2025

Asset Management Plan

THE TOWNSHIP OF MONTAGUE

COUNTRY LIVING AT ITS BEST

This Asset Management Program was prepared by:

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

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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 services. The goal of asset management is to balance delivering critical services in a cost-effective manner. This involves the development and implementation of asset management strategies and long-term financial planning.

The overall replacement cost of the asset categories owned by Montague total $88 million. 79% of all assets analysed are in fair or better condition. Assessed condition data was available for all roads and most bridge and culvert assets, for the remaining assets, asset age was used to approximate condition. Generally, age can misstate the true condition of assets, making assessments essential to accurate asset management planning, and a recurring recommendation.

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

To meet capital replacement and rehabilitation needs for existing infrastructure, prevent future infrastructure backlogs, and achieve long-term sustainability, the Township's average annual capital requirement totals $1.7 million. Based on a historical analysis of sustainable capital funding sources, the Township is committing approximately $1.0 million towards capital projects or reserves per year. As a result, the Township is funding 60% of its annual capital requirements. This creates a total annual funding deficit of $679 thousand.

Addressing annual infrastructure funding shortfalls is a difficult and long-term endeavour for municipalities. Short phase-in periods to meet these funding targets may place too high a burden on taxpayers too quickly, whereas a phase-in period beyond 20 years may see a continued deterioration of infrastructure, leading to larger backlogs.

To close annual deficits for capital contributions from tax revenues for asset needs, it is recommended the Township review the feasibility of implementing a 1.6% annual increase in revenues over a 10-year phase-in period. Funding scenarios over longer time frames are also presented which reduce the annual increases.

To close annual deficits for capital contributions from water and sanitary revenues for asset needs, it is recommended the Township review the feasibility of implementing a 1.0% annual increase respectively in revenues over a 10-year phase-in period. Funding scenarios over longer time frames are also presented which reduce the annual increases.

In addition to annual needs, there is also an infrastructure backlog of $790 thousand, comprising assets that remain in service beyond their estimated useful life. It is highly unlikely that all such assets are in a state of disrepair, requiring immediate replacements or full reconstruction. This makes targeted and consistent

condition assessments integral to refining long-term replacement and backlog estimates.

Risk frameworks and levels of service targets can then be used to prioritize projects and help select the right lifecycle intervention for the right asset at the right time—including replacement or full reconstruction. The Township has developed preliminary risk models which are integrated with its asset register. These models can produce risk matrices that classify assets based on their risk profiles.

Most municipalities in Ontario, and across Canada, continue to struggle with meeting infrastructure demands. This challenge was created over many decades and will take many years to overcome. To this end, several recommendations should be considered, including:

- Continuous and dedicated improvement to the Township's infrastructure datasets, which form the foundation for all analysis, including financial projections and needs.
- Continuous refinements to the risk and lifecycle models as additional data becomes available. This will aid in prioritizing projects and creating more strategic long-term capital budgets.
- Continue conducting network-wide assessments to ensure condition information remains reliable.

The Township has taken important steps in building its asset management program. Continuous improvement of asset data will be essential in maintaining momentum, supporting long-term financial planning, and delivering affordable service levels to the community.

About this Document

The Township of Montague Asset Management Plan was developed in accordance with Ontario Regulation 588/17 ("O. Reg 588/17"). It contains a comprehensive analysis of Montague's infrastructure portfolio. This is a living document that should be updated regularly as additional asset and financial data becomes available.

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. Along with creating better performing organizations, more livable 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.

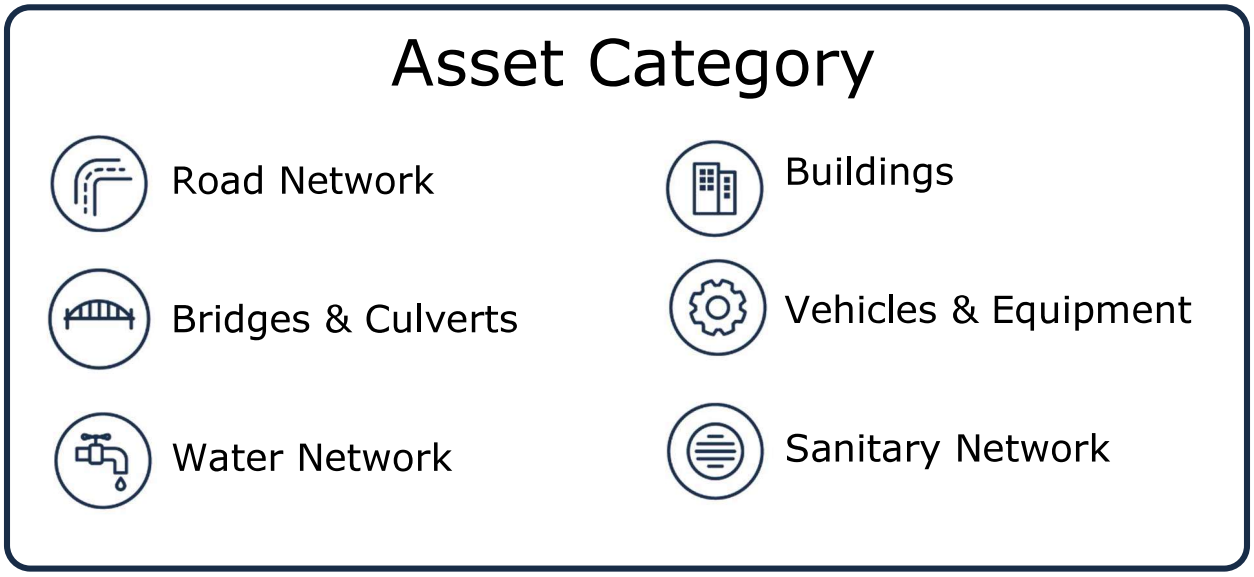
Table 1 Ontario Regulation 588/17 Requirements and Reporting Deadlines

Requirement	2019	2022	2024	2025
1. Strategic Asset Management Policy	✓		✓	
2. Asset Management Plans		✓	✓	✓
State of infrastructure for core assets		✓		
State of infrastructure for all assets			✓	✓
Current levels of service for core assets		✓		
Current levels of service for all assets			✓	
Proposed levels of service for all assets				✓
Lifecycle costs associated with current levels of service		✓	✓	
Lifecycle costs associated with proposed levels of service				✓
Growth impacts		✓	✓	✓
Financial strategy				✓

Scope

The scope of this document is to identify the current practices and strategies that are in place to manage the public infrastructure and to make recommendations where they can be further refined. Through the implementation of sound asset management strategies, the Township can ensure that public infrastructure is managed to support the sustainable delivery of services.

The following asset categories are addressed in further detail in the Appendix.



Limitations and Constraints

The asset management program development required substantial effort by staff, it was developed based on best-available data, and is subject to the following broad limitations, constrains, and assumptions:

- The analysis is highly sensitive to several critical data fields, including an asset's estimated useful life, replacement cost, quantity, and in-service date. Inaccuracies or imprecisions in any of these fields can have substantial and cascading impacts on all reporting and analytics.
- User-defined and unit cost estimates, based typically on staff judgment, recent projects, or established through completion of technical studies, offer the most precise approximations of current replacement costs. When this isn't possible, historical costs incurred at the time of asset acquisition or construction can be inflated to present day. This approach, while sometimes necessary, can produce inaccurate estimates.
- In the absence of condition assessment data, age was used to estimate asset condition ratings. This approach can result in an over- or understatement of asset needs. As a result, financial requirements generated through this approach can differ from those produced by in-field assessments.

- The risk models are designed to support objective project prioritization and selection. However, in addition to the inherent limitations that all models face, they also require availability of important asset attribute data to ensure that asset risk ratings are valid, and assets are properly stratified within the risk matrix. Missing attribute data can misclassify assets.

These limitations have a direct impact on most of the analysis presented, including condition summaries, age profiles, long-term replacement and rehabilitation forecasts, and shorter term, 10-year forecasts that were generated.

These challenges are quite common and require long-term commitment and sustained effort by staff. As the Township's asset management program evolves and advances, the quality of future AMPs and other core documents that support asset management will continue to increase.

An Overview of Asset Management

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

Lifecycle costs can span decades, requiring planning and foresight to ensure financial responsibility is spread equitably across generations. An asset management plan is critical to this planning, and an essential element of the 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 (AMP).

This industry standard, defined by the Institute of Asset Management (IAM), emphasizes the alignment between the corporate strategic plan and various asset management documents.

Foundational Documents

In the municipal sector, 'asset management strategy' and 'asset management plan' are often used interchangeably. Other concepts such as 'asset management framework', 'asset management system', and 'strategic asset management plan' further add to the confusion; lack of consistency in the industry on the purpose and definition of these elements offers little clarity. To make a clear distinction between the policy, strategy, and the plan see the following sections for detailed descriptions of the document types.

Strategic Plan

The strategic plan has a direct, and cascading impact on asset management planning and reporting, making it a foundational element. At the beginning of each term of Council, Council holds strategic planning exercises and discussions to identify major initiatives and administrative improvements it wishes to achieve during its tenure. Staff then identify the scope, resources, timing & other logistical matters associated with proposed initiatives.

Asset Management Policy

An asset management policy represents a statement of the principles guiding the Township's approach to asset management activities as well as their commitment. It aligns with the organization and provides clear direction to municipal staff on their roles and responsibilities.

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 Township plans to achieve its asset management objectives through planned activities and decision-making criteria.

Key Technical Concepts

Effective asset management integrates several key components, including data management, lifecycle management, risk management, and levels of service.

Asset Hierarchy and Data Classification

Asset hierarchy illustrates the relationship between individual assets and their components, and a wider, more expansive network and system. How assets are grouped in a hierarchy structure can impact how data is interpreted. Key category details are summarized at the asset segment level.

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. The two methodologies are:

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

User-defined costs based on reliable sources are a reasonably accurate and reliable way to determine asset replacement costs. Cost inflation is typically used in the absence of reliable replacement cost data. It is a reliable method for recently purchased and/or constructed assets where the total cost is reflective of the actual costs that the Township 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 Township expects the asset to be available for use and remain in service before requiring replacement or disposal. The EUL for each asset 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 date and its EUL, the Township can determine the service life remaining (SLR) for each asset. Using condition data and the asset's SLR, the Township can more accurately forecast when it will require replacement. The SLR is calculated as follows:

Figure 1: Service Life Remaining Calculation

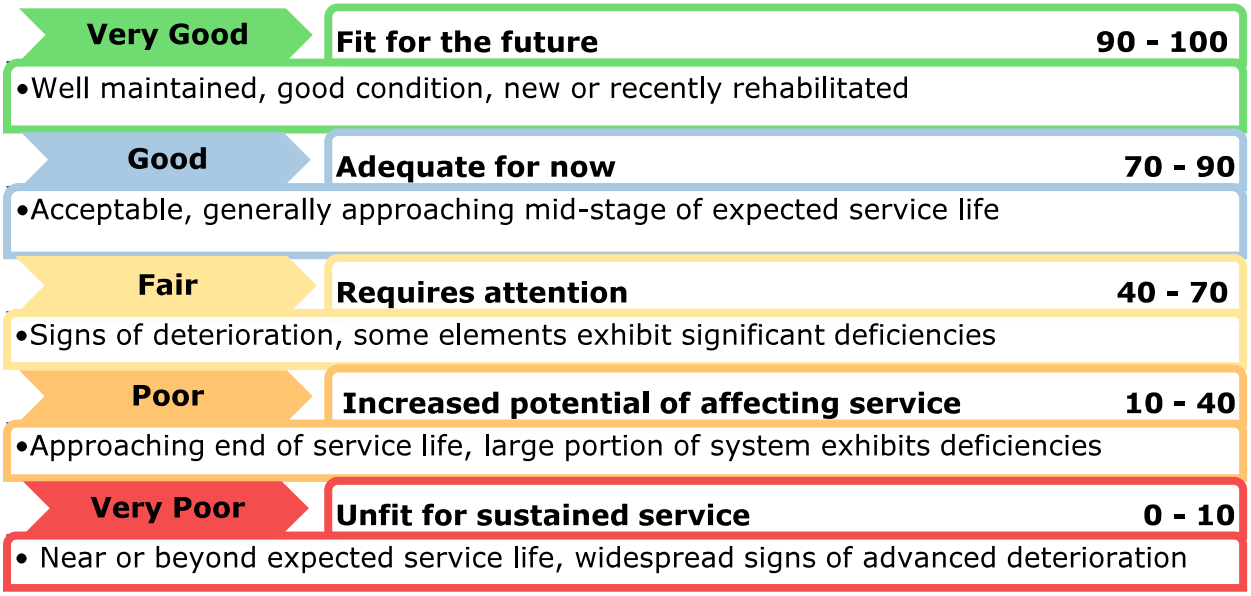
Asset Condition

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 Township's asset portfolio. The figure below outlines the condition rating system used to determine asset condition for all assets in Montague.

Figure 2: Standard Condition Rating Scale



The analysis 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 G: Condition Assessment Guidelines includes additional information on the role of asset condition data and provides basic guidelines for the development of a condition assessment program.

Lifecycle Management Strategies

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

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

There are several field intervention activities that are available to extend the life of an asset. These activities can be generally placed into one of three categories: maintenance, rehabilitation, and replacement. The Figure 3 provides a description of each type of activity and the general difference in cost.

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

Figure 3: Lifecyle Management Typical Interventions

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	$$
Replacement/ Reconstruction	Asset end-of-life activities that often involve the complete replacement of assets	Full Reconstruction	$$$

Risk Management Strategies

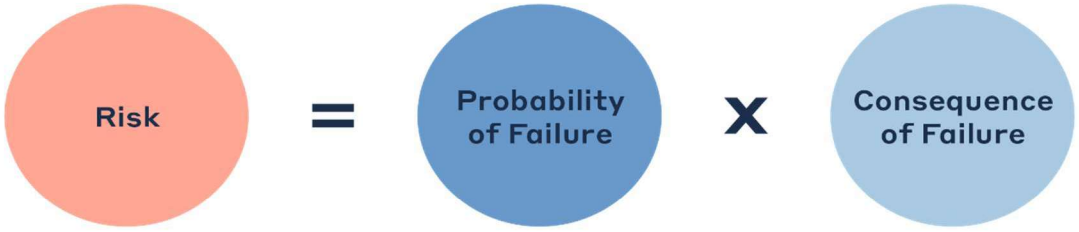
Municipalities generally take a 'worst-first' approach to infrastructure spending. Rather than prioritizing assets based on their importance to service delivery, assets in the worst condition are fixed first, regardless of their criticality. However, not all assets are created equal. Some are more important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

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

A high-level evaluation of asset risk and criticality was performed. 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.

Risk is a product of two variables: the probability that an asset will fail, and the resulting consequences of that failure event. It can be a qualitative measurement, (low, medium, high) or quantitative measurement (1-5), that can be used to rank assets and projects, identify appropriate lifecycle strategies, optimize short- and long-term budgets, minimize service disruptions, and maintain public health and safety.

Figure 4: Risk Equation



Probability of Failure

Several factors can help decision-makers estimate the probability or likelihood of an asset's failure, including its condition, age, previous performance history, and exposure to extreme weather events, such as flooding and ice jams—both a growing concern for municipalities in Canada.

Consequence of Failure

Estimating criticality also requires identifying the types of consequences that the organization and community may face from an asset's failure, and the magnitude of those consequences. Consequences of asset failure will vary across the infrastructure portfolio; the failure of some assets may result primarily in high direct financial cost but may pose limited risk to the community. Other assets may have a relatively minor financial value, but any downtime may pose significant health and safety hazards to residents. See each asset category for definitions and the developed risk models.

Climate Change

Climate change can cause severe impacts on human and natural systems around the world. The effects of climate change include increasing temperatures, higher levels of precipitation, droughts, and extreme weather events. In 2019, Canada's Changing Climate Report (CCCR 2019) was released by Environment and Climate Change Canada (ECCC).

The report revealed that between 1948 and 2016, the average temperature increase across Canada was 1.7°C; moreover, during this period, Northern Canada experienced a 2.3°C increase. The temperature increase in Canada has doubled that of the global average. If emissions are not significantly reduced, the temperature could increase by 6.3°C in Canada by the year 2100 compared to 2005 levels. Observed precipitation changes in Canada include an increase of approximately 20% between 1948 and 2012.

By the late 21st century, the projected increase could reach an additional 24%. During the summer months, some regions in Southern Canada are expected to experience periods of drought at a higher rate. Extreme weather events and climate conditions are more common across Canada. Recorded events include droughts, flooding, cold extremes, warm extremes, wildfires, and record minimum arctic sea ice extent.

The changing climate poses a significant risk to the Canadian economy, society, environment, and infrastructure. Physical infrastructure is vulnerable to damage

and increased wear when exposed to these extreme events and climate variabilities. Canadian municipalities are faced with the responsibility to protect their local economy, citizens, environment, and physical assets.

Integration Climate Change and Asset Management

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

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

Impacts of Growth

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

Impact of Growth on Lifecycle Activities

Planning for forecasted population growth may require the expansion of existing infrastructure and services. As growth-related assets are constructed or acquired, they should be integrated into the Township'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 Township will need to review the lifecycle costs of 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.

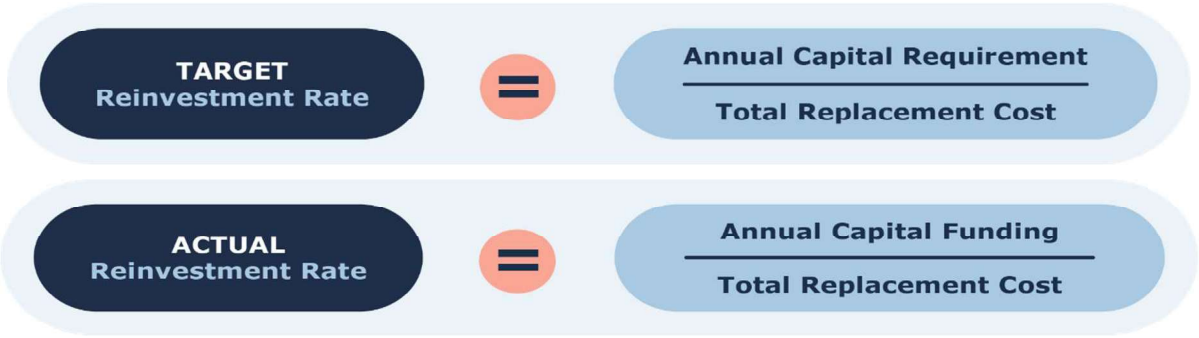
Annual Capital Requirements

The annual requirements represent the amount the Township should allocate annually to each asset category to meet replacement needs as they arise, prevent infrastructure backlogs, and achieve long-term sustainability. This is calculated using each assets replacement cost and estimated useful life.

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 Township can determine the extent of any existing funding gap.

Figure 5: Reinvestment Rate Equations



Levels of Service

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

Community Levels of Service

Community LOS are a simple, plain language description or measure of the service that the community receives. For core asset categories, the Province through O. Reg. 588/17, has provided qualitative descriptions that are required. For non-core asset categories, the Township has determined the qualitative descriptions that will be used. The community LOS can be found in the Levels of Service subsection within each asset category section.

Technical Levels of Service

Technical LOS 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 Township's asset management strategies on the physical condition of assets or the quality/capacity of the services they provide.

For core asset categories, the Province through O. Reg. 588/17, has provided technical metrics that are required. For non-core asset categories, the Township has determined the technical metrics that will be used. The technical LOS can be found in the Levels of Service subsection within each asset category section.

Current and Proposed Levels of Service

In developing an effective asset management plan, it is imperative to establish clear levels of service across key service areas to ensure the efficient and sustainable delivery of municipal services. The Township established current levels of service as well as proposed levels of service over a 10-year period, in accordance with O. Reg. 588/17.

Proposed levels of service are realistic and achievable within the timeframe outlined by the Township. They were determined with consideration of a variety of community expectations, fiscal capacity, regulatory requirements, corporate

goals, and long-term sustainability. The Township will identify a lifecycle management and financial strategy which will allow these targets to be achieved.

Annual Review

The annual review must address the municipality's progress in implementing its asset management plan, any factors impeding the municipality's ability to implement its asset management plan as well as a strategy to address any of the identified factors.

Community Profile

The Township of Montague is a lower-tier municipality and part of Lanark County which is in Southeastern Ontario. Montague is just South of the City of Ottawa, with the Rideau River running along the eastern side of the Township.

The Township was incorporated in 1850s and the area has a rich history, with European settlement dating back to the early 19th century. It was initially developed for agriculture and logging due to its fertile land and abundant forests. The Rideau Canal, a significant historical and engineering landmark, passes through part of the Township, and was a crucial factor in the area's early development. The economy traditionally revolved around agriculture, but in recent years, there has been a diversification with some residents commuting to Ottawa or nearby towns for work.

The Township offers various outdoor recreational activities, including fishing, boating, and hiking, particularly along the Rideau River and in the surrounding natural areas. The rural landscape also provides opportunities for cycling and bird watching. The Township values their rural community and local culture, with events and gatherings often centered around agricultural or outdoor activities.

Demand within the region is driven by the agricultural industry, which comprises of agricultural products and services, including farm equipment, supplies, and maintenance services. Furthermore, the natural beauty and outdoor recreational opportunities in and around the Township, including activities on the Rideau River and surrounding areas, can drive demand in sectors like tourism, hospitality, and leisure services. Proximity to larger cities, like Ottawa, can also drive demand for residential development in Montague.

Table 2 Montague & Ontario Census Information

Census Characteristic	Montague	Ontario
Population 2021	3,914	14,223,942
Population Change 2016-2021	4.1%	5.8%
Total Private Dwellings	1,551	5,929,250
Population Density	14.1/km^2	15.9/km^2
Land Area	278.47 km^2	892,411.76 km^2

Inventory & Cost

The Township's inventory has an asset hierarchy of categories and segments as outlined below where the dark blue headings are the categories and the listings in grey are the segments.

State of the Infrastructure

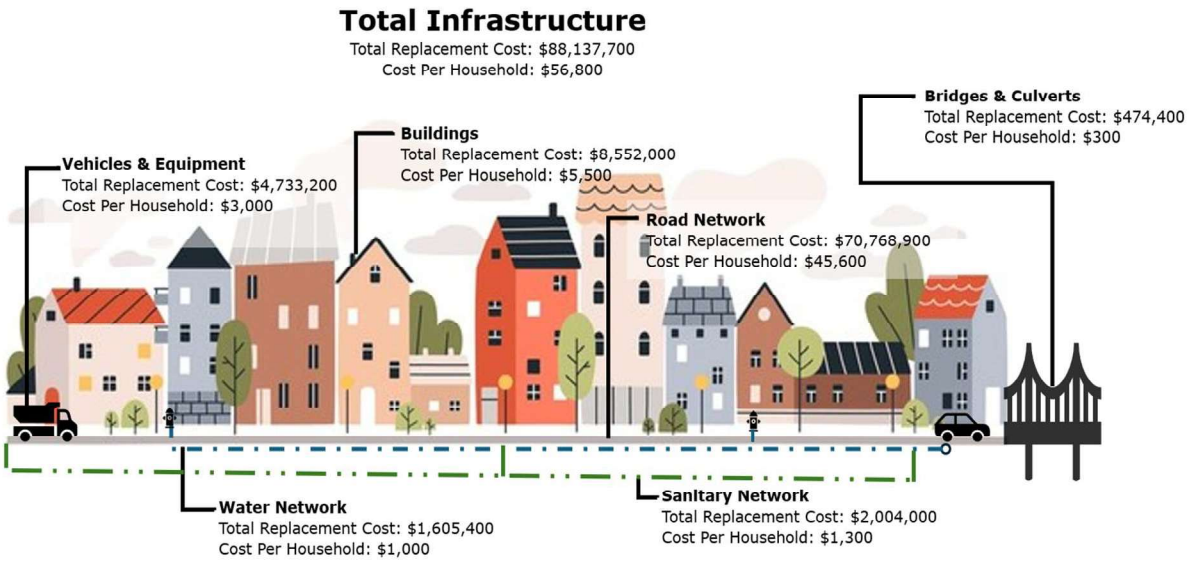
Table 3 Montague State of the Infrastructure

Asset Category	Replacement Cost	Asset Condition	Service Trend
Road Network	$70,768,916	Good (67%)	↘
Bridges & Culverts	$474,348	Good (73%)	→
Buildings	$8,551,971	Fair (55%)	↗
Vehicles & Equipment	$4,733,227	Good (60%)	↗
Water Network	$1,605,179	Good (77%)	↘
Sanitary Network	$2,004,035	Very Good (81%)	↘
Overall	$88,137,676	Good (66%)	→

Replacement Cost

All Montague's asset categories have a total replacement cost of $88 million based on available inventory data. This total was determined based on a combination of user-defined costs and historical cost inflation. This estimate reflects the replacement of historical assets with similar, not necessarily identical, assets available for procurement today.

Figure 6: Portfolio Replacement Value and cost per household



Condition & Age

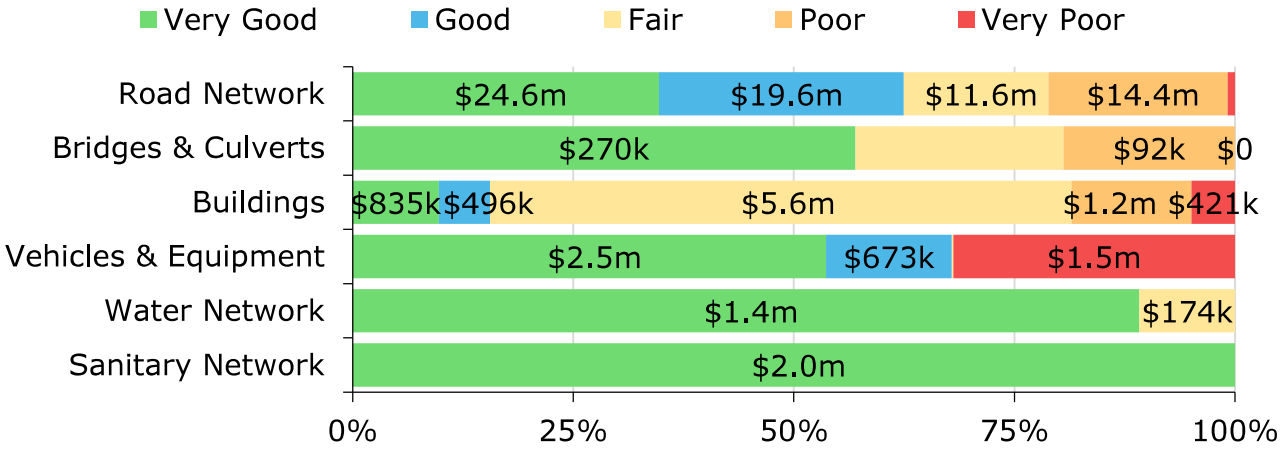
Condition of Asset Portfolio

The current condition of the assets is central to all asset management planning. Collectively, 79% of assets in Montague are in fair or better condition. This estimate relies on both age-based and field condition data.

Assessed condition data is available for roads as well as bridges and culverts; for the remaining portfolio, age is used as an approximation of condition. Assessed condition data is invaluable in asset management planning as it reflects the true condition of the asset and its ability to perform its functions.

The chart below shows the breakdown of the overall asset portfolio's average condition.

Figure 7: Condition Breakdown



Service Life Remaining

Based on asset age, available assessed condition data and estimated useful life, 18% of the Township's assets will require rehabilitation / replacement within the next 10 years. Details of the capital requirements are identified in each asset section.

Risk & Criticality

Qualitative Risk

Montague has noted key trends, challenges, and risks to service delivery that they are currently facing:

Capital Funding Strategies

Partially owing to the completeness of the asset data historically, operations tend to be reactive rather than proactive. Problems are generally only known when issues arise, and complaints are made.

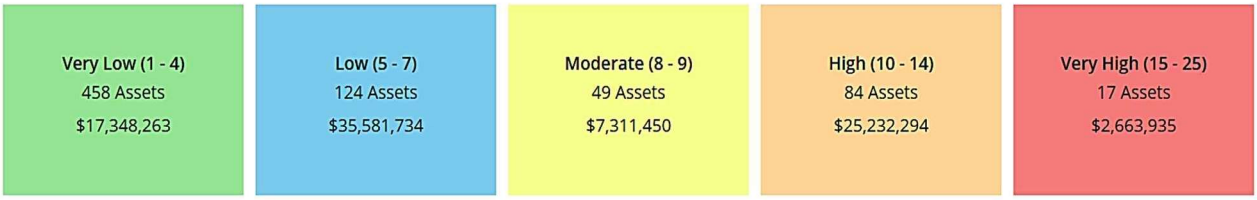
Aging Infrastructure

The lifecycle management strategy has been reactive. In recent years staff have focused on replacing poor condition assets but are still playing catch up on deferred lifecycle activities. Staff plan to pivot from build/replace strategy towards the implementation of a proactive maintenance and capital rehabilitation strategy to extend the service life at a lower cost.

Quantitative Risk

The overall asset risk breakdown for Montague's asset inventory is portrayed in the figure below.

Figure 8: Overall Asset Risk Breakdown



Reviewing the list of very high-risk assets to evaluate how best to mitigate the level of risk the Township is experiencing will help advance Montague's asset management program.

Climate & Growth

Montague Climate Profile

The Township of Montague is in southeastern Ontario within Lanark County. The Township is expected to experience notable effects of climate change which include higher average annual temperatures, an increase in total annual precipitation, and an increase in the frequency and severity of extreme events. According to Climatedata.ca – a collaboration supported by Environment and Climate Change Canada (ECCC) – the Township of Montague may experience the following trends:

Higher Average Annual Temperature:

- Between the years 1971 and 2000 the annual average temperature was 6.2 ^{o}C

- Under a high emissions scenario, the annual average temperatures are projected to increase by 5.8 ºC by the year 2050 and over 6.5 ºC by the end of the century.

Increase in Total Annual Precipitation:

- Under a high emissions scenario, Montague is projected to experience an 12% increase in precipitation by the year 2051 and a 17% increase by the end of the century.

Increase in Frequency of Extreme Weather Events:

- It is expected that the frequency and severity of extreme weather events will change.
- In some areas, extreme weather events will occur with greater frequency and severity than others especially those impacted by Great Lake winds.

Impacts of Growth

Understanding the key drivers of growth and demand will allow the Town to plan for new infrastructure more effectively, and the upgrade or disposal of existing infrastructure. Increases or decreases in demand can affect what assets are needed and what level of service meets the needs of the community.

Montague Official Plan (2010 – Updated 2023)

The Township of Montague adopted an Official Plan to establish practical and clear objectives and policies in accordance with the Ontario Planning Act. The Official Plan is a planning document for the purpose of guiding the future development of the Township of Montague.

The Official Plan has been approved as of August 3rd, 2010, with updates in April 2023.The designated Settlement Areas of the Township are central to preserving and enhancing its rural character and natural beauty. The Township aims to support economic growth and diversification, including home-based and tourism-related businesses. The Settlement Areas are being developed to serve as key local centers for residential, social, commercial, and cultural activities, catering to both residents and visitors. Additionally, there's a focus on offering diverse living options in rural and settlement areas in an environmentally responsible way, aligning with the principle of limiting new residential development in rural regions.

The Township encourages new residential development on vacant or underutilized lands in the designated Settlement Area. If there's a lack of growth opportunities through intensification, expanding the Settlement Area's boundaries could be considered, provided this expansion does not affect prime agricultural lands.

Population projections for Montague are expected to reach 4,565 over the planning period to 2028. External factors, including policies in other jurisdictions, can impact Montague Township's population growth and land use. The Lanark County Sustainable Communities Official Plan has a population allocation for the Township of 4,857 to the year 2038

The following tables outlines the recorded population and private dwellings for Montague, based on 2021 Census data.

Historical Figures	1996	2001	2006	2011	2016	2021
Population	3,802	3,671	3,595	3,483	3,761	3,914
Population Change	N/A	-3.4%	-2.1%	-3.2%	8.0%	4.1%
Private Dwellings	N/A	1,215	1,276	1,389	1,489	1,551

Levels of Service

Levels of service are a measure of the quality and scope of the services that municipal infrastructure provides to the community. Both quantitative and qualitative metrics are used to measure the current level of service.

Strategic Plan Line of Site

The strategic plan has a direct, and cascading impact on asset management planning and reporting, making it a foundational element.

Vision Statement

The Township of Montague is a municipality that embraces growth while maintaining community and financial sustainability. The Township of Montague values and upholds collaborative governance, working with staff, Council, and the community to achieve its shared goals.

Mission Statement

To build and support the community of the Township of Montague by working together to provide relevant and comprehensive municipal services.

Themes of the Strategic Plan

Financial and Community Sustainability - clear emphasis on maintaining affordability for residents through tax rates.

Growth - ensure that growth happens in a way does not unnecessarily burden the Township.

Recreation and Lifestyle - there is a want for some increased services but also clear that there is a limited ability and want to fund new programming.

Municipal Facilities and Land - creating a clear, understandable status of municipal building and land inventory.

Level of Service Statement

Utilizing the strategic plan as a guide for determining the Township's levels of service, the staff developed the corporate service statement as follows:

"The Township of Montague values collaborative governance while ensuring community sustainability with an emphasis on maintaining affordability."

This will be utilized to define levels of service in the Township.

Current Levels of Service

The Township of Montague has defined their current levels of service for each infrastructure category by breaking it down into 3 service attributes scope, quality / reliability and performance. Each of these attributes are defined as follows:

Scope – Is a description of the services being provided and the assets that are utilized to provide the services.

Quality / Reliability – Is a description of how condition is measured as well as the current average condition of the assets utilized to provide the services. Also, for each asset category there are additional reliability measures included.

Performance – Is a description of how the Township will ensure long-term sustainability with an emphasis on affordability and is measured utilizing risk and financial parameters.

Based on an analysis of each asset category the current level of service is provided in each asset section.

Proposed Levels of Service

Through a comprehensive assessment proposed levels of service for the Township have been developed. To ensure long-term sustainability and overall achievability the following were utilized / developed as part of the analysis.

Stakeholder Engagement – Regularly engage with stakeholders to gather feedback and communicate changes transparently.

Data-Driven Decision Making – Use data analytics to inform decision-making processes and identify areas for improvement.

Flexibility and Adaptability – Design the methodology to be flexible, allowing for adjustments based on evolving priorities.

Continuous Improvement – Establish a process for continuous review and improvement of the LOS methodology itself.

Scenarios

The scenarios that were used to analyse Montague inventory were run for 50-years to ensure all the lifecycles were included at least once. They are also all based on the data available in the asset management system which outlines estimated useful life and condition as well as replacement costs which all the results are based on.

Scenario 1: Current Lifecycle Activities

Purpose: This scenario examines the current state of the infrastructure based on existing lifecycle practices. It looks at how the infrastructure is currently being maintained, the condition it's in, and the amount of annual investment needed in each asset category.

Key Focus: The condition of the infrastructure and the annual investment levels based on current practices.

Outcome: This scenario provides a baseline for understanding how the infrastructure is currently being maintained. It helps identify whether there are any gaps between current practices and long-term sustainability goals.

Scenario 2: Current Capital Reinvestment Rate

Purpose: This scenario builds upon the current capital reinvestment rate, where the total amount of investment being made into capital improvements (like replacement or major repairs) remains the same. In this scenario, the focus is on the impact that current investment levels have on the condition of the infrastructure over time.

Key Focus: The annual investment stays constant, and the condition of the infrastructure is evaluated based on that level of reinvestment.

Outcome: This helps to see if the current capital reinvestment rate is enough to maintain the infrastructure in a sustainable way over the long term, or if it's falling short and leading to degradation in condition.

Scenario 3: Maintain Current Condition

Purpose: This scenario aims to achieve a specific, target condition level for the infrastructure, where the goal is to maintain the current level of service of the infrastructure in each asset category. By fixing the conditions, the model determines what the required annual investment would be to maintain that target over the long term.

Key Focus: This scenario focuses on achieving a targeted condition level and determining how much investment would be necessary to maintain that condition.

Outcome: This scenario gives insights into how much investment would be needed to keep the infrastructure at the current condition level.

Results

Scenario 1: Current Lifecycle Activities - this scenario utilizes the current lifecycle activities outlined as current practice within each asset category. The condition and annual investment were then determined.

The table below summarizes the results of each asset category and overall.

Asset Category	Current Average Condition	Projected Average Condition	Funding Required
Road Network	Good (65%)	Good (75%)	$1,056,278
Bridges & Culverts	Good (73%)	Good (86%)	$7,311
Buildings	Fair (59%)	Good (81%)	$263,218
Vehicles & Equipment	Good (62%)	Good (78%)	$294,294
Water Network	Good (79%)	Good (76%)	$32,272
Sanitary Network	Very Good (82%)	Good (76%)	$33,401
Overall	Good (64%)	Good (76%)	$1,686,774

Scenario 2: Current Capital Reinvestment Rate - this scenario utilizes the current capital reinvestment within each asset category. The current annual investment was held, and the condition was determined.

The table below summarizes the results of each asset category and overall.

Asset Category	Current Average Condition	Projected Average Condition	Funding Required
Road Network	Good (65%)	Fair (41%)	$475,000
Bridges & Culverts	Good (73%)	Good (86%)	$7,311
Buildings	Fair (59%)	Fair (58%)	$238,000
Vehicles & Equipment	Good (62%)	Fair (57%)	$227,000
Water Network	Good (79%)	Fair (43%)	$18,339
Sanitary Network	Very Good (82%)	Fair (45%)	$19,400
Overall	Good (64%)	Fair (48%)	$985,050

Scenario 3: Current Condition - this scenario utilizes an average condition at the current level of the infrastructure within each asset category. The condition value was held, and the annual investment was then determined.

The table below summarizes the results of each asset category and overall.

Asset Category	Current Average Condition	Projected Average Condition	Funding Required
Road Network	Good (65%)	Good (65%)	$920,007
Bridges & Culverts	Good (73%)	Good (73%)	$4,803
Buildings	Fair (59%)	Fair (59%)	$238,000
Vehicles & Equipment	Good (62%)	Good (62%)	$231,774
Water Network	Good (79%)	Good (79%)	$32,272
Sanitary Network	Very Good (82%)	Very Good (82%)	$33,401
Overall	Good (64%)	Good (65%)	$1,460,257

Stakeholder Engagement

In the fall of 2024, the Township conducted a resident satisfaction survey to evaluate public perception of current municipal services. Approximately 3% of the Township's population responded to the survey.

Key Findings:

Overall Satisfaction: 66% of respondents indicated they were generally satisfied with the quality of services being provided by the Township.

Attitude Toward Trade-Offs: With limited funding, resource allocation often involves balancing priorities. When asked about their willingness to make trade-offs

between different infrastructure services to maintain cost levels, 56% of respondents agreed they were open to such compromises.

Service Level Expectations: Residents reported that, on average, all infrastructure services were meeting expectations—except for roads, which were rated as slightly below expectations.

A staff workshop was also conducted in the fall, where a discussion of staff's satisfaction with the services, they are providing to residents was reviewed. Overall, staff were satisfied with the services being provided.

Proposed Level of Service Summary

Montague is taking a strategic approach to ensuring the long-term sustainability of its municipal services. By focusing on the condition of the assets used to provide these services, the Township is aiming to balance service quality with cost-efficiency. This practical approach will help prevent over-investment in infrastructure that may not be sustainable while also ensuring that the community's needs are met.

Montague is making significant strides in improving the accuracy of its asset management system, which is crucial for better decision-making regarding capital requirements and long-term sustainability.

Montague has strategically addressed their infrastructure funding gap with the increase in funding to vehicles & equipment as well as the construction of a new multi-purpose facility which will continue to ensure sustainable services to the community. By focusing on condition for the roads, water and sanitary infrastructure services, the Township will be working to improve services identified as below expectations as well as ensuring the continued value of the utility services.

Financial Management

Financial Strategy

Each year, Montague makes important investments in its infrastructure's maintenance, renewal, rehabilitation, and replacement to ensure assets remain in a state of good repair. However, spending needs typically exceed fiscal capacity. In fact, most municipalities continue to struggle with annual infrastructure deficits. Achieving full-funding for infrastructure programs will take many years and should be phased-in gradually to reduce burden on the community.

This financial strategy is designed for the Township's existing asset portfolio and is premised on two key inputs: the average annual capital requirements and the average annual funding typically available for capital purposes. The annual requirements are based on the replacement cost of assets and their serviceable life, and the target proposed level of service of maintaining an average condition of fair. This figure is calculated for each individual asset and aggregated to develop category-level values.

The annual funding available is determined by the amount of revenue that is allocated consistently to either that years capital program or to reserves for capital

purposes. For Montague, the approved 2025 values were used to project available funding going forward.

Only reliable and predictable sources of funding are used to benchmark funds that may be available on any given year. The funding sources include:

- Revenue from taxation allocated to reserves for capital purposes
- Revenue from water and wastewater rates allocated to capital reserves
- The Canada Community Building Fund (CCBF), formerly the federal Gas Tax Fund
- The Ontario Community Infrastructure Fund (OCIF)

Although provincial and federal infrastructure programs can change with evolving policy, CCBF, OCIF, and OMPF are considered as permanent and predictable.

Annual Capital Requirements

The annual requirements represent the amount the Township should allocate annually to each asset category to meet replacement needs as they arise, prevent infrastructure backlogs, and achieve long-term sustainability.

The table below outlines the total average annual capital requirements for existing assets in each asset category. Based on the proposed levels of service selected to maintain the current lifecycle strategy for all asset categories.

Asset Category	Current Average Condition	Projected Average Condition	Funding Required
Road Network	Good (65%)	Good (75%)	$1,056,278
Bridges & Culverts	Good (73%)	Good (86%)	$7,311
Buildings	Fair (59%)	Good (81%)	$263,218
Vehicles & Equipment	Good (62%)	Good (78%)	$294,294
Water Network	Good (79%)	Good (76%)	$32,272
Sanitary Network	Very Good (82%)	Good (76%)	$33,401
Overall	Good (64%)	Good (76%)	$1,686,774

Current Funding Levels

The table below summarizes how current funding levels compare with funding required for each asset category. At existing levels, the Township is funding 60% of its annual capital requirements for all infrastructure analyzed. This creates a total annual funding deficit of $679 thousand.

Asset Category	Annual Capital Requirements	Annual Funding Available	Annual Infrastructure Deficit
Road Network	$1,056,278	$475,000	$581,278
Bridges & Culverts	$7,311	$29,895	$(22,584)
Buildings	$263,218	$238,000	$25,218
Vehicles & Equipment	$294,294	$227,000	$67,294
Water Network	$32,272	$18,339	$13,933
Sanitary Network	$33,401	$19,400	$14,001
Overall	**$1,686,774**	**$1,007,634**	**$679,140**

Closing the Gap

Eliminating annual infrastructure funding shortfalls is a difficult and long-term endeavour for municipalities. Considering the Township's current funding position, it will require many years to reach full funding for current assets.

This section outlines how Montague can close the annual funding deficits using own-source revenue streams, i.e., property taxation and utility rates. Funding 100% of annual capital requirements ensures that major capital events, including replacements, are completed as required. Under this scenario, projects are unlikely to be deferred to future years. This delivers the proposed level of service of maintain the current lifecycle strategy for all asset categories.

Full Funding Requirements Tax Revenues

In 2025, Montague' will have an annual tax revenue of $3,785,795. As illustrated in the following table, without consideration of any other sources of revenue or cost containment strategies, full funding would require a 17.2% tax change over time.

While shorter phase-in periods may place too high a burden on taxpayers, a phase-in period beyond 20 years may see a continued deterioration of infrastructure, leading to larger backlogs. Several scenarios have been developed using phase-in periods ranging from five to twenty years this is outlined it the table below.

Phase In Period	5 Years	10 Years	15 Years	20 Years
% Increase in Annual Taxation	3.2%	1.6%	1.1%	0.8%

Full Funding Requirements Utility Rate Revenues

For 2025, Montague' forecasted water rate revenues total $128,099. Annual capital requirements for the water network total $32,272, against available funding of $18,339. This creates a funding deficit of $13,933. To close this annual gap, the Township's water revenues would need to increase.

Similarly, wastewater rate revenues are forecasted to be $135,241 in 2025. Average annual requirements for Montague' wastewater assets total $33,401 against available funding of $19,400, creating an annual deficit of $14,001. Rate revenues would need to increase to close this funding gap.

As with tax revenues, short phase-in periods may require excessive rate increases, whereas more protracted timeframes may lead to larger backlogs and more unpredictable spending on emergency repairs and replacements.

Phase In Period	5 Years	10 Years	15 Years	20 Years
Water Network				
% Annual Increase	2.1%	1.0%	0.7%	0.5%
Wastewater Network				
% Annual Increase	2.0%	1.0%	0.7%	0.5%

Ten-Year Financial Plan

The Township is working with a clear long-term financial strategy aimed at reaching sustainable funding levels for its tax-funded assets, water rates, and wastewater services in 10-years. The Township is still operating with an infrastructure deficit until 2035. The tables below show a 10-year capital projection for each asset category with proposed funding.

Tax Rate	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Road Network	$2.9m	$1.9m	$0	$2.1m	$1.1m	$619k	$2.4m	$0	$96k	$125k
Bridges & Culverts	$0	$0	$0	$0	$0	$92k	$73k	$39k	$0	$0
Buildings	$572k	$334k	$53k	$34k	$273k	$72k	$203k	$22k	$14k	$418k
Vehicles & Equipment	$364k	$0	$0	$32k	$507k	$78k	$433k	$51k	$83k	$57k
Tax Total	$3.8m	$2.2m	$53k	$2.2m	$1.9m	$861k	$3.1m	$112k	$193k	$600k
Tax Proposed Funding	$972k	$1.0m	$1.1m	$1.2m	$1.2m	$1.3m	$1.3m	$1.4m	$1.5m	$1.6m

Utility Rate	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Water Network	$0	$16K	$0	$0	$0	$0	$215k	$0	$0	$0
Sanitary Network	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Water Total	$0	$16k	$0	$0	$0	$0	$215k	$0	$0	$0
Water Proposed Funding	$18k	$20k	$21k	$22k	$24k	$25k	$26k	$28k	$29k	$30k

There are no sanitary network capital activities in the 10-year window only the long-term financial strategy shows the funding.

Recommendations

Financial Strategies

1. Review feasibility of adopting a full-funding scenario that achieves 100% of average annual requirements for the asset categories analyzed. This involves:
    - implementing a 1.6% annual tax increase over a 10-year phase-in period and allocating the full increase in revenue towards capital funding
    - continued allocation of OCIF and CCBF funding as previously outlined
    - implementing a 1.0% annual water and sanitary increases both over a 10-year phase-in period and allocating the full increase in revenue towards capital funding
    - using risk frameworks and staff judgement to prioritize projects, particularly to aid in elimination of existing infrastructure backlogs

NOTE: Although difficult to capture inflation costs, supply chain issues, and fluctuations in commodity prices will also influence capital expenditures.

Asset Data

1. Continuously review, refine, and calibrate lifecycle and risk profiles to better reflect actual practices and improve capital projections. In particular:
    - the timing of various lifecycle events, the triggers for treatment, anticipated impacts of each treatment, and costs
    - the various attributes used to estimate the likelihood and consequence of asset failures, and their respective weightings
2. Asset management planning is highly sensitive to replacement costs. Periodically update replacement costs based on recent projects, invoices, or estimates, as well as condition assessments, or any other technical reports and studies. Material and labour costs can fluctuate due to local, regional, and broader market trends, and substantially so during major world events. Accurately estimating the replacement cost of like-for-like assets can be challenging. Ideally, several recent projects over multiple years should be used.
3. Continue conducting network-wide assessments to ensure the condition information remains reliable. Condition assessments are vital to asset management plans as they provide crucial insights into the health and performance of assets over time. By evaluating the condition of assets regularly, the Township can prioritize maintenance and repair efforts, optimize resource allocation, and extend the lifespan of assets. This proactive approach can ensure the efficient and cost-effective operation of infrastructure and equipment.

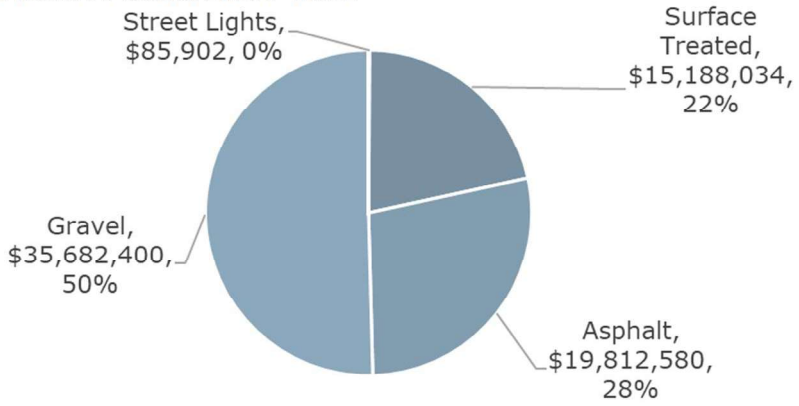
Appendix A: Road Network

Montague's road network comprises the largest share of its infrastructure portfolio, with a current replacement cost of $70.7 million, distributed primarily between asphalt, surface treated and gravel roads. The Township also owns and manages other supporting infrastructure and capital assets, including streetlights.

Inventory & Valuation

The figure below displays the replacement cost of each asset segment in the Township's Road inventory.

Figure 9: Road Network Replacement Value

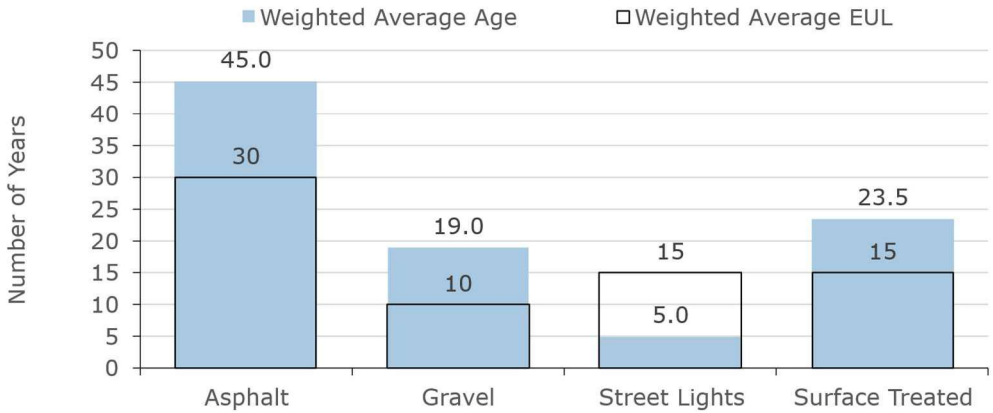


Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

Asset Condition & Age

The graph below identifies the average age, and the estimated useful life for each asset segment. It is all weighted by replacement cost.

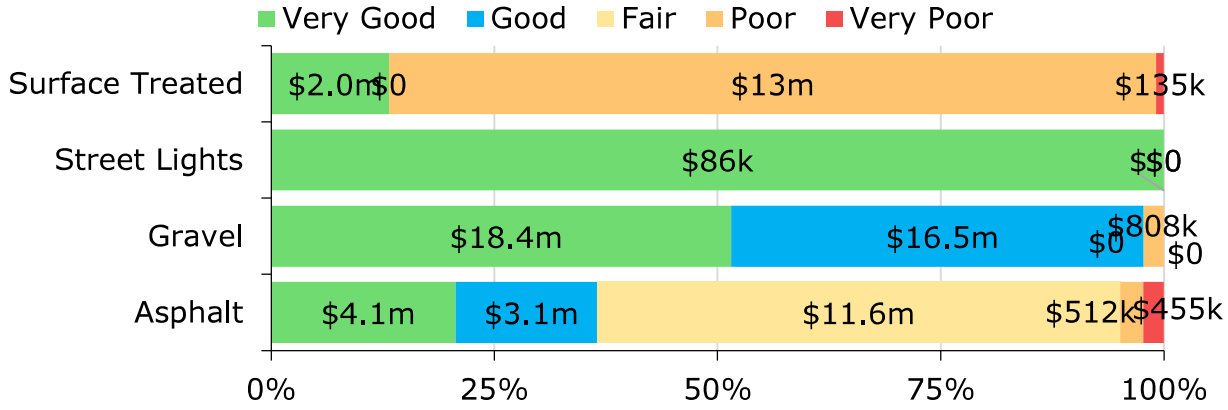
Figure 10: Road Network Average Age vs Average EUL



The analysis shows that, based on in-service dates, roads continue to remain in operation beyond their expected useful life. This is due to the life cycle management strategies currently being utilized.

The graph below visually illustrates the average condition for each asset segment on a very good to very poor scale.

Figure 11: Road Network Condition Breakdown



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

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. At present, the following describes the Township's current approach:

- A road needs study, through an external consultant, is conducted and staff intend to reduce the assessment interval by ensuring that internal staff assessments are conducted on a regular basis
- Routine road patrols are undertaken weekly, in compliance with the Minimum Maintenance Standards (MMS)

The following rating criteria is used to determine the current condition of road segments and forecast future capital requirements:

Condition	Rating
Very Good	80-100
Good	60-80
Fair	40-60
Poor	20-40
Very Poor	0-20

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 strategies shown in Figure 12 have been developed as a proactive approach to managing the lifecycle of municipally owned 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.

Figure 12: Road Network Current Lifecycle Strategy

Maintenance

- Operations such as patching, shouldering, and ditching/brushing are routinely conducted on surface treated and asphalt roads.
- For gravel roads, a reactive approach is taken for brushing and ditching, with annual funding allocated for soft spot repair and regravelling on a 4-year cycle. Grading is performed up to 6 times a year as needed, with staff conducting internal annual assessments to gauge road condition and plan maintenance activities accordingly.

Rehabilitation / Renewal / Replacement

- Road replacement decisions align with Asset Management Plan Lifecycles and recommendations from the Roads Needs Study

PCI scores, staff judgment, traffic loads, and opportunity to bundle projects help inform the optimal lifecycle intervention. Lifecycle models used to estimate the savings to annual capital requirement are shown below in Figure 13: Surface Treated (LCB) Road Lifecycle Model and Figure 14: Asphalt (HCB) Road Lifecycle Model

Figure 13: Surface Treated (LCB) Road Lifecycle Model

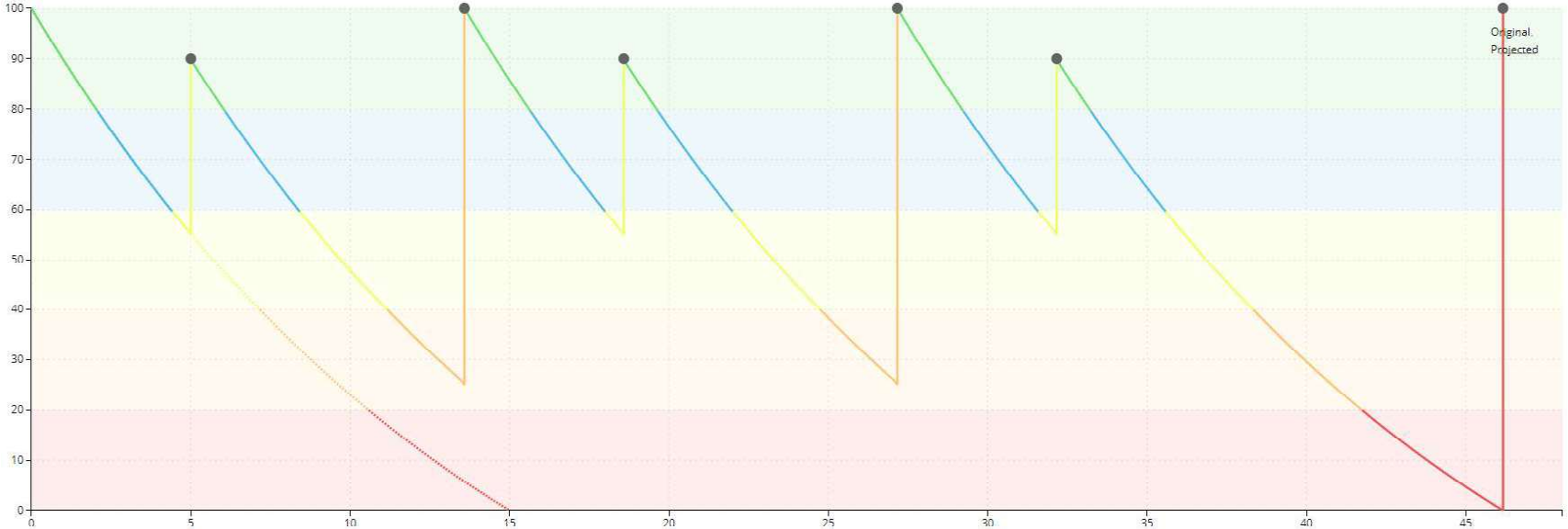
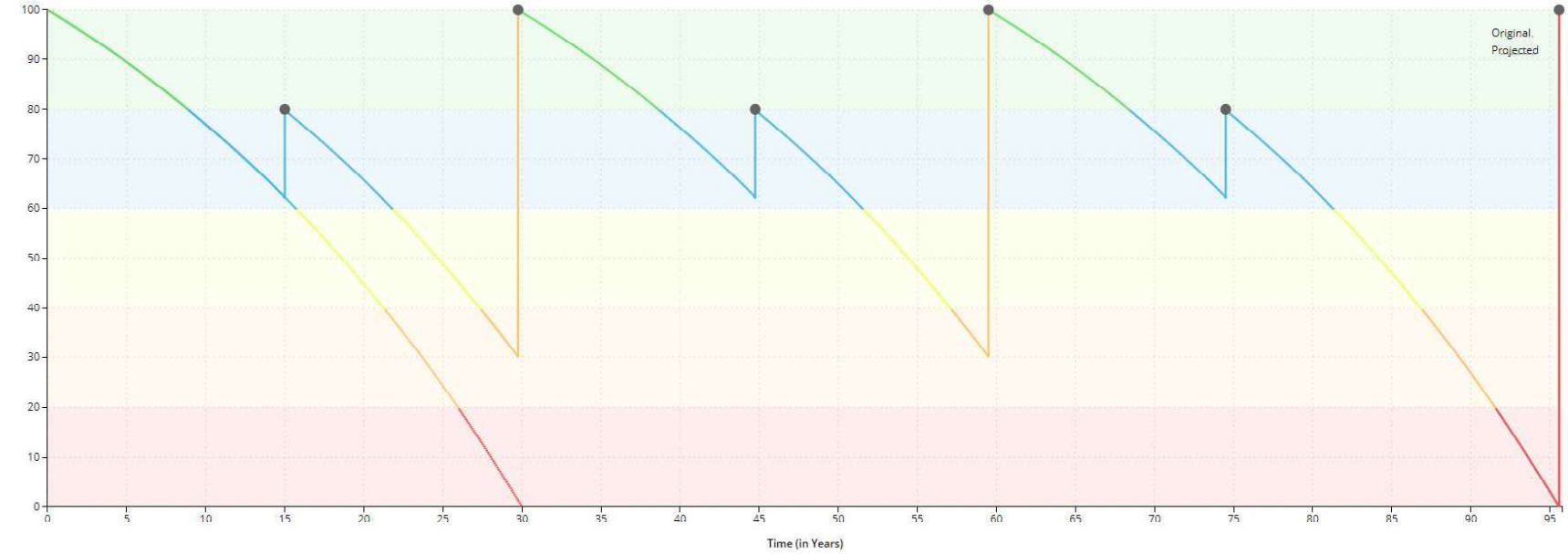


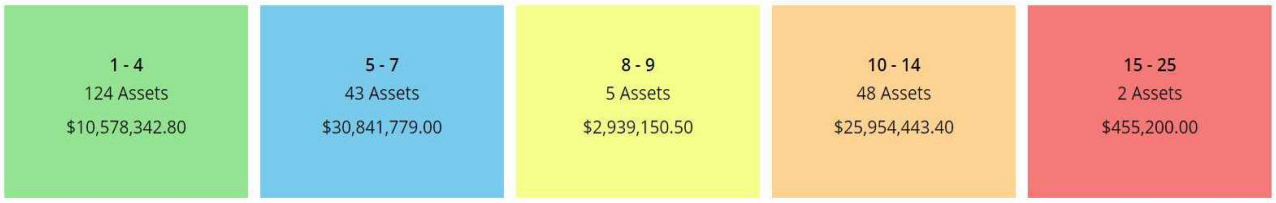
Figure 14: Asphalt (HCB) Road Lifecycle Model



Risk & Criticality

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 available inventory data.

Figure 15: Road Network Risk Matrix



This is a high-level model developed by municipal staff and it should be reviewed and adjusted to reflect an evolving understanding of both the probability and consequences of asset failure. The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of the road network are documented below:

Probability of Failure (POF)	Consequence of Failure (COF)
Service Life Remaining (Operational 20%)	Segment (Financial 50%)
Condition (Performance 80%)	Traffic Volume (Operational 50%)

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

Levels of Service

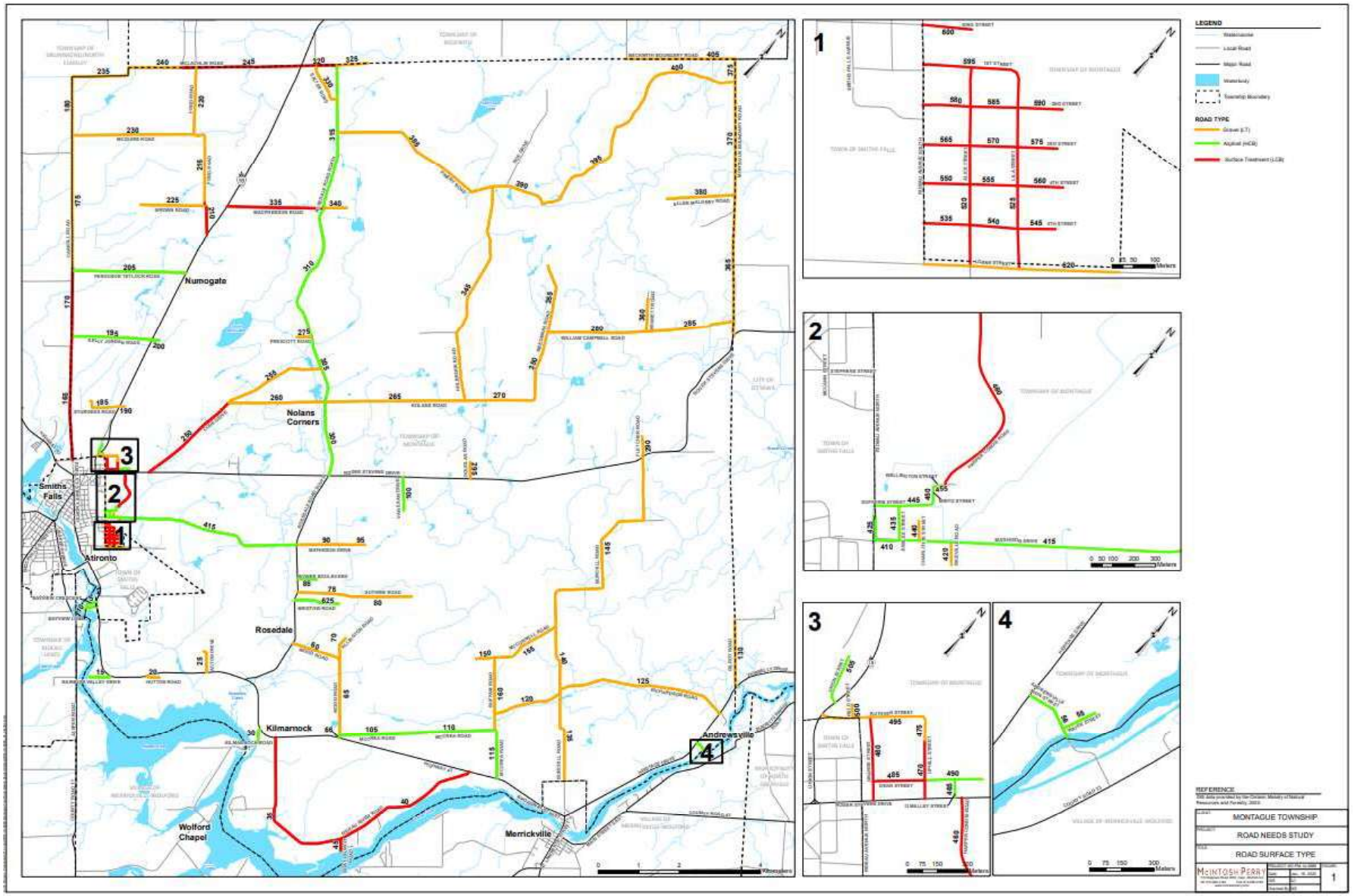
The framework created by the Township for levels of service is a valuable tool for assessing and managing the performance of their assets and/or services provided by their assets. Proposed levels of service for the Township have been developed through engagement with Township staff.

Current Levels of Service

The following tables identify the Township'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 Township has selected.

Community LOS		Service Attribute	Technical LOS	
Description, which may include maps, of the road network in the municipality and its level of connectivity	The Township's road network spans a total of 158 km primarily within a rural setting, with areas of urban development. See Figure 18	Scope	Replacement Cost	$70,768,916
			Quantity (km of roads)	158
			Quantity (number of streetlights)	103
			Lane-km of arterial roads (MMS classes 1 and 2) per land area (km/km2)	0
			Lane-km of collector roads (MMS classes 3 and 4) per land area (km/km2)	0
			Lane-km of local roads (MMS classes 5 and 6) per land area (km/km2)	0.57
Description or images that illustrate the different levels of road class pavement condition	See Figure 2 for the description of road condition	Quality	Average pavement condition index for paved roads in the municipality	Fair (51%)
			Average surface condition for unpaved roads in the municipality (e.g., excellent, good, fair, poor)	Good
			Average Condition	Good (65%)
General	Services will be provided to ensure sustainability with a emphasis on affordability	Performance	% Risk that is High and Very High	10%
			Average Asset Risk	Moderate (8.16)
			Annual Funding	$475,000
			Capital re-investment rate	10.04%

Figure 16: Map of Roads



Proposed Levels of Service

The scenarios that were used to analyse Montague's inventory were run for 50-years. They are also all based on the data available in the asset management system which outlines estimated useful life and condition as well as replacement costs which all the results are based on.

Scenario 1: Current Lifecycle Activities - this scenario utilizes the current lifecycle activities outlined as current practice within each asset category. The condition and annual investment were then determined.

Scenario 2: Current Capital Reinvestment Rate - this scenario utilizes the current capital reinvestment within each asset category. The current annual investment was held, and the condition was determined.

Scenario 3: Current Condition - this scenario utilizes an average condition of Good (65%) of the infrastructure within the road network. The condition value was held, and the annual investment was then determined.

The table below outlines the results for each scenario for the Road Network.

Scenarios	Replacement Cost	Average Condition	Annual Capital Reinvestment
Scenario 1 – Lifecycle	$35,086,516	Good (75%)	$1,056,278
Scenario 2 - Current Capital Investment Rate	$35,086,516	Fair (41%)	$475,000
Scenario 3 - Maintain Current Condition	$35,086,516	Good (65%)	$920,007

10-Year Capital Forecast

Below is the projected ten-year capital forecast

Segments	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Asphalt	$184k	$618k	$0	$2.0m	$398k	$48k	$2.0m	$0	$0	$0
Streetlights	$0	$0	$0	$0	$0	$0	$0	$0	$0	$86k
Surface Treated	$2.7m	$1.2m	$0	$81k	$695k	$571k	$389k	$0	$96k	$39k
Total	$2.9m	$1.9m	$0	$2.1m	$1.1m	$619k	$2.4m	$0	$96k	$125k

Gravel roads are not included in this forecast as they are managed through the operations and considered to never need replacement due to the preventative maintenance activities performed. The operating budget is $275k for gravel roads.

Appendix B: Bridges & Culverts

Bridges and culverts (B&C) represent a critical portion of the transportation services provided to the community. The bridges and culverts are only infrastructure that meets the Ontario Structures Inspection Manual (OSIM) definition for a bridge. Previously, small culverts were included in the inventory of bridges and culverts however, the replacement of these are not considered or tracked as capital so they were removed.

Inventory & Valuation

The replacement cost of the Township's bridges and culverts inventory includes only infrastructure that meets the OSIM definition for bridges and is $474k. Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed. This can be included in the OSIM inspections as the replacement cost is part of the calculation for the bridge condition index (BCI).

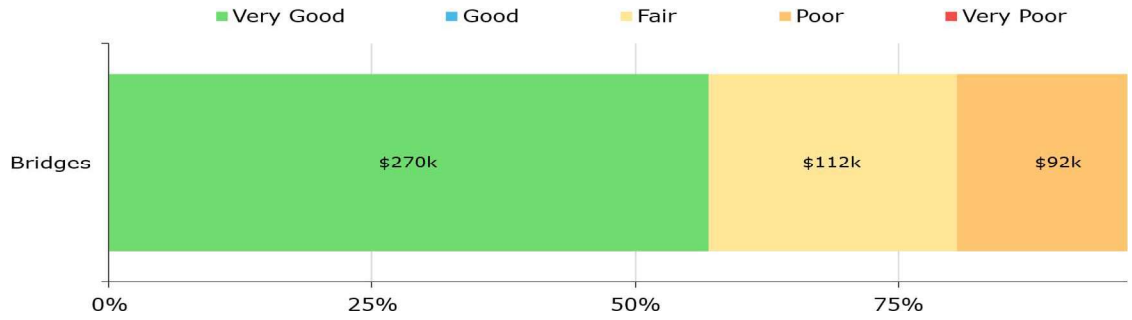
Asset Condition & Age

The graph below identifies the average age and the estimated useful life for each asset segment. The values are weighted based on replacement cost.

Figure 17: B&C Average Age vs Average EUL

The graph below visually illustrates the average condition for each asset segment on a very good to very poor scale.

Figure 18: B&C Condition Breakdown



To ensure that the Township's bridges and culverts continue to provide an acceptable level of service, the staff should monitor the average condition of all

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

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. Montague's current approach is to assess the bridges and culverts every 2 years in accordance with the Ontario Structure Inspection Manual (OSIM). The most recent assessment was completed in 2024 by Greer Galloway Consulting Engineers. The condition scale for bridges and culverts utilized is from 0 to 100 from Very Poor to Very Good. See the following images as examples of a bridge in Fair condition, as well as a structural culvert in Very Good condition.

Figure 19: B&C Condition Images

Richardson Culvert (BCI=100)

Richardson Bridge (BCI=71.6 Good)

Figure 1: South Elevation

Matheson Drive Culvert (BCI=87 Very Good)

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. Figure 20 outlines Montague's current lifecycle management strategy.

Figure 20: B&C Current Lifecycle Strategy

Maintenance

- All maintenance and repair activities are driven by the results of inspections competed according to the Ontario Structure Inspection Manual (OSIM)

Rehabilitation / Renewal / Replacement

- Replacement occurs upon OSIM inspection recommendation and is subject to the availability of funding

Risk & Criticality

The 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 available inventory data.

Figure 21: B&C Risk Matrix

This is a high-level model developed by municipal staff and should be reviewed and adjusted to reflect an evolving understanding of both the probability and consequences of asset failure.

The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of bridges and culverts are documented below:

Probability of Failure (POF)	Consequence of Failure (COF)
Condition (Performance 60%)	Replacement Cost (Financial 50%)
Service Life Remaining (Operational 40%)	Traffic Volume 50% (Operational 50%)
	Segment 50% (Operational 50%)

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

Levels of Service

The framework created by the Township for levels of service is a valuable tool for assessing and managing the performance of their assets and/or services provided by their assets. Proposed levels of service for the Township have been developed through engagement with Township staff.

Current Levels of Service

The following tables identify the Township's current level of service for municipal bridges and culverts. 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 Township has selected.

Community LOS		Service Attribute	Technical LOS	
Description of the traffic that is supported by municipal bridges (e.g., heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists).	The Township's bridges support a range of traffic types, including heavy and light vehicles, pedestrians and cyclists. They are used as part of major transportation routes that accommodate all types of travel including emergency response, transportation of goods/services, and personal travel.	Scope	Replacement Cost	$474,348
			Bridges and Structural Culvert Quantity	6
			% of bridges in the Municipality with loading or dimensional restrictions	0
Description or images of the condition of bridges & culverts and how this would affect use of the bridges & culverts	See Figure 22: B&C Condition Images	Quality	Average bridge and structural culvert condition index value for bridges in the Municipality	Good (75%)
			Average culvert condition index value for culverts in the Municipality	N/A
			Average Condition	Good (73%)
General	Services will be provided to ensure sustainability with a emphasis on affordability	Performance	% Risk that is High and Very High	51%
			Average Asset Risk	Moderate (9.8)
			Annual Requirement	$ 29,895
			Capital re-investment rate	0.82%

Proposed Levels of Service

The scenarios that were used to analyse Montague's inventory were run for 50-years. They are also all based on the data available in the asset management system which outlines estimated useful life and condition as well as replacement costs which all the results are based on.

Scenario 1: Current Lifecycle Activities - this scenario utilizes the current lifecycle activities outlined as current practice within each asset category. The condition and annual investment were then determined.

Scenario 2: Current Capital Reinvestment Rate - this scenario utilizes the current capital reinvestment within each asset category. The current annual investment was held, and the condition was determined.

Scenario 3: Current Condition - this scenario utilizes an average condition of Good (73%) of the infrastructure within municipal bridges and culverts. The condition value was held, and the annual investment was then determined.

The table below outlines the results for each scenario.

Scenarios	Replacement Cost	Average Condition	Annual Capital Reinvestment
Scenario 1 – Lifecycle	$474,348	Good (86%)	$7,311
Scenario 2 - Current Capital Investment Rate	$474,348	Good (86%)	$29,895
Scenario 3 - Maintain Current Condition	$474,348	Good (73%)	$4,803

10-Year Capital Forecast

Below is the projected ten-year capital forecast

Segments	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Bridges	$0	$0	$0	$0	$0	$92k	$73k	$39k	$0	$0

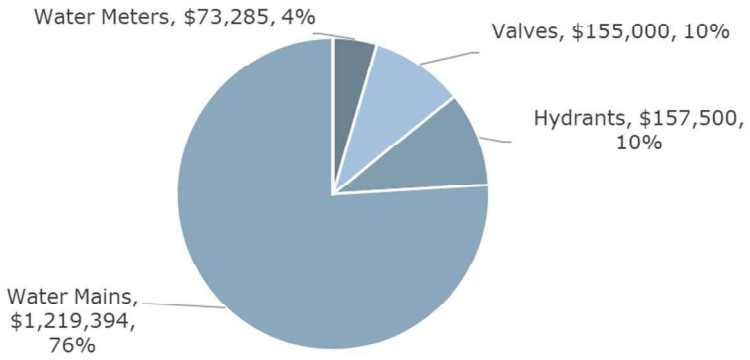
Appendix C: Water Network

The Township's water distribution services are confined to its boundaries, with all treated water sourced from the Town of Smiths Falls via the Smiths Falls Water Treatment Plant.

Inventory & Valuation

The graph below displays the total replacement cost of each asset segment in Montague's water network inventory.

Figure 22: Water Network Replacement Cost

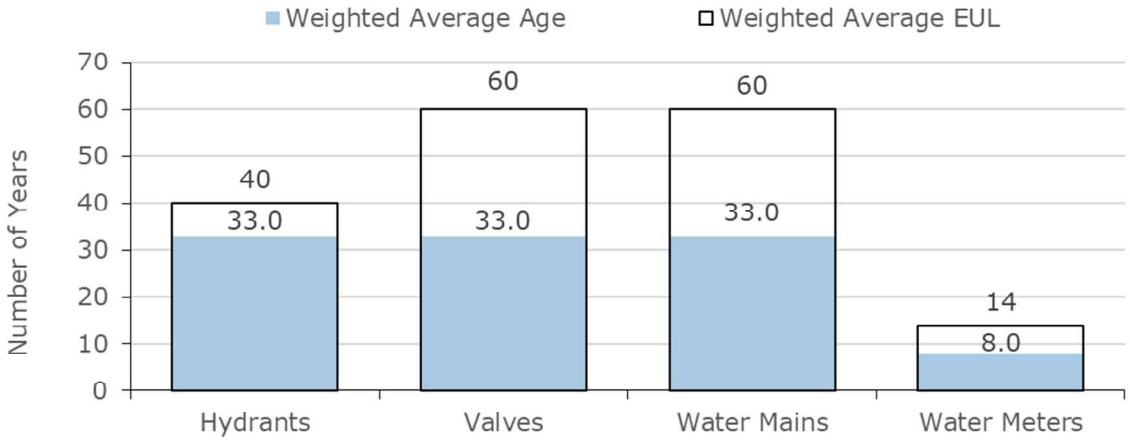


Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

Asset Condition & Age

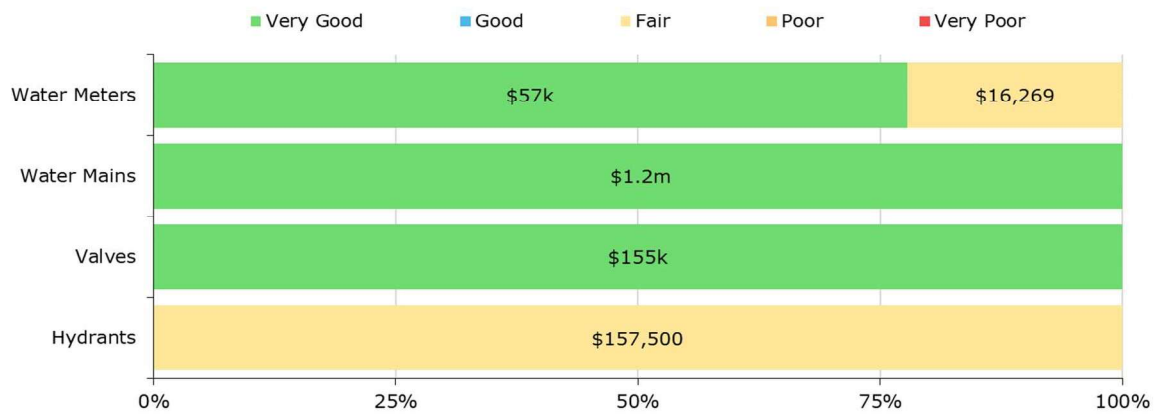
The graph below identifies the current average condition, the average age, and the estimated useful life for each asset segment. The average condition (%) is a weighted value based on replacement cost.

Figure 23: Water Network Average Age vs Average EUL



The graph below visually illustrates the average condition for each asset segment on a very good to very poor.

Figure 24: Water Network Condition Breakdown



To ensure that the municipal water network continues to provide an acceptable level of service, the Township 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.

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

Current Approach to Condition Assessment

Above ground distribution assets such as hydrants and valves are assessed regularly to ensure operability.

Lifecycle Management Strategy

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 Township's current lifecycle management strategy.

Figure 25: Water Network Current Lifecycle Strategy

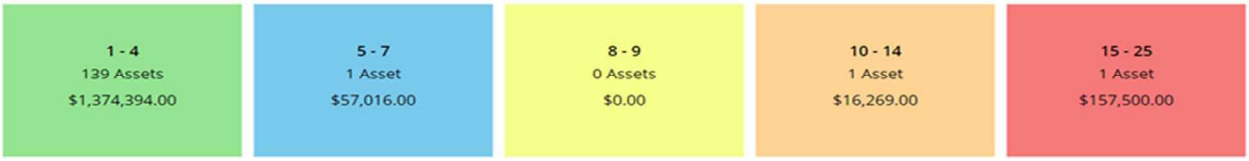
Maintenance / Rehabilitation / Replacement

- Regular chlorine testing through sampling to maintain water quality standards
- Repairs are promptly addressed on a reactive basis in response to complaints to uphold service reliability and address community concerns
- Water hydrant flow-testing every 5 years to assess functionality and identify any potential issues for proactive maintenance

Risk & Criticality

The 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 available inventory data.

Figure 26: Water Network Risk Matrix



This is a high-level model that has been developed based on information currently available and should be reviewed and adjusted to reflect an evolving understanding of both the probability and consequences of asset failure. This is the criteria set up for mains, all other assets are only replacement cost for consequence of failure.

The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of water mains are documented below:

Probability of Failure (POF)	Consequence of Failure (COF)
Condition (Performance 60%)	Road Surface Type (Financial 50%)
Service Life Remaining % (Operational 40%)	Pipe Diameter (50% Operational)

The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of the rest of the water network are documented below:

Probability of Failure (POF)	Consequence of Failure (COF)
Condition (Performance 60%)	Replacement Cost (100% Financial)
Service Life Remaining % (Operational 40%)	

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

Levels of Service

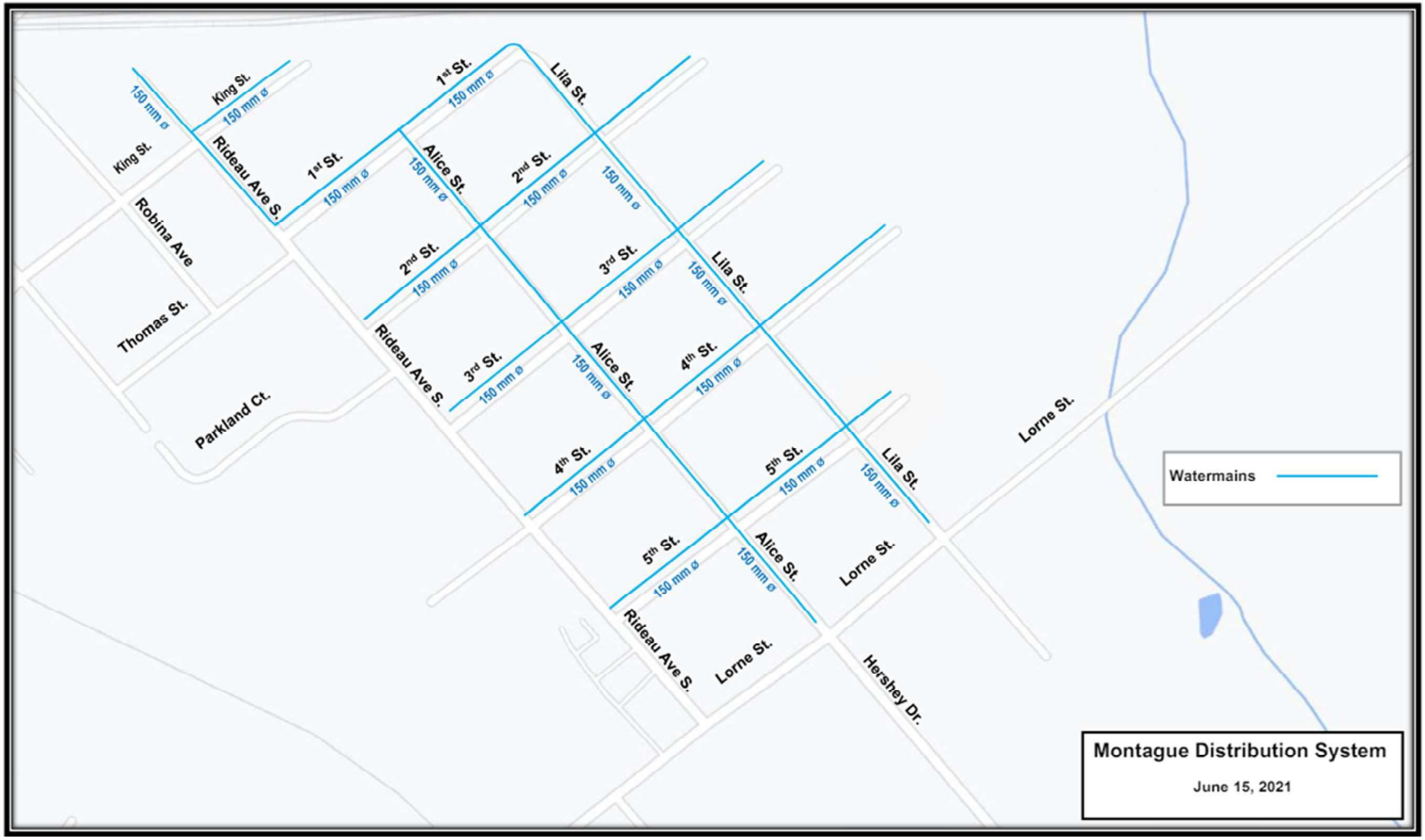
The framework created by the Township for levels of service is a valuable tool for assessing and managing the performance of their assets and/or services provided by their assets. Proposed levels of service for the Township have been developed through engagement with Township staff.

Current Levels of Service

The following tables identify the Township's current level of service for municipal 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 Township has selected.

Community LOS		Service Attribute	Technical LOS	
Description, which may include maps of the user groups or areas of the municipality that are connected to the municipal water system	See Figure 27: Water Network Map	Scope	Replacement Cost	$1,605,179
			Quantity (Meters of main)	3,048
Description, which may include maps, of the user groups or areas of the municipality that have fire flow	140 properties out of 1663 in the Township are connected to the water system and the water system has fire flow available.		% of properties connected to the municipal water system	8.4%
			% of properties where fire flow is available	8.4%
Description of boil water advisories and service interruptions	There have been no boil water advisories or main breaks	Reliability	Average Condition	Good (79%)
			# 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	0%
			# of connection-days per year where water is not available to water main breaks compared to the total number of properties connected to the municipal water system	0%
General	Services will be provided to ensure sustainability with an emphasis on affordability	Performance	% Risk that is High and Very High	11%
			Average Asset Risk	Very Low (4.5)
			Annual Investment	$18,339
			Capital re-investment rate	1.14%

Figure 27: Water Network Map



Proposed Levels of Service

The scenarios that were used to analyse Montague's inventory were run for 50-years. They are also all based on the data available in the asset management system which outlines estimated useful life and condition as well as replacement costs which all the results are based on.

Scenario 1: Current Lifecycle Activities - this scenario utilizes the current lifecycle activities outlined as current practice within each asset category. The condition and annual investment were then determined.

Scenario 2: Current Capital Reinvestment Rate - this scenario utilizes the current capital reinvestment within each asset category. The current annual investment was held, and the condition was determined.

Scenario 3: Current Condition - this scenario utilizes an average condition of Good (79%) of the infrastructure within the water network. The condition value was held, and the annual investment was then determined.

The table below outlines the results for each scenario for the water network.

Scenarios	Replacement Cost	Average Condition	Annual Capital Reinvestment
Scenario 1 – Lifecycle	$1,605,179	Good (76%)	$32,272
Scenario 2 - Current Capital Investment Rate	$1,605,179	Fair (43%)	$18,339
Scenario 3 - Maintain Current Condition	$1,605,179	Good (79%)	$32,272

10-Year Capital Forecast

Below is the projected ten-year capital forecast

Segments	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Hydrants	$0	$0	$0	$0	$0	$0	$158k	$0	$0	$0
Valves	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Water Mains	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Water Meters	$0	$16k	$0	$0	$0	$0	$57k	$0	$0	$0
Total	$0	$16k	$0	$0	$0	$0	$215k	$0	$0	$0

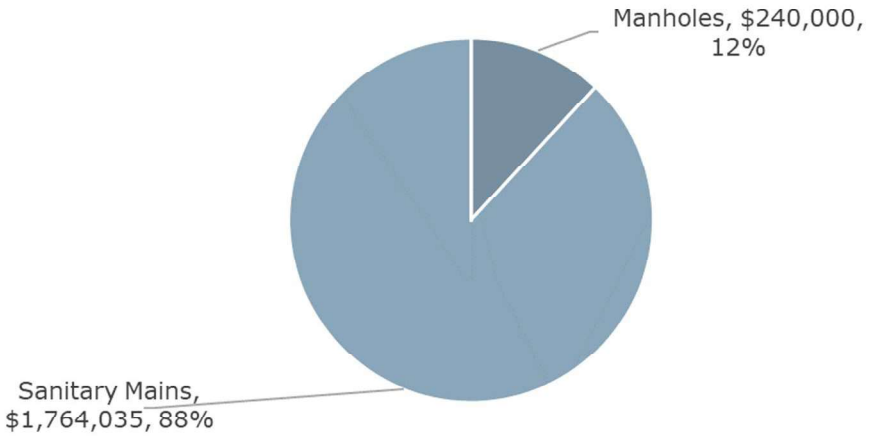
Appendix D: Sanitary Network

The Township owns Sanitary Network infrastructure for collection, conveyance, and disposal of wastewater. The Town of Smiths Falls owns and operates the treatment system. The Sanitary Network contributes to the environmental services provided to the community.

Inventory & Valuation

The graph below displays the total replacement cost of each asset segment in Montague's sanitary network inventory.

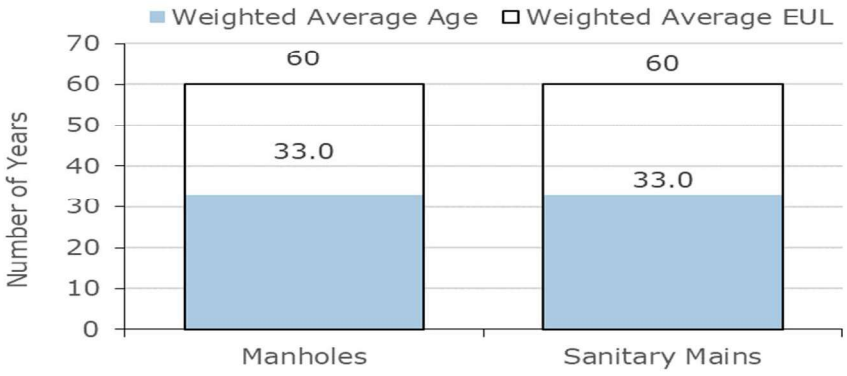
Figure 28: Sanitary Network Replacement Cost



Asset Condition & Age

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

Figure 29: Sanitary Network Average Age vs Average EUL



The graph below visually illustrates the average condition for each asset segment on a very good to very poor.

Figure 30: Sanitary Network Condition Breakdown

To ensure that the municipal sanitary network continues to provide an acceptable level of service, the Township 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.

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

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. The Township implements a comprehensive condition assessment strategy, which includes conducting CCTV inspections on a scheduled basis. These inspections are performed every five years to ensure the continued integrity and functionality of the infrastructure.

Lifecycle Management Strategy

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 Township's current lifecycle management strategy.

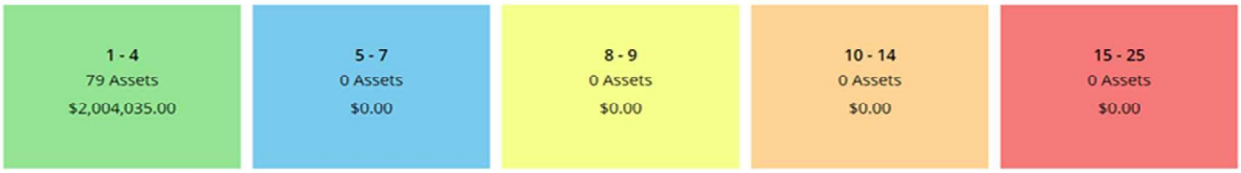
Figure 31: Sanitary Network Current Lifecycle Strategy

Maintenance / Rehabilitation / Replacement
•Maintenance program involves cleaning and flushing of sanitary mains every 5 years

Risk & Criticality

The 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 available inventory data.

Figure 32: Sanitary Network Risk Matrix



This is a high-level model that has been developed based on information currently available and should be reviewed and adjusted to reflect an evolving understanding of both the probability and consequences of asset failure.

The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of sanitary mains are documented below:

Probability of Failure (POF)	Consequence of Failure (COF)
Condition (Performance 60%)	Pipe Material (Financial 50%)
Service Life Remaining % (Operational 40%)	Pipe Diameter (50% Operational)

The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of the rest of the sanitary sewer network are documented below:

Probability of Failure (POF)	Consequence of Failure (COF)
Condition (Performance 60%)	Replacement Cost (100% Financial)
Service Life Remaining % (Operational 40%)	

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

Levels of Service

The framework created by the Township for levels of service is a valuable tool for assessing and managing the performance of their assets and/or services provided by their assets. Proposed levels of service for the Township have been developed through engagement with Township staff.

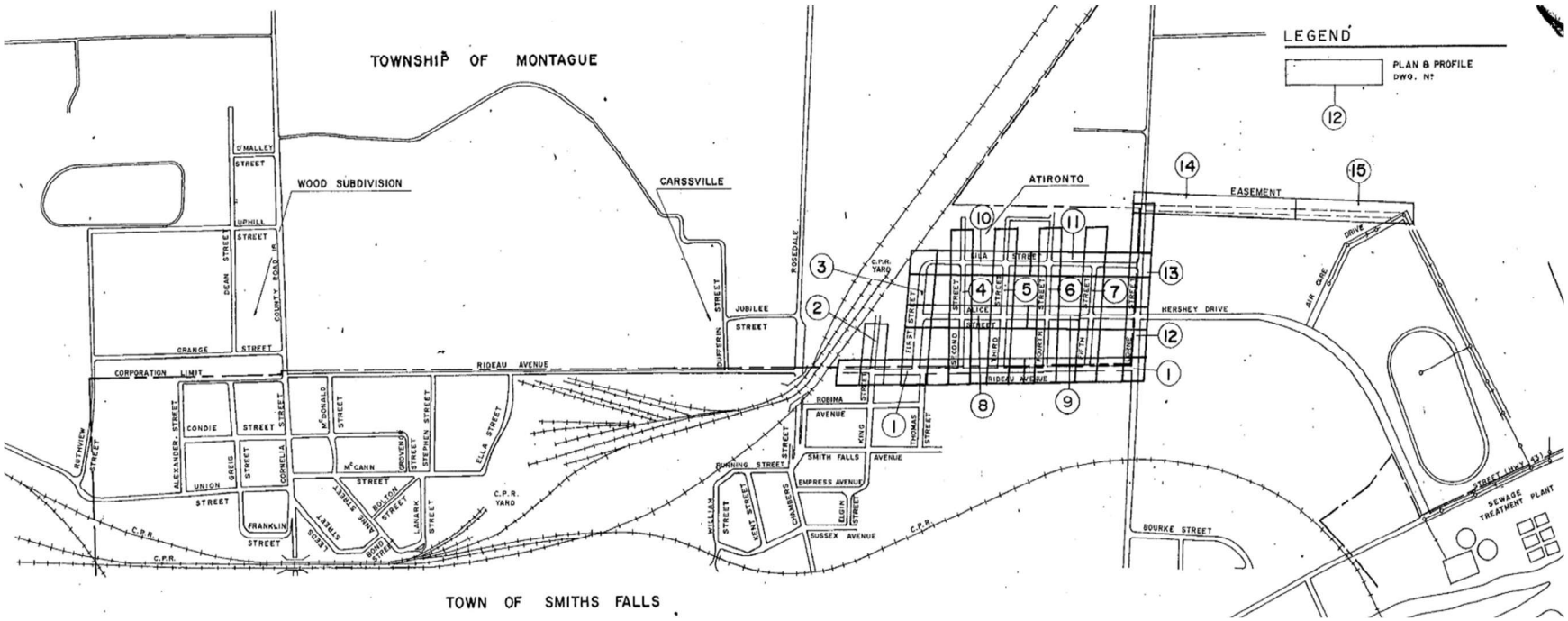
Current Levels of Service

The following tables identify the Township's current level of service for municipal sanitary 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 Township has selected.

Community LOS		Service Attribute	Technical LOS	
Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal wastewater system	See Figure 33: Sanitary Network Map	Scope	Replacement Cost	$2,004,035
			Quantity (Meters of main)	3,310
			% of properties connected to the municipal wastewater system	8.4%
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	N/A		Average Condition	Very Good (82%)
Description of the frequency and volume of overflows in combined sewers in the municipal wastewater system that occur in habitable areas or beaches	N/A	Reliability	# 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
Description of how stormwater can get into wastewater mains in the municipal wastewater system, causing sewage to overflow into streets or backup into homes	No known cross-connections by design. Infiltration of groundwater to pipes occurs through pipe defects.			
Description of how wastewater mains in the municipal wastewater system are designed to be resilient to stormwater infiltration	The wastewater system is built to seal it from infiltration. I&I is not present in new areas, and mostly an issue with older areas.		# of connection-days per year having wastewater backups compared to the total number of properties connected to the municipal wastewater system	0%

Community LOS		Service Attribute	Technical LOS	
Description of the effluent that is discharged from sewage treatment plants in the municipal wastewater system	Sewage Treatment is managed by Smith Falls		# of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system	N/A
General	Services will be provided to ensure sustainability with an emphasis on affordability	Performance	% Risk that is High and Very High	0%
			Average Asset Risk	Very Low (3.3)
			Annual Investment	$19,361
			Capital re-investment rate	0.97%

Figure 33: Sanitary Network Map



Proposed Levels of Service

The scenarios that were used to analyse Montague's inventory were run for 50-years. They are also all based on the data available in the asset management system which outlines estimated useful life and condition as well as replacement costs which all the results are based on.

Scenario 1: Current Lifecycle Activities - this scenario utilizes the current lifecycle activities outlined as current practice within each asset category. The condition and annual investment were then determined.

Scenario 2: Current Capital Reinvestment Rate - this scenario utilizes the current capital reinvestment within each asset category. The current annual investment was held, and the condition was determined.

Scenario 3: Current Condition - this scenario utilizes an average condition of Very Good (82%) of the infrastructure within the sanitary network. The condition value was held, and the annual investment was then determined.

The table below outlines the results for each scenario for the sanitary network.

Scenarios	Replacement Cost	Average Condition	Annual Capital Reinvestment
Scenario 1 – Lifecycle	$2,004,035	Good (76%)	$33,401
Scenario 2 - Current Capital Investment Rate	$2,004,035	Fair (45%)	$19,400
Scenario 3 - Maintain Current Condition	$2,004,035	Very Good (82%)	$33,401

10-Year Capital Forecast

Below is the projected ten-year capital forecast

Segments	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Manholes	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Sanitary Mains	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

There are no lifecycle activities identified for the sanitary network, there is only a long-term financial strategy.

Appendix E: Buildings

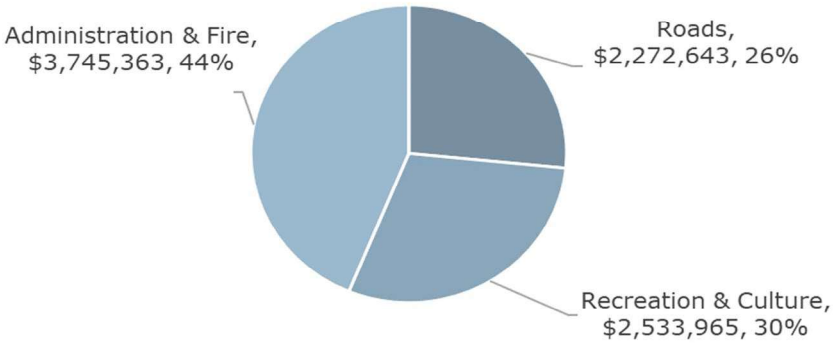
Montague owns and maintains several facilities that provide key services to the community. These include:

- administrative offices & fire halls
- public works garages and storage sheds
- recreation facilities

Inventory & Valuation

The graph below displays the total replacement cost of each asset segment in Montague's buildings inventory. The Township has a complete componentization of their buildings their inventory tracks buildings activities as a detailed componentization.

Figure 34: Buildings Replacement Cost

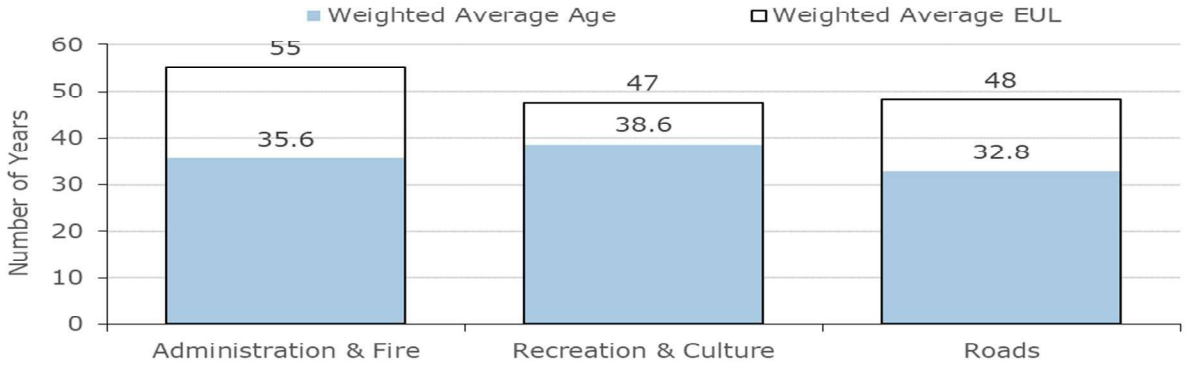


Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to represent capital requirements more accurately.

Asset Condition & Age

The graph below identifies the average age, and the estimated useful life for each asset segment. The values are weighted based on replacement cost.

Figure 35: Buildings Average Age vs Average EUL



The graph below visually illustrates the average condition for each asset segment on a very good to very poor.

Figure 36: Buildings Condition Breakdown

To ensure that the municipal buildings continue to provide an acceptable level of service, the Township 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 buildings.

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

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. Building condition assessments are conducted on a 5-year cycle to evaluate structural integrity and identify necessary improvements. A comprehensive inventory and assessment were completed in 2023 by ABSI

Lifecycle Management Strategy

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 Township's current lifecycle management strategy.

Figure 37: Buildings Current Lifecycle Strategy

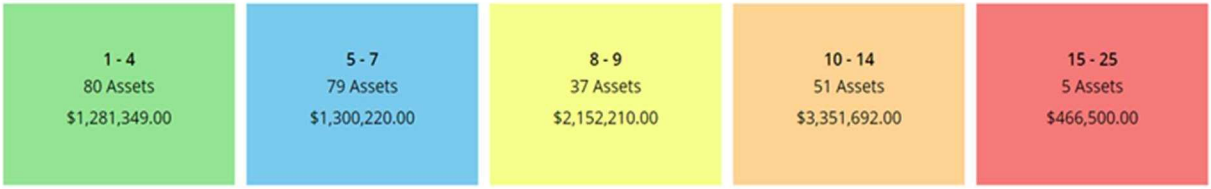
Maintenance / Rehabilitation / Replacement

- Upgrades to buildings are facilitated through grant funding, enabling the municipality to enhance infrastructure while optimizing resource allocation
- Heating systems undergo annual inspections to maintain efficiency and safety standards
- Repairs and replacements of component systems are addressed promptly on an as-needed basis, ensuring the continued reliability and comfort of municipal facilities

Risk & Criticality

The 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 available inventory data.

Figure 38: Buildings Risk Matrix



This is a high-level model that has been developed based on information currently available and should be reviewed and adjusted to reflect an evolving understanding of both the probability and consequences of asset failure.

The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of the facilities are documented below:

Probability of Failure (POF)	Consequence of Failure (COF)
Condition (Performance 60%)	Replacement Cost (80% Financial)
Service Life Remaining % (Operational 40%)	AMP Segment (20% Operational)

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

Levels of Service

The framework created by the Township for levels of service is a valuable tool for assessing and managing the performance of their assets and/or services provided by their assets. Proposed levels of service for the Township have been developed through engagement with Township staff.

Current Levels of Service

The following tables identify the Township's current level of service for municipal sanitary 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 Township has selected.

	Community LOS	Service Attribute	Technical LOS	
Description of the services provided by municipal buildings.	Service provided by municipal buildings are based on the types of buildings outlined below: • administrative offices • museum and community hall • fire hall and associated offices and facilities • public works garages and storage sheds	Scope	Replacement Cost	$8,551,971
			Quantity	7
Description of the condition of municipal buildings	Condition Description • Very Good - Fit for the future • Good - Adequate for now • Fair - Requires attention • Poor - Increased potential of affecting service • Very Poor - Unfit for sustained service	Quality	Average Condition	Fair (59%)
General	Services will be provided to ensure sustainability with an emphasis on affordability	Performance	% Risk that is High and Very High	45%
			Average Asset Risk	Moderate (9.56)
			Annual Requirement	$171,000
			Capital re-investment rate	1.10%

Proposed Levels of Service

The scenarios that were used to analyse Montague's inventory were run for 50-years. They are also all based on the data available in the asset management system which outlines estimated useful life and condition as well as replacement costs which all the results are based on.

Scenario 1: Current Lifecycle Activities - this scenario utilizes the current lifecycle activities outlined as current practice within each asset category. The condition and annual investment were then determined.

Scenario 2: Current Capital Reinvestment Rate - this scenario utilizes the current capital reinvestment within each asset category. The current annual investment was held, and the condition was determined.

Scenario 3: Current Condition - this scenario utilizes an average condition of Fair (59%) of the infrastructure within the municipal buildings. The condition value was held, and the annual investment was then determined.

The table below outlines the results for each scenario for the municipal buildings.

Scenarios	Replacement Cost	Average Condition	Annual Capital Reinvestment
Scenario 1 – Lifecycle	$8,551,971	Good (81%)	$263,218
Scenario 2 - Current Capital Investment Rate	$8,551,971	Fair (58%)	$238,000
Scenario 3 - Maintain Current Condition	$8,551,971	Fair (59%)	$238,000

10-Year Capital Forecast

Below is the projected ten-year capital forecast for buildings. With the construction of the new multi-use building the capital contributions in the long-term strategy are being used to fund the debt annual payments.

Segments	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Administration & Fire	$209k	$114k	$16k	$17k	$185k	$48k	$64k	$8k	$0	$102k
Recreation & Culture	$88k	$62k	$17k	$17k	$33k	$17k	$38k	$2k	$0	$243k
Roads	$275k	$158k	$21k	$0	$55k	$7k	$101k	$13k	$14k	$74k
Total	$572k	$334k	$53k	$34k	$273k	$72k	$203k	$22k	$14k	$418k

Appendix F: Vehicles & Equipment

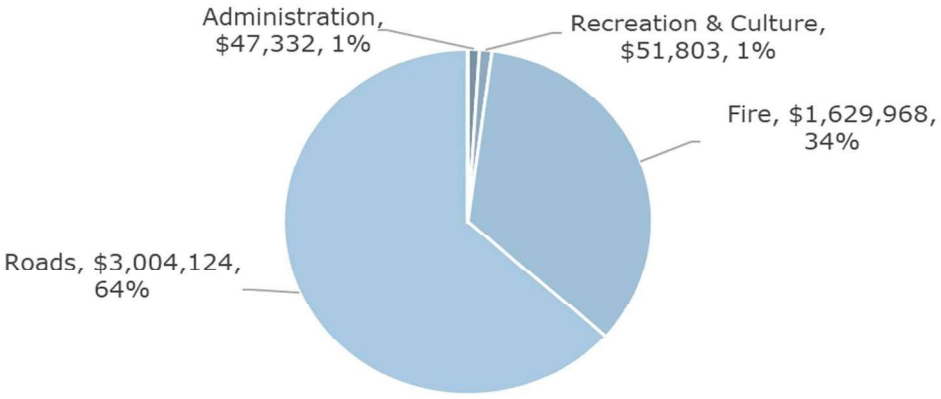
Vehicles and Equipment allow staff to efficiently deliver municipal services and personnel. Municipal vehicles and equipment are used to support several service areas, including:

- Roads vehicles for road maintenance
- Fire vehicles & equipment for emergency services
- Administrative equipment for municipal offices
- Recreation services equipment

Inventory & Valuation

The graph below displays the total replacement cost of each asset segment in the vehicle inventory.

Figure 39: Vehicles & Equipment Replacement Costs

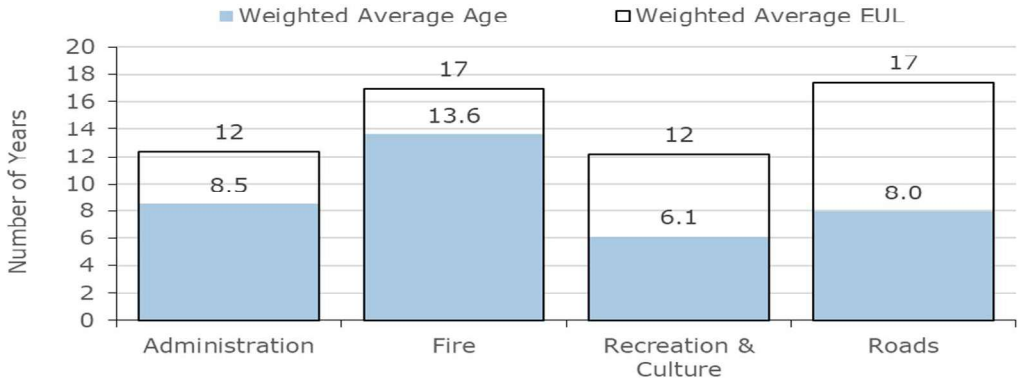


Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to represent capital requirements more accurately.

Asset Condition & Age

The graph below identifies the average age and the estimated useful life for each asset segment. The values are weighted based on replacement cost.

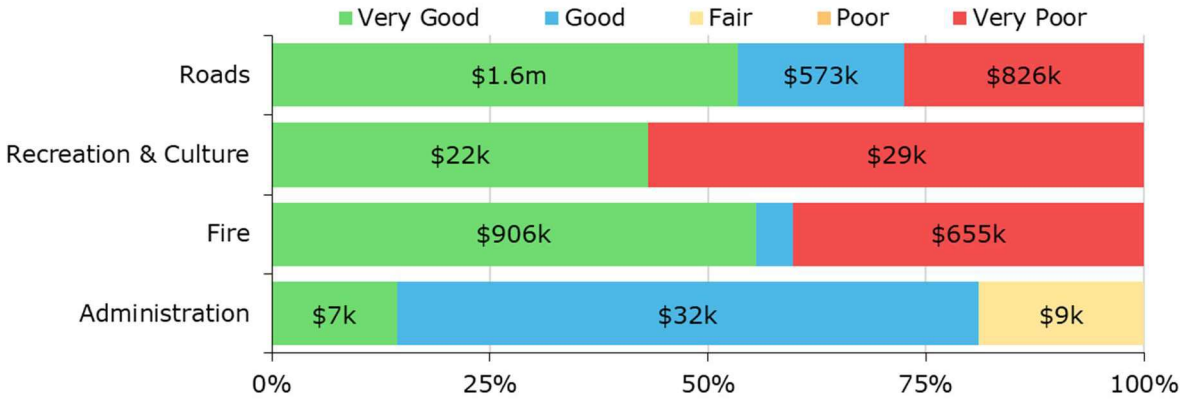
Figure 40: Vehicles & Equipment Average Age vs Average EUL



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

The graph below visually illustrates the average condition for each asset segment on a very good to very poor scale.

Figure 41: Vehicles & Equipment Condition Breakdown



To ensure that the Township's vehicles and equipment continue to provide an acceptable level of service, the Township 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 vehicles and equipment.

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. An example of the Township's current approach for municipal roads vehicles and equipment includes annual safety inspections for vehicles, where mechanics review their condition and assess maintenance expenses.

Lifecycle Management Strategy

The condition or performance of assets will deteriorate over time. To ensure vehicles and equipment are performing as expected, it is important to establish a lifecycle management strategy to proactively manage asset deterioration. The assets in this category are very varied and below are listed some examples but it covers major equipment and vehicles.

Figure 42: Vehicles & Equipment Current Lifecycle Strategy

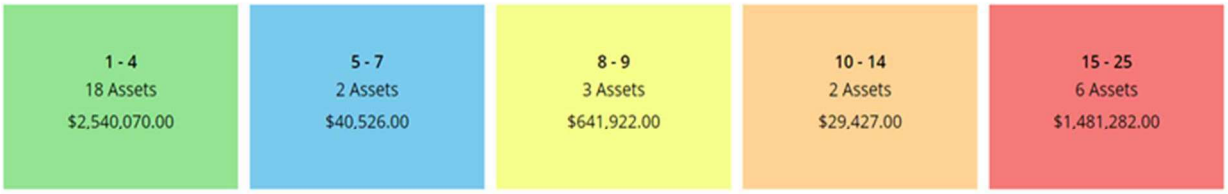
Maintenance / Rehabilitation / Replacement

- Adherence to regulatory requirements and best practices in maintaining essential vehicles such as Fire Station pumpers and tankers. These vehicles undergo replacement every 20 years, complemented by annual servicing to uphold performance standards.
- For other municipal vehicles, replacement timelines are determined based on mileage, typically falling within a 20-25 year lifecycle.
- Regular maintenance of Fire Station equipment follows manufacturer recommendations, while Self-Contained Breathing Apparatus (SCBA) equipment undergoes monthly testing and replacement based on staff recommendations
- Based on staff recommendations and Asset Management Plan lifecycles, vehicles are replaced when deemed necessary to maintain reliability and safety standards
- Maintenance of road network equipment adheres to manufacturer recommendations

Risk & Criticality

The 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 available inventory data.

Figure 43: Vehicles & Equipment Risk Matrix



This is a high-level model that has been developed based on information currently available and should be reviewed and adjusted to reflect an evolving understanding of both the probability and consequences of asset failure.

The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of the vehicles and equipment are documented below:

Probability of Failure (POF)	Consequence of Failure (COF)
Condition (Performance 60%)	Replacement Cost (80% Financial)
Service Life Remaining (Operational 40%)	AMP Segment (20% Operational)

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

Levels of Service

The framework created by the Township for levels of service is a valuable tool for assessing and managing the performance of their assets and/or services provided by their assets. Proposed levels of service for the Township have been developed through engagement with Township staff.

Current Levels of Service

The following tables identify the Township's current level of service for municipal sanitary 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 Township has selected.

Community LOS		Service Attribute	Technical LOS	
Description of the services provided by municipal vehicles and equipment	Municipal vehicles and equipment are used to support several service areas, including: • Roads vehicles for road maintenance • Fire vehicles & equipment for emergency services • Administrative equipment for municipal offices • Recreation services equipment	Scope	Replacement Cost	$4,733,227
			Quantity	31
Description of the condition of vehicles and equipment	Condition Description • Very Good - Fit for the future • Good - Adequate for now • Fair - Requires attention • Poor - Increased potential of affecting service • Very Poor - Unfit for sustained service	Quality	Average Condition	Good (62%)
General	Services will be provided to ensure sustainability with an emphasis on affordability	Performance	% Risk that is High and Very High	32%
			Average Asset Risk	High (10.5)
			Annual Requirement	$227,000
			Capital re-investment rate	4.8%

Proposed Levels of Service

The scenarios that were used to analyse Montague's inventory were run for 50-years. They are also all based on the data available in the asset management system which outlines estimated useful life and condition as well as replacement costs which all the results are based on.

Scenario 1: Current Lifecycle Activities - this scenario utilizes the current lifecycle activities outlined as current practice within each asset category. The condition and annual investment were then determined.

Scenario 2: Current Capital Reinvestment Rate - this scenario utilizes the current capital reinvestment within each asset category. The current annual investment was held, and the condition was determined.

Scenario 3: Current Condition - this scenario utilizes an average condition of Good (62%) of the infrastructure within the vehicles and equipment. The condition value was held, and the annual investment was then determined.

The table below outlines the results for each scenario for vehicles and equipment.

Scenarios	Replacement Cost	Average Condition	Annual Capital Reinvestment
Scenario 1 – Lifecycle	$4,733,227	Good (78%)	$294,294
Scenario 2 - Current Capital Investment Rate	$4,733,227	Fair (57%)	$227,000
Scenario 3 - Maintain Current Condition	$4,733,227	Good (62%)	$231,774

10-Year Capital Forecast

Below is the projected ten-year capital forecast

Segments	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Administration	$9k	$0	$0	$32k	$0	$9k	$7k	$0	$0	$0
Fire	$0	$0	$0	$0	$150k	$69k	$27k	$51k	$0	$0
Recreation & Culture	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Roads	$355k	$0	$0	$0	$357k	$0	$399k	$0	$83k	$57k
Total	$364k	$0	$0	$32k	$507k	$78k	$433k	$51k	$83k	$57k

Appendix G: Condition Assessment Guidelines

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

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

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

Role of Asset Condition Data

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

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

Guidelines for Condition Assessment

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

Condition assessments must include a quantitative or qualitative assessment of the current condition of the asset, collected according to specified condition rating criteria, in a format that can be used for asset management decision-making. As a result, it is important that staff adequately define the condition rating criteria that

should be used and the assets that require a discrete condition rating. When engaging with external consultants to complete condition assessments, it is critical that these details are communicated as part of the contractual terms of the project.

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

Developing a Condition Assessment Schedule

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

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