their gravel roads. This includes regrading, completed by an external contractor, dust control completed five (5) times per year, and gravelling on an as-needed basis
	All regular maintaince activities, including pothole repairs, are conducted in compliance with Minimum Maintenance Standards (O.Reg 239/02)
	In 2022 the Public Works department completed internal condition assessments for the entire road network. It is the Town’s intention to complete annual condition assessment review and updates for the entire road network
Rehabilitation	Milling and resurfacing of paved roads typically occurs when assets have reached 20 years of age.
Replacement	Project coordination with other core infrastructure is the primary determinant for road replacement – water and sewer replacement projects will typically also prompt full road replacement
	Road condition is also considered when determining when to replace an asset

The following lifecycle strategies have been developed as a proactive approach to managing the lifecycle of asphalt roads. Instead of allowing the roads to deteriorate until replacement is required, strategic rehabilitation is expected to extend the service life of roads at a lower total cost. The strategy represents the typical lifecycle activities and their triggers, however there may be instances where events occur outside of these parameters due to factors such as condition, strategic initiatives, and concurrent capital projects affecting road assets (i.e., watermain replacement).

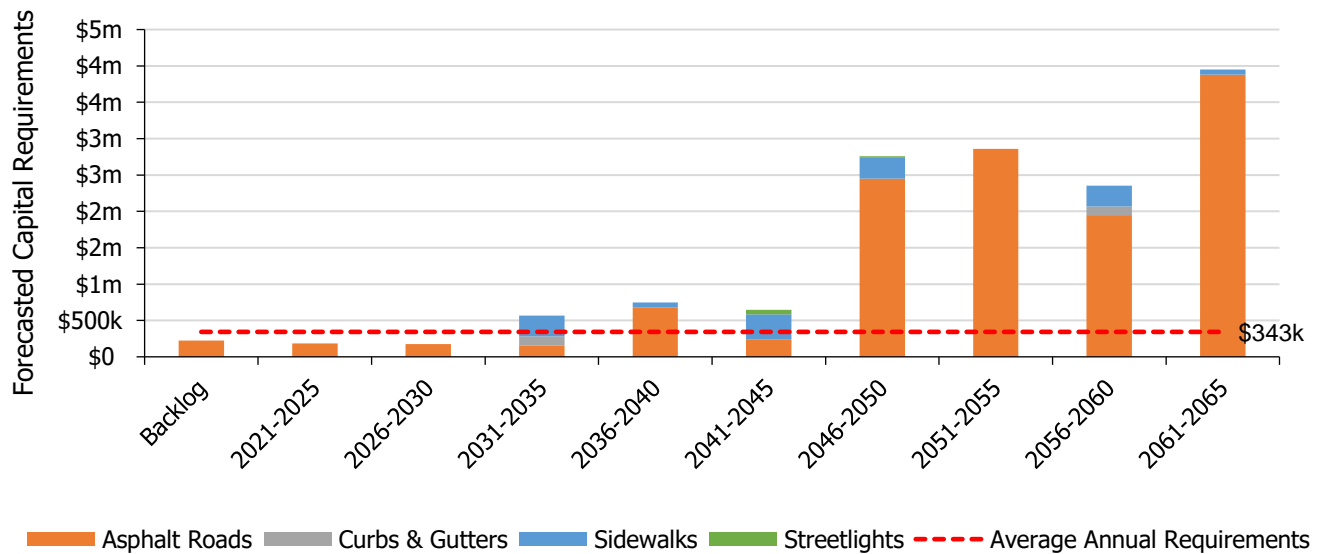
Paved Roads (Asphalt)

Event Name	Event Class	Event Trigger	Event Impact
Crack Sealing 1 of 2	Maintenance	5 Years	No Impact
Patching 1 of 2	Maintenance	10-15 Years	No Impact
Mill and Pave 1 of 2	Rehabilitation	Condition 1	Condition improved to 80%
Mill and Pave 2 of 2	Rehabilitation	Condition 1	Condition improved to 80%
Crack Sealing 2 of 2	Maintenance	5 Years	No Impact
Patching 2 of 2	Maintenance	30-35 Years	No Impact
Full Reconstruction	Replacement	Condition (0)	Condition improved to 100%



Forecasted Capital Requirements

Based on the lifecycle strategies identified previously for asphalt roads, and assuming the end-of-life replacement of all other assets in this category, the following graph forecasts capital requirements for the Road Network. The annual capital requirement is \$343,000 which represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs to meet future capital needs of all road network assets. Reporting in 5-year cumulative bins, the capital requirements fluctuate from year to year and as illustrated below grow gradually from 2021 onwards, spiking most significantly in 2061-2065.



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 in Appendix B.

4.1.5 Risk & Criticality

Risk Matrix

The asset-specific attributes that municipal staff utilize to define and quantify risk for their asphalt roads are as listed below; their weighting to the model is listed as well.

Probability of Failure (POF)	Consequence of Failure (COF)
Condition: 100%	Replacement Cost (Financial): 100%

Based on the above parameters and their weightings the probability and the consequence of failure for the paved road assets was calculated and the risk score was determined based on 2021 inventory data.

Consequence	5	1 Asset 552 m \$385,469	0 Assets - \$0	2 Assets 401 m \$795,807	0 Assets - \$0	0 Assets - \$0
	4	3 Assets 820 m \$573,276	1 Asset 238 m \$166,280	3 Assets 313 m \$621,804	1 Asset 238 m \$166,139	0 Assets - \$0
	3	5 Assets 823 m \$574,885	10 Assets 2,006 m \$1,402,718	9 Assets 1,752 m \$1,225,252	14 Assets 2,734 m \$1,912,112	0 Assets - \$0
	2	33 Assets 3,048 unit(s), m \$2,185,703	6 Assets 540 m \$377,430	3 Assets 312 m \$218,071	1 Asset 62 m \$42,985	3 Assets 303 m \$211,851
	1	0 Assets - \$0	0 Assets - \$0	0 Assets - \$0	0 Assets - \$0	1 Asset 22 m \$15,167
		1	2	3	4	5
		Probability				

For a more detailed breakdown of the risk parameters, please refer to Appendix D .

Risks to Current Asset Management Strategies

In addition to quantifiable risks as discussed above the Town’s road assets carry qualitative risks. These are risks that are generally applicable to road assets but may not precisely apply to one road over another. The Town identified the following qualitative risks for their road assets:



Asset Data & information

Roads inventory information is somewhat limited and data confidence is low, especially for road assets that are older and/or have not had recent rehabilitation work completed. In the coming years staff intend to prioritize data refinement efforts to increase the accuracy and reliability of asset data and information. Once completed staff can more confidently develop data-driven strategies to address infrastructure needs.



Staff Resources & Capacity

Englehart’s municipal staffing team is limited and constrained by the significant demands of also operating, rehabilitating, and reporting on their infrastructure assets. This is a particular challenge for road assets. With the implementation of a centralized inventory system staff believe they will gain efficiencies which will increase their capacity to complete data refinement activities and further develop their lifecycle strategies. Despite the expected efficiency of a centralized inventory staff resources are expected to remain constrained, and in the event of unexpected staff leaves or turnover could be further compromised.

4.1.6 Levels of Service

The following tables identify the Town’s current level of service for the Road Network. 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 Town has selected for this AMP.

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Scope	Description, which may include maps, of the road network in the municipality and its level of connectivity	The Municipal road network contains about 15 lane kilometers of local and collector roads which include asphalt and gravel surfaces. The road network primarily services the central neighborhoods of the Town and are bound by the Trans Canada Highway to the south and west and

Service Attribute	Qualitative Description	Current LOS (2021)
		the railroad tracks to the north and east. See Appendix C for a road map.
Quality	Description or images that illustrate the different levels of road class pavement condition	<p>Road conditions range from poor to very good and are on average in fair condition. Road conditions are described as follows:</p> <p>Very good: Very smooth with no cracking, surface deformation or surface defects</p> <p>Good: Smooth with a few cracks, surface deformation or surface defects</p> <p>Fair: Comfortable with intermittent cracks, surface deformations or surface cracks</p> <p>Poor: Uncomfortable with frequent cracks, surface deformation or surface defects</p> <p>Very Poor: Uncomfortable with constant cracks, surface deformation or surface defects.</p>

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2021)
Scope	Lane-km of collector roads (MMS classes 3 and 4) per land area (km/km ²)	5.91
	Lane-km of local roads (MMS classes 5 and 6) per land area (km/km ²)	3.78
Sustainable	% of the road network that is in good or very good condition	57%
	% of the road network that is in fair or worse condition	43%
Affordable	Annual Capital reinvestment rate vs. target capital reinvestment rate.	Current: 2.63% Target: 2.84%

4.1.7 Recommendations

Asset Inventory

- Work to disaggregate pooled curbs, and street light fixture assets to allow for better asset planning and analysis. Consider applying a street from and street to segmentation to match the road asset's structure and to improve ease of asset reference.
- Where there are investments (i.e., asset rehabilitations, replacements) to road network assets updates asset information accordingly so that the asset management system remains an accurate information and planning resource for the Town

Condition Assessment Strategies

- Work to upload the latest (and all future) condition assessment information to Citywide so that it can be utilized in risk and life cycle strategy.
- Refine internal reference information on road and sidewalk condition score criteria. Consider the inclusion of reference photos and other assessment tools so that considerations are uniform over time and between assessors.

Lifecycle Management Strategies

- Implement the identified lifecycle management strategies for roads to realize potential cost avoidance and maintain a high quality of road pavement condition.
- Evaluate the efficacy of the Town's lifecycle management strategies at regular intervals to improve the accuracy of the events cost, trigger, and impact

Risk Management Strategies

- Implement risk-based decision-making as part of asset management planning and budgeting processes. Complete regular review of the risk model and high-risk assets.
- Work to better understand the Town's risk tolerance by asset category and segment and identify acceptable risk responses so that the Town is better equipped to respond to failures and to risks as they may arise.

Levels of Service

- Continue to measure current levels of service in accordance with the metrics identified in O. Reg. 588/17 and those metrics that the Town believes to provide meaningful and reliable inputs into asset management planning.
- 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.

Stormwater Network

The Town of Englehart owns a variety of stormwater assets including storm sewer mains, catch basins, and ditches.

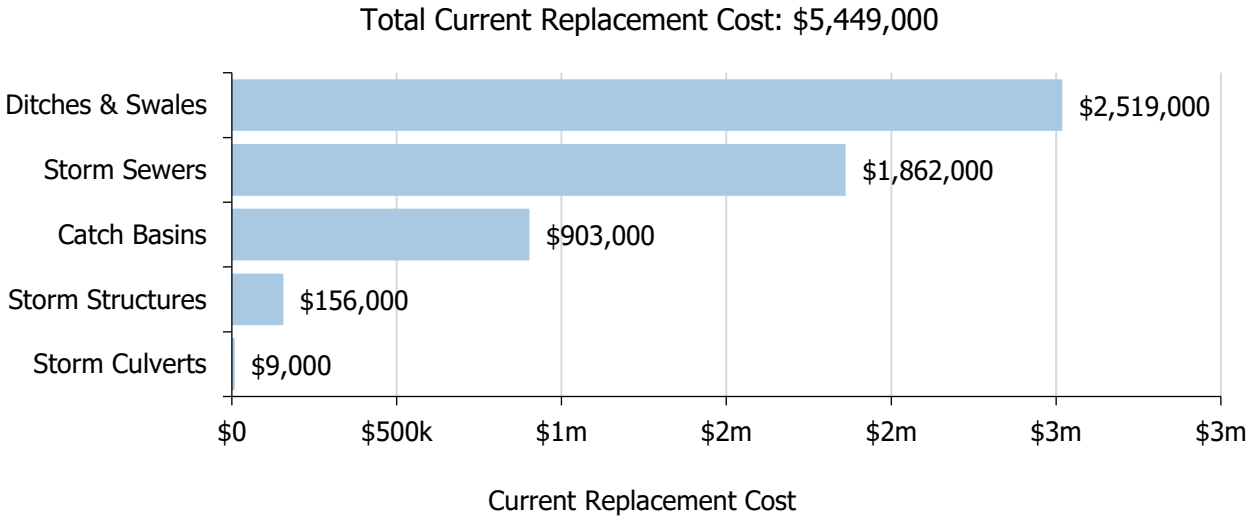
Staff are working towards improving the accuracy and reliability of their Stormwater Network inventory especially as it relates to the assets in-service date. At the time of publication, the Town did not have information on the in-service date of their stormwater assets. To estimate the in-service date of storm infrastructure the in-service date of the related road segment was used as a proxy for the in-service date of the subject stormwater infrastructure asset.

The Tables below provide an overview of the storm water inventory.

4.1.8 Asset Inventory & Replacement Cost

The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Town's Stormwater Network inventory.

Asset Segment	Quantity	Primary Replacement Cost Method	Total Replacement Cost
Catch Basins	150	Inflation of User Defined Cost	\$903,000
Ditches & Swales	26,160 m	Inflation of User Defined Cost	\$2,519,000
Storm Culverts	1	Inflation of User Defined Cost	\$9,000
Storm Sewers	1,934 m	Inflation of User Defined Cost	\$1,862,000
Storm Structures	26	Inflation of User Defined Cost	\$156,000
Total			\$5,449,000

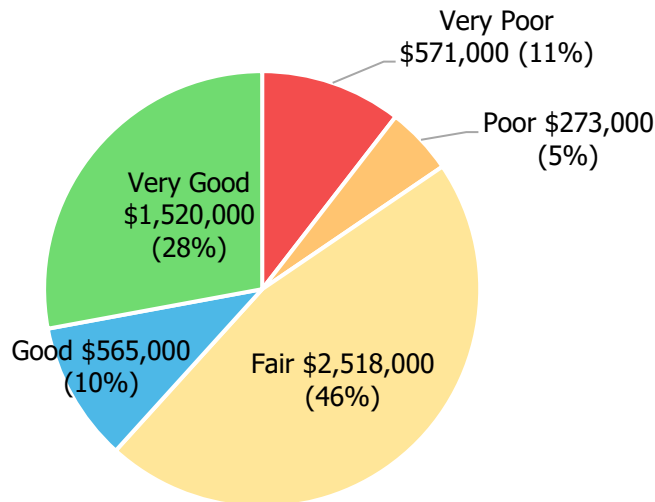


4.1.9 Asset Condition

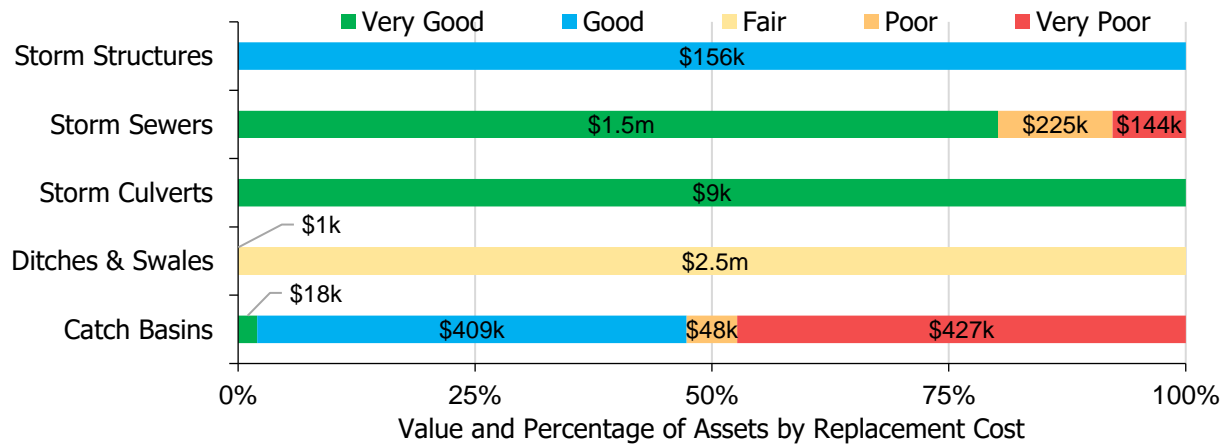
The table below identifies the current average condition and source of available condition data for each asset segment. The Average Condition (%) is a weighted value based on replacement cost.

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Catch Basins	38%	Poor	Age-Based
Ditches & Swales	51%	Fair	Age-Based
Storm Culverts	88%	Very Good	Age-Based
Storm Sewers	78%	Good	Age-Based
Storm Structures	74%	Good	Age-Based

Total



When reviewing condition of each stormwater asset segment in more detail, we see that some segments (i.e., catch basins) have more variability in asset condition than others (i.e., storm structures).



To ensure that the Town’s Stormwater Network continues to provide an acceptable level of service, asset condition should be regularly monitored and considered in asset investment decisions.

Current Approach to Condition Assessment

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

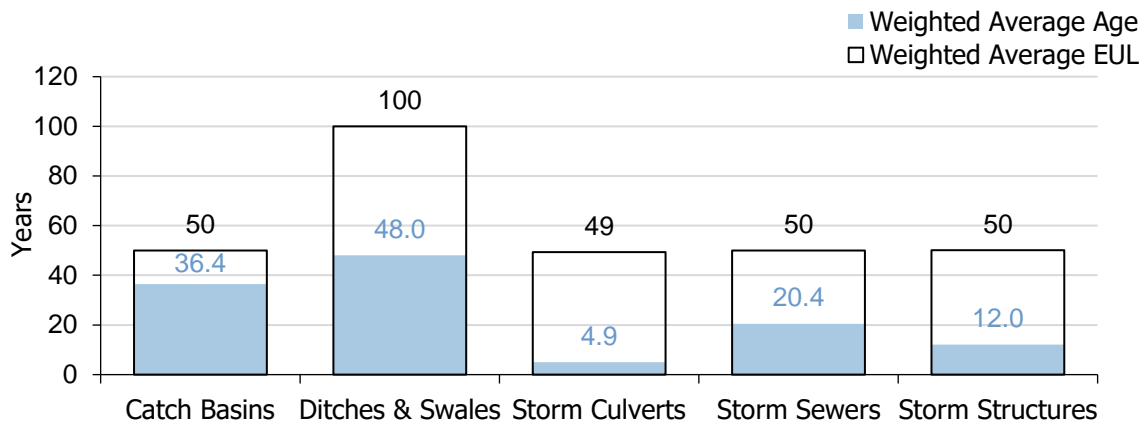
- To date condition has been derived based on the assets age and its expected service life with additional internal considerations for the pipe material.
- It is the Town’s intention to complete a large-scale condition assessment for their storm mains by the end of 2023. This is expected to be conducted internally with guidance from an external engineering consultant.

4.1.10 Estimated Useful Life & Average Age

The Estimated Useful Life for Stormwater Network assets has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)
Catch Basins	50	36.4
Ditches & Swales	100	48.0
Storm Culverts	49	4.9
Storm Sewers	50	20.4
Storm Structures	50	12.0

At this time, the condition of all stormwater assets is estimated based on the assets age relative to its Estimated Useful Life (EUL). As indicated below using a replacement cost weighted average age and EUL, on average the age of storm water assets is less than the EUL.



Each asset's Estimated Useful Life should 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.

4.1.11 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.

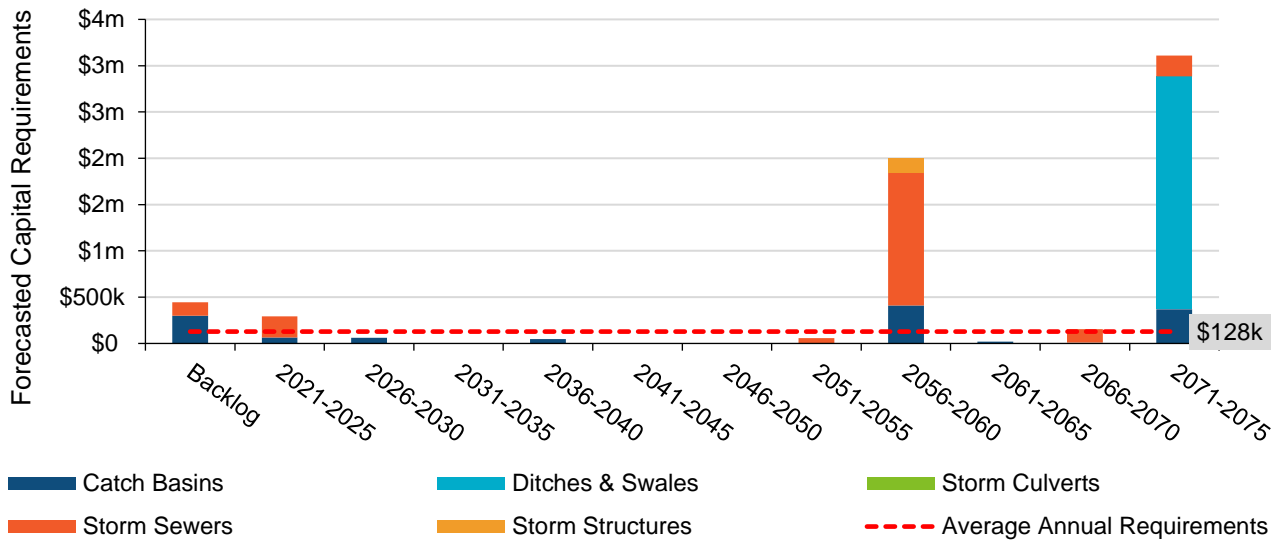
The following table outlines the Town’s current lifecycle management strategy for their stormwater network assets.

Activity Type	Description of Current Strategy
Maintenance & Inspection	The majority of Englehart’s storm system is comprised of ditches. On an annual basis storm ditches are inspected.
	Based on inspection findings, flushing is performed and oil-grit separators are cleaned to avoid blockages.
	Storm drain inlets are cleaned as needed based on annual inspection findings.
Replacement	About every seven (7) years the Town intends to complete Closed Circuit Television Video (CCTV) ² inspections and apply condition ratings to their entire storm network. The next inspection and assessment is planned for 2023.
	At this time storm assets are generally replaced in a reactive manner, but this is expected to improve once updated condition information is gathered. Asset replacement is generally completed where assets are in very poor condition, in a critical location, and/or serving an important function (i.e., downtown corridor, limited permeable services).

² CCTV inspections is the process of using a camera inside of a pipe to inspect for condition by identifying pipe defects and/or blockages. CCTV inspections provide a non-invasive and more cost-effective method of reviewing asset condition and identifying specific issues and their location.

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement is \$128,000 and represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs. When reviewing capital requirements in 5-year bins, projected costs are highest in 2056 and 2071 mostly for storm sewers, ditches, and swales.



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 in Appendix B.

4.1.12 Risk & Criticality

Risk Matrix

The asset-specific attributes that municipal staff utilize to define and quantify risk for stormwater main assets are as listed below; their weighting to the model is listed in bracket.

Probability of Failure (POF)	Consequence of Failure (COF)
Condition: 85%	Replacement Cost (Financial): 50%
Material: 15%	Diameter (mm) (social): 50%

A further breakdown of the risk parameters and criteria can be found in Appendix D. Based on these parameters, the following consequence and probability of failure scores were determined, and the overall risk score derived. Assets in red are considered the highest risk assets; conversely assets in green are the lowest risk assets. As illustrated below, there are a

few stormwater network assets that hold significant risk, however most assets are low risk (green and blue).

Consequence	5	6 Assets 1,190 m \$1,145,851	0 Assets - \$0	2 Assets 2,771 m \$266,782	1 Asset 190 m \$182,951	0 Assets - \$0
	4	0 Assets - \$0	0 Assets - \$0	2 Assets 1,131 m \$108,943	0 Assets - \$0	1 Asset 150 m \$144,435
	3	3 Assets 300 m \$288,870	6 Assets 41 unit(s) \$246,744	34 Assets 13,896 m \$1,338,071	0 Assets - \$0	1 Asset 60 m \$57,774
	2	1 Asset 2 unit(s) \$12,036	16 Assets 46 unit(s) \$276,833	43 Assets 8,212 m \$790,738	4 Assets 50 m, unit(s) \$78,476	21 Assets 64 unit(s) \$385,159
	1	8 Assets 8 unit(s) \$15,481	7 Assets 7 unit(s) \$42,126	2 Assets 143 m \$13,808	2 Assets 2 unit(s) \$12,036	7 Assets 7 unit(s) \$42,126
		1	2	3	4	5
		Probability				

Risks to Current Asset Management Strategies

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

Asset Information

Currently there is no assessed condition information for stormwater assets. Instead, staff rely on age-based condition and general knowledge of past failures. The lack of assessed condition or documented main break history poses a significant risk to the Town’s ability to accurately predict failure and plan lifecycle strategies accordingly. Staff intend to begin collecting assessed condition information for their stormwater main assets in 2023 and this is expected to significantly reduce asset information-based risks.



4.1.13 Levels of Service

The following tables identify the Town’s current level of service for Stormwater Network. 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 Town has selected for this AMP.

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Scope	Description, which may include map, of the user groups or areas of the municipality that are protected from flooding, including the extent of protection provided by the municipal stormwater system.	At this time, the Town does not have flood mapping to determine its flood resilience, including the number of properties protected. The Town has identified the need for more information of storm resilience and is working on a strategy to develop and collect such information.

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2021)
Scope	% of properties in municipality resilient to a 100-year storm	TBD
	% of the municipal stormwater management system Resilient to a 5-year storm	TBD
Affordable	Annual Capital reinvestment rate vs. Target re-investment Rate	Current: 1.74% Target: 2.35%
Sustainable	% of the stormwater system that is in good or very good condition	38%
	% of the stormwater system that is in fair or poorer condition	62%

4.1.14 Recommendations

Asset Inventory

- Review and refine as able asset inventory information especially as it relates to assets in-service date
- If other asset inventory information (i.e., number of breaks etc.) is available in other systems and deemed valuable to the Town, work to update it to Citywide to improve analysis.
- Identify any additional asset information that would be valuable to asset management decisions; if it is not currently collected review the value it would provide alongside the cost of collection to determine project viability.

Condition Assessment Strategies

- Continue to develop project plans to ensure that storm mains receive CCTV inspections in 2023 as planned. As condition information becomes available ensure timely updates in Citywide are completed

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 of the probability and consequences of asset failure.

Lifecycle Management Strategies

- Document and review lifecycle management strategies for the Stormwater Network on a regular basis to achieve the lowest total cost of ownership while maintaining adequate service levels.
- Works towards executing plans, especially as it relates to obtaining condition assessments for the stormwater network. Prioritize assessment of stormwater mains that are in critical locations and/or are suspected to be in poor condition.

Levels of Service

- To meet the requirements of O. Reg. 588/17 Level of Service, begin to collect information of the extent of protection provided by the municipal storm water system. Specifically work to gather information on resilience to a 5-year and 100-year storm.

Buildings

The Town of Englehart owns and maintains several facilities that provide key services to the community. These include:

- Town Hall
- Fire Stations
- Public Works Garage
- Arena
- Swimming Pool
- Library
- Museum

Fire Department Joint Operations Agreement

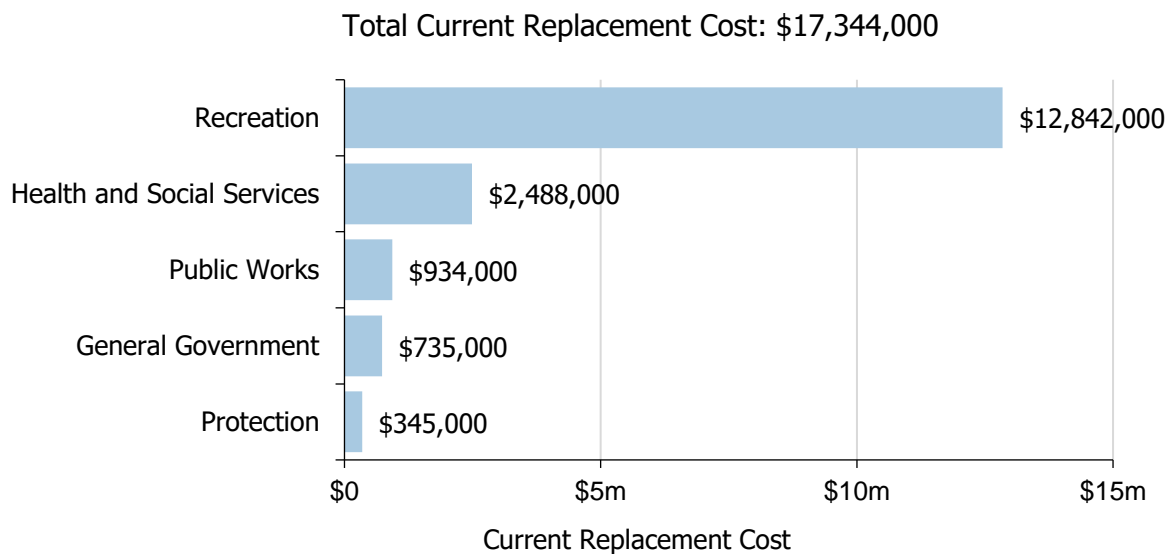
In accordance with the Municipal Act, R.S.O. 1990, Chapter M.45 which permits two (2) or more municipalities to establish, maintain, and operate a fire department jointly, in 2017 the Town of Englehart established an agreement for shared fire services with the Township of Eanturel, Township of Chamberlain, and the Municipality of Charlton and Dack. The agreement identifies the management structure for the fire department, to be known as the “Englehart and Area Fire Department”.

The agreement outlines that operational and capital costs for all fire services assets (building, fleet, and equipment) shall be shared on a per capita basis based on each respective municipalities’ population. Based on the 2021 census, the Town of Englehart contributes slightly less than half of the total Englehart and Area Fire Department budget. The replacement amounts indicated for protection services are based on an apportionment of 46% of the assets replacement value since this represents the total cost that the Town of Englehart would be reasonably expected to contribute based on the current by-law agreement (#2017-09). All other protection asset inventory information is based on the total quantity of assets rather than the Town of Englehart’s apportionment of that asset.

4.1.15 Asset Inventory & Replacement Cost

The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Town's Buildings & Facilities inventory. Recreation assets have the largest total replacement costs, followed by health and social services.

Asset Segment	Quantity	Primary Replacement Cost Method	Total Replacement Cost
General Government	1	User-Defined	\$735,000
Health and Social Services	5	User-Defined	\$2,488,000
Protection	1	User-Defined	\$345,000
Public Works	3	User-Defined	\$934,000
Recreation	4	User-Defined	\$12,842,000
Total	14		\$17,344,000

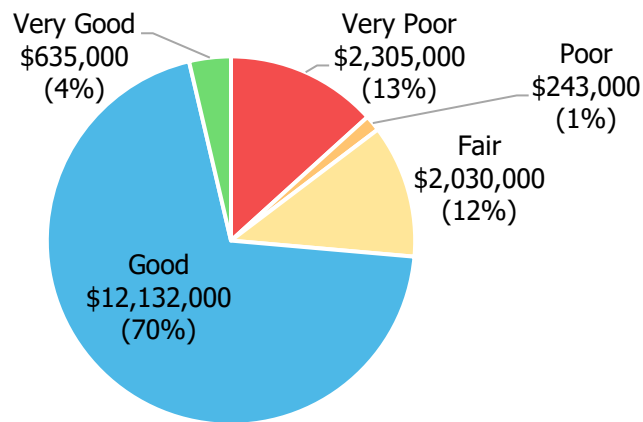


4.1.16 Asset Condition

The table below identifies the current average condition and source of available condition data for each asset segment. The Average Condition (%) is a weighted value based on replacement cost.

Asset Segment	Average Condition (%)	Average Condition	Condition Source
General Government	0%	Very Poor	Age-Based
Health and Social Services	27%	Poor	Age-Based
Protection	0%	Very Poor	Age-Based
Public Works	40%	Fair	Age-Based
Recreation	67%	Good	Age-Based
	56%	Fair	Age-Based

As indicated in the chart below, when weighted by asset replacement value nearly three-quarters of building assets are in very good and good condition. However, 13% or assets with a replacement value of about \$2.3 million are in very poor condition and will therefore require attention in the very near term.



To ensure that the Town's Buildings & Facilities continues to provide an acceptable level of service, the average condition of all assets should be regularly monitored. As asset condition degrades various asset interventions may be required.

Current Approach to Condition Assessment

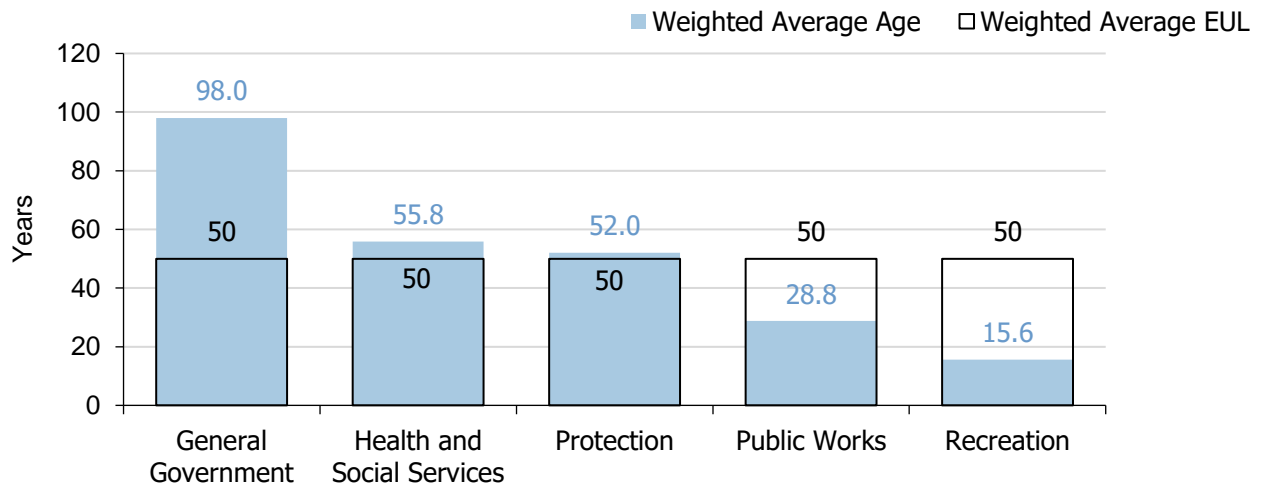
At this time the Town uses age and expected useful life as the basis of asset condition. In addition to age-based condition Englehart staff complete monthly building walk-throughs. As well the Town holds several regular maintenance contracts for specialized equipment, including elevators and fire safety systems. Any issues identified by contractors and staff are promptly responded to and may be considered when making asset replacement decisions.

4.1.17 Estimated Useful Life & Average Age

The Estimated Useful Life for Buildings & Facilities assets has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)
General Government	50	98
Health and Social Services	50	55.8
Protection	50	52
Public Works	50	28.8
Recreation	50	15.6

Currently, there is no assessed condition information for Building assets. In the absence of assessed condition, age-based condition is used to estimate asset condition. For building assets, the weighted average age of general government, health and social services, and protection is greater than the weighted average Estimated Useful life. For public works and recreation buildings the average age is much lower than the weighted average EUL.



Building assets have an array of components which often carry unique EUL and may not be of uniform age or condition. Upon the completion of Building Condition Assessments (BCA), which generates building component specific age, EUL, and condition information, the assessed condition is likely to be better than the age-based condition. Regardless, the condition of buildings will require regular monitoring to ensure interventions occur as needed.

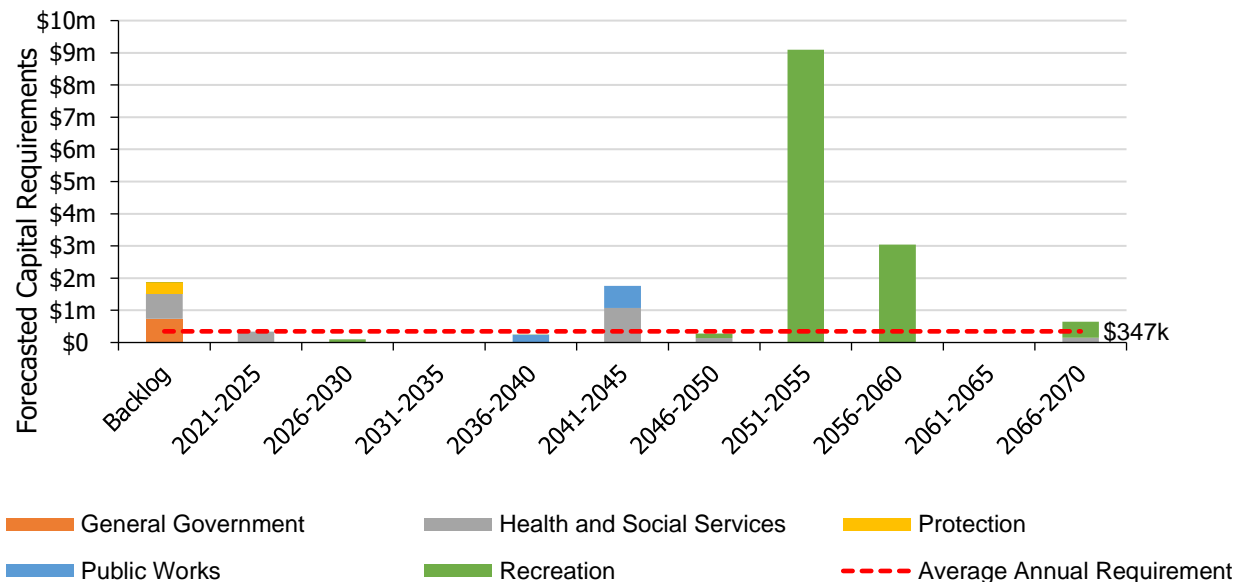
4.1.18 Lifecycle Management Strategy

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 Town’s current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance	Municipal buildings are subject to monthly inspections to identify health & safety requirements as well as structural deficiencies that require additional attention
	The Arena elevator and fire safety systems have regular maintenance contracts through an external contractor based on legislative requirement
	All other maintenance for municipal buildings is completed on an as-needed basis, which may be identified through customer complaints or health & safety walk throughs
Replacement	Health and safety related concerns are addressed as a priority when determining asset replacement As there is presently no formal condition assessment program in place, replacement of assets is generally more reactive at this time. Available funding and capital requirements are reviewed annually to determine capital project list

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement is \$347,000 and represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs. When reviewing capital requirements in 5-year



cumulative bins, the requirements vary by year spiking significantly in 2051-2055 and 2061-2065 for the recreation asset segment.

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 in Appendix B.

4.1.19 Risk & Criticality

Risk Matrix

The asset-specific attributes that municipal staff utilize to define and quantify risk are as listed below; their weighting to the model is listed beside.

Probability of Failure (POF)	Consequence of Failure (COF)
Condition (Operational): 100%	Replacement Cost (Financial): 80%
	Segment (Operational): 20%

Based on the above parameters, the probability and the consequence of failure was calculated, and the overall risk score was determined for each building asset.



The quantification of risk at the asset level allows the Town to determine appropriate risk mitigation strategies and treatment options. Risk mitigation may include asset-specific lifecycle strategies, data refinement programs (i.e., condition assessment strategies, attribute data) and/or asset ownership strategies (i.e., lease vs. own).

Risks to Current Asset Management Strategies

In addition to the quantitative risks noted above, the Town’s building assets carry qualitative risks. These are general in nature, typically affecting a group of assets as opposed to specific assets.



Infrastructure Age & Design

The Town’s building assets are quite old and, in many cases, require significant rehabilitation or potentially full replacement. In some cases, buildings are undersized and/or not effectively designed for their intended purpose. There is currently no decision-making process in place to determine how to plan for significant rehabilitations or replacement decisions. The age of building assets and the lack of formal plan or program to determine rehabilitation or replacement, poses a risk to long-term suitability and financial resourcing for either rehabilitation or replacement.

4.1.20 Levels of Service

The following tables identify the Town’s current level of service for Buildings. These metrics include the technical and community level of service metrics that the Town has selected for this AMP.

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Scope	Description, which may include maps, of the types of facilities that the municipality owns and maintains	The Town of Englehart owns a variety of buildings that support operations and provide services and recreational opportunities to the community. Public facing facilities include the library, museum, park and recreation washrooms, the community Arena Complex and the Englehart Lee Outdoor Pool. Operations based facilities include the Town Hall, Fire Hall, and various storage facilities.

Technical Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Sustainability	Annual Capital reinvestment rate vs. Target re-investment Rate	Current: 1.49% Target: 2.00%
Performance	% of budlings that are in good or very good condition	74%
	% of buildings that are in fair or worse condition	26%

4.1.21 Recommendations

Asset Inventory

- The Town's asset inventory contains a single record for each building. Buildings consist of several separate capital components that have unique estimated useful lives and require asset-specific lifecycle strategies. Staff should work towards a component-based inventory of all facilities to allow for asset specific lifecycle planning.
- To assist in this process the Town may wish to explore hiring an external contractor familiar with Uniformat II componentization for the completion of a Building Condition Assessments. Specific knowledge of critical assets like the water and wastewater treatment plants, would be especially valuable to the quality of collected data.

Condition Assessment Strategies

- The Town should implement regular condition assessments for all facilities to better inform short- and long-term capital requirements.

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 of the probability and consequences of asset failure.
- For Protection Services facility assets, which are shared by three other neighbouring municipalities, work to gain a consensus on mutually accepted risk tolerances and risk responses so that asset investment decisions are more easily arrived at.

Levels of Service

- Begin measuring current levels of service in accordance with the metrics that the Town has established in this AMP. Ensure that the LOS can be regularly collected and reported on. If there are data collection and reporting issues identified, the Town may revise the current LOS selected but must finalize the selected metrics no later than July 2024.
- Any LOS selected should provide meaningful and reliable inputs into asset management planning.
- Work towards identifying proposed levels of service as per O. Reg. 588/17 (2025 requirement) and identify the strategies that are required to close any gaps between current and proposed levels of service.

Machinery & Equipment

To maintain the high quality of public infrastructure and support the delivery of core services, the Town owns various types of machinery and equipment. This includes:

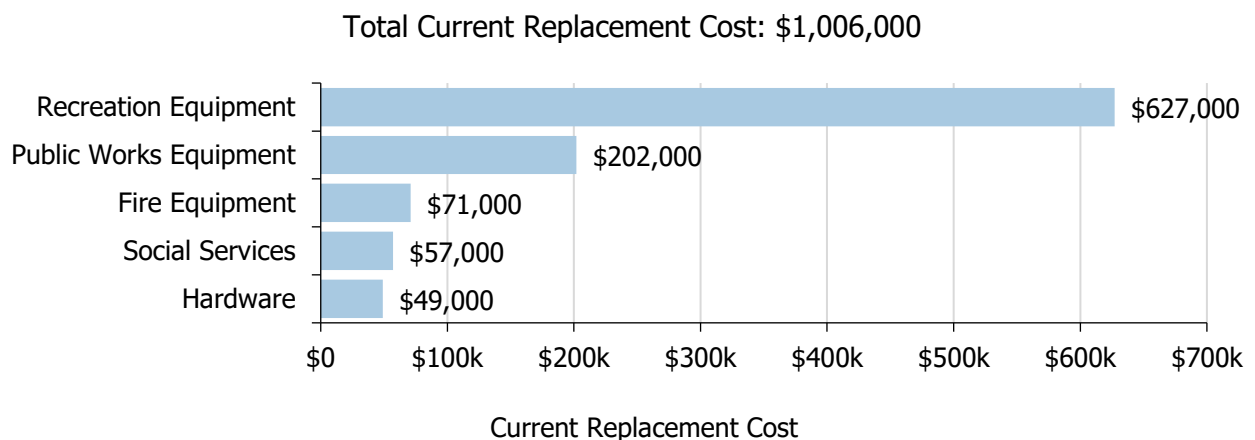
- Landscaping equipment to maintain public parks
- Fire equipment to support the delivery of emergency services
- Trucks, trailers, and street sweepers to maintain roadways
- Gym and recreational equipment for resident’s use
- Computers, telephones, and other office equipment to support the Town’s operations

Machinery and equipment assets are integral to the Town’s operation and its ability to deliver services in a reliable and responsive manner. The information to follow summarizes the state and condition of the machinery and equipment inventory.

4.1.22 Asset Inventory & Replacement Cost

The following table includes the quantity, replacement cost method and total replacement cost of each asset segment in the Town’s Machinery & Equipment inventory.

Asset Segment	Quantity	Primary Replacement Cost Method	Total Replacement Cost
Fire Equipment	6	User-Defined	\$71,000
Hardware	4	CPI Tables	\$49,000
Public Works Equipment	14	User-Defined	\$202,000
Recreation Equipment	18	CPI Tables	\$627,000
Social Services	3	CPI Tables	\$57,000
Total			\$1,006,000

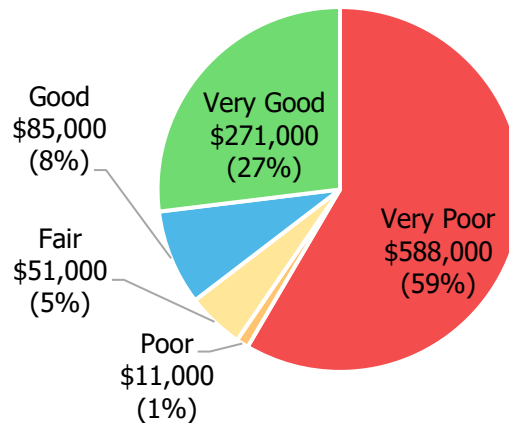


4.1.23 Asset Condition

The table below identifies the current average condition and source of available condition data for each asset segment. The Average Condition (%) is a weighted value based on replacement cost.

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Fire Equipment	9%	Very Poor	Age-based
Hardware	32%	Poor	Age-based
Public Works Equipment	48%	Fair	Age-based
Recreation Equipment	32%	Poor	Age-Based
Social Services	0%	Very Poor	Age-Based
	32%	Very Poor	Age-Based

As indicated in the pie chart below most machinery and equipment assets are in very poor condition, about a third of assets are in very good and good condition and the balance are fair or poor.



To ensure that the Town's Machinery & Equipment continues to provide an acceptable level of service, the Town 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 Machinery & Equipment.

Current Approach to Condition Assessment

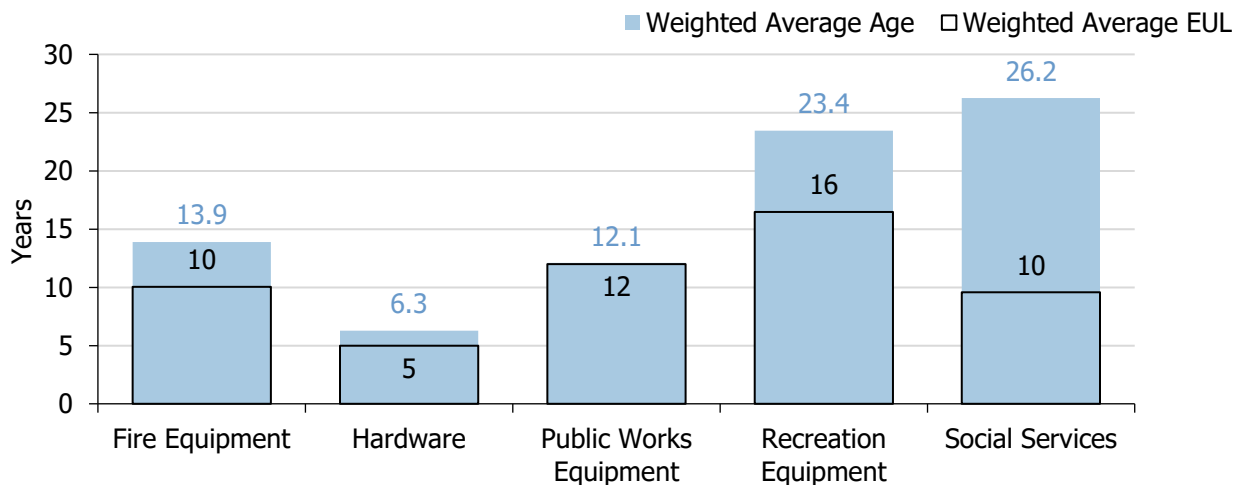
Currently asset condition information is calculated based on the assets age relative to the asset expected useful life. Currently Englehart staff expect to continue use of age-based condition.

4.1.24 Estimated Useful Life & Average Age

The Estimated Useful Life for Machinery & Equipment assets has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)
Fire Equipment	10	13.9
Hardware	5	6.3
Public Works Equipment	12	12.1
Recreation Equipment	16	23.4
Social Services	10	26.2

The weighted average age of all machinery and equipment asset segments is significantly greater than the weighted average Estimated Useful Life (EUL). Since age-based condition is currently used, most assets are in poor condition.



Each asset's Estimated Useful Life should 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.

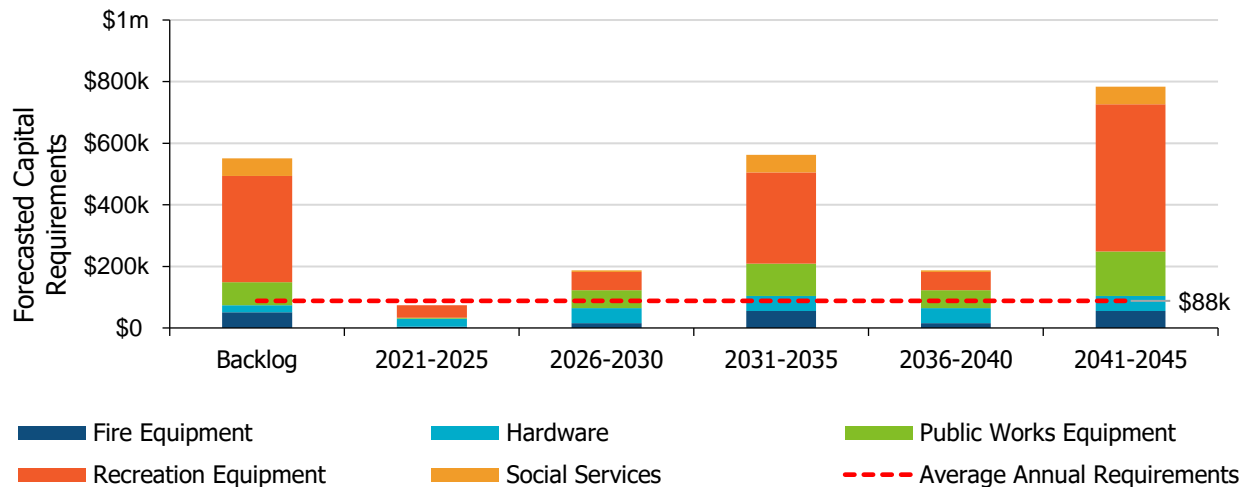
4.1.25 Lifecycle Management Strategy

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 Town’s current lifecycle management strategy:

Activity Type	Description of Current Strategy
Maintenance	A maintenance schedule is in place for municipally owned machinery and equipment Maintenance activities are triggered by seasonal use schedule of equipment, or on an as-needed basis
Replacement	The replacement of machinery & equipment is mostly driven by deficiencies identified by operators that may impact their ability to complete required tasks

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement is \$88,000 and represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs. When reviewing capital requirements in 5-year cumulative bins, there is significant capital backlog and spikes in projected capital investment for 2031-2035 and 2041-2045.



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 in Appendix B.

4.1.26 Risk & Criticality

Risk Matrix

The asset-specific attributes that municipal staff utilize to define and quantify risk for machinery and equipment assets are as listed below; their weighting to the model is listed in bracket.

Probability of Failure (POF)	Consequence of Failure (COF)
Condition (Operational): 100%	Replacement Cost (Financial): 80%
	Segment (Operational): 20%

Based on the above parameters and using 2021 data the following probability and consequence of failure scores were calculated and the overall risk score was determined.



Understanding how risks are distributed within an asset class can provide useful insights into the level of risk that the Town holds. It can also provide meaningful direction on which assets may be a priority for investment. As indicated above, most assets are low risk (green and blue boxes) because they have both a low probability and consequence of failure. However, some assets (red) are high risk since both their probability and consequence of failure are significant. These assets may be strong candidates for investment prioritization.

This is a high-level model developed for the purposes of this AMP. Town staff should regularly review and adjust the risk model to reflect both changes in data available to calculate risk and understanding of the variables used to determine asset risks.

Risks to Current Asset Management Strategies

In addition to the quantitative risks discussed above, the Town carries general risks that to some degree affect all machinery and equipment assets. Identified qualitative risks are:



Capital Funding Strategies

Machinery and Equipment assets are important resources to the Town’s operation, but there are no long-term plans for their rehabilitation or replacement. Instead, planning occurs on an annual basis as per an external Mechanic’s recommendation. Without longer term capital fund planning the Town may encounter years where there are significantly more capital needs than funds available resulting in deferrals that could compromise the assets performance and increase its total lifecycle costs.

4.1.27 Levels of Service

The following tables identify the Town’s current level of service for Machinery & Equipment. These metrics include the technical and community level of service metrics that the Town has selected for this AMP.

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Scope	Description or images of the types of equipment that the municipality operates and the services that they help to provide to the community	A diverse range of machinery and equipment assets are owned by the Town and support a variety of functions. Assets include office hardware, fire equipment, and recreation equipment including treadmills and fitness equipment

Technical Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Sustainability	Annual Capital reinvestment rate vs. Target re-investment Rate	Current: 6.56% Target: 8.75%
Scope	% of machinery & equipment that is in good or very good condition	36%
	% of machinery & equipment that is in fair or poorer condition	64%

4.1.28 Recommendations

Replacement Costs

- Most replacement costs of recreation-based machinery and equipment assets is based on the inflation of historical costs. These costs should be evaluated to determine their accuracy and reliability. Replacement costs should be updated according to the best available information on the cost to replace the asset in today's value.

Condition Assessment Strategies

- Identify condition assessment strategies for high value and high-risk equipment (i.e., Zamboni, protection equipment). Incorporate assessed condition into Citywide so that it is utilized in decision making.
- 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 of the probability and consequences of asset failure.

Levels of Service

- Begin measuring current levels of service in accordance with the metrics that the Town has established in this AMP. Additional metrics can be established as they are determined to provide meaningful and reliable inputs into asset management planning.
- 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.

Fleet & Fleet Equipment

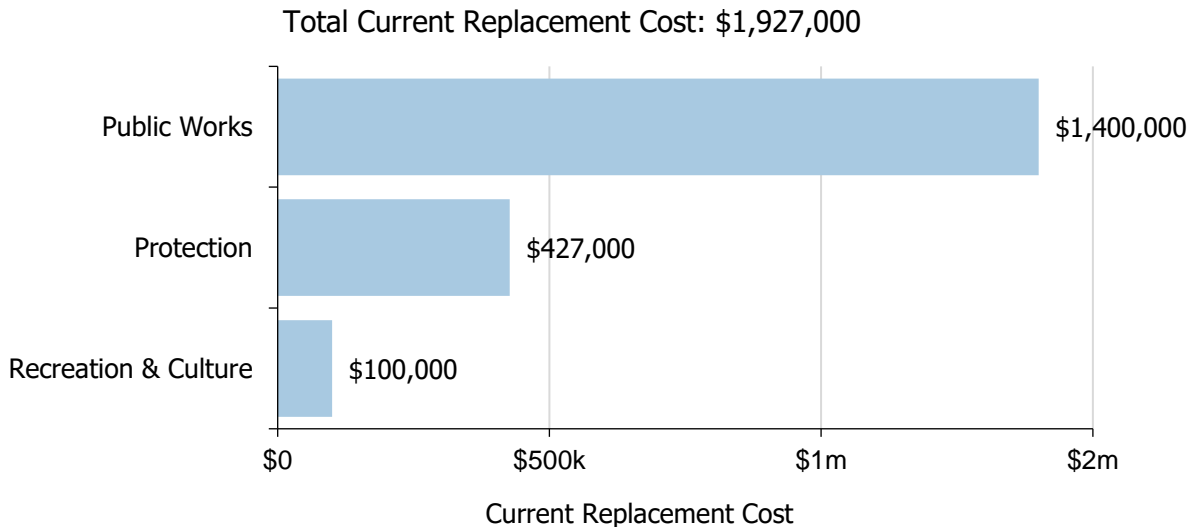
Fleet and fleet equipment assets are critical to the Town’s ability to maintain their infrastructure as they provide access throughout the Town and often are a tool for asset repair and maintenance. The Town owns a variety of fleet and fleet equipment assets which include:

- Fire Protection assets including various Fire trucks
- Utility trucks primarily used by the Public Works Department
- Loaders and various utility work machines
- Wheelchair bus

4.1.29 Asset Inventory & Replacement Cost

The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Town’s Vehicles.

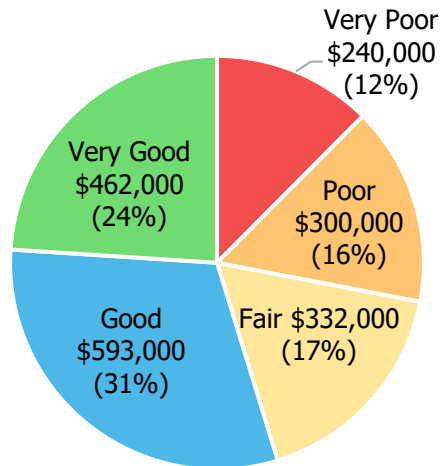
Asset Segment	Quantity	Primary Replacement Cost Method	Total Replacement Cost
Protection	3	User-Defined	\$427,000
Public Works	12	User-Defined	\$1,400,000
Recreation & Culture	1	User-Defined	\$100,000
Total	16		\$1,927,000



4.1.30 Asset Condition

The table below identifies the current average condition and source of available condition data for each asset segment. The Average Condition (%) is a weighted value based on replacement cost.

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Protection	61%	Good	Age-Based
Public Works	55%	Fair	Age-Based
Recreation	0%	Very Poor	Age-Based
Total	54%	Fair	Age-Based



To ensure that the Town's Vehicles continue to provide an acceptable level of service, the average condition of all assets should be regularly monitored. As asset conditions change, the lifecycle management strategy should also be reviewed to determine what combination of maintenance, rehabilitation and replacement activities is required.

Current Approach to Condition Assessment

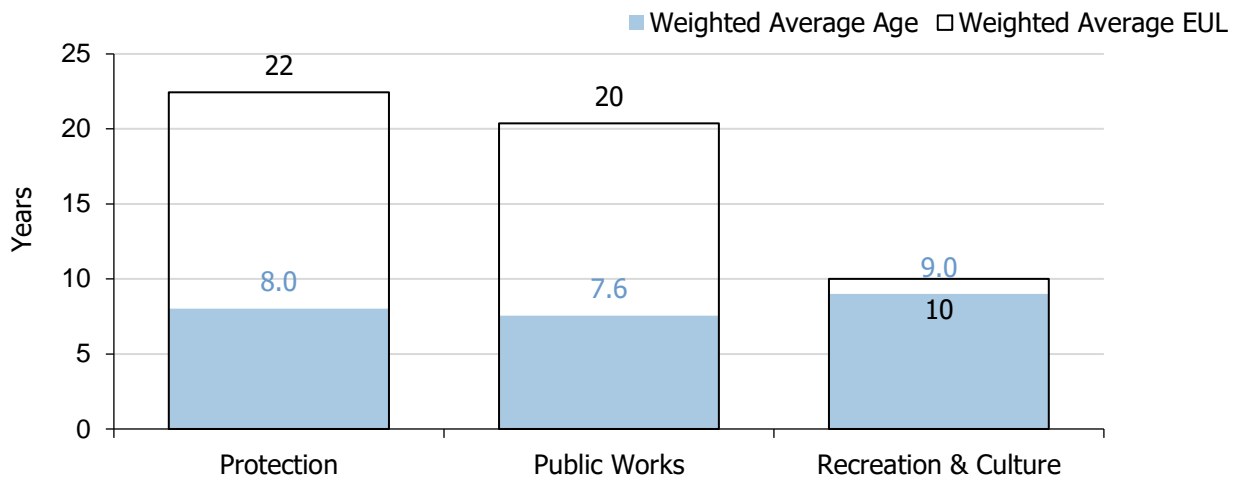
Condition assessments are not currently completed on fleet assets and instead age-based condition, based on the assets age and its expected useful life, is used. Through the regular maintenance and inspections activities completed externally, condition is informally reviewed but it is not documented and is not a data point available for reference or use in asset management decision.

4.1.31 Estimated Useful Life & Average Age

The Estimated Useful Life for Vehicles assets has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)
Protection	22	8
Public Works	20	7.6
Recreation	10	9

On average most fleet and fleet and equipment assets are lower in age than their Estimated Useful Life (EUL).



Each asset's Estimated Useful Life should 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.

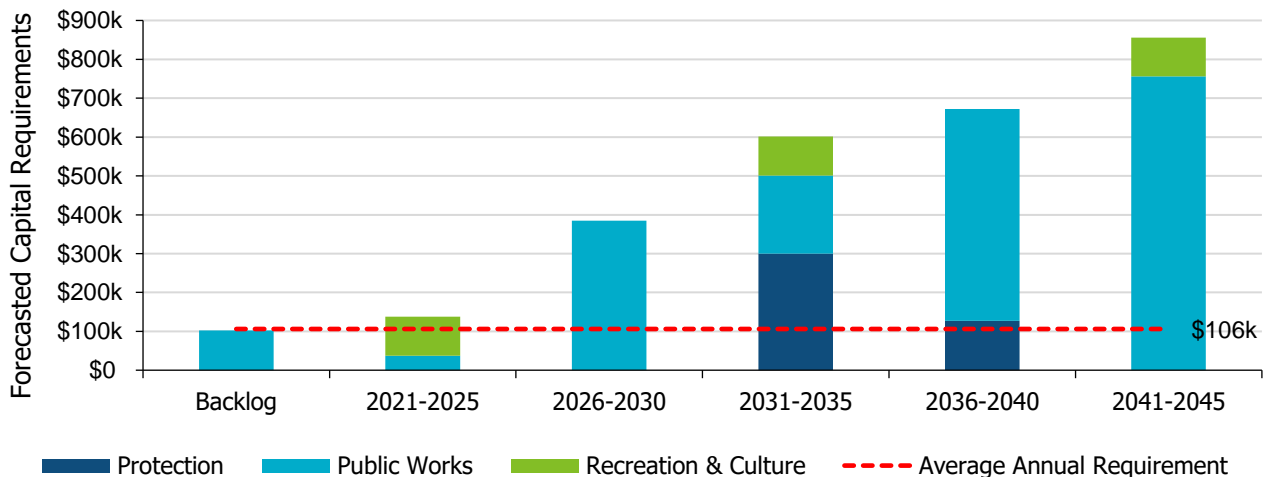
4.1.32 Lifecycle Management Strategy

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 Town’s current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance	All maintenance activities for municipally owned vehicles is completed by external mechanics. This includes oil changes, seasonal tire changes, and other maintenance activities as required
Replacement	Asset deterioration is the primary determinant for asset replacement. This is based on mechanics assessments and recommendations

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement is \$106,000 and represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs. Forecasted capital requirements are aggregated into 5-year bins and reported until 2045. This period is selected because it allows for every fleet and fleet equipment asset to go through one iteration of replacement.



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 in Appendix B.

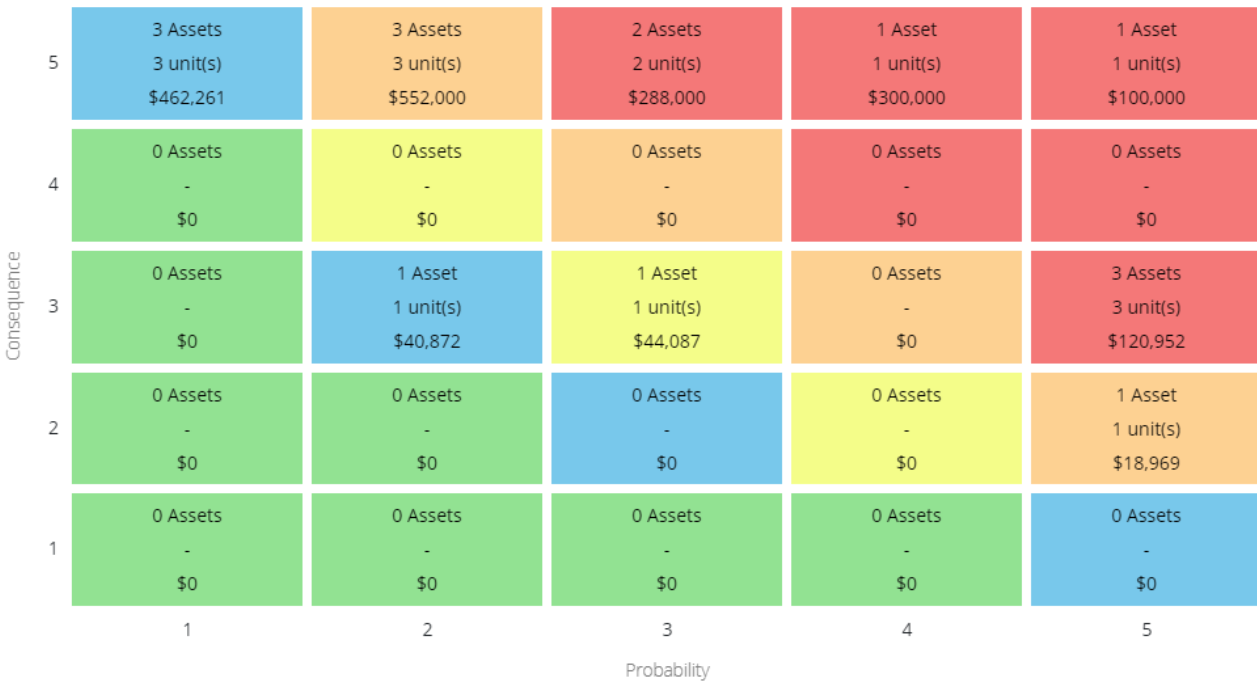
4.1.33 Risk & Criticality

Risk Matrix

Risk is computed based on determining the probability and the consequence of asset failure. The following parameters were used to determine probability and consequence of failure for fleet and fleet equipment assets using 2021 inventory data.

Probability of Failure (POF)	Consequence of Failure (COF)
Condition (Operational): 100%	Replacement Cost (Financial): 80%
	Department (operational): 20%

The following risk matrix provides a visual representation of the relationship between the probability and the consequence of failure for the fleet assets. As illustrated below about one third of the fleet assets have a low probability and/or consequence of failure (blue and yellow boxes). The remaining assets are considered high risk because of their high probability and/or consequence of failure.



Qualitative Risks to Current Asset Management Strategies

Machinery and equipment assets also carry qualitative risks. These are more general in nature and may not specifically affect one asset more than another but pose some degree of risk to all gleet and fleet equipment assets. The following was identified as the primary qualitative risk:



Aging Infrastructure

Many critical fleet assets, such as the garbage truck, are older and in poor condition. Due to the cost of such assets staff seek to utilize them for as long as possible but in doing so also hold the risk of assets failing with limited or no back up solutions.

4.1.34 Levels of Service

The following tables identify the Town’s current level of service for Fleet & Fleet Equipment. These metrics include the technical and community level of service metrics that the Town has selected for this AMP.

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Scope	Description or images of the types of vehicles (e.g., light, medium and heavy-duty) that the municipality operates and the services that they help to provide to the community	Several fleet assets support the Town's operations and emergency services. Primarily these can be grouped into protection assets primarily consisting of fire fleet assets, and transportation assets which include various tractors, plows, dump trucks, and general utility vehicles.

Technical Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Performance	Annual Capital reinvestment rate vs. Target re-investment Rate	Current: 4.10% Target: 5.50%
	% of fleet & fleet equipment that is in good or very good condition	55%
	% of fleet & fleet equipment that is in fair or poorer condition	45%

4.1.35 Recommendations

Condition Assessment Strategies

- Identify condition assessment strategies (e.g., bi-annual assessments by mechanic) for high value and high-risk fleet assets.
- Some fleet assets may have surpassed their estimated useful life but remain functional and suitable. Where estimated useful life has been surpassed review if immediate replacement is required. If not, adjust service life or condition ratings accordingly.

Risk Management Strategies

- Review risk models on a regular basis and adjust according to an evolving understanding of the probability and consequences of asset failure.
- While refining the risk model it may be determined that additional attribute data would be helpful to measuring risk. If this is the case review the feasibility of data collection against the value it would provide.

Levels of Service

- Begin measuring current levels of service in accordance with the metrics that the Town has established in this AMP. Additional metrics can be established as they are determined to provide meaningful and reliable inputs into asset management planning.
- 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.

Lifecycle Management

- Regularly record and review lifecycle management activities and their associated costs to better understand the cumulative cost and impact of various interventions. When considered asset replacement, review and compare rehabilitation costs and asset lifecycle impacts alongside asset replacement costs to determine the most cost-effective decision.

Land Improvements

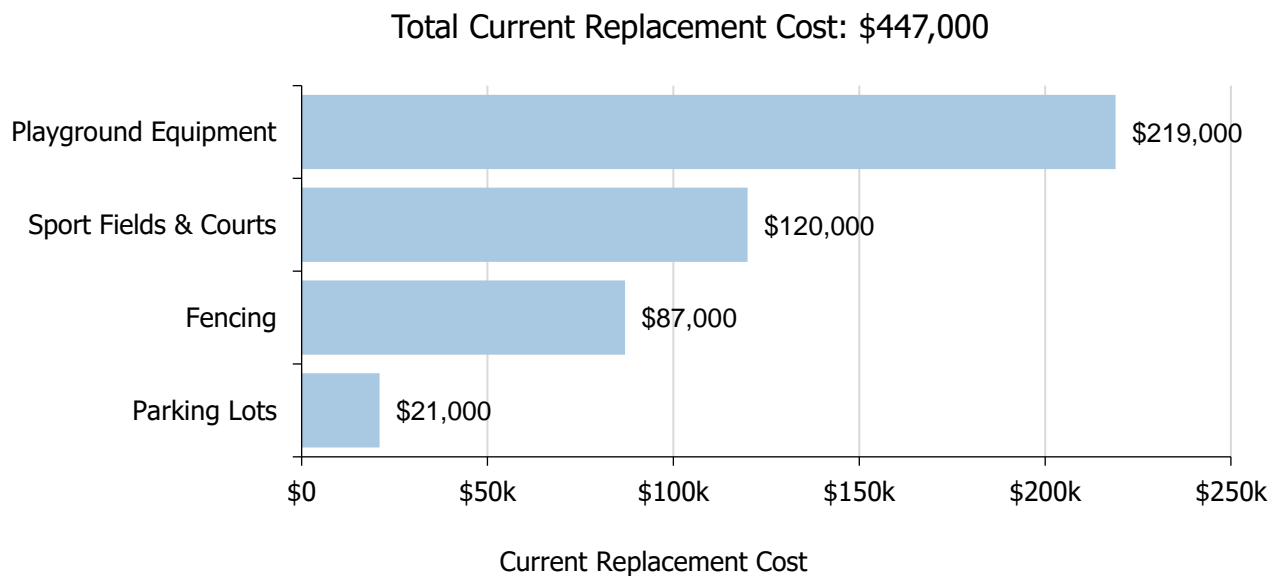
The Town of Englehart owns a small number of assets that are considered Land Improvements. This category includes:

- Tennis courts and associated fencing
- Playground equipment at various parks
- Sports fields including their lighting and fencing
- Parking lots

4.1.36 Asset Inventory & Replacement Cost

The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Town’s Land Improvements inventory.

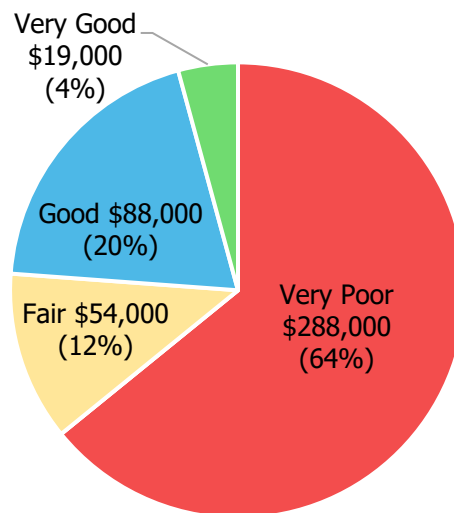
Asset Segment	Quantity	Primary Replacement Cost Method	Total Replacement Cost
Fencing	4	CPI Tables	\$87,000
Parking Lots	1	CPI Tables	\$21,000
Playground Equipment	7	CPI Tables	\$219,000
Sports Fields & Courts	1	User-Defined	\$120,000
Total	13		\$447,000



4.1.37 Asset Condition

The table below identifies the current average condition and source of available condition data for each asset segment. The Average Condition (%) is a weighted value based on replacement cost.

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Fencing	13%	Poor	Age-Based
Parking Lots	68%	Good	Age-Based
Playground Equipment	34%	Poor	Age-Based
Sports Fields & Courts	0%	Very Poor	Age-Based
Total	22%	Poor	Age-Based



To ensure that the Town's Land Improvements continues to provide an acceptable level of service, the Town 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 Land Improvements.

Current Approach to Condition Assessment

Accurate and reliable condition data is a critical tool to well informed asset replacement schedules and cost-effective asset management. For example, it often prevents premature asset replacement and proactively addresses imminent or near-term asset failure. The following describes the municipality’s current approach for land improvement assets:

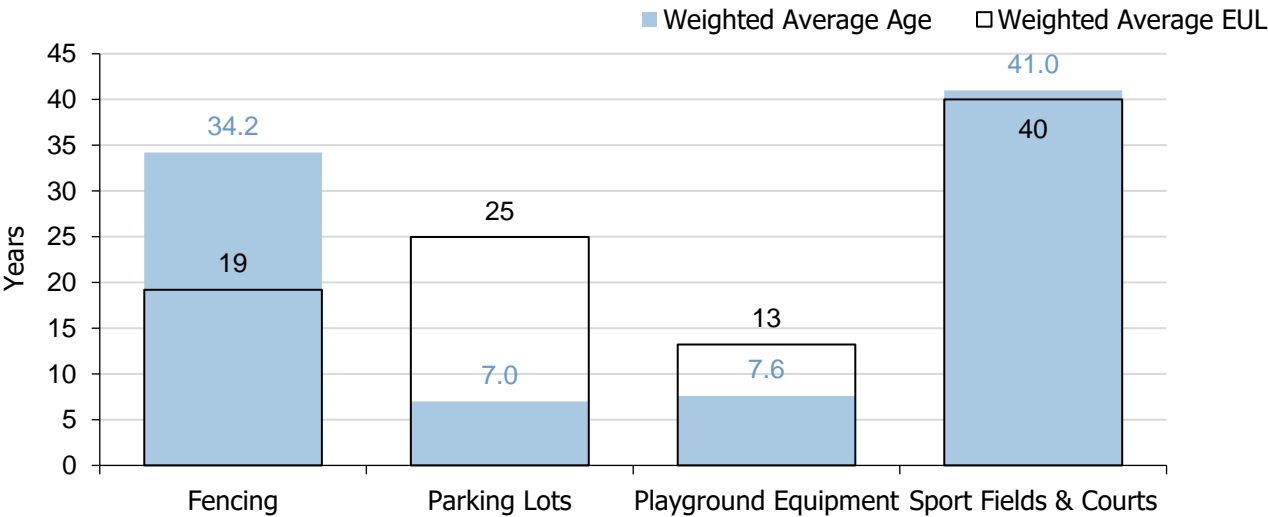
- Staff complete regular visual inspections of land improvements assets to ensure they are in state of adequate repair
- There are no formal condition assessment programs in place for land improvements

4.1.38 Estimated Useful Life & Average Age

The Estimated Useful Life (EUL) for Land Improvements assets has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)
Fencing	19	34.2
Parking Lots	25	7
Playground Equipment	13	7.6
Sports Fields & Courts	40	41

Land Improvement assets calculate condition based on the asset age and EUL. Currently fencing and sport fields and courts are on average older than their EUL. Conversely parking lots and playgrounds are on average younger than their EUL.



The EUL of land improvements assets should be regularly reviewed to determine if they reflect the assets actual estimated life; if not, adjustments to the EUL are merited.

4.1.39 Lifecycle Management Strategy

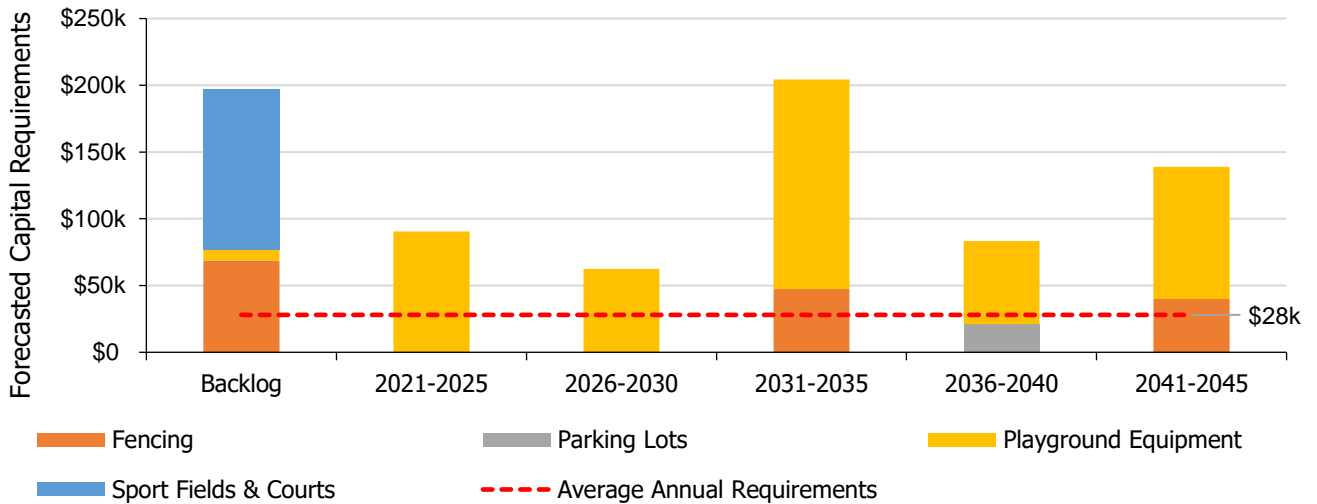
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

The following table outlines the Town’s current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance, Rehabilitation & Replacement	The Land Improvements asset category includes several unique asset types and lifecycle requirements are dealt with on a case-by-case basis. Generally asset rehabilitation and/or replacement is based on public concerns, or public expectations which may increase the demand for land improvement assets

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement is \$28,000 and represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs.



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 in Appendix B.

4.1.40 Risk & Criticality

Risk Matrix

The following risk matrix 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 2021 inventory data. See Appendix D for the criteria used to determine the risk rating of each asset.

Probability of Failure (POF)	Consequence of Failure (COF)
Condition (Operational): 100%	Replacement Cost (Financial): 80%
	Department (operational): 20%



Risks to Current Asset Management Strategies

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

Asset Information



Asset information for land improvement assets is quite limited and staff have modest confidence in its accuracy. With staff working to centralize their asset inventory listing, some improvements are expected. This will better equip staff to identify areas for data review and refinement and identify additional asset attributes that may be valuable to collect.

4.1.41 Levels of Service

The following tables identify the Town’s current level of service for Land Improvements. These metrics include the technical and community level of service metrics that the Town has selected for this AMP.

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Scope	Description, which may include maps, of the outdoor recreational facilities that the municipality operates and maintains	The Town of Englehart provides several land improvement assets to support a healthy and vibrant community. These assets include outdoor play structures, ball diamonds, tennis courts. See Appendix C for a map of land improvement assets.

Technical Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Performance	Annual Capital reinvestment rate vs. Target re-investment Rate	Current: 4.70% Target: 6.26%
	% of land improvements that are in good or very good condition	24%
	% of land improvements that are in fair or poorer condition	76%

4.1.42 Recommendations

Replacement Costs

- Most land assets replacement costs are based on the inflation of historical costs. These costs should be evaluated to determine their accuracy and reliability. Replacement costs should be updated according to the best available information on the cost to replace the asset in today's value.

Inventory

- Ensure that land improvement assets are comprehensively and accurately captured. Regularly review inventory and ensure that asset acquisitions and disposals are also reflected in the asset inventory. Consider developing a data governance strategy (applicable to all asset categories) to ensure that the data management responsibilities and strategies are present so that data can more effectively support asset management decisions.

Condition Assessment Strategies

- Identify land improvement assets that are of particular importance to the Town and prioritize condition assessments to those assets
- If condition assessments are completed internally, ensure there is a systematic process for assessments including a defined rating scale with clear considerations that are well documented and accessible to current and future staff.

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 of the probability and consequences of asset failure.

Levels of Service

- Begin measuring current levels of service in accordance with the metrics that the Town has established in this AMP. Additional metrics can be established as they are determined to provide meaningful and reliable inputs into asset management planning.
- 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.

5

Analysis of Rate-funded Assets

Key Insights

- Rate-funded assets are valued at \$37 million
- 50% of rate-funded assets are in fair or better condition
- The average annual capital requirement to sustain the current level of service for rate-funded assets is approximately \$612,000
- Critical assets should be evaluated to determine appropriate risk mitigation activities and treatment options

Water Network

The Town of Englehart owns several assets integral to the provision and distribution of clean drinking water. These assets include:

- Water Treatment Plant
- Water Wells & Reservoirs
- Pumping Stations
- Water Mains & Associated assets (i.e., valves, service lines, hydrants, manholes)

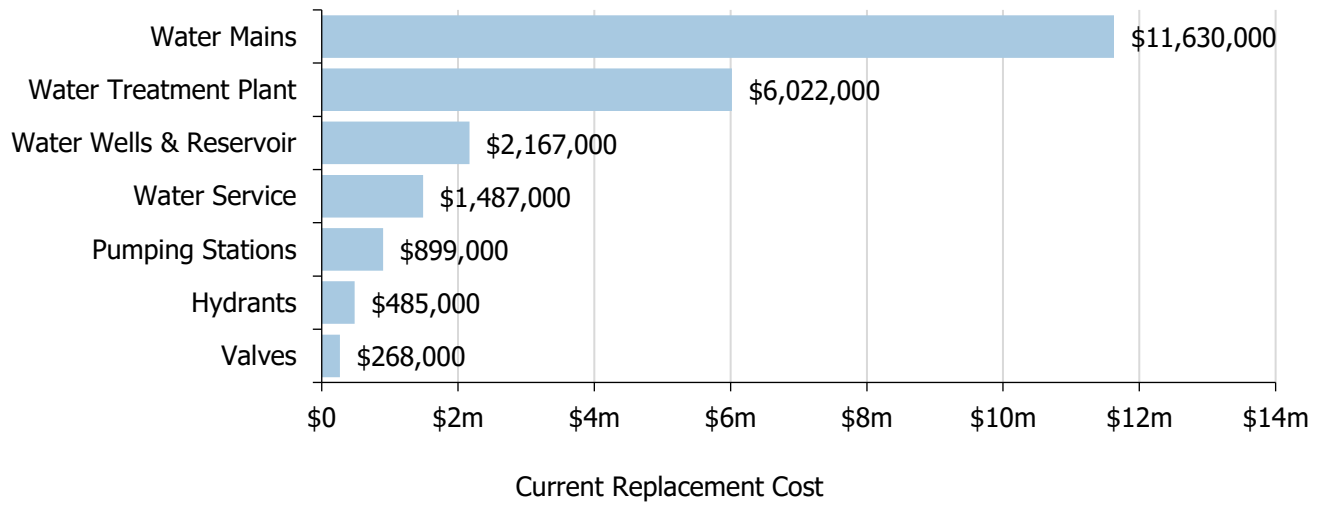
To assist in the management and operation of water assets, the Town of Englehart uses the services of the Ontario Clean Water Agency (OCWA) to operate and maintain the water treatment and water main assets (distribution system). OCWA is the contracted operating authority and responsible for the day-to-day operation of the plant and distribution system as well as the first point of contact in emergencies. OCWA completes ministerial reporting and provides recommendations for capital replacements on an annual basis. These recommendations are reviewed by the Township and either approved or held for future consideration.

5.1.1 Asset Inventory & Replacement Cost

The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Town's Water Network inventory.

Asset Segment	Quantity	Primary Replacement Cost Method	Total Replacement Cost
Hydrants	62	CPI Tables	\$485,000
Pumping Stations	3	User-Defined	\$899,000
Valves	126	CPI Tables	\$268,000
Mains	14,433 m	CPI Tables	\$11,630,000
Service	610	CPI Tables	\$1,487,000
Water Treatment Plant	15	CPI Tables	\$6,022,000
Water Wells & Reservoir	3	CPI Tables	\$2,167,000
Total			\$22,958,000

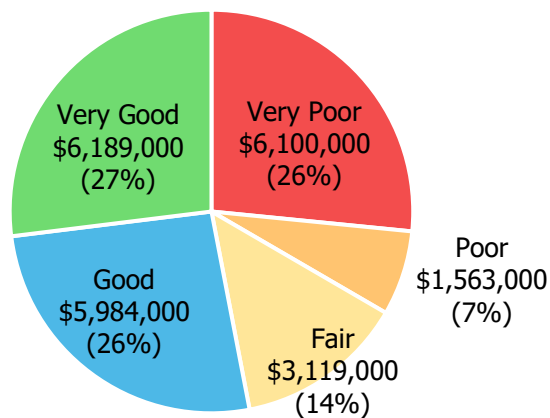
Total Current Replacement Cost: \$22,958,000



5.1.2 Asset Condition

The table below identifies the current average condition and source of available condition data for each asset segment. The Average Condition (%) is a weighted value based on replacement cost.

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Hydrants	49%	Fair	Age-Based
Pumping Stations	62%	Good	Age-Based
Valves	53%	Fair	Age-Based
Mains	78%	Good	Age-Based
Service	49%	Fair	Age-Based
Water Treatment Plant	15%	Very Poor	Age-Based
Water Wells & Reservoir	17%	Very Poor	Age-Based
Total	52%	Fair	Age-Based



To ensure that the Town's Water Network continues to provide an acceptable level of service, the Town 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 Water Network.

Current Approach to Condition Assessment

Accurate and reliable condition data is a critical resource to asset management. The following describes the municipality's current approach:

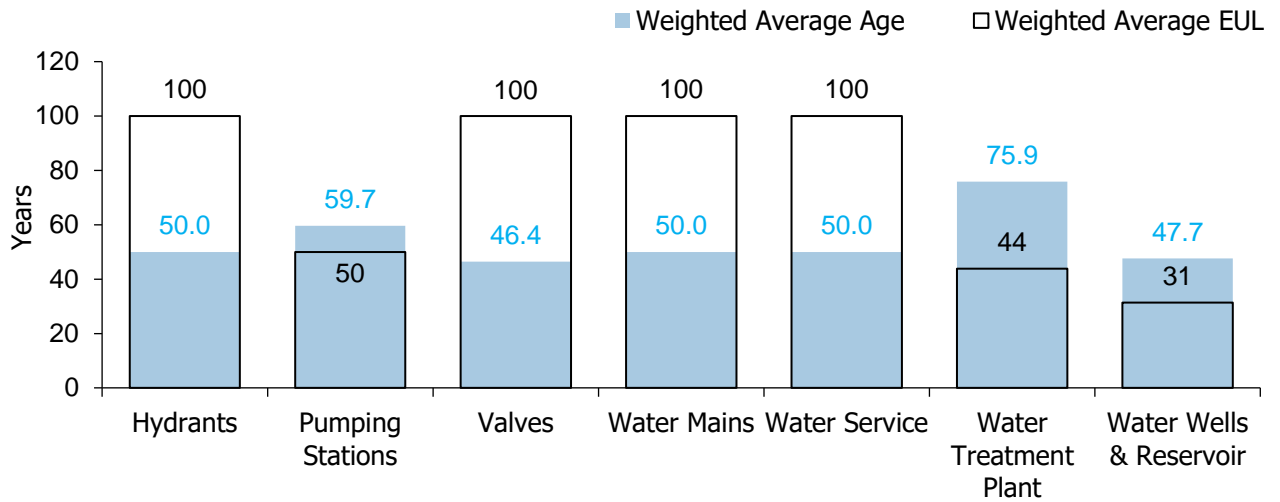
- Englehart staff, alongside OCWA review water main breaks and issues with valves and water colouration based on flushing done each spring.
- Water pressures are regularly tested and reviewed, and issues are reported by OCWA to the Town of Englehart
- CCTV is completed after the installation of new watermains but currently CCTV inspections are not completed on existing mains
- It is the Town's intentions to complete CCTV assessments across their water mains more broadly, however they encounter issues finding suitable contractors to complete the work due to the Town's more remote location and the relatively small size of their network. At this time, age-based condition is used to estimate asset condition.
- Recommendations for replacement are predominately based on water break history and valve replacements.

5.1.3 Estimated Useful Life & Average Age

The Estimated Useful Life for Water Network assets has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)
Hydrants	100	50
Pumping Stations	50	59.7
Valves	100	46.4
Mains	100	50
Service	100	50
Water Treatment Plant	44	75.9
Water Wells & Reservoir	31	47.7

As indicated below the age of hydrants, valves, water mains and water service assets are on average less than the Expected Useful Life (EUL). Conversely, the average age of pumping stations, water treatment plant assets and water wells and reservoirs are greater than the EUL. At this time, the Town relies on age-based condition which is informed by each assets age relative to it's EUL.



Each asset's Estimated Useful Life should 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.

5.1.4 Lifecycle Management Strategy

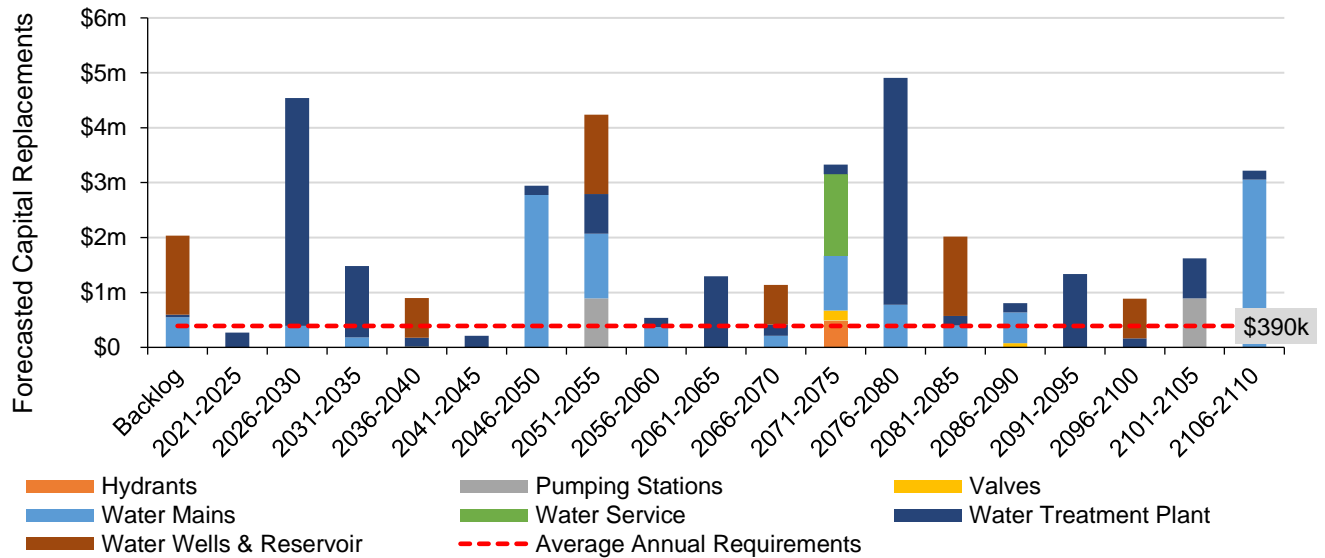
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

The following table outlines the Town’s current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance	On an annual basis 20% of the water main valves are turned. Over a 5-year period the entire network’s valves are turned. As required by capital projects, additional valves may be turned.
	Cathodic protection is in place on portion of the system.
	Hydrant flushing occurs on an annual basis
Inspection	Leak monitoring is completed by OCWA based on flows. Englehart is notified when there are suspected leaks.
	Water main breaks, water pressures and valve control issues are regularly monitored by OCWA and as relevant report to the Town of Englehart.
	Water colouration issues are identified in the spring and fall when the water mains are flushed
Inspection	CCTV inspections are completed after the installation of new watermains but currently existing mains are not camered.
	Going forward, the Town would like to complete more expansive CCTV inspections but have experienced issues finding suitable contractors due to the Towns remote location and modest network size.
Replacement	OCWA provides recommendations for asset replacement for both distribution and treatment assets. Asset replacement is generally driven by water breaks and valve replacement and ensuring legislative compliance. Additionally, replacement decisions consider funding constraints and opportunities (i.e., grant funding etc.).
	Decisions to replace water distribution assets is significantly impacted by the decision to replace sewer main assets, and visa versa.
	To the extent permissible, replacement projects may be deferred due to limited capital funding.

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement is \$390,000 and represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs. Projected capital requirements, reported in 5-year cumulative bins, fluctuate over time but particularly spike in 2026-2030, 2051-2055, and 2076-2080



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 in Appendix B.

5.1.5 Risk & Criticality

Risk Matrix

Risk is determined based on the probability and the consequence of asset failure. For water main assets municipal staff utilize the following parameters to define and quantify risk are as listed below; their weighting to the model is listed beside.

Probability of Failure (POF)	Consequence of Failure (COF)
Condition: 50%	Replacement Cost (Financial): 60%
Material: 50%	Diameter (Operational): 40%

The following risk matrix provides a visual representation of the relationship between the above factors.

5	2 Assets \$416,515	4 Assets \$1,641,793	3 Assets \$2,130,271	0 Assets \$0	2 Assets \$5,412,607
4	9 Assets \$1,688,424	8 Assets \$1,529,509	16 Assets \$2,974,720	2 Assets \$1,308,340	4 Assets \$617,747
3	12 Assets \$911,619	6 Assets \$449,965	11 Assets \$1,166,939	2 Assets \$176,660	0 Assets \$0
2	10 Assets \$425,603	7 Assets \$311,986	15 Assets \$821,705	1 Asset \$68,607	2 Assets \$38,814
1	0 Assets \$0	22 Assets \$76,802	183 Assets \$746,656	1 Asset \$9,615	12 Assets \$31,838
	1	2	3	4	5
	Probability				

As illustrated in the matrix most assets are low risk (green) but a small selection of assets are high risk (red) since they hold both a high probability and high consequence of failure. To mitigate risks the Town holds, high risk assets should be investigated, and risk mitigation measures explored. Risk mitigation may include asset replacement or significant rehabilitation activities that reduce the probability of asset failure.

The Town's understanding of risk and the variables that contribute to its calculation may evolve over time. In addition, the asset information available to calculate risk could expand. In the

event of changes to either risk considerations or data available, the Town should review the risk model to determine if it remains suitable and effective for water network asserts.

Risks to Current Asset Management Strategies

The following section summarizes qualitative risks which are key trends and challenges, to service delivery that generally affect a group of assets. For water assets, these are as follows:



Aging Infrastructure

In recent years that Town has seen an increase in both commercial and residential growth. As a result, there has been increased demand for infrastructure, especially water and sewer. Currently, despite demand for development it is constrained by limited water infrastructure capacity. As the demand for growth continues, the Town must prioritize expanding its capacity.



Capital Funding Strategies

Major capital rehabilitation projects for water and sewer infrastructure are heavily dependant on the availability of grant funding opportunities. The Town faces challenges in accessing grant funding due to the required upfront capital investment for study and design without any assurance of obtaining capital investment amidst a constrained capital budget. In addition, grant funding has become increasingly competitive to obtain and due to the Town's remote location procuring contractors to complete capital projects is challenging.

5.1.6 Levels of Service

The following tables identify the Town's current level of service for Water Network. 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 Town has selected for this AMP.

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal water system	The Municipal water system services a variety of users including residential, commercial, and light industrial. The distribution system primarily services the Town's central neighborhoods bound by highway 11 to the

Service Attribute	Qualitative Description	Current LOS (2021)
		south and west and the railroad tracks to the north and east. Please refer to Appendix C for a map of the water mains.
	Description, which may include maps, of the user groups or areas of the municipality that have fire flow	The Town of Englehart is currently working to increase the fire flow available. Currently pumps are not sufficiently sized to provide the requisite fire flow as per Ontario Standards.
Reliability	Description of boil water advisories and service interruptions	Boil water advisories are issues in the municipality based on water sample results. A notice of lifted boil water advisories is issued when actual or suspected (i.e., in the event of planned works) water sample results indicate that the water quality within the municipal drinking water system is unsafe for drinking. In 2021 there was one (1) precautionary Boil Water Advisory notice issued due to planned water valve and hydrant replacement.

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2021)
Scope	% of properties connected to the municipal water system	86%
	% of properties where fire flow is available	# ³
Reliability	# of connection-days per year where a boil water advisory notice is in place compared to the total number of properties connected to the municipal water system	BWA impact: 150 connection days Number of Properties connected to water system: 755

³ A review of the water treatment pumps has indicated that they cannot provide the necessary fire flow even though distribution system and hydrants are sized and located to provide fire flow. The reported figure represents the percentage of properties within an appropriate distance of fire hydrants to have sufficient fire flow if the pumps were appropriately sized.

Service Attribute	Technical Metric	Current LOS (2021)
	# of connection-days per year where water is not available due to water main breaks compared to the total number of properties connected to the municipal water system	Water Main Break Connection Days: 0 Number of Properties connected to water system: 755
Performance	Annual capital re-investment rate vs. target annual re-investment rate.	Current: 0.24% Target: 1.70%
Sustainable	% of the water system that is in good or very good condition	53%
	% of the water system that is in fair or worse condition	47%

5.1.7 Recommendations

Asset Inventory

- Review asset information, especially in-service dates of water main assets, to ensure they are accurate. Make updates as necessary.
- Ensure that as assets are added, replaced, or otherwise changed, appropriate updates are made in citywide.

Condition Assessment Strategies

- Begin to consider various strategies to procure CCTV inspections of water mains. Consider issuing a tender with multiple neighbouring municipalities to solicit more interest, potentially higher calibre proponents, and improved pricing due to the larger scale of the project.
- Ensure that CCTV information is collected in the same segmentation as assets are segmented in citywide so that assessment information can be appended to assets and incorporated into risk models.

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 of the probability and consequences of asset failure. Adjustments to the model may also be merited where there are changes in available asset data (i.e., incorporating data on number of breaks).

Levels of Service

- Continue to measure current levels of service in accordance with the metrics that the Town has established in this AMP. Additional metrics can be established as they are determined to provide meaningful and reliable inputs into asset management planning.
- 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. To ensure realistic proposed levels of service carefully review and consider current levels of service when setting proposed.

Sanitary Network

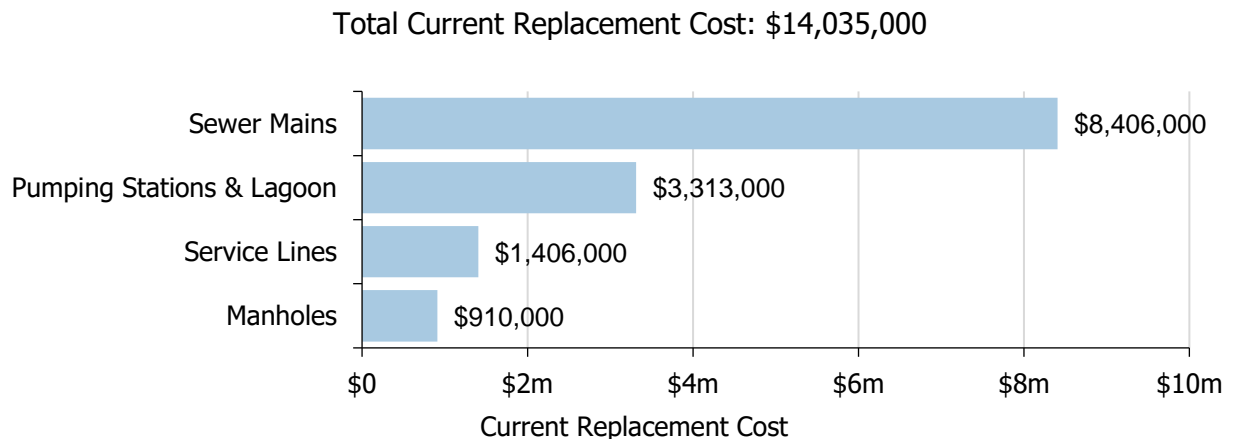
The sanitary network consists of a variety of assets used to collect and treat wastewater. These assets including service lines, sewer mains and pumping stations which collect wastewater across the town and move it to the facultative lagoon where it is treated before being discharged into the Englehart river.

Like the water network, the Town of Englehart uses the services of the Ontario Clean Water Agency (OCWA) to manage the sanitary network assets. OCWA is the contracted operating authority and responsible for the day-to-day operation of the treatment and collection system as well as the first point of contact in emergencies. OCWA completes ministerial reporting and provides recommendations for capital replacements on an annual basis. These recommendations are reviewed by the Township and either approved or held for future consideration.

5.1.8 Asset Inventory & Replacement Cost

The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Town’s Sanitary Network inventory.

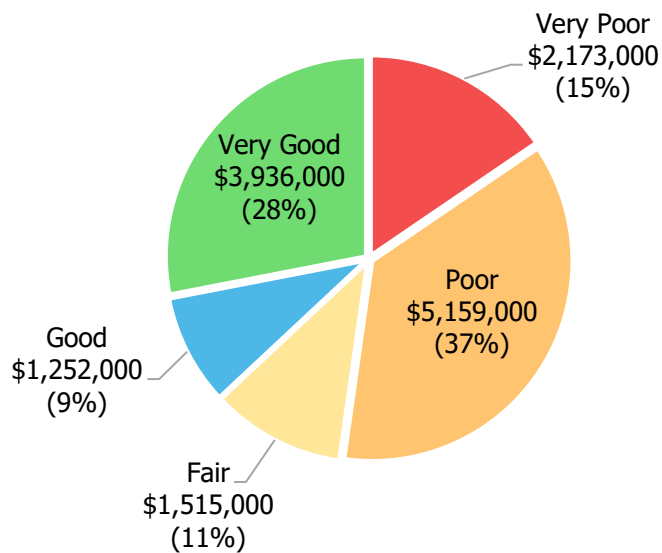
Asset Segment	Quantity (Assets)	Primary Replacement Cost Method	Total Replacement Cost
Manholes	126	Cost/Unit	\$910,000
Pumping Stations & Lagoon	6	CPI Tables	\$3,313,000
Service Lines	584	Cost/Unit	\$1,406,000
Sewer Mains	9,774 meters	CPI Tables	\$8,406,000
Total			\$14,035,000



5.1.9 Asset Condition

The table below identifies the current average condition and source of available condition data for each asset segment. The Average Condition (%) is a weighted value based on replacement cost.

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Manholes	35%	Poor	Age-Based
Pumping Stations & Lagoon	34%	Poor	Age-based
Service Lines	35%	Poor	Age-Based
Sewer Mains	61%	Good	Age-Based
Total	50%	Fair	Age-Based



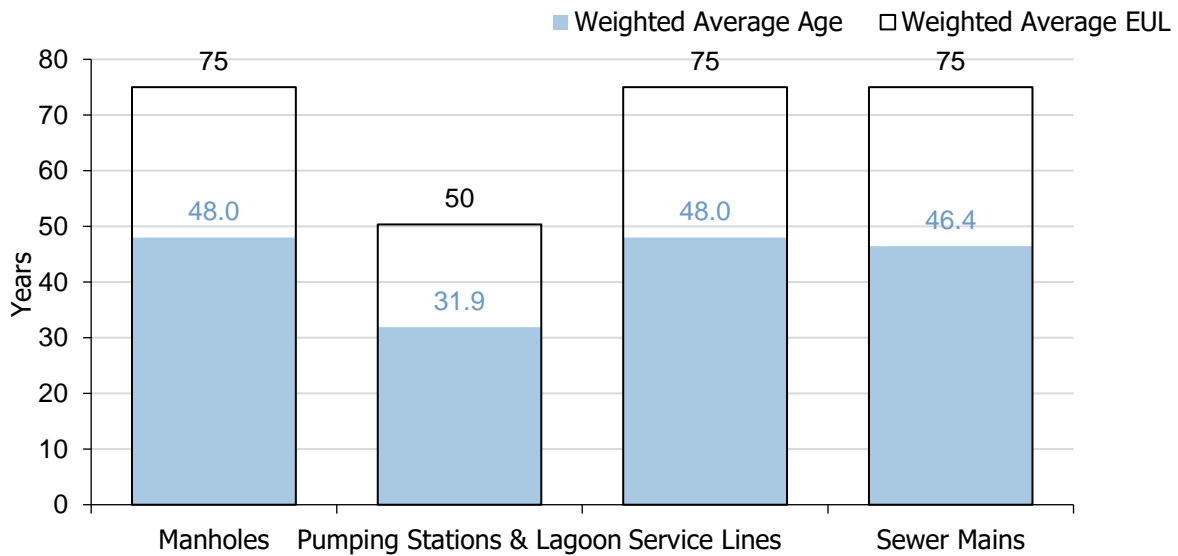
To ensure that the Town's Sanitary Sewer Network continues to provide an acceptable level of service, the Town should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance,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

5.1.10 Estimated Useful Life & Average Age

The Estimated Useful Life for Sanitary Sewer Network assets has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)
Manholes	75	48
Pumping Stations & Lagoon	50	31.9
Service Lines	75	48
Sewer Mains	75	46.4

As indicated below for every asset segment the weighted average age is less than the weighted average Estimated Useful Life (EUL).



Each asset's EUL should 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.

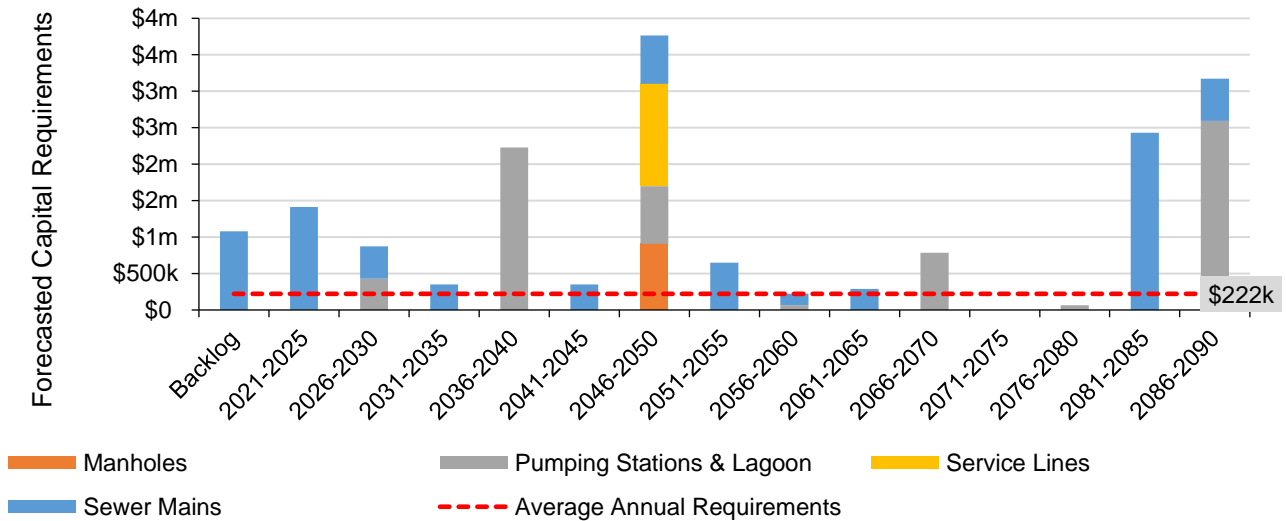
5.1.11 Lifecycle Management Strategy

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. The following lifecycle activities occur on the sanitary network.

Activity Type	Description of Current Strategy
Maintenance	Annually, 20% of the system is flushed and cleaned. The entire system is completed every 5 years.
	Flow monitoring is recorded regularly.
Inspection	CCTV inspections are completed on areas of concern only or before a planned replacement project.
	The Town is currently working to develop a more comprehensive condition assessment program.
Replacement	Asset replacement decisions are primarily based on recommendations from OCWA with additional consideration for age-based condition and assessed condition where available.
	In addition to the above, collection network assets are commonly replaced where related water main and roadway assets are identified as in need of replacement.
	Wastewater Treatment equipment assets are reviewed by OCWA who also provides any recommendations for asset replacement.

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement is \$222,000 and represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs. Capital requirements reported in 5-year cumulative bins vary by years spike most significantly in 2036-2040,2046-2050,2081-2085 and 2086-2090.



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 in Appendix B.

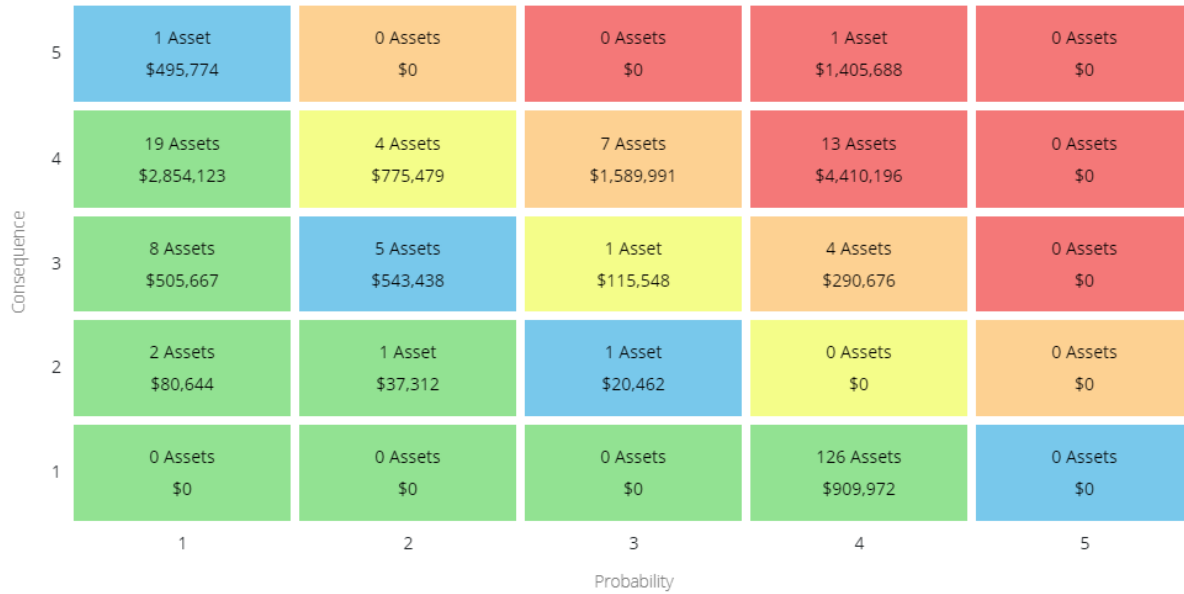
5.1.12 Risk & Criticality

Risk Matrix

Risk is determined based on the calculated probability and consequence of failure for an asset. In this case, the following parameters are used; each parameters weight to the model is indicated in brackets.

Probability of Failure (POF)	Consequence of Failure (COF)
Condition: 85%	Replacement Cost (Financial): 50%
Material: 15%	Diameter (mm) (social): 50%

Based on these above parameters the following probability and consequence scores were calculated and the risk scores determined for the sanitary sewer mains. Reported figures are based on 2021 data.



Most assets are low risk (green) but there is a small selection of assets considered high risk because of both a high probability and consequence of failure. High risk assets should be investigated to determine the specific factors that contribute to their risk score and potential mitigation measures. Mitigation may include asset replacement or rehabilitation.

The Town's understanding of risk may also evolve over time. As this happens, the risk model should also be reviewed to determine if it remains suitable, and if not, adjustments to the model should be made.

Risks to Current Asset Management Strategies

In addition to the risks noted above, sanitary assets are exposed to qualitative risks. These are more general in nature reflecting key trends and challenges to service delivery. Specific for Englehart growth is an identified qualitative risk:



Growth

The Town's Sewer system is approaching its capacity and will be unable to accommodate much more demand. Soon, demand for growth is expected to be constrained by limited sewer capacity. Staff are working towards developing a comprehensive long-term sanitary system capital plan with considerations for growth.

5.1.13 Levels of Service

The following tables identify the Town’s current level of service for Sanitary Sewer Network. 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 Town has selected for this AMP.

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Accessible & Reliable	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal wastewater system	The Municipal wastewater system is connected to a variety of property types including residential, commercial, and light industrial. The collection system primarily services the Town's central neighborhoods bound by highway 11 to the south and west and the railroad tracks to the north and east.
	Description of how combined sewers in the municipal wastewater system are designed with overflow structures in place which allow overflow during storm events to prevent backups into homes	There are no combined sewers in the municipality of Englehart. The Municipality is aware of the presence of weeping tiles connected to sewer laterals which can increase sewer flows during heavy rain events. The Municipality and engineering consultants are actively working on strategies to reduce the extent and impact of known illegal connections.
Safe & Regulatory	Description of the frequency and volume of overflows in combined sewers in the municipal wastewater system that occur in habitable areas or beaches	There are no combined sewers in the municipality of Englehart
	Description of how stormwater can get into sanitary sewers in the municipal wastewater system, causing sewage to overflow into streets or backup into homes	Storm water can get into sanitary sewers because of illegal connections (e.g., roof drains, weeping tile connections) and infiltration related to aging and damaged infrastructure (i.e., pipe cracks), and surface water.

Service Attribute	Qualitative Description	Current LOS (2021)
Safe & Regulatory	Description of how sanitary sewers in the municipal wastewater system are designed to be resilient to stormwater infiltration	The municipality follows a series of design standards that integrate servicing requirements and land use considerations when constructing or replacing sanitary sewers. These standards have been determined with consideration of the minimization of sewage overflows and backups.
	Description of the effluent that is discharged from sewage treatment plants in the municipal wastewater system	PSD TO POPULATE

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2021)
Accesible & Reliable	% of properties connected to the municipal wastewater system	86%
Safe & Regulatory	# of events per year where combined sewer flow in the municipal wastewater system exceeds system capacity compared to the total number of properties connected to the municipal wastewater system	N/A ⁴
	# of connection-days per year having wastewater backups compared to the total number of properties connected to the municipal wastewater system	0 vs 661 ⁵
Safe & Regulatory	# of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system	1 Violation: 661 Connected Properties
Affordable	Annual Capital reinvestment rate vs. Target reinvestment Rate	Current: 0.36% Target: 1.58%

⁴ There are no combined sewers in the Town of Englehart.

⁵ Wastewater Back-ups all occurred on the private side.

Sustainable	% of the wastewater system that is in good or very good condition	37%
	% of the wastewater system that is in fair or worse condition	63%

5.1.14 Recommendations

Asset Inventory

- The Service lines are currently one pooled asset. There are nearly 600 service line connections, which are a variety of ages, may contain various pipe materials, and different conditions. As a next step in asset inventory information refinement staff should begin disaggregating pooled service line assets so that there is one asset for every one service line connection.

Condition Assessment Strategies

- Condition to develop the condition assessment program. As a strategy for attracting viable proponents to bid on future projects, consider coordinating procurement of the CCTV inspections of the water and sewer network. Ensure that data is collected in the same segmentation of assets in citywide so that the assessments can be efficiently appended to assets.

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 of the probability and consequences of asset failure. This includes adjustments to the model as additional data (i.e., assessed condition) may become available.

Lifecycle Management Strategies

- Evaluate the efficacy of the Town’s lifecycle management strategies at regular intervals to determine the impact cost, condition, and risk.

Levels of Service

- Measure current levels of service in accordance with the metrics that the Town has established in this AMP.

- In preparation for the 2025 deadline, begin identifying proposed levels of service. Review and consider the current level of service when setting the proposed; this will assist in establishing reasonable targets and identifying strategies to close any gaps between current and proposed levels of service.

6

Impacts of Growth

Key Insights

- Understanding future growth projections is critical to appropriately planning for infrastructure investments to both existing and potentially new infrastructure
- Since 2011 the Town of Englehart has experienced modest population fluctuations, with an overall slight population decline. Population projections for the District of Temiskaming, of which Englehart is apart, forecast population decline until 2031.
- The Town plans to accommodate any future growth within the existing infrastructure network (i.e., access to new growth through existing road network. Any costs incurred for growth, should be considered in long-term funding strategies that are designed to maintain the current level of service

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 population and employment growth and demand will assist the Town in effectively planning for infrastructure expansion, upgrade, and disposal. Changes in demand can affect what assets are needed and what level of service meets the needs of the community.

6.1.1 Central Temiskaming Planning Area Official Plan

The Town of Englehart is one of four (4) Towns and Townships located within the Central Temiskaming District, which was established in 2006. The Central Temiskaming Planning Board adopted the District’s first Official Plan in 2012, with a planning period until 2026. The Official Plan outlines planning policies that apply throughout the Planning Area (Central Temiskaming District).

The Englehart area of the District is identified for development of downtown commercial and highway commercial areas (Section 2, 1a). This assists with other principles of the plan, like encouraging smart growth which is premised on providing daily goods and services in walkable proximity to residential land uses. It also assists with protecting rural landscapes, which is also identified as a principle of the plan (Section 2, 1b,1c).

In the Town of Englehart all growth is expected to be serviced by the existing water and wastewater system. The Township is required to monitor water and wastewater systems capacity and to allocate available capacity to new growth. New roads required to facilitate growth are considered where they provide demonstrated public interest and feasibility. New growth is planned within settlement areas and is only permitted outside of them if select conditions are met.

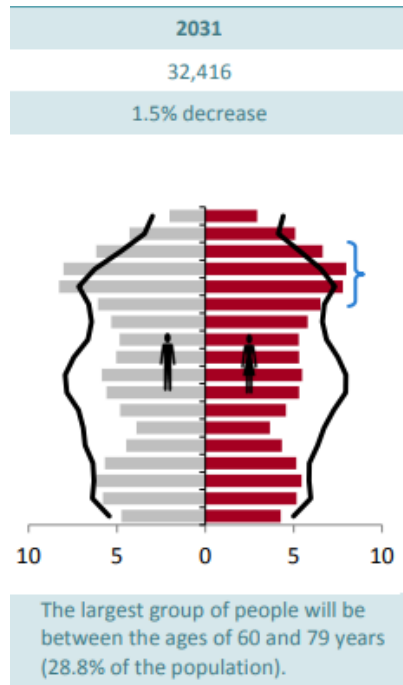
6.1.2 Englehart Population

The Town of Englehart has experienced little population change since 2011. The following table outlines the population and dwelling statistics for the Town of Englehart.

	2011	2016	2021
Total Private Dwellings	727	711	720
Historical & Forecast Total Population	1,519	1,479	1,442

Population projections are not available for Englehart specifically, however, they are available for the Temiskaming District. Based on these projections, the district’s population is projected to continue to decline slightly until 2031. This is largely due to a large proportion of older persons

and a relatively small proportion of persons of child rearing ages. The population distribution is illustrated below:



Based on these historic population patterns and projections moving forward, the Town of Englehart is expected to have sufficient capacity to manage the impacts of growth.

Impact of Growth on Lifecycle Activities

By July 1, 2025, the Town's asset management plan must include a discussion of how the assumptions regarding future changes in population and economic activity informed the preparation of the lifecycle management and financial strategy.

Based on population patterns the Town of Englehart does not expect difficulty to accommodate or plan for population growth. Significant expansion of existing infrastructure is not expected. Should growth-related assets be constructed or acquired, they should be integrated into the Town's AMP. While the addition of residential units will add to the existing assessment base and offset some of the costs associated with growth, the Town will need to review the lifecycle costs of any growth-related infrastructure. These costs should be considered in long-term funding strategies that are designed to, at a minimum, maintain the current level of service.

7

Financial Strategy

Key Insights

- The Town is committing approximately \$943,000 towards capital projects per year from sustainable revenue sources
- Given the annual capital requirement of \$1,652,000, there is currently a funding gap of \$709,000 annually
- For tax-funded assets, we recommend increasing tax revenues by 0.7% each year for the next 15 years to achieve a sustainable level of funding
- For the Sanitary Sewer Network, we recommend increasing rate revenues by 3.7% annually for the next 20 years to achieve a sustainable level of funding
- For the Water Network, we recommend increasing rate revenues by 3.1% annually for the next 20 years to achieve a sustainable level of funding

Financial Strategy Overview

For an asset management plan to be effective and meaningful, it must be integrated with financial planning and long-term budgeting. The development of a comprehensive financial plan will allow Township of Englehart to identify the financial resources required for sustainable asset management based on existing asset inventories, desired levels of service, and projected growth requirements.

This report develops such a financial plan by presenting several scenarios for consideration and culminating with final recommendations. As outlined below, the scenarios presented model different combinations of the following components:

1. The financial requirements for:
 - a. Existing assets
 - b. Existing service levels
 - c. Requirements of contemplated changes in service levels (none identified for this plan)
 - d. Requirements of anticipated growth (none identified for this plan)
2. Use of traditional sources of municipal funds:
 - a. Tax levies
 - b. User fees
 - c. Reserves
 - d. Debt
 - e. Development charges
3. Use of non-traditional sources of municipal funds:
 - a. Reallocated budgets
 - b. Partnerships
 - c. Procurement methods
4. Use of Senior Government Funds:
 - a. Gas tax
 - b. Annual grants

Note: Periodic grants are normally not included due to Provincial requirements for firm commitments. However, if moving a specific project forward is wholly dependent on receiving a one-time grant, the replacement cost included in the financial strategy is the net of such grant being received.

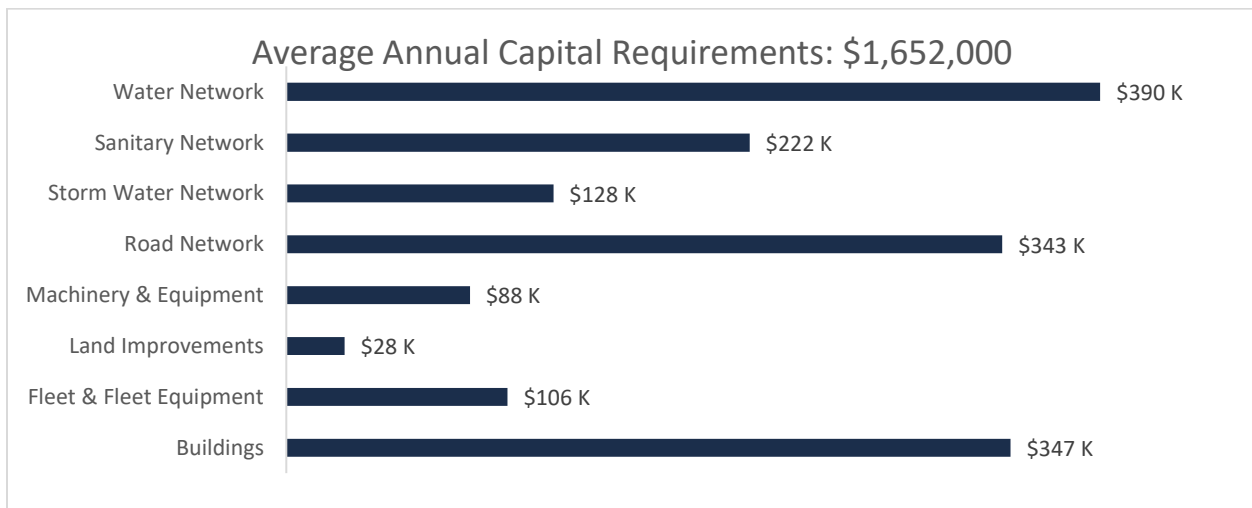
If the financial plan component results in a funding shortfall, the Province requires the inclusion of a specific plan as to how the impact of the shortfall will be managed. In determining the legitimacy of a funding shortfall, the Province may evaluate a Township's approach to the following:

1. In order to reduce financial requirements, consideration has been given to revising service levels downward.
2. All asset management and financial strategies have been considered. For example:
 - a. If a zero-debt policy is in place, is it warranted? If not the use of debt should be considered.
 - b. Do user fees reflect the cost of the applicable service? If not, increased user fees should be considered.

7.1.1 Annual Requirements & Capital Funding

Annual Requirements

The annual requirements represent the amount the Town should allocate annually to each asset category to meet replacement needs as they arise, prevent infrastructure backlogs and achieve long-term sustainability. In total, the Township must allocate approximately \$1.7 million annually to address capital requirements for the assets included in this AMP.



For most asset categories the annual requirement has been calculated based on a “replacement only” scenario, in which capital costs are only incurred at the construction and replacement of each asset.

However, for the Road Network and Sanitary Sewer Network, lifecycle management strategies have been developed to identify capital costs that are realized through strategic rehabilitation and renewal of the Township’s roads and sanitary sewer mains respectively. The development of these strategies allows for a comparison of potential cost avoidance if the strategies were to be implemented. The following table compares two scenarios for the Road Network and Sanitary Sewer Network:

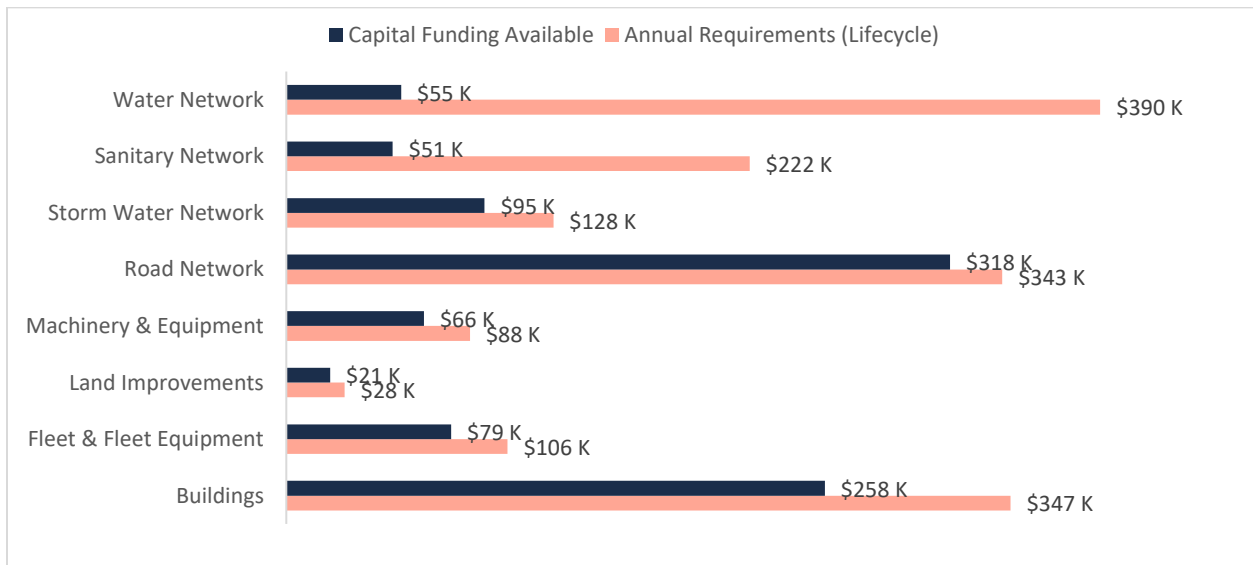
1. **Replacement Only Scenario:** Based on the assumption that assets deteriorate and – without regularly scheduled maintenance and rehabilitation – are replaced at the end of their service life.
2. **Lifecycle Strategy Scenario:** Based on the assumption that lifecycle activities are performed at strategic intervals to extend the service life of assets until replacement is required.

Asset Category	Annual Requirements (Replacement Only)	Annual Requirements (Lifecycle Strategy)	Difference
Road Network	\$592,000	\$343,000	\$249,000

The implementation of a proactive lifecycle strategy for roads leads to a potential annual cost avoidance of \$249,000 for the Road Network. This represents an overall reduction of the annual requirements by 42%. As the lifecycle strategy scenario represents the lowest cost option available to the Town, we have used these annual requirements in the development of the financial strategy.

Annual Funding Available

Based on a historical analysis of sustainable capital funding sources, the Township is committing approximately \$943,000 towards capital projects per year. Given the annual capital requirement of \$1,652,000, there is currently a funding gap of \$709,000 annually.



Funding Objective

We have developed a scenario that would enable Englehart to achieve full funding within 1 to 20 years for the following assets:

1. **Tax Funded Assets:** Buildings, Fleet & Fleet Equipment, Land Improvements, Machinery & Equipment, Road Network, Storm Water Network
2. **Rate-Funded Assets:** Water Network, Sanitary Network

Note: For the purposes of this AMP, we have excluded gravel roads since they are a perpetual maintenance asset and end of life replacement calculations do not normally apply. If gravel roads are maintained properly, they can theoretically have a limitless service life.

For each scenario developed we have included strategies, where applicable, regarding the use of cost containment and funding opportunities.

\$1,040,000 Financial Profile: Tax Funded Assets

7.1.2 Current Funding Position

The following tables show, by asset category, Englehart’s average annual asset investment requirements, current funding positions, and funding increases required to achieve full funding on assets funded by taxes.

Asset Category	Avg. Annual Requirement	Annual Funding Available			Annual Deficit	
		Taxes	Gas Tax	OCIF		Total Available
Buildings	347,000	258,000	0	0	258,000	89,000
Fleet & Fleet Equipment	106,000	79,000	0	0	79,000	27,000
Land Improvements	28,000	21,000	0	0	21,000	7,000
Machinery & Equipment	88,000	66,000	0	0	66,000	22,000
Road Network	343,000	71,000	84,000	163,000	318,000	25,000
Storm Water Network	128,000	95,000	0	0	95,000	33,000
Total	1,040,000	590,000	84,000	163,000	837,000	203,000

The average annual investment requirement for the above categories is \$1,040,000. Annual revenue currently allocated to these assets for capital purposes is \$837,000 leaving an annual deficit of \$203,000. Put differently, these infrastructure categories are currently funded at 80% of their long-term requirements.

7.1.3 Full Funding Requirements

In 2021, the Town of Englehart has annual tax revenues of \$1,884,000. As illustrated in the following table, without consideration of any other sources of revenue or cost containment strategies, full funding would require the following tax change over time:

Asset Category	Tax Change Required for Full Funding
Buildings	4.7%
Fleet & Fleet Equipment	1.4%
Land Improvements	0.4%
Machinery & Equipment	1.2%
Road Network	1.3%

Storm Water Network	1.8%
Total	10.8%

There are no expected changes in sustainable revenue sources or debt cost. Based on this assumption the following table describes the tax rate adjustment required annually to meet the annual capital requirement over 5, 10, 15, or 20 years.

	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	203,000	203,000	203,000	203,000
Change in Debt Costs	N/A	N/A	N/A	N/A
Change in OCIF Grants	N/A	N/A	N/A	N/A
Resulting Infrastructure Deficit:	203,000	203,000	203,000	203,000
Tax Increase Required	10.8%	10.8%	10.8%	10.8%
Annually:	2.1%	1.1%	0.7%	0.6%

7.1.4 Financial Strategy Recommendations

Considering all the above information, we recommend the 15-year option. This involves full funding being achieved over 15 years by:

- a) Increasing tax revenues by 0.7% each year for the next 15 years solely for the purpose of phasing in full funding to the asset categories covered in this section of the AMP.
- b) Allocating the current gas tax and OCIF revenue as outlined previously.
- c) Should the scheduled OCIF grant increase, the Township should reduce the annual tax increase by an amount equal to the grant increase as it occurs.
- d) Reallocating appropriate revenue from categories in a surplus position to those in a deficit position.
- e) Increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

Notes:

1. As in the past, periodic senior government infrastructure funding will most likely be available during the phase-in period. By Provincial AMP rules, this periodic funding cannot be incorporated into an AMP unless there are firm commitments in place. We have included OCIF formula-based funding, if applicable, since this funding is a multi-year commitment⁶.
2. We realize that raising tax revenues by the amounts recommended above for infrastructure purposes will be very difficult to do. However, considering a longer phase-in window may have even greater consequences in terms of infrastructure failure.

Although this option achieves full funding on an annual basis in 15 years and provides financial sustainability over the period modeled, the recommendations do require prioritizing capital projects to fit the resulting annual funding available.

Prioritizing future projects will require the current data to be replaced by condition-based data. Although our recommendations include no further use of debt, the results of the condition-based analysis may require otherwise.

⁶ The Town should take advantage of all available grant funding programs and transfers from other levels of government. While OCIF has historically been considered a sustainable source of funding, the program is currently undergoing review by the provincial government. Depending on the outcome of this review, there may be changes that impact its availability.

Financial Profile: Rate Funded Assets

7.1.5 Current Funding Position

The following tables show, by asset category, Englehart’s average annual asset investment requirements, current funding positions, and funding increases required to achieve full funding on assets funded by taxes.

Asset Category	Avg. Annual Requirement	Annual Funding Available			Annual Deficit	
		Rates	To Oper	OCIF		Total Available
Water Network	390,000	414,000	-359,000	0	55,000	335,000
Sanitary Network	222,000	162,000	-111,000	0	51,000	171,000
Total	612,000	576,000	-470,000	0	106,000	506,000

The average annual investment requirement for the above categories is \$612,000. Annual revenue currently allocated to these assets for capital purposes is \$106,000 leaving an annual deficit of \$506,000. Put differently, these infrastructure categories are currently funded at 17% of their long-term requirements.

7.1.6 Full Funding Requirements

In 2021, Englehart capital allocations for the Water Network was \$55,000 and \$51,000 for the Sanitary Network. This represents the funding available from collected user fees after allocation to the operational budget. As illustrated in the table below, without consideration of any other sources of revenue, full funding would require the following changes to the existing capital allocation over time:

Asset Category	Tax Change Required for Full Funding
Water Network	80.9%
Sanitary Network	105.6%
Total	87.8%

In the following tables, we have expanded the above scenario to present multiple options for achieving full funding. Due to the significant increases required, we have provided phase-in options of up to 20 years:

	Water Network				Sanitary Network			
	5 Years	10 Years	15 Years	20 Years	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	335,000	335,000	335,000	335,000	171,000	171,000	171,000	171,000
Tax Increase Required	80.9%	80.9%	80.9%	80.9%	105.6%	105.6%	105.6%	105.6%
Annually:	12.6%	6.2%	4.1%	3.1%	15.6%	7.5%	5.0%	3.7%

7.1.7 Financial Strategy Recommendations

Considering the above information, we recommend the 20-year option for the Water & Sanitary Networks. This involves full funding being achieved over 20 years by:

- a) Increasing rate revenues by 3.1% each year for the next 20 years for the Water Network.
- b) Increasing rate revenues by 3.7% each year for the next 20 years for the Sanitary Network.
- c) These rate revenue increases are solely for the purpose of phasing in full funding to the respective asset categories covered in this AMP.
- d) Increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

Notes:

- 1. As in the past, periodic senior government infrastructure funding will most likely be available during the phase-in period. This periodic funding should not be incorporated into an AMP unless there are firm commitments in place.
- 2. We realize that raising rate revenues for infrastructure purposes will be very difficult to do. However, considering a longer phase-in window may have even greater consequences in terms of infrastructure failure.
- 3. Any increase in rates required for operations would be in addition to the above recommendations.

Although this strategy achieves full funding for rate-funded assets over 20 years, the recommendation does require prioritizing capital projects to fit the annual funding available. Prioritizing future projects will require the current data to be replaced by condition-based data. Although our recommendations include no further use of debt, the results of the condition-based analysis may require otherwise.

Use of Reserves

7.1.8 Available Reserves

Reserves play a critical role in long-term financial planning. The benefits of having reserves available for infrastructure planning include:

- a) the ability to stabilize tax rates when dealing with variable and sometimes uncontrollable factors
- b) financing one-time or short-term investments
- c) accumulating the funding for significant future infrastructure investments
- d) managing the use of debt
- e) normalizing infrastructure funding requirement

By asset category, the table below outlines the details of the reserves currently available to Englehart.

Asset Category	Balance at December 31, 2021
Buildings	414,000
Fleet & Fleet Equipment	345,000
Land Improvements	18,000
Machinery & Equipment	56,000
Road Network	218,000
Storm Water Network	314,000
Total Tax Funded:	1,365,000
Water Network	1,291,000
Sanitary Network	787,000
Total Rate Funded:	2,078,000

There is considerable debate in the municipal sector as to the appropriate level of reserves that a Township should have on hand. There is no clear guideline that has gained wide acceptance. Factors that municipalities should consider when determining their capital reserve requirements include:

- a) Breadth of services provided
- b) Age and condition of infrastructure
- c) Use and level of debt
- d) Economic conditions and outlook
- e) Internal reserve and debt policies.

These reserves are available for use by applicable asset categories during the phase-in period to full funding. This coupled with Englehart’s judicious use of debt in the past, allows the scenarios to assume that, if required, available reserves and debt capacity can be used for high priority and emergency infrastructure investments in the short- to medium-term.

7.1.9 Recommendation

In 2025, Ontario Regulation 588/17 will require Englehart to integrate proposed levels of service for all asset categories in its asset management plan update. We recommend that future planning should reflect adjustments to service levels and their impacts on reserve balances.

8

Appendices

Key Insights

- Appendix A includes a one-page report card with an overview of key data from each asset category
- Appendix B identifies projected 10-year capital requirements for each asset category
- Appendix C includes several maps that have been used to visualize the current level of service
- Appendix D identifies the criteria used to calculate risk for each asset category

Appendix A: Infrastructure Report Card

Asset Category	Replacement Cost (millions)	Asset Condition	Financial Capacity	
Road Network	\$12.1	Good	Annual Requirement:	\$343,000
			Funding Available:	\$318,000
			Annual Deficit:	\$25,000
Stormwater Network	\$5.5	Fair	Annual Requirement:	\$128,000
			Funding Available:	\$95,000
			Annual Deficit:	\$33,000
Buildings	\$17.3	Fair	Annual Requirement:	\$347,000
			Funding Available:	\$258,000
			Annual Deficit:	\$89,000
Machinery & Equipment	\$1.0	Poor	Annual Requirement:	\$88,000
			Funding Available:	\$66,000
			Annual Deficit:	\$22,000
Fleet & Fleet Equipment	\$1.9	Fair	Annual Requirement:	\$106,000
			Funding Available:	\$79,000
			Annual Deficit:	\$27,000
Land Improvements	\$0.5	Poor	Annual Requirement:	\$28,000
			Funding Available:	\$21,000
			Annual Deficit:	\$7,000
Water Network	\$22.9	Fair	Annual Requirement:	\$390,000
			Funding Available:	\$55,000
			Annual Deficit:	\$335,000
Sanitary Network	\$14.0	Fair	Annual Requirement:	\$222,000
			Funding Available:	\$51,000
			Annual Deficit:	\$171,000
Overall	\$75.2	Fair	Annual Requirement:	\$1,652,000
			Funding Available:	\$943,000
			Annual Deficit:	\$709,000

Appendix B: 10-Year Capital Requirements

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

Road Network											
Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Asphalt Roads	\$224,642	\$0	\$0	\$0	\$182,094	\$0	\$0	\$11,904	\$154,866	\$0	\$7,914
Curbs & Gutters	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Sidewalks	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Streetlights	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	\$224,642	\$0	\$0	\$0	\$182,094	\$0	\$0	\$11,904	\$154,866	\$0	\$7,914

Stormwater Network											
Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Storm Sewers	\$144,435	\$0	\$0	\$0	\$225,319	\$0	\$0	\$0	\$0	\$0	\$0
Catch Basins	\$300,905	\$0	\$0	\$0	\$66,198	\$0	\$0	\$0	\$60,182	\$0	\$0
Storm Ditches	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Storm Structures	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Storm Culverts	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	\$445,340	\$0	\$0	\$0	\$291,517	\$0	\$0	\$0	\$60,182	\$0	\$0

Buildings

Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
General Government	\$735,200	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Health and Social Services	\$789,000	\$337,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Protection	\$345,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Public Works	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Recreation	\$6,400	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$7,278	\$0	\$91,300
	\$1,875,700	\$337,500	\$0	\$0	\$0	\$0	\$0	\$0	\$7,278	\$0	\$91,300

Machinery & Equipment

Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Fire Equipment	\$50,600	\$0	\$4,600	\$0	\$0	\$0	\$16,100	\$0	\$0	\$0	\$0
Hardware	\$22,750	\$0	\$0	\$0	\$0	\$26,033	\$22,750	\$0	\$0	\$0	\$26,033
Public Works Equipment	\$74,946	\$0	\$2,588	\$0	\$0	\$0	\$0	\$10,000	\$30,000	\$12,054	\$5,300
Recreation Equipment	\$345,240	\$0	\$0	\$0	\$30,220	\$10,863	\$4,171	\$20,851	\$10,005	\$6,891	\$17,388
Social Services	\$57,303	\$0	\$0	\$0	\$0	\$0	\$5,421	\$0	\$0	\$0	\$0
	\$550,839	\$0	\$7,188	\$0	\$30,220	\$36,896	\$48,442	\$30,851	\$40,005	\$18,945	\$48,721

Fleet & Fleet Equipment

Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Protection	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Public Works	\$102,328	\$0	\$37,593	\$0	\$0	\$0	\$300,000	\$44,087	\$0	\$40,872	\$0
Recreation & Culture	\$0	\$0	\$100,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	\$102,328	\$0	\$137,593	\$0	\$0	\$0	\$300,000	\$44,087	\$0	\$40,872	\$0

Land Improvements

Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Fencing	\$68,680	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Parking Lots	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Playground Equipment	\$8,424	\$0	\$57,009	\$33,437	\$0	\$0	\$0	\$0	\$0	\$49,857	\$12,515
Sports Fields & Courts	\$120,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	\$197,104	\$0	\$57,009	\$33,437	\$0	\$0	\$0	\$0	\$0	\$49,857	\$12,515

Water Network

Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Hydrants	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pumping Stations	\$7,481	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Valves	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Mains	\$542,354	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$392,912
Service	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Water Treatment Plant	\$43,269	\$0	\$130,000	\$8,226	\$85,393	\$46,775	\$3,981,504	\$59,391	\$104,053	\$0	\$0
Water Wells & Reservoir	\$1,444,353	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	\$2,037,457	\$0	\$130,000	\$8,226	\$85,393	\$46,775	\$3,981,504	\$59,391	\$104,053	\$0	\$392,912

Sanitary Network

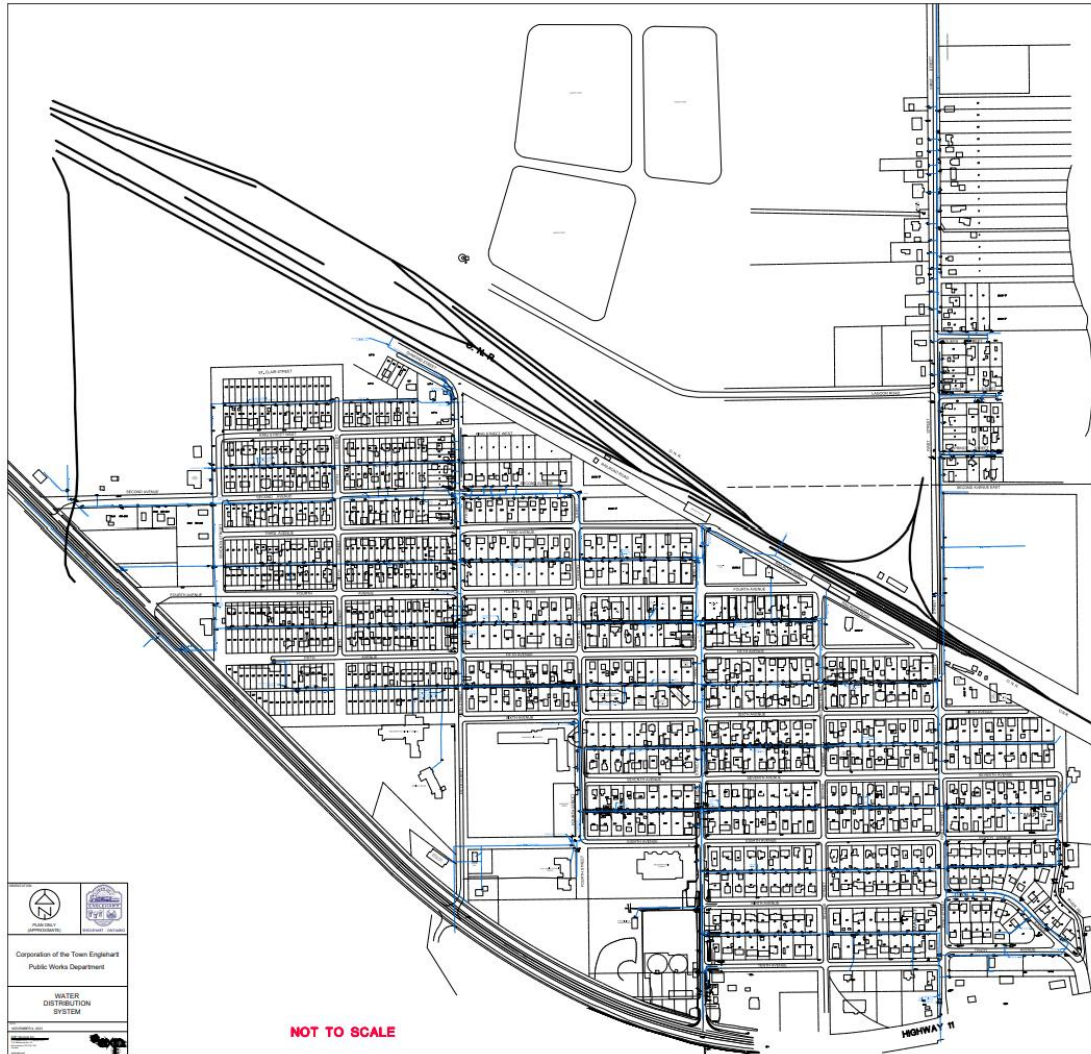
Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Manholes	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pumping Stations & Lagoon	\$0	\$0	\$5,000	\$0	\$0	\$0	\$5,000	\$0	\$63,533	\$361,088	\$0
Service Lines	\$197,135	\$309,978	\$0	\$0	\$0	\$0	\$30,294	\$564,811	\$0	\$0	\$0
Sewer Mains	\$1,079,804	\$1,093,451	\$0	\$0	\$0	\$315,350	\$0	\$0	\$0	\$0	\$441,732
	\$1,079,804	\$1,093,451	\$5,000	\$0	\$0	\$315,350	\$5,000	\$0	\$63,533	\$361,088	\$441,732

All Asset Categories

Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Road Network	\$224,642	\$0	\$0	\$0	\$182,094	\$0	\$0	\$11,904	\$154,866	\$0	\$7,914
Stormwater Network	\$445,340	\$0	\$0	\$0	\$291,517	\$0	\$0	\$0	\$60,182	\$0	\$0
Buildings	\$1,875,700	\$337,500	\$0	\$0	\$0	\$0	\$0	\$0	\$7,278	\$0	\$91,300
Machinery & Equipment	\$550,839	\$0	\$7,188	\$0	\$30,220	\$36,896	\$48,442	\$30,851	\$40,005	\$18,945	\$48,721
Fleet & Fleet Equipment	\$102,328	\$0	\$137,593	\$0	\$0	\$0	\$300,000	\$44,087	\$0	\$40,872	\$0
Land Improvements	\$197,104	\$0	\$57,009	\$33,437	\$0	\$0	\$0	\$0	\$0	\$49,857	\$12,515
Water Network	\$2,037,457	\$0	\$130,000	\$8,226	\$85,393	\$46,775	\$3,981,504	\$59,391	\$104,053	\$0	\$392,912
Sanitary Network	\$1,079,804	\$1,093,451	\$5,000	\$0	\$0	\$315,350	\$5,000	\$0	\$63,533	\$361,088	\$441,732
Total	\$6,513,214	\$1,430,951	\$336,790	\$41,663	\$589,224	\$399,021	\$4,334,946	\$146,233	\$429,917	\$470,762	\$995,094

Appendix C: Level of Service Maps

Water Network Map



Sanitary Sewer Network



Road Network



Appendix D: Risk Rating Criteria

Probability of Failure

Asset Category	Risk Criteria	Criteria Weighting	Value/Range	Probability of Failure Score
Road Network (Roads)	Assessed Condition	75	Excellent	1
			Good	2
			Fair	3
			Poor	4
			Very Poor	5
Stormwater Network Buildings Machinery & Equipment Vehicles Land Improvements	Condition	100%	80-100	1
			60-79	2
			40-59	3
			20-39	4
			0-19	5
Sanitary & Water Mains	Condition	70%	80-100	1
			60-79	2
			40-59	3
			20-39	4
			0-19	5
	Pipe Material	30%	PVC	1
			Cast Iron	
			Copper	
			Ductile Iron	
			Unknown	3

Consequence of Failure (CoF)

Asset Category	Risk Classification	Risk Criteria	Value/Range	CoF Score
Roads	Economic (100%)	Replacement Cost (100%)	\$30,000	1
			\$75,000	2
			\$150,000	3
			\$300,000	4
			\$500,000	5
Stormwater Network	Economic (100%)	Replacement Cost (100%)	\$10,000 and below	1
			\$50,000 and below	2
			\$100,000 and below	3
			\$150,000 and below	4
			\$400,000 and below	5
Buildings & Facilities Machinery & Equipment Vehicles Land Improvements	Economic (80%)	Replacement Cost (100%)	\$10,000	1
			\$35,000	2
			\$50,000	3
			\$65,000	4
			\$80,000	5
	Operational (20%)	Segmentt (100%)	Library, Meuseum, Parks, Recreation Facilities	2
			Fire Hydrants	3
			Water treatment & distribution, pumping stations & Lagoons	4
			Protective Services, Water Treatment Plant, Water Wells	5
Sanitary & Water Mains	Social (50%)	Pipe Size (100%)	50 mm	1
			100 mm	2
			200 mm	3
			300 mm	4
			400 mm	5
	Economic (50%)	Replacement Cost (100%)	\$10,000 and below	1
			\$50,000 and below	2
			\$100,000 and below	3
			\$150,000 and below	4
			\$400,000 and below	5

