Asset Management Plan

Town of Hearst

2023

This Asset Management Program was prepared by:

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

Key Statistics

Replacement cost of asset portfolio

$235.2 million

Replacement cost of infrastructure per household

$98,000 (2021)

Percentage of assets in fair or better condition

35%

Percentage of assets with assessed condition data

4%

Annual capital infrastructure deficit

$6.2 million

Recommended timeframe for eliminating annual infrastructure deficit

15-20 Years

Target reinvestment rate

3.74%

Actual reinvestment rate

1.09%

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Executive Summary

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

Scope

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

This AMP include the following asset categories:

With the development of this AMP the Town has achieved compliance with O. Reg. 588/17 to the extent of the requirements that must be completed by July 1, 2022. There are additional requirements concerning proposed levels of service and growth that must be met by July 1, 2024 and 2025.

Findings

The overall replacement cost of the asset categories included in this AMP totals $235.2 million. 35% of all assets analysed in this AMP are in fair or better condition and assessed condition data was available for 4% of assets. For the remaining 96% of assets, assessed condition data was unavailable, and asset age was used to approximate condition – a data gap that persists in most municipalities. Generally, age misstates the true condition of assets, making assessments essential to accurate asset management planning, and a recurring recommendation in this AMP.

The development of a long-term, sustainable financial plan requires an analysis of whole lifecycle costs. This AMP uses a replacement-only strategy for all asset categories but does include proposed proactive lifecycle strategies for the Road Network to determine the lowest cost option to maintain the current level of service.

To meet capital replacement and rehabilitation needs for existing infrastructure, prevent infrastructure backlogs, and achieve long-term sustainability, the Town's average annual capital requirement totals $8.8 million. This could potentially be reduced to $7.8 million annually with the addition of the Road Network lifecycle strategies outlined further in this document.

Based on a historical analysis of sustainable capital funding sources, the Town is committing approximately $2.6 million towards capital projects or reserves per year. As a result, there is currently an annual funding gap of $6.2 million; which translates to approximately $2,600 per household.

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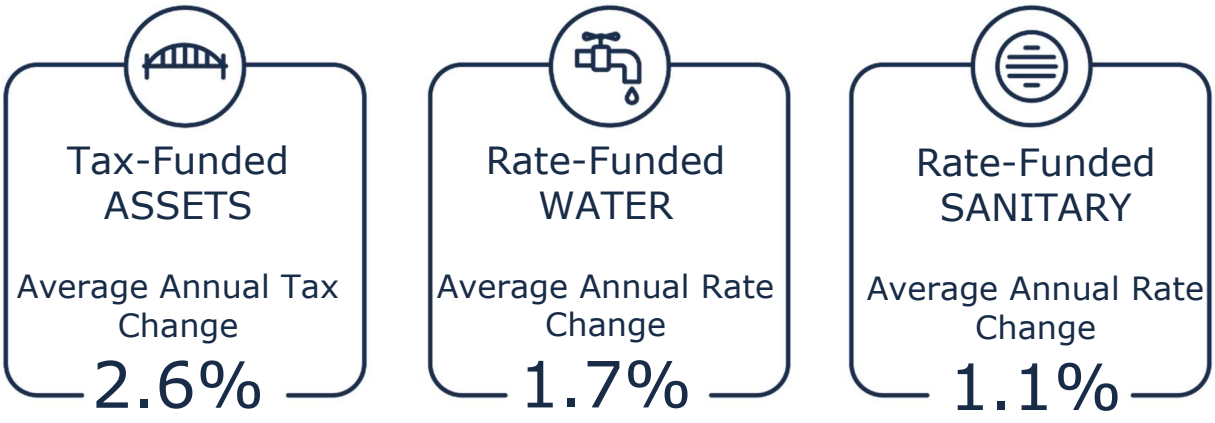
It is important to note that this AMP represents a snapshot in time and is based on the best available processes, data, and information at the Town. Strategic asset management planning is an ongoing and dynamic process that requires continuous improvement and dedicated resources

Recommendations

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



Recommendations to guide continuous refinement of the Town's asset management program. These include:

- Review data to update and maintain a complete and accurate dataset
- Develop a condition assessment strategy with a regular schedule
- Review and update lifecycle management strategies
- Develop and regularly review short- and long-term plans to meet capital requirements
- Measure current levels of service and identify sustainable proposed levels of service

1 Introduction & Context

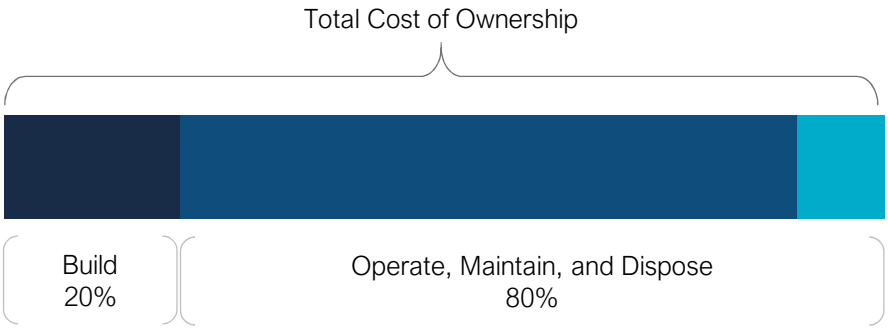
Key Insights

- The goal of asset management is to minimize the lifecycle costs of delivering infrastructure services, manage the associated risks, while maximizing the value ratepayers receive from the asset portfolio
- The Town's asset management policy provides clear direction to staff on their roles and responsibilities regarding asset management
- An asset management plan is a living document that should be updated regularly to inform long-term planning
- Ontario Regulation 588/17 outlines several key milestone and requirements for asset management plans in Ontario between July 1, 2022, and 2025

1.1 An Overview of Asset Management

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

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



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

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

1.1.1 Asset Management Policy

An asset management policy represents a statement of the principles guiding the Town's approach to asset management activities. It aligns with the organizational strategic plan and provides clear direction to municipal staff on their roles and responsibilities as part of the asset management program.

The Municipality adopted an Asset Management Policy in June of 2018 in accordance with Ontario Regulation 588/17. The Policy states that the Town will continue to develop its best practices to manage all current and future assets. The objectives of the policy include:

- Ensuring that all municipal infrastructure assets meet expected performance levels and continue to provide desired service levels in the most efficient and effective manner.
- Linking service outcomes to infrastructure investment decisions to assist the Town on focusing on service-, rather than budget-, driven asset management approaches.
- Committing to good stewardship and improved accountability and transparency to the community.

1.1.2 Asset Management Strategy

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

1.1.3 Asset Management Plan

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

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

The AMP is a living document that should be updated regularly as additional asset and financial data becomes available. This will allow the Town to re-evaluate the state

of infrastructure and identify how the organization's asset management and financial strategies are progressing.

1.2 Key Concepts in Asset Management

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

1.2.1 Lifecycle Management Strategies

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

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

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

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

Depending on initial lifecycle management strategies, asset performance can be sustained through a combination of maintenance and rehabilitation, but at some point, replacement is required. Understanding what effect these activities will have

on the lifecycle of an asset, and their cost, will enable staff to make better recommendations.

The Town's approach is a replacement-only strategy as described within each asset category outlined in this AMP. Developing and implementing a proactive lifecycle strategy, such as the ones described in the Road Network, will help staff to determine which activities to perform on an asset and when they should be performed to maximize useful life at the lowest total cost of ownership.

1.2.2 Risk Management Strategies

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

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

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

1.2.3 Levels of Service

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

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

Community Levels of Service

Community levels of service are a simple, plain language description or measure of the service that the community receives. For core asset categories (roads, bridges and culverts, water, wastewater, stormwater) the province, through O. Reg. 588/17, has provided qualitative descriptions that are required to be included in this AMP. For non-core asset categories, the Town has determined the qualitative descriptions that will be used to determine the community level of service provided. These descriptions can be found in the Levels of Service subsection within each asset category.

Technical Levels of Service

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

For core asset categories (roads, bridges and culverts, water, wastewater, stormwater) the province, through O. Reg. 588/17, has provided technical metrics that are required to be included in this AMP.

Current and Proposed Levels of Service

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

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

1.3 Ontario Regulation 588/17

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

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

2019

Strategic Asset Management Policy

2022

Asset Management Plan for Core Assets with the following components:

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

2024

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

2025

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

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

1.3.1 O. Reg. 588/17 Compliance Review

The following table identifies the requirements outlined in Ontario Regulation 588/17 for municipalities to meet by July 1, 2022. Next to each requirement a page or section reference is included in addition to any necessary commentary.

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

2 Scope and Methodology

Key Insights

- This asset management plan includes 9 asset categories and is divided between tax-funded and rate-funded categories
- The source and recency of replacement costs impacts the accuracy and reliability of asset portfolio valuation
- Accurate and reliable condition data helps to prevent premature and costly rehabilitation or replacement and ensures that lifecycle activities occur at the right time to maximize asset value and useful life

2.1 Asset Categories Included in this AMP

This asset management plan for the Town of Hearst is produced in compliance with Ontario Regulation 588/17. The July 2022 deadline under the regulation—the first of three AMPs—requires analysis of only core assets (roads, bridges and culverts, water, wastewater, and stormwater).

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

Asset Category	Source of Funding
Road Network	Tax Levy
Bridges & Culverts	
Storm Network	
Buildings	
Vehicles	
Machinery & Equipment	
Land Improvements	
Water Network	User Rates
Sanitary Network	

2.2 Deriving Replacement Costs

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

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

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

2.3 Estimated Useful Life and Service Life Remaining

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

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

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

2.4 Reinvestment Rate

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

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

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

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

2.5 Deriving Asset Condition

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

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

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

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

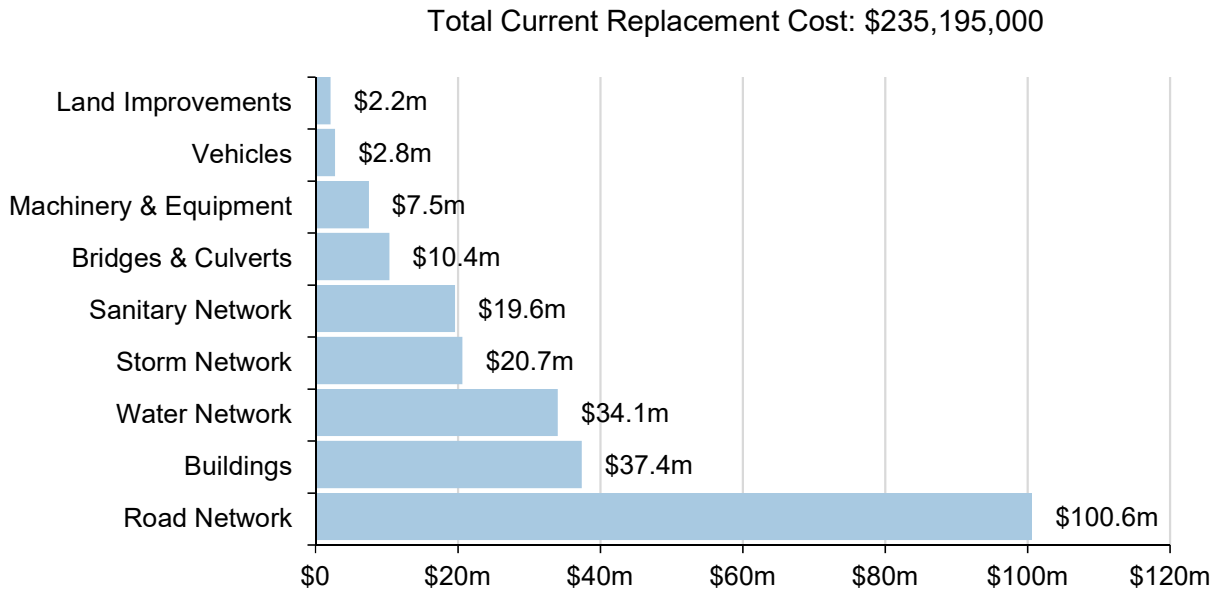
3 Portfolio Overview

Key Insights

- The total replacement cost of the Town's asset portfolio is $235.2 million
- The Town's target re-investment rate is 3.74%, and the actual re-investment rate is 1.09%, contributing to an expanding infrastructure deficit
- 35% of all assets are in fair or better condition
- Average annual capital requirements total $8.8 million per year across all assets but could potentially be reduced to $7.8 million with the implementation of lifecycle strategies in the Road Network

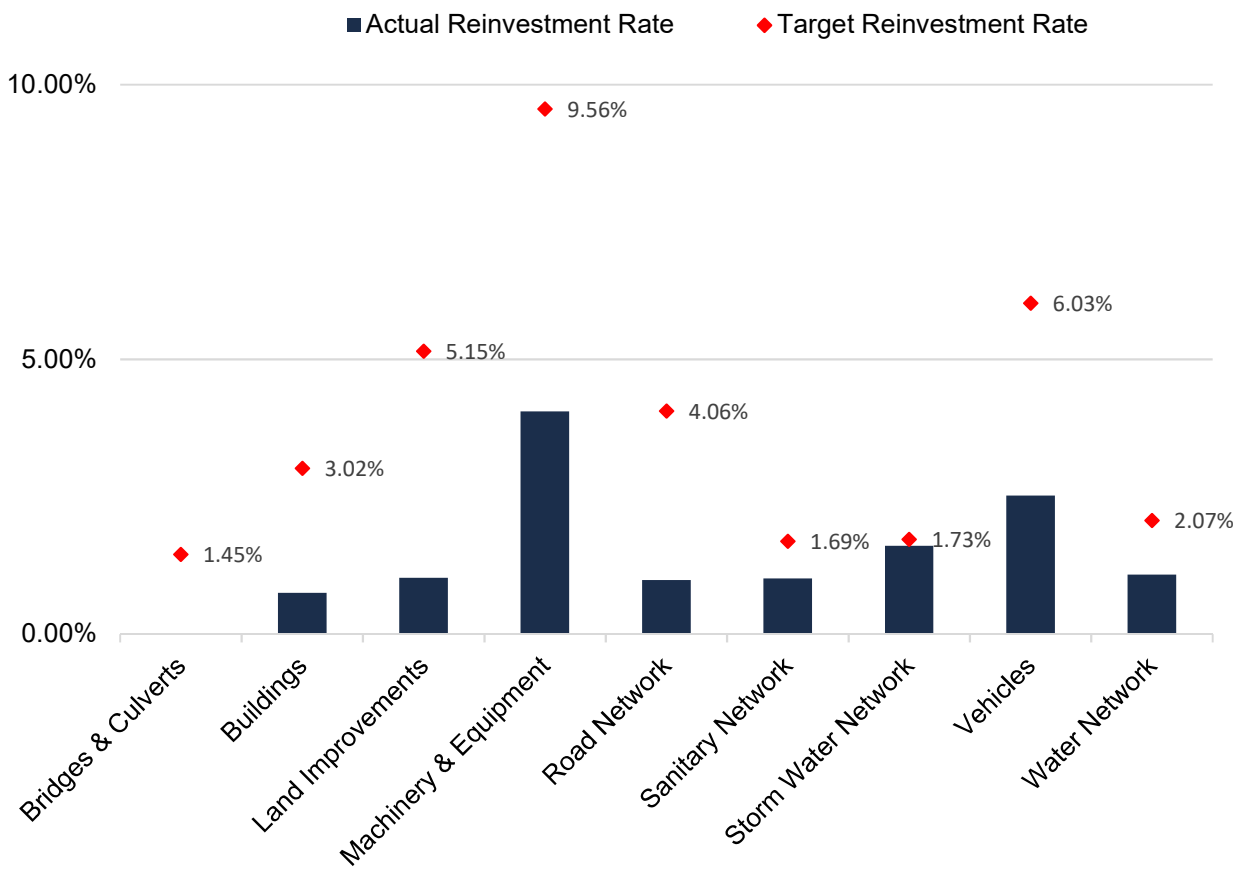
3.1 Total Replacement Cost of Asset Portfolio

The asset categories analyzed in this AMP have a total replacement cost of $235.2 million based on inventory data from 2022. This total was determined based on a combination of user-defined costs and historical cost inflation. This estimate reflects replacement of historical assets with similar, not necessarily identical, assets available for procurement today.



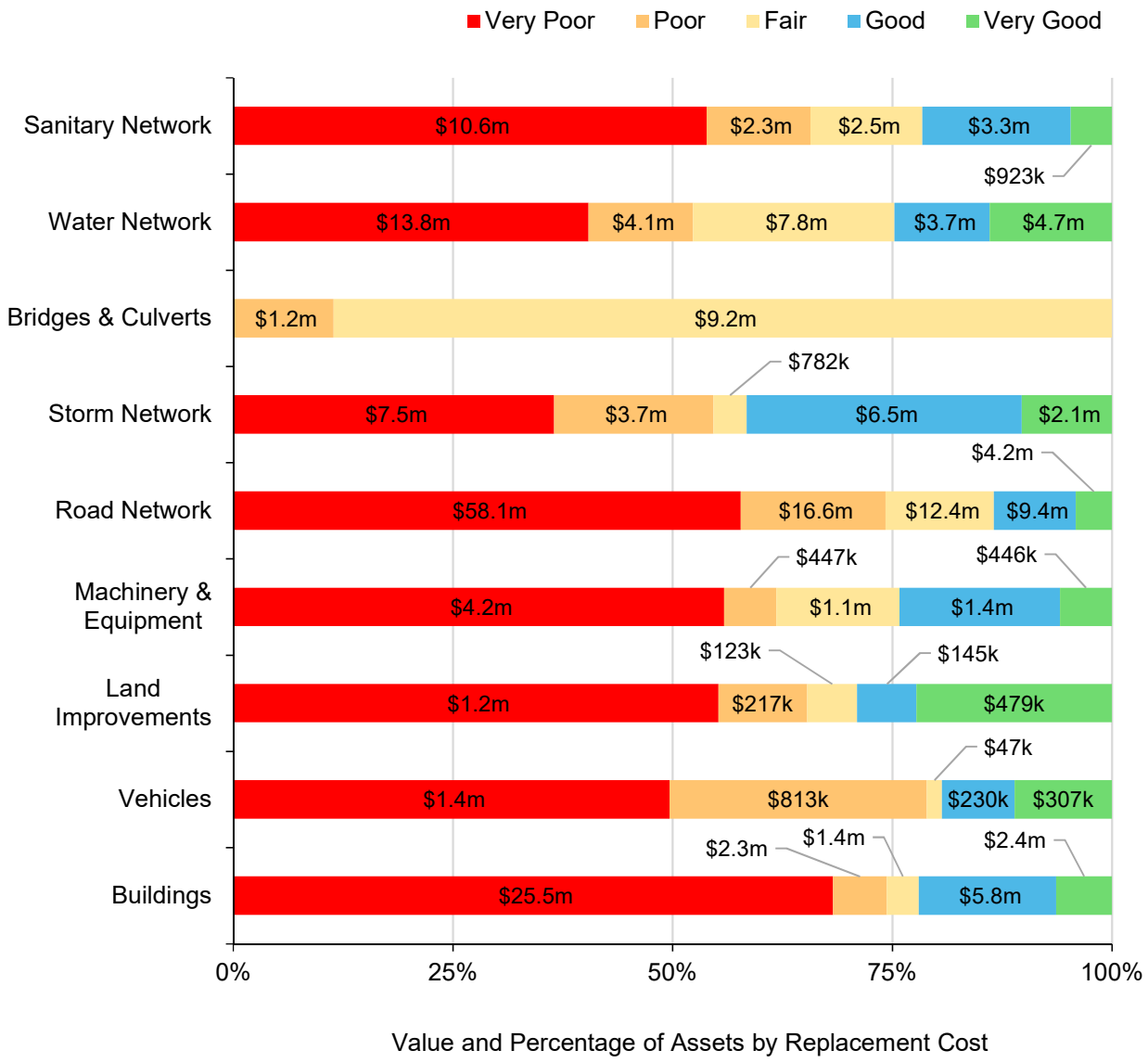
3.2 Target vs. Actual Reinvestment Rate

The graph below depicts funding gaps or surpluses by comparing target vs actual reinvestment rate. To meet the long-term replacement needs, the Town should be allocating approximately $8.8 million annually, for a target reinvestment rate of 3.74%. Actual annual spending on infrastructure totals approximately $2.6 million, for an actual reinvestment rate of 1.09%.



3.3 Condition of Asset Portfolio

The current condition of the assets is central to all asset management planning. Collectively, 34% of assets in Hearst are in fair or better condition. This estimate relies on both age-based and field condition data.



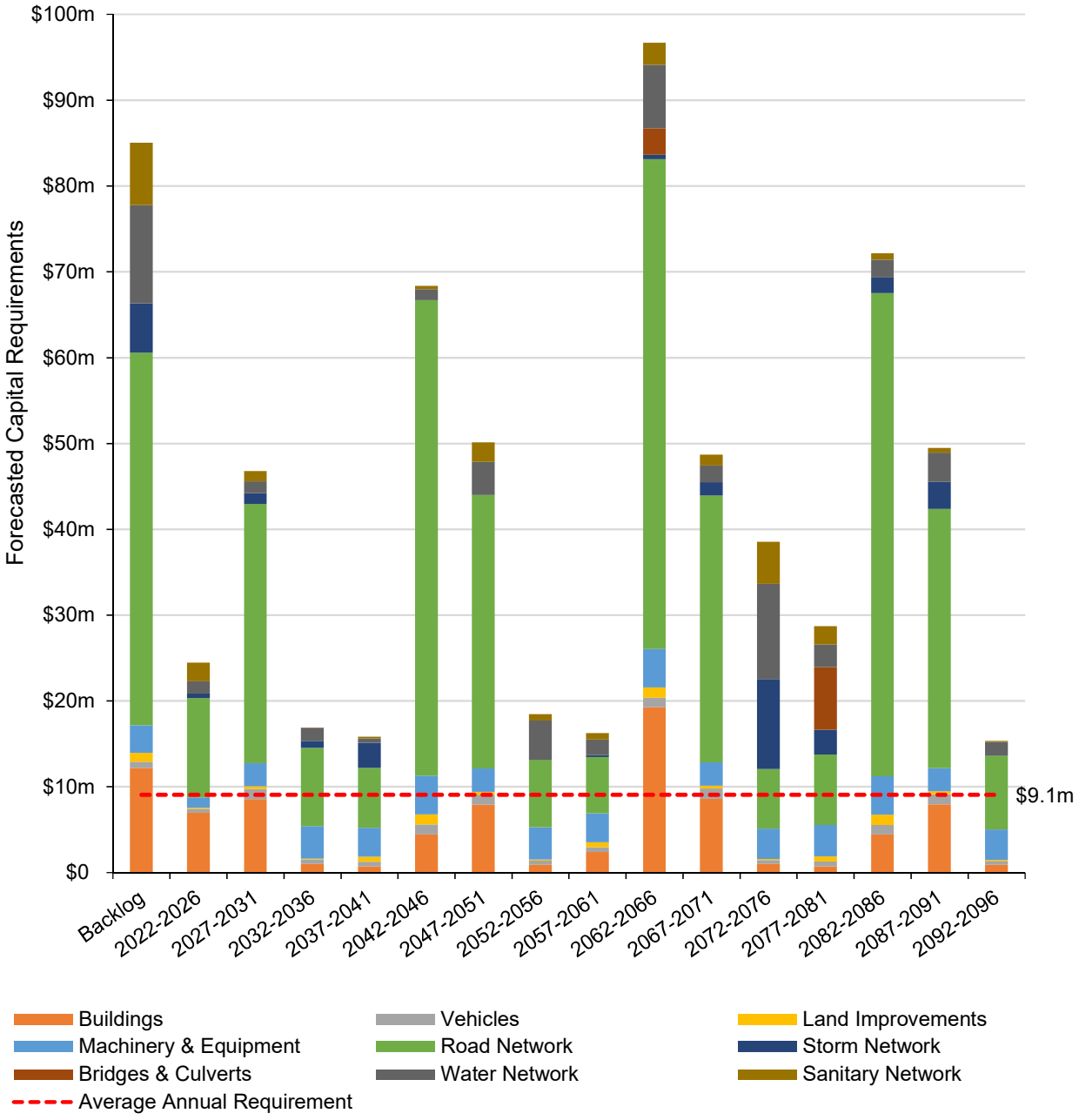
Value and Percentage of Assets by Replacement Cost

This AMP relies on assessed condition data for 4% of assets; 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 table below identifies the source of condition data used throughout this AMP.

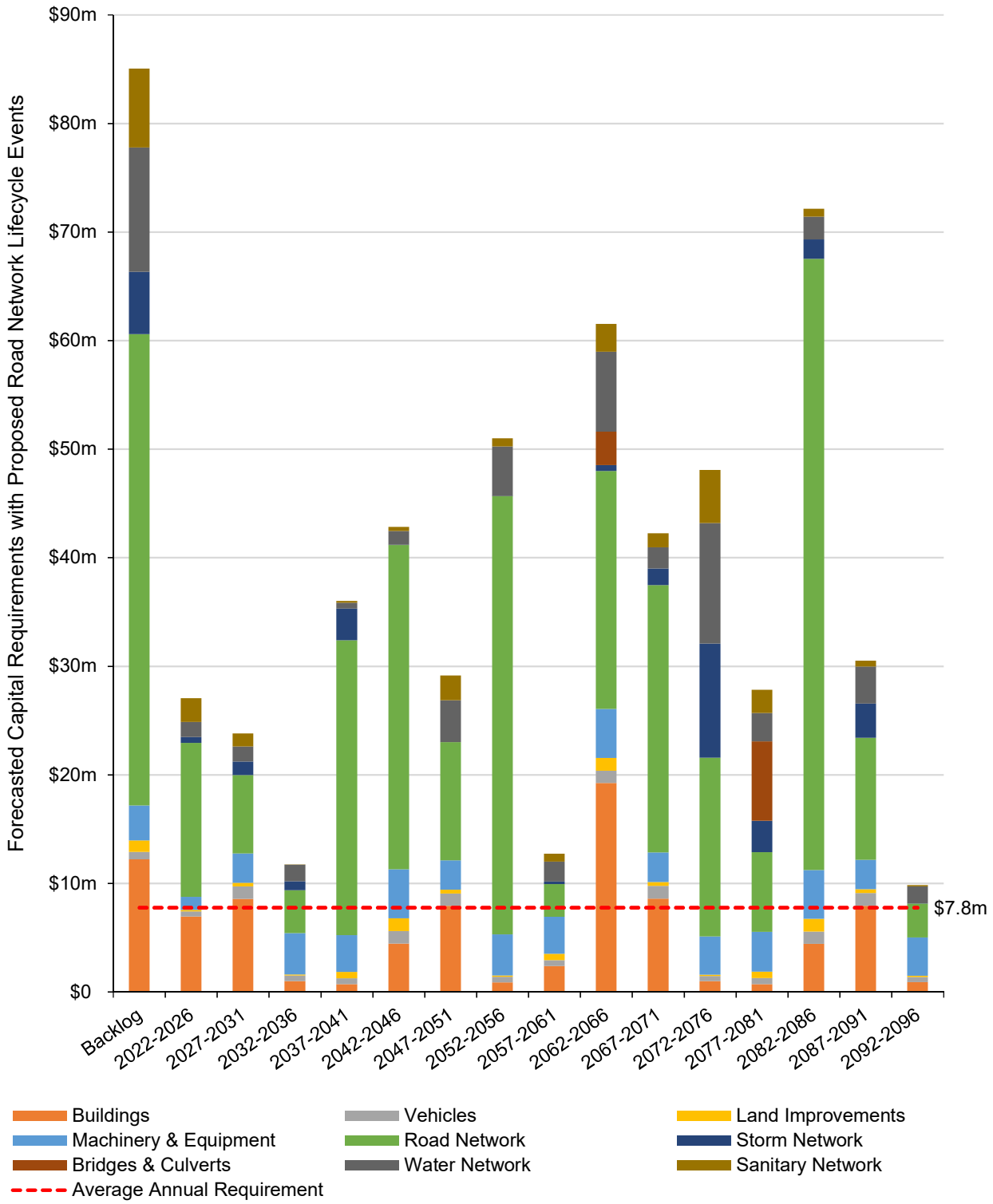
Asset Category	Asset Segment	% of Assets with Assessed Condition	Source of Condition Data
Road Network	Paved Roads	0%	N/A
Bridges & Culverts	Bridges	100%	2021 OSIM Report
	Structural Culverts	100%	2022 OSIM Report
Stormwater Network	All	0%	N/A
Buildings & Facilities	All	0%	N/A
Machinery & Equipment	All	0%	N/A
Vehicles	All	0%	N/A
Land Improvements	All	0%	N/A
Water Network	All	0%	N/A
Sanitary Network	All	0%	N/A

3.4 Forecasted Capital Requirements

The development of a long-term capital forecast should include both asset rehabilitation and replacement requirements. With the development of asset-specific lifecycle strategies that include the timing and cost of future capital events, the Town can produce an accurate long-term capital forecast. The following graph identifies capital requirements over the next 75 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average 5-year capital requirements.



The long-term capital forecast would change slightly with the implementation of the proactive lifecycle events listed in the Road Network section:



4 Analysis of Tax-funded Assets

Key Insights

- Tax-funded assets are valued at $181.5 million
- 6% of tax-funded assets are in fair or better condition
- The average annual capital requirement to sustain the current level of service for tax-funded assets is approximately $7.8 million. This could potentially be reduced to $6.8 million with the implementation of lifecycle strategies on the Road Network
- Critical assets should be evaluated to determine appropriate risk mitigation activities and treatment options

4.1 Road Network

The Road Network is a critical component of the provision of safe and efficient transportation services and represents the highest value asset category in the Municipality's asset portfolio. It includes all municipally owned and maintained roadways in addition to supporting roadside infrastructure including curbs, sidewalks, and streetlights.

The Municipality's roads and sidewalks are maintained by the Public Works department who is also responsible for winter snow clearing, ice control and snow removal operations.

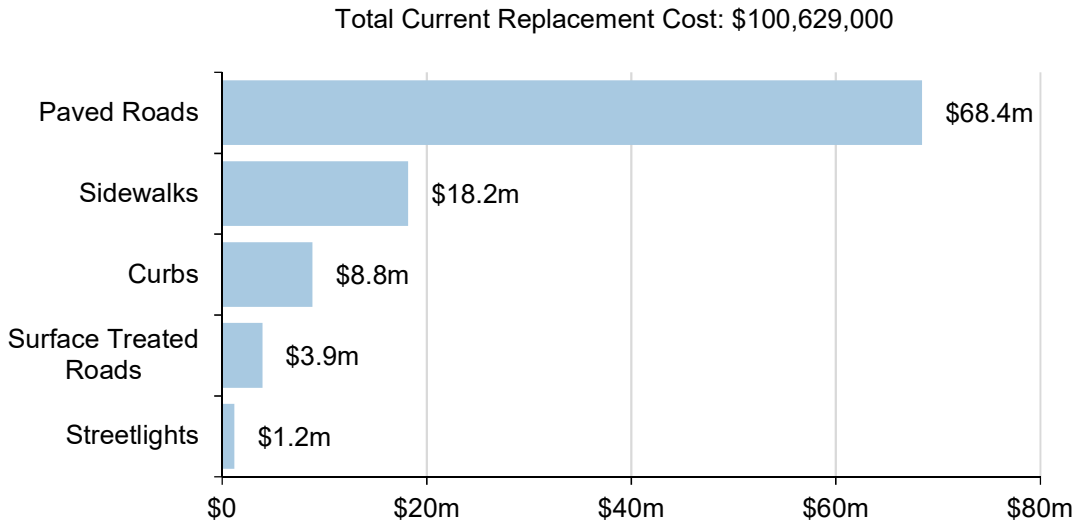
4.1.1 Asset Inventory & Replacement Cost

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

Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost	Annual Capital Requirement
Curbs	45 KM	Cost Per Unit	$8,836,000	$442,000
Gravel Roads	48 KM	Not Planned for Replacement[1]		
Paved Roads	53 KM	Cost Per Unit	$68,431,000	$3,422,000
Sidewalks	42 KM	CPI	$18,203,000	$910,000
Streetlights	866 Assets	CPI	$1,213,000	$88,000
Surface Treated Roads	31 KM	Cost Per Unit	$3,946,000	$263,000
			$100,629,000	**$5,125,000**

Implementing the lifecycle strategies shown in Section 4.1.4. could potentially reduce the annual capital requirement from $5.1 million to $4.1 million which could lead to cost savings of $1.0 million annually.

[1] Gravel roads undergo perpetual operating and maintenance activities. If maintained properly, they can theoretically have a limitless service life.



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

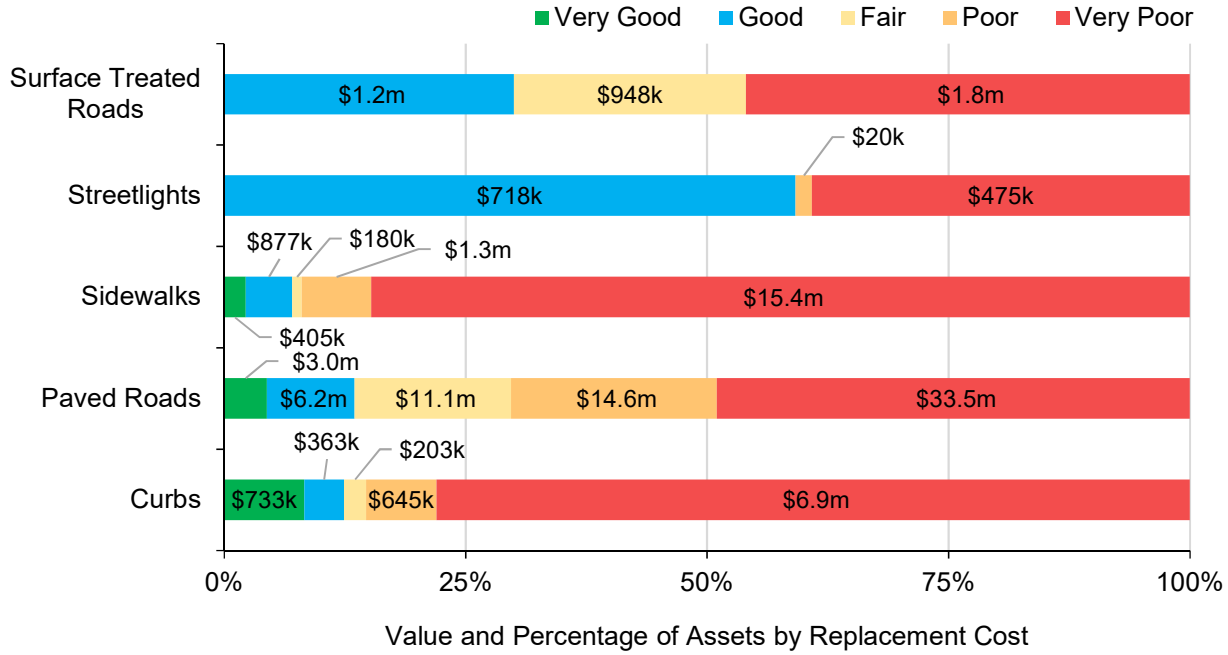
4.1.2 Asset Condition

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

Asset Segment	Average Condition	Average Condition Rating	Condition Source
Curbs	16%	Very Poor	Age-Based
Paved Roads	25%	Poor	Age-Based
Sidewalks	11%	Very Poor	Age-Based
Streetlights	38%	Poor	Age-Based
Surface Treated Roads	37%	Poor	Age-Based
	22%	**Poor**	**Age-Based**

The condition of these assets is determined by their age. Conducting a comprehensive Road Needs Study or establishing a formal systematic assessment process, which involves utilizing internal staff conducting road patrols to evaluate asset conditions, may impact the condition being monitored within the Citywide system.

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



To ensure that the Town's continues to provide an acceptable level of service, it 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 road network.

Current Approach to Condition Assessment

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

- A Road Needs Study was completed in 2016 that included a detailed assessment of the condition of each road segment
- The town's current condition assessment strategy relies entirely on staff expertise

4.1.3 Estimated Useful Life & Average Age

The estimated useful life for road network assets has been assigned according to a combination of established industry standards and staff knowledge. The average age of each asset is based on the number of years each asset has been in-service. Assessed condition may increase or decrease the average service life remaining.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)
Curbs	20	20.8
Paved Roads	20	19.2
Sidewalks	20	22.1
Streetlights	16	8.4
Surface Treated Roads	5	7.7

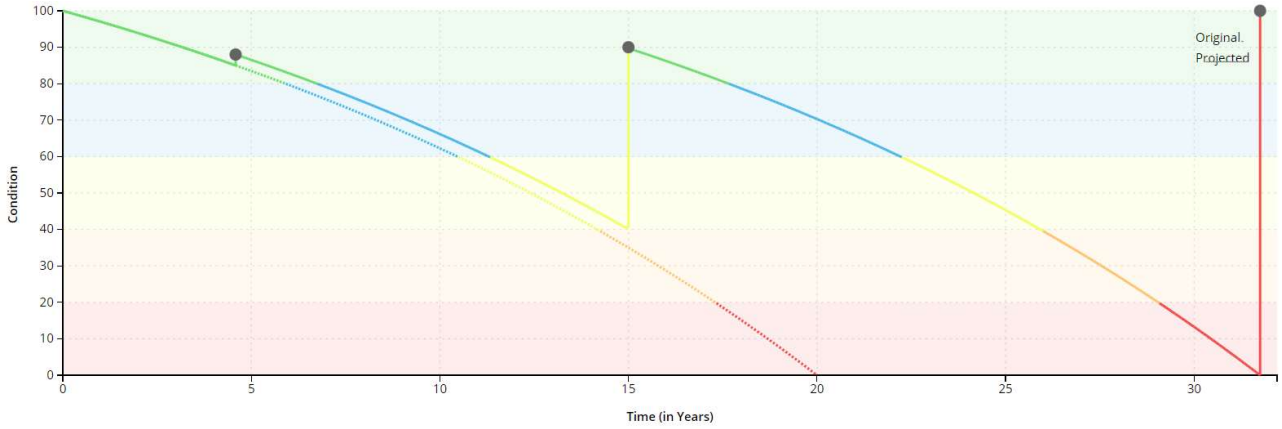
Each asset's estimated useful life should be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

4.1.4 Lifecycle Management Strategy

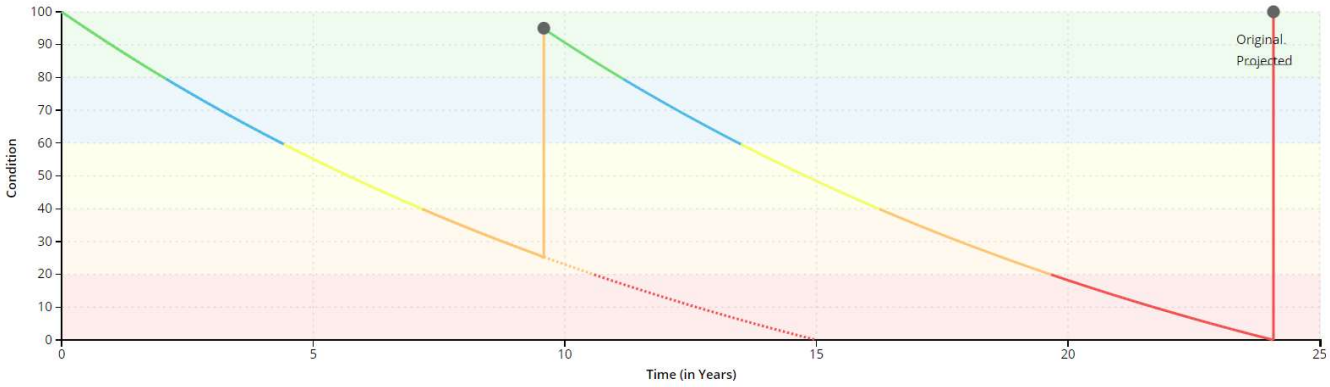
The condition or performance of most assets will deteriorate over time. This process is affected by a range of factors including an asset's characteristics, location, utilization, maintenance history and environment.

Currently, Hearst's lifecycle management strategy is mostly reactive with the goal of replacing roads when they reach end-of-life. The following proposed lifecycle strategies have been developed as a proactive approach to managing Hearst's 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.

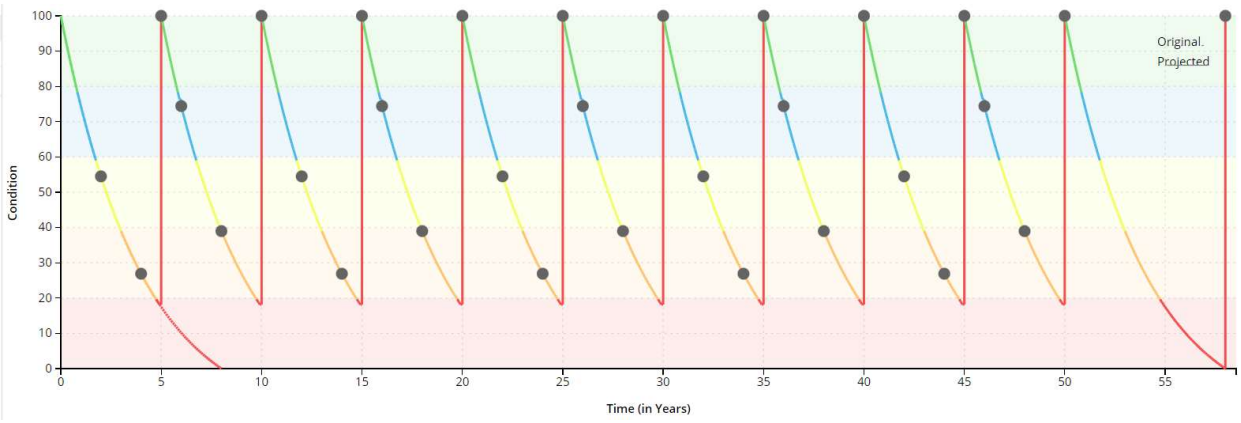
Paved Roads					
Event Name	**Event Class**	**Event Trigger**	**Cost**	**Funding Source**	**Impact**
Crack Sealing	Preventative Maintenance	85% Condition	$2.35 / m	Operating	Adds 3% Condition
Mill and Pave	Rehabilitation	Age of 15 Years	$134 / m	Capital	Sets Condition to 90%



Surface Treated Roads					
Event Name	**Event Class**	**Event Trigger**	**Cost**	**Funding Source**	**Impact**
Single Lift Surface Treatment	Rehabilitation	25% – 40% Condition	$80.40 / m	Capital	Sets Condition to 95%



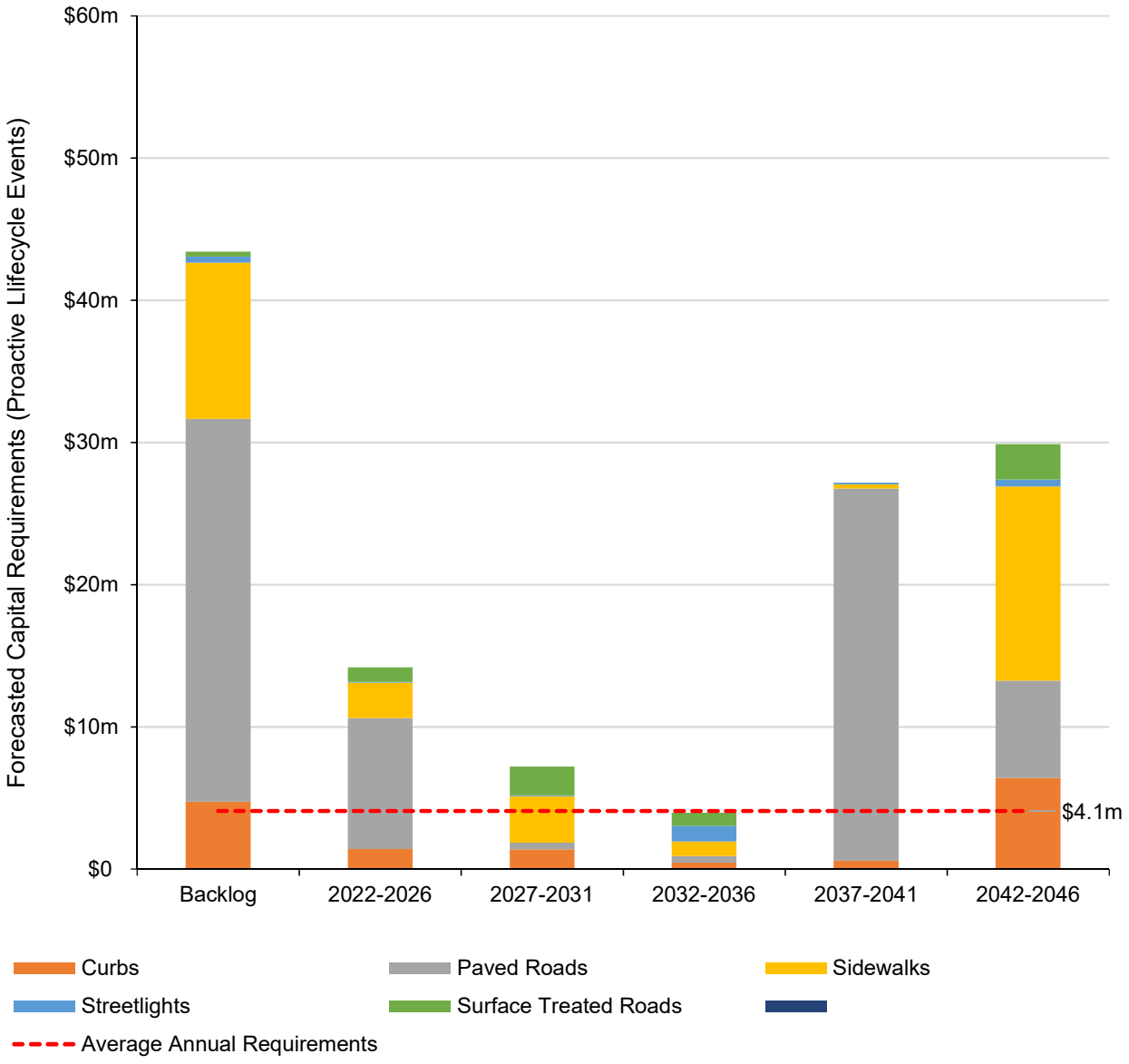
Gravel Roads					
Event Name	**Event Class**	**Event Trigger**	**Cost**	**Funding Source**	**Impact**
Dust Suppressant	Maintenance	Repeats Every 2 Years	$2.75 / m	Operating	No Impact
Grading	Rehabilitation	Repeats Every 2 Years	$2.00 / m	Operating	No Impact
Gravelling	Maintenance	Repeats Every 5 Years	$33.50 / m	Capital	Adds 5 Years



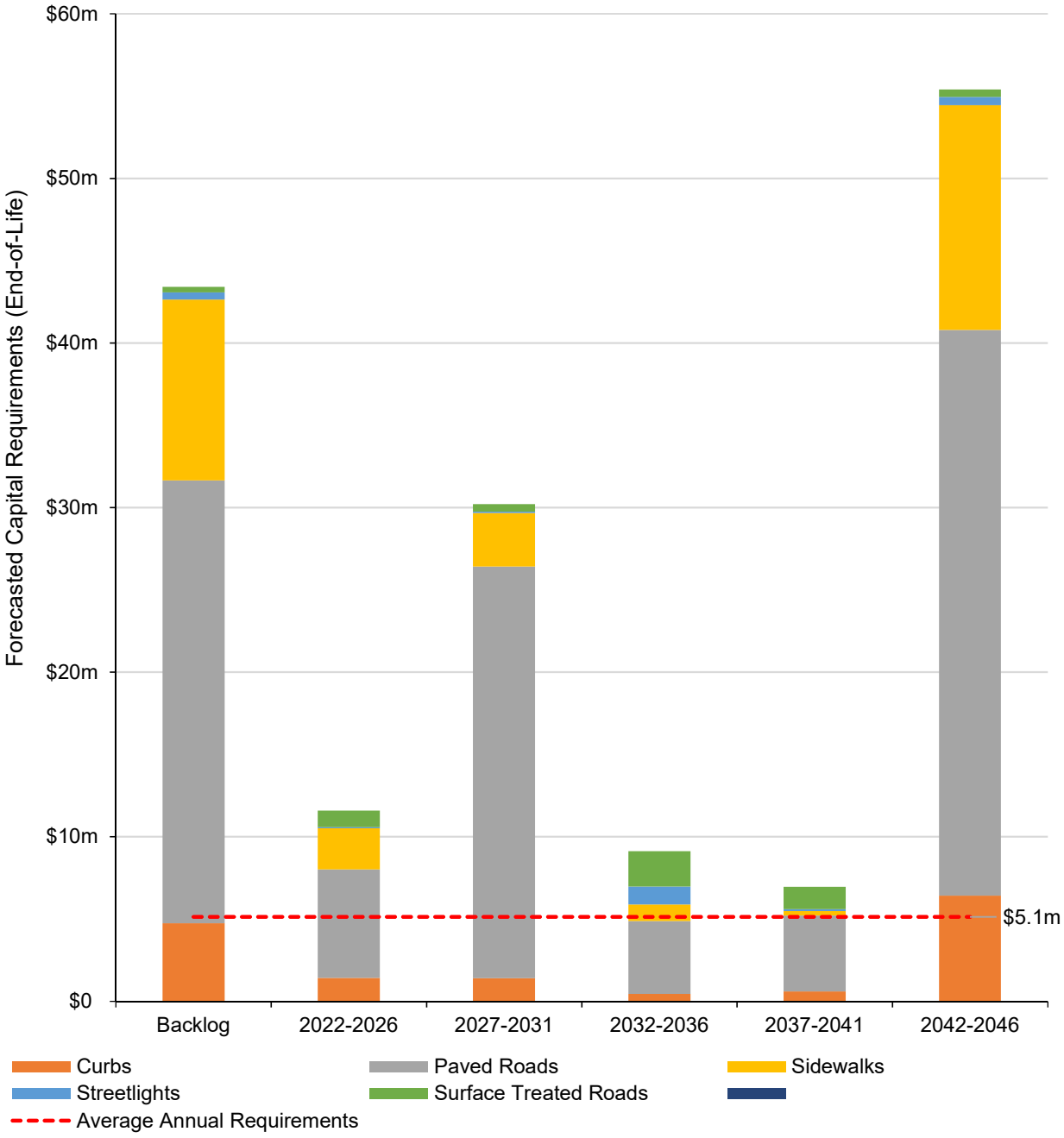
Forecasted Capital Requirements

Based on the lifecycle strategies identified previously for roads, and assuming the end-of-life replacement of all other assets in this category, the following graph forecasts capital requirements for the road network.

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 25 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average 5-year capital requirements.



The first graph shows the capital requirements based on the proactive/proposed lifecycle strategy for paved roads, whereas the graph labelled "End-of-Life" shows the capital requirements based on letting roads run to failure, which is the current strategy for the Road Network. When comparing the forecasts, the proactive lifecycle strategy is more staggered and achievable compared to the end-of-life strategy.



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

4.1.5 Risk & Criticality

Risk Matrix

The following risk matrix provides a visual representation of the criteria used in the table below, to determine the risk rating of each paved road network asset.

This is a high-level model developed for the purposes of this AMP and Town staff should review and adjust the risk model 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)
Condition	Replacement Cost
Service Life Remaining (%)	

The identification of critical assets allows the Town 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.

Risks to Current Asset Management Strategies

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

Lifecycle Management Strategies

The Town presently employs a replacement-only approach for lifecycle strategies. It is recommended to consider the inclusion of proactive lifecycle management strategies, which have the potential to generate cost savings and extend the lifespan of existing assets.

Capital Funding Strategies

Using a replacement-only strategy results in a worst-first approach, leading to no funding left for maintaining roads in acceptable condition and extending their lifespan.

In the long term, including lifecycle strategies could potentially reduce the average annual requirement for the Road Network, which allows those savings to be reinvested where necessary.

Public Expectations

Public expectations have indicated a desire to convert gravel roads to paved. A long-term strategy for transitioning gravel and surface treated roads to paved roads could be considered in the future.

4.1.6 Levels of Service

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

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2022)
Scope	Description, which may include maps, of the road network in the municipality and its level of connectivity	See Appendix B
Quality	Description or images that illustrate the different levels of road class pavement condition	See Appendix B

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2022)
Scope	Lane-km of arterial roads (MMS classes 1 and 2) per land area (km/km^2)	37.4 / 98.06
	Lane-km of collector roads (MMS classes 3 and 4) per land area (km/km^2)	24.4 / 98.06
	Lane-km of local roads (MMS classes 5 and 6) per land area (km/km^2)	115 / 98.06
Quality	Average pavement condition index for paved roads in the municipality	Fair
	Average surface condition for unpaved roads in the municipality (e.g. excellent, good, fair, poor)	Good
Performance	Average annual capital reinvestment rate vs. target reinvestment rate	0.98% : 5.09%
	% assets in good / very good condition	13%
	% assets in poor / very poor condition	74%

4.1.7 Recommendations

Asset Inventory

- Review road curb and sidewalk inventory to determine whether all municipal assets within these asset segments have been accounted for.
- The streetlight inventory includes several pooled assets that should be broken into discrete segments to allow for detailed planning and analysis.

Condition Assessment Strategies

- The last comprehensive assessment of the road network was completed in 2016. Consider completing an updated assessment of all roads within the next 1-2 years.

Lifecycle Management Strategies

- Implement the identified lifecycle management strategies for paved and surface treated roads to realize potential cost avoidance and maintain a high quality of road pavement condition.
- Evaluate the efficacy of the Town's lifecycle management strategies at regular intervals to determine the impact cost, condition and risk.

Risk Management Strategies

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

Levels of Service

- Continue to measure current levels of service in accordance with the metrics identified in O. Reg. 588/17 and those metrics that the Town believes to provide meaningful and reliable inputs into asset management planning.
- Work towards identifying proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

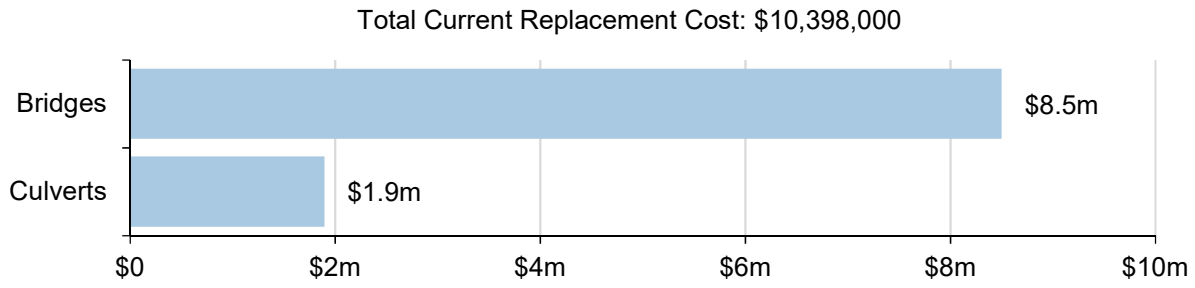
4.2 Bridges & Culverts

Bridges and Culverts (over 3m) represent a critical portion of the transportation services provided to the community. Hearst is responsible for the maintenance of all bridges and culvert, with the goal of keeping structures in an adequate state of repair and minimizing service disruptions.

4.2.1 Asset Inventory & Replacement Cost

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

Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost	Annual Capital Requirement
Bridges	4	User-Defined	$8,501,000	$133,000
Culverts	4	User-Defined	$1,897,000	$38,000
	8	User-Defined	**$10,398,000**	**$151,000**



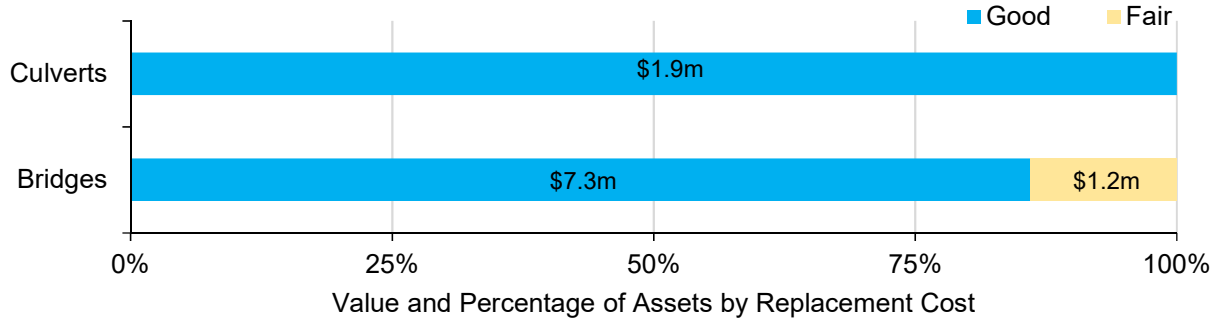
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to accurately represent realistic capital requirements.

4.2.2 Asset Condition

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

Asset Segment	Average Condition	Average Condition Rating	Condition Source
Bridges	75%	Good	100% Assessed
Culverts	80%	Good	100% Assessed
	76%	**Good**	**100% Assessed**

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



To ensure that the Town continues to provide an acceptable level of service, it 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 bridges and culverts.

Current Approach to Condition Assessment

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

- Condition assessments of all bridges and culverts with a span greater than or equal to 3 meters are completed in accordance with the Ontario Structure Inspection Manual (OSIM)
- Culverts are inspected on even years, bridges on odd years
- The Town utilizes internal staff to conduct assessments

- Maintenance activities are conducted on an annual basis, including: deck and sidewalk sweeping, along with grading an dust suppressant

4.2.3 Estimated Useful Life & Average Age

The estimated useful life for bridges and culverts assets has been assigned according to a combination of established industry standards and staff knowledge. The average age of each asset is based on the number of years each asset has been in-service. Assessed condition may increase or decrease the average service life remaining.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)
Bridges	75	54.2
Culverts	50	Unknown

The average age for culverts is unknown as the in-service dates are unspecified in the data register.

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

4.2.4 Lifecycle Management Strategy

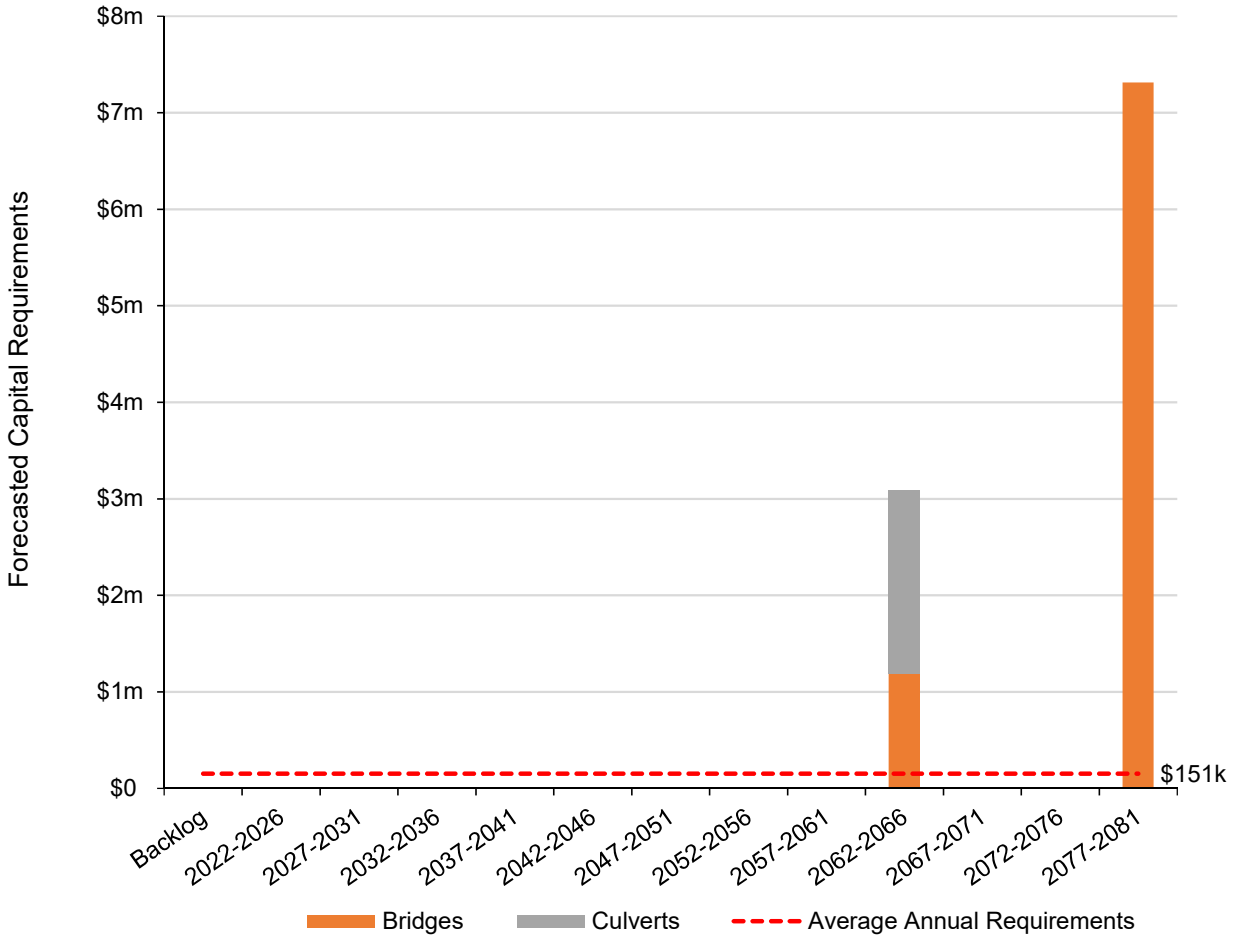
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance, Rehabilitation and Replacement	All lifecycle activities are driven by the results of mandated structural inspections competed according to the Ontario Structure Inspection Manual (OSIM)
Inspection	The most recent inspection report was completed in 2021 (bridges) and 2022 (culverts)

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 60 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average 5-year capital requirements.



The current lifecycle strategy and reporting process does not include the associated costing of any activities performed to maintain or rehabilitate the assets. Therefore, they are not included in the forecasted capital requirements. An external consultant for a bridge and culvert assessment may be able to provide this costing and refine the capital forecasts.

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

4.2.5 Risk & Criticality

Risk Matrix

The following risk matrix provides a visual representation of the criteria used in the table below, to determine the risk rating of each bridge & culvert asset.

This is a high-level model developed for the purposes of this AMP and Town staff should review and adjust the risk model 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	Replacement Cost
Service Life Remaining (%)	

The identification of critical assets allows the Town 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.

Risks to Current Asset Management Strategies

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

Ageing Infrastructure

While the in-service dates of the culverts are unspecified, the bridge assets were constructed between 1953 and 1979. As all assets are older and about the same age, they may reach their end of life at similar times. To prepare for this scenario and to ensure necessary funding requirements are met, this should be a consideration while developing any rehabilitation or replacement plans.

Capital Funding Strategies

Grant funding is necessary for replacement projects of this scale. Without the development of a capital funding strategy, necessary funding may not be accessible when needed, which could cause the deferral of capital works projects. A capital funding strategy would aid in alleviating dependency on grant funding and could also improve bridge accessibility over time. In the interim, additional grant funding opportunities could be explored as a proactive measure.

Infrastructure Design

Some of the older culverts are made out of creosote wood and should be replaced with a more durable material with a longer lifespan. Furthermore, replacing these assets would allow for an engineered design to ensure capacity requirements are met.

4.2.6 Levels of Service

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

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2022)
Scope	Description of the traffic that is supported by municipal bridges (e.g. heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists)	The Town of Hearst bridges have been designed in accordance with the standard and requirements of the Bridge Design Code at the time of construction. The bridges have been designed to carry heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians and cyclists. Municipal bridges form a key component of the Town's transportation network. The majority of bridges and structural culverts have no load or dimensional restrictions, with the exception of one bridge with a load restriction. Traffic that is supported by municipal bridges and structural culverts includes heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians and cyclists.
Quality	Description or images of the condition of bridges and culverts and how this would affect use of the bridges and culverts	See Appendix B

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2022)
Scope	% of bridges and structural culverts in the Town with loading or dimensional restrictions	1 / 8 or 13%
Quality	Average bridge condition index value for bridges in the Town	Good
	Average bridge condition index value for structural culverts in the Town	Good
Performance	Average annual capital reinvestment rate vs. target reinvestment rate	0% : 1.45%
	% assets in good / very good condition	89%
	% assets in poor / very poor condition	0%

4.2.7 Recommendations

Data Review/Validation

- Continue to review and validate inventory data and assessed condition all bridges and structural culverts upon the completion of OSIM inspections every 2 years.
- Determine in-service dates or estimated age for culverts.

Risk Management Strategies

- Implement risk-based decision-making as part of asset management planning and budgeting processes. This should include the regular review of high-risk assets to determine appropriate risk mitigation strategies.
- Review risk models on a regular basis and adjust according to an evolving understanding of the probability and consequences of asset failure.
- Replace culverts made of creosote wood with a more reliable and durable material.

Lifecycle Management Strategies

- This AMP only includes capital costs associated with the reconstruction of bridges and culverts. The Town should work towards identifying projected capital rehabilitation and renewal costs as well as updated replacement costs for bridges and culverts and integrating these costs into long-term planning.

Levels of Service

- Continue to measure current levels of service in accordance with the metrics identified in O. Reg. 588/17 and those metrics that the Town believe to provide meaningful and reliable inputs into asset management planning.
- Work towards identifying proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

4.3 Storm Network

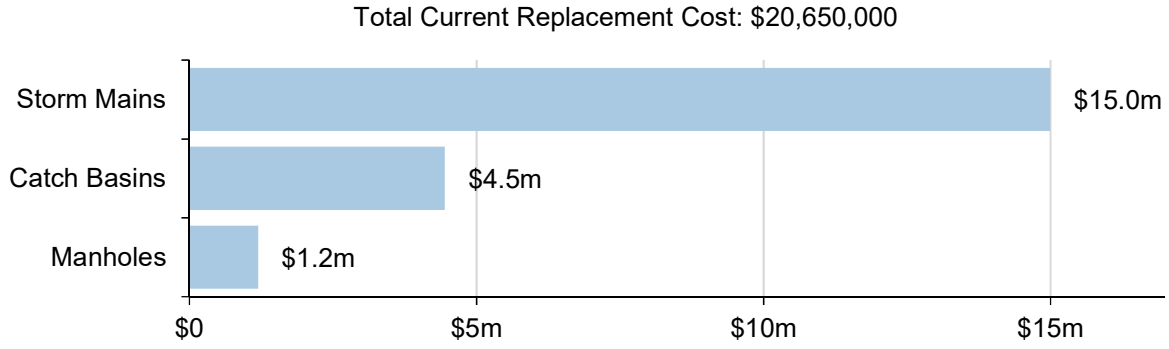
The Town is responsible for owning and maintaining a stormwater comprised of mains, manholes, and catch basins.

Staff are working towards improving the accuracy and reliability of the storm network inventory to assist with long-term asset management planning.

4.3.1 Asset Inventory & Replacement Cost

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

Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost	Annual Capital Requirement
Catch Basins	1,113	User-defined	$4,452,000	$89,000
Manholes	100	User-defined	$1,200,000	$24,000
Storm Mains	36 KM	Cost per unit	$14,998,007	$244,000
			$20,650,000	**$357,000**



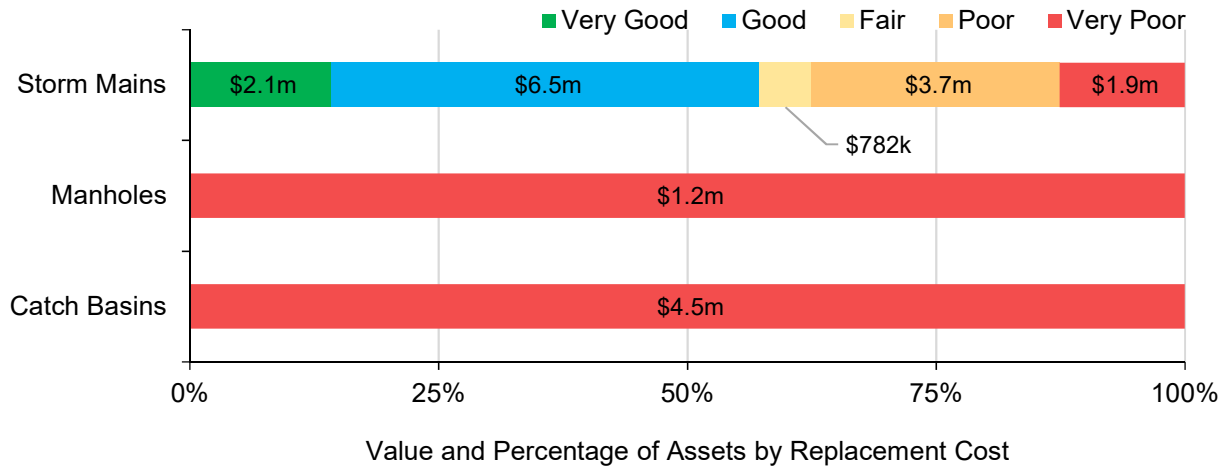
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to accurately represent realistic capital requirements.

4.3.2 Asset Condition

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

Asset Segment	Average Condition	Average Condition Rating	Condition Source
Catch Basins	0%	Very Poor	Age-Based
Manholes	0%	Very Poor	Age-Based
Storm Mains	54%	Fair	Age-Based
	39%	**Poor**	**Age-Based**

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



Value and Percentage of Assets by Replacement Cost

It is important to acknowledge that the condition of the Manholes and Catch Basin asset segment could be significantly underestimated due to unknown in-service dates.

To ensure that the Town's storm network continues to provide an acceptable level of service, it 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 stormwater network.

Current Approach to Condition Assessment

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

- There are no formal condition assessment programs in place for the storm network
- As the Town refines the available asset inventory for the stormwater network a regular assessment cycle should be established

4.3.3 Estimated Useful Life & Average Age

The estimated useful life for stormwater network assets has been assigned according to a combination of established industry standards and staff knowledge. The average age of each asset is based on the number of years each asset has been in-service. Assessed condition may increase or decrease the average service life remaining.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)
Catch Basins	50	Unknown
Manholes	50	Unknown
Storm Mains	50	26.6

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

4.3.4 Lifecycle Management Strategy

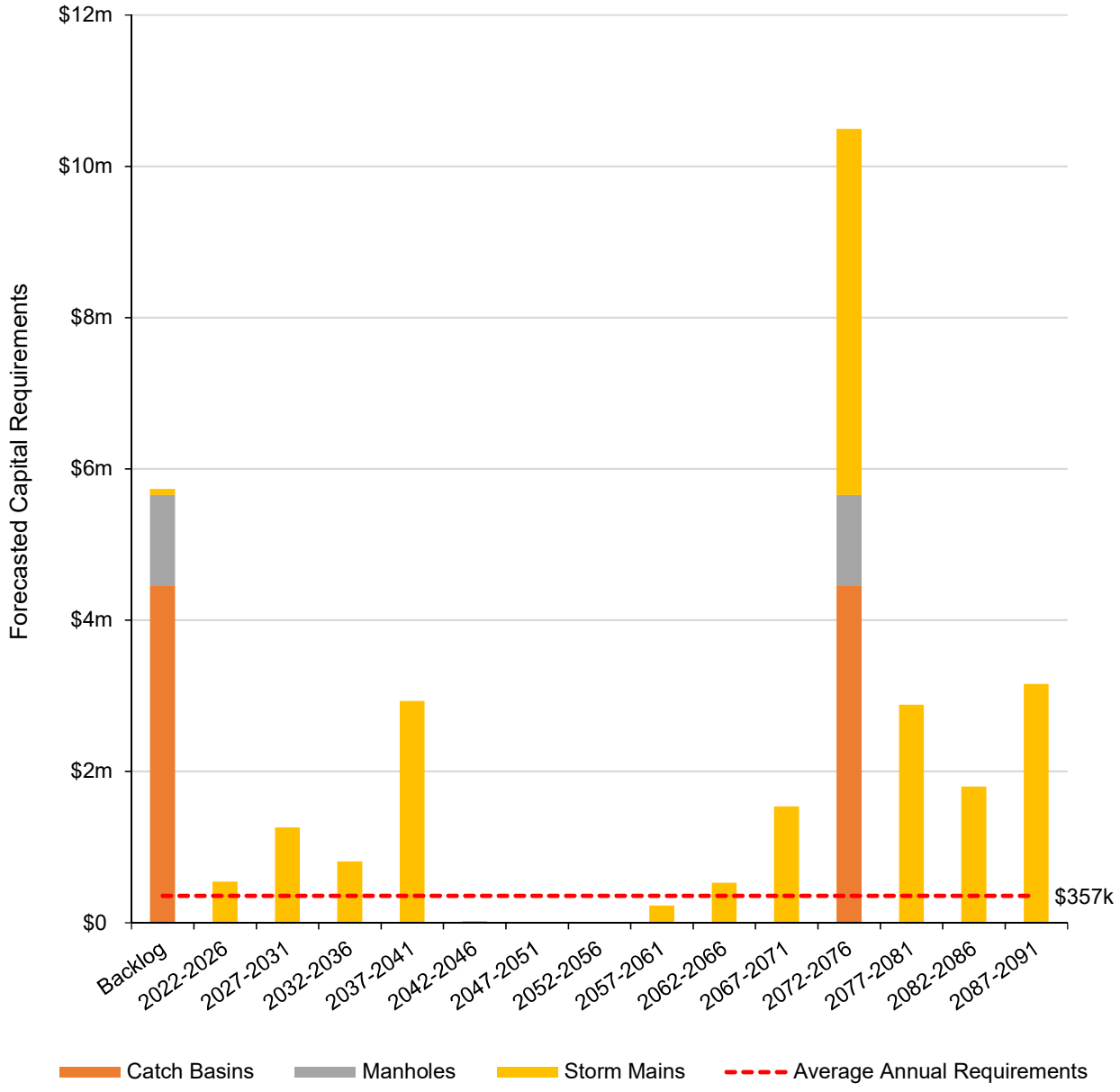
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance	Maintenance activities are completed to a lesser degree compared to other underground linear infrastructure
	Minor maintenance activities including frame and cover adjustments are conducted on an ad-hoc basis
	Repairs to structures, including restoration, is completed and is part of the Town's operational budget
Rehabilitation/ Replacement	Replacement of storm network assets are done in conjunction with road and other underground assets projects
	Without the availability of up-to-date condition assessment information replacement activities are purely reactive in nature

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 70 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average 5-year capital requirements.



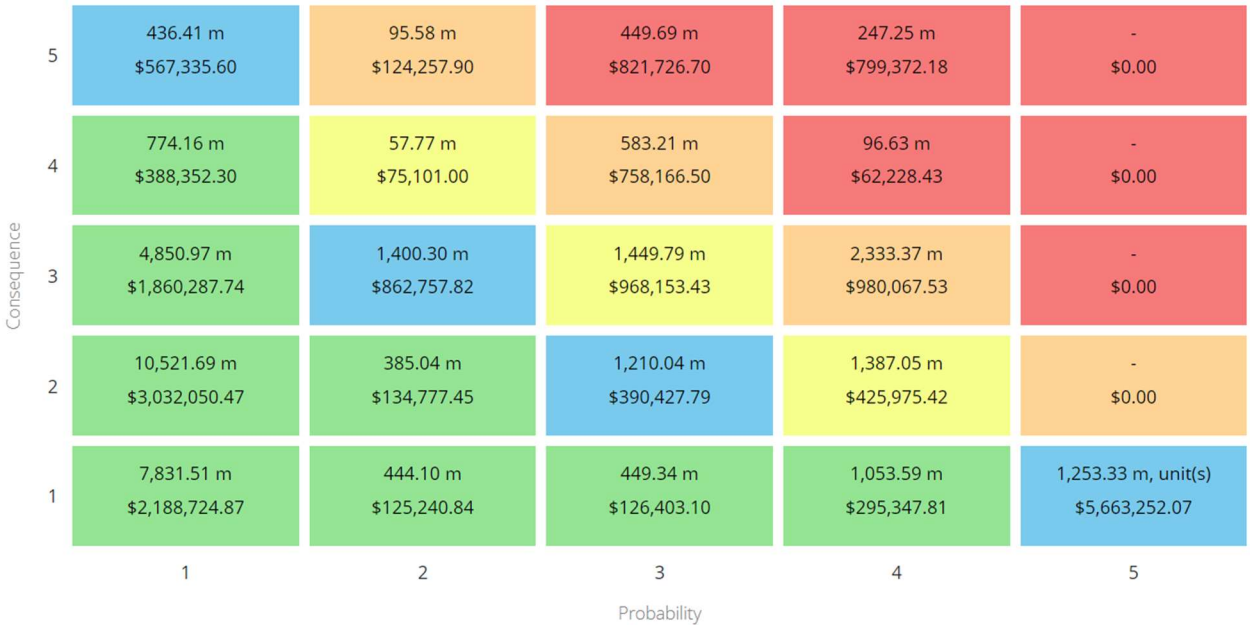
The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix A.

4.3.5 Risk & Criticality

Risk Matrix

The following risk matrix provides a visual representation of the criteria used in the table below, to determine the risk rating of storm network assets.

This is a high-level model developed for the purposes of this AMP and Town staff should review and adjust the risk model 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 stormwater network are documented below:

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost
Service Life Remaining	Pipe Size (mm)
Material	

The identification of critical assets allows the Town 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.

Risks to Current Asset Management Strategies

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

Ageing Infrastructure

A significant portion of the stormwater network is comprised of corrugated steel pipe and steel rods, which have a relatively shorter lifespan compared to materials like HDPE and PVC. As a result, assets need to be replaced at a more frequent rate than if they were made of those more durable materials. Transitioning all assets constructed with these materials to HDPE and PVC could yield lesser average annual capital requirements and improve the reliability of the network.

Climate Change & Infrastructure Design

IDF curves, used for determining the sizing requirements of stormwater assets, undergo revisions to accommodate the escalating demands of climate change and extreme weather events.

At the time of installation, Hearst's stormwater assets were initially engineered to withstand a 100-year storm. However, internal observations indicate that assets designed to withstand a 100-year storm as recently as 2016 may no longer meet the present-day calculation criteria.

Presently, Hearst's strategic efforts have prioritized the installation of new HDPE stormwater assets within sections of developed areas, facilitating the transition to an urban classification. As a result, there has been a comparatively reduced focus on asset replacement in other areas.

When assets are replaced, it would be necessary to undertake a redesign incorporating the updated IDF curves. Additionally, directing the outflow towards an area not conducive to infiltration should be considered.

Asset Data Confidence

In the absence of recent condition assessments, the evaluation of asset condition and thus risk prioritization within the Manholes and Catch Basin segments predominantly relies on age-based criteria. However, due to the unavailability of in-service dates for the majority of these assets, it leads to the understating of the condition and the resulting risk ratings.

4.3.6 Levels of Service

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

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2022)
Scope	Description, which may include map, of the user groups or areas of the municipality that are protected from flooding, including the extent of protection provided by the municipal stormwater system	See Appendix B

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2022)
Scope	% of properties in municipality resilient to a 100-year storm	77%
	% of the municipal stormwater management system resilient to a 5-year storm	100%
Performance	Average annual capital reinvestment rate vs. target reinvestment rate	1.61 % : 1.73%
	% assets in good / very good condition	42%
	% assets in poor / very poor condition	55%

4.3.7 Recommendations

Asset Inventory

- The Town's stormwater network inventory does not include in-service dates or estimated ages for Manholes or Catch Basins. With no available condition assessment data, reported condition is purely age-based. This causes a distortion of asset condition reporting and the resultant replacement strategy based on risk ratings. Therefore, it is important to prioritize the development of a comprehensive inventory of the stormwater network, including in-service dates or estimated ages, to address this issue effectively.

Condition Assessment Strategies

- The development of a comprehensive inventory should be accompanied by a system-wide assessment of the condition of all assets in the stormwater network through CCTV inspections.

Risk Management Strategies

- Implement risk-based decision-making as part of asset management planning and budgeting processes. This should include the regular review of high-risk assets to determine appropriate risk mitigation strategies.
- Review risk models on a regular basis and adjust according to an evolving understanding of the probability and consequences of asset failure.
- Over the course of time, conduct periodic evaluations of the existing infrastructure to assess whether the assets align with the criteria for withstanding a 100-year storm, as per the latest available IDF curves.

Lifecycle Management Strategies

- As assets undergo replacement over time, it is advisable to utilize materials such as HDPE and PVC, in addition to conducting a redesign that incorporates the updated IDF curves.
- Review existing stormwater network and evaluate whether current infrastructure meets present-day calculation criteria.
- Document and review lifecycle management strategies for the stormwater network on a regular basis to achieve the lowest total cost of ownership while maintaining adequate service levels.

Levels of Service

- Continue to measure current levels of service in accordance with the metrics that the Town has established in this AMP. Additional metrics can be established as they are determined to provide meaningful and reliable inputs into asset management planning.
- Work towards identifying proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

4.4 Buildings

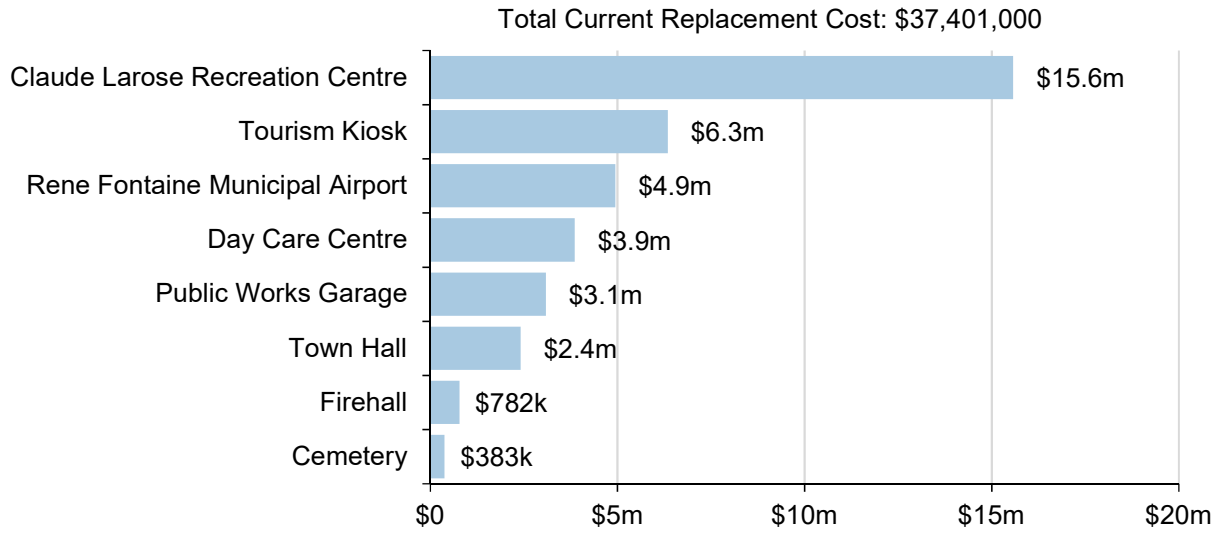
The Town of Hearst owns and maintains several facilities that provide key services to the community. These include:

- Town Hall
- Claude Larose Recreation Centre
- René Fontaine Municipal Airport
- Firehall
- Public works garage
- Day care centre
- Tourism Kiosks
- Cemetery

4.4.1 Asset Inventory & Replacement Cost

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

Asset Segment	Quantity (# Components)	Replacement Cost Method	Total Replacement Cost	Annual Capital Requirement
Cemetery	20	CPI	$383,000	$19,000
Claude Larose Recreation Centre	70	CPI	$15,579,000	$492,000
Day Care Centre	22	CPI	$3,861,000	$105,000
Firehall	17	CPI	$782,000	$28,000
Public Works Garage	15	CPI	$3,090,000	$82,000
Rene Fontaine Municipal Airport	25	CPI	$4,944,000	$133,000
Tourism Kiosk	24	CPI	$6,347,000	$169,000
Town Hall	17	CPI	$2,415,000	$102,000
			$37,401,000	**$1,129,000**



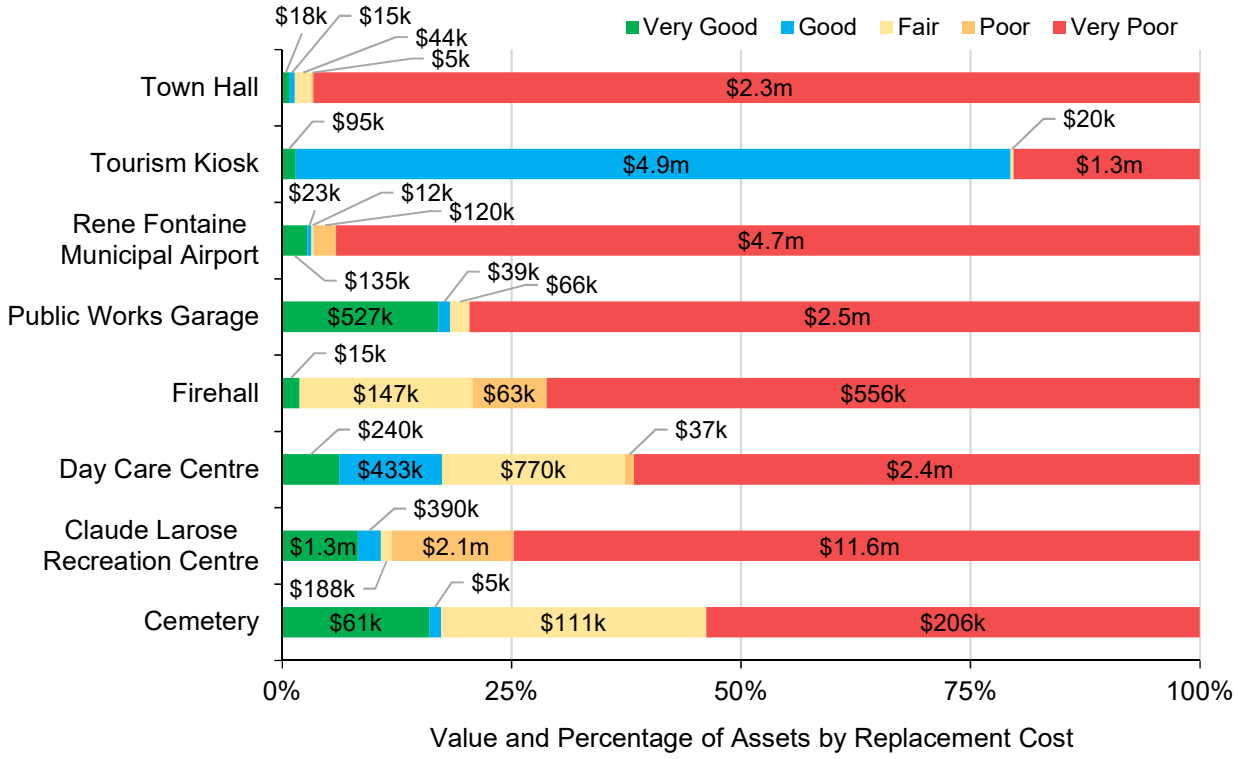
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to accurately represent realistic capital requirements.

4.4.2 Asset Condition

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

Asset Segment	Average Condition	Average Condition Rating	Condition Source
Cemetery	31%	Poor	Age-Based
Claude Larose Recreation Centre	15%	Very Poor	Age-Based
Day Care Centre	34%	Poor	Age-Based
Firehall	12%	Very Poor	Age-Based
Public Works Garage	33%	Poor	Age-Based
Rene Fontaine Municipal Airport	4%	Very Poor	Age-Based
Tourism Kiosk	58%	Fair	Age-Based
Town Hall	3%	Very Poor	Age-Based
	23%	**Poor**	**Age-Based**

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



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

Current Approach to Condition Assessment

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

- The fire station is inspected monthly
- Visual inspections of buildings are conducted internally, on an ad hoc basis
- While there is no formal building assessment program, the Town is in early discussion regarding utilizing a third-party engineering firm to conduct a thorough building condition assessment (BCA)

4.4.3 Estimated Useful Life & Average Age

The estimated useful life for buildings and facilities assets has been assigned according to a combination of established industry standards and staff knowledge. The average age of each asset is based on the number of years each asset has been in-service. Assessed condition may increase or decrease the average service life remaining.

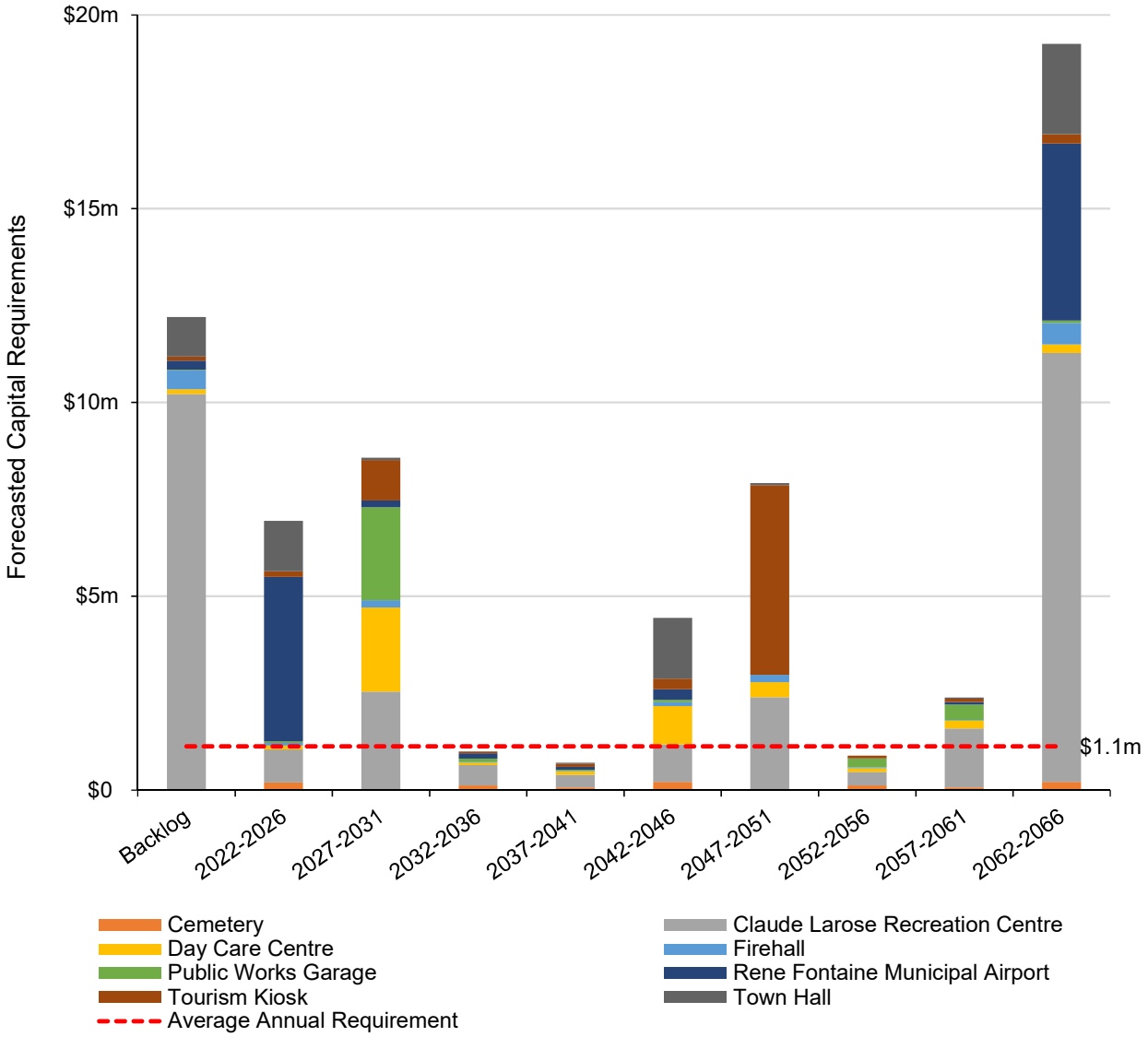
Asset Segment	Average Estimated Useful Life (Years)	Average Age (Years)
Cemetery	20	13.9
Claude Larose Recreation Centre	35	30.8
Day Care Centre	38	24.3
Firehall	32	31.5
Public Works Garage	39	25.3
Rene Fontaine Municipal Airport	39	37.6
Tourism Kiosk	39	15.1
Town Hall	26	29.1

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

4.4.4 Lifecycle Management Strategy

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 45 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average 5-year capital requirements.



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

4.4.5 Risk & Criticality

Buildings are considered a non-core asset category. As such, Hearst has until July 1, 2024, to identify asset risk and determine asset criticality.

4.4.6 Levels of Service

Buildings are considered a non-core asset category. As such, Hearst has until July 1, 2024, to determine the qualitative descriptions and technical metrics that measure the current level of service provided.

4.4.7 Recommendations

Asset Inventory

- Buildings consist of several separate capital components that have unique estimated useful lives and require asset-specific lifecycle strategies. Going forward, the Township should develop a consistent building componentization scheme, such as UNIFORMAT-II. This will allow the Township to document the needs of buildings at a component level.

Replacement Costs

- Gather accurate replacement costs and update on a regular basis to ensure the accuracy of capital projections.

Condition Assessment Strategies

- The Town should implement regular condition assessments for all facilities to better inform short- and long-term capital requirements.
- The Town should consider conducting building condition assessments on a cyclical basis (5–10-year cycle)

Risk Management Strategies

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

Levels of Service

- Begin measuring current levels of service in accordance with the metrics that the Town has established in this AMP. Additional metrics can be established as they are determined to provide meaningful and reliable inputs into asset management planning.
- Work towards identifying proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

4.5 Vehicles

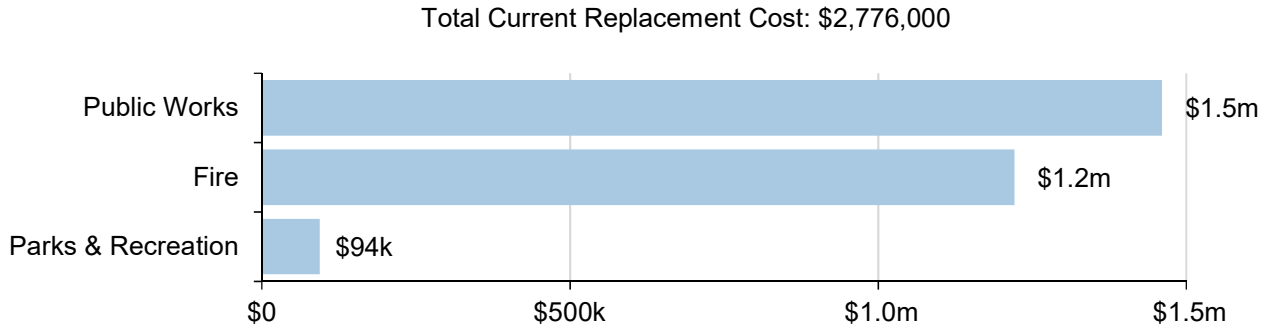
Vehicles allow staff to efficiently deliver municipal services and personnel. Municipal vehicles are used to support several service areas, including:

- Heavy duty fire vehicles
- Various public works vehicles

4.5.1 Asset Inventory & Replacement Cost

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

Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost	Annual Capital Requirement
Fire	8	CPI	$1,221,000	$63,000
Parks & Recreation	2	CPI	$94,000	$9,000
Public Works	15	CPI	$1,461,000	$95,000
	25	**CPI**	**$2,776,000**	**$167,000**



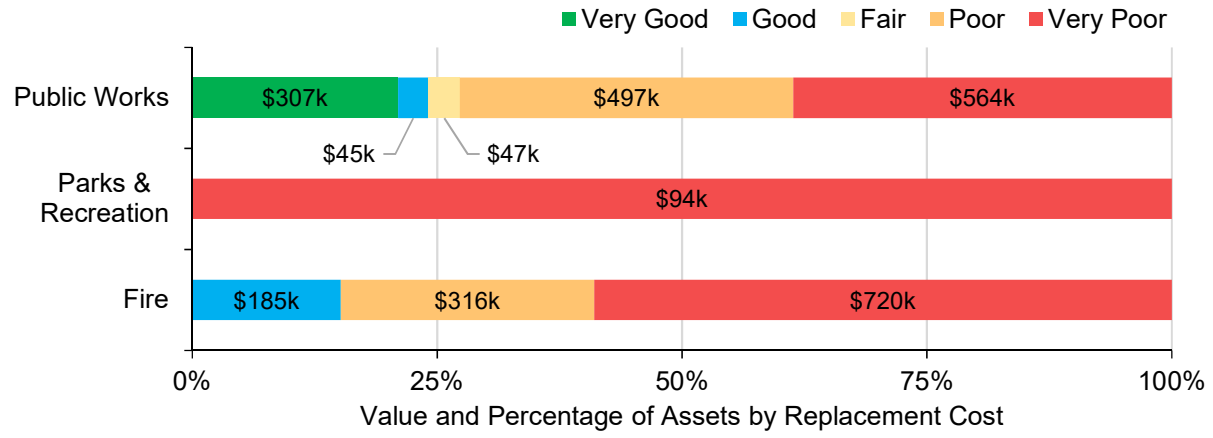
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to accurately represent realistic capital requirements.

4.5.2 Asset Condition

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

Asset Segment	Average Condition	Average Condition Rating	Condition Source
Fire	23%	Poor	Age-Based
Parks & Recreation	0%	Very Poor	Age-Based
Public Works	33%	Poor	Age-Based
	27%	**Poor**	**Age-Based**

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



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

Current Approach to Condition Assessment

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

- The Town utilizes internal resources to complete regular visual inspections of vehicles, ensuring they are in state of adequate repair prior to operation
- CVOR vehicles are inspected daily
- Condition assessments are conducted on vehicles in accordance with regulations for health and safety regulations including National Fire Protection Association (NFPA) codes and standards for fire service-related vehicles

4.5.3 Estimated Useful Life & Average Age

The estimated useful life for vehicles assets has been assigned according to a combination of established industry standards and staff knowledge. The average age of each asset is based on the number of years each asset has been in-service. Assessed condition may increase or decrease the average service life remaining.

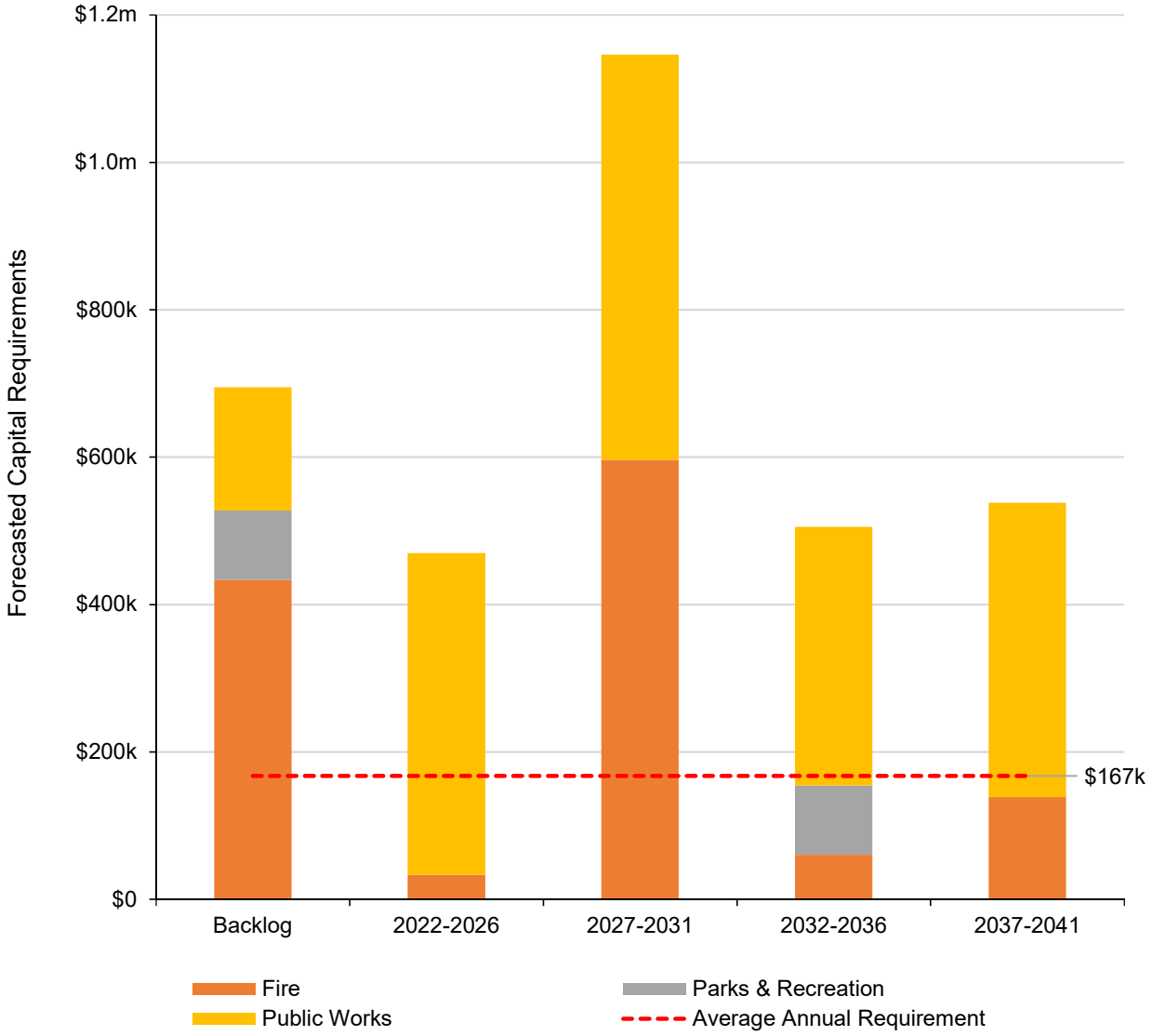
Asset Segment	Average Estimated Useful Life (Years)	Average Age (Years)
Fire	18.9	20
Parks & Recreation	20.0	10
Public Works	10.8	17

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

4.5.4 Lifecycle Management Strategy

Forecasted Capital Requirements

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



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

4.5.5 Risk & Criticality

Vehicles are considered a non-core asset category. As such, the Town has until July 1, 2024, to identify asset risk and determine asset criticality.

4.5.6 Levels of Service

Vehicles are considered a non-core asset category. As such, the Town has until July 1, 2024, to determine the qualitative descriptions and technical metrics that measure the current level of service provided.

4.5.7 Recommendations

Replacement Costs

- Gather accurate replacement costs and update on a regular basis to ensure the accuracy of capital projections.

Condition Assessment Strategies

- Identify condition assessment strategies for high value and high-risk equipment.
- Review assets that have surpassed their estimated useful life to determine if immediate replacement is required or whether these assets are expected to remain in-service. Adjust the service life and/or condition ratings for these assets accordingly.

Risk Management Strategies

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

Levels of Service

- Begin measuring current levels of service in accordance with the metrics that the Town has established in this AMP. Additional metrics can be established as they are determined to provide meaningful and reliable inputs into asset management planning.
- Work towards identifying proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

4.6 Machinery & Equipment

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

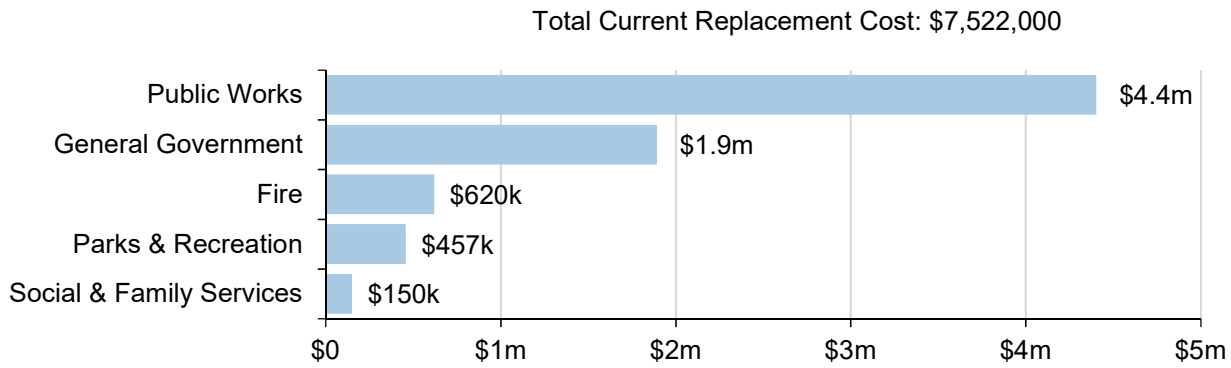
- Landscaping equipment to maintain public parks
- Fire equipment to support the delivery of emergency services
- Various snow removal equipment

Keeping machinery and equipment in an adequate state of repair is important to maintain a high level of service.

4.6.1 Asset Inventory & Replacement Cost

The following table includes the quantity, replacement cost method and total replacement cost of each asset segment in the Town's machinery and equipment inventory.

Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost	Annual Capital Requirement
Fire	211	CPI	$620,000	$111,000
General Government	1,078	CPI	$1,893,000	$290,000
Parks & Recreation	16	CPI	$457,000	$36,000
Public Works	279	CPI	$4,403,000	$268,000
Social & Family Services	11	CPI	$150,000	$15,000
			$7,522,000	**$719,000**



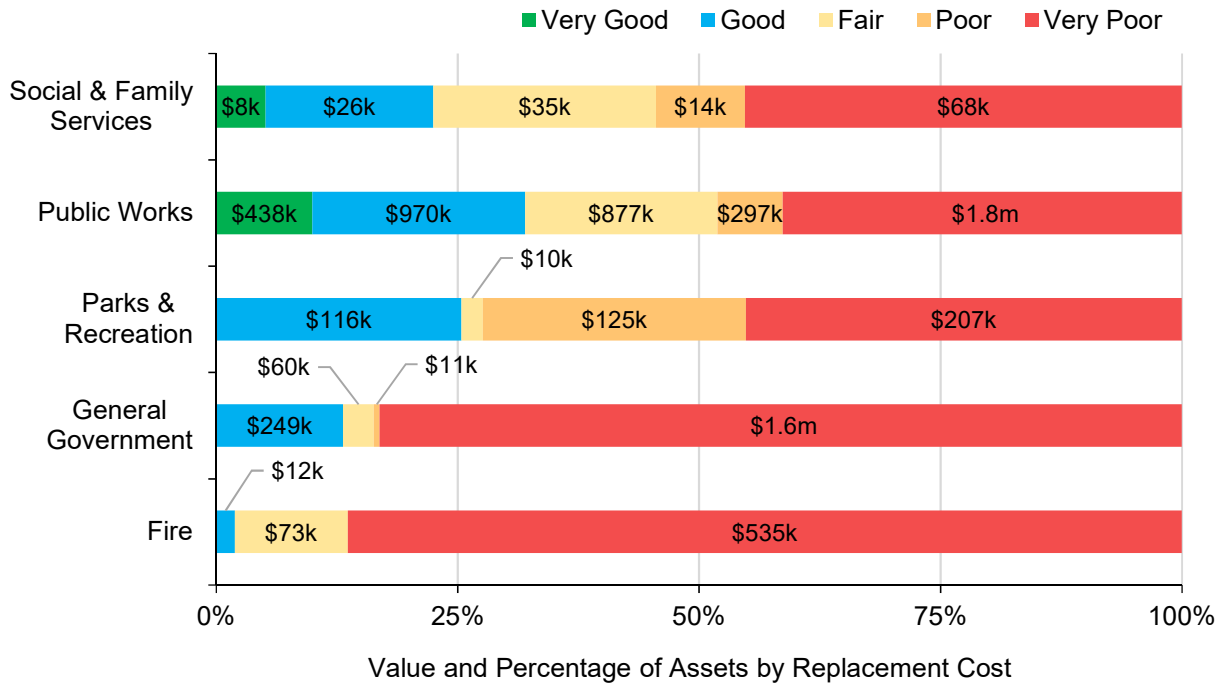
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to accurately represent realistic capital requirements.

4.6.2 Asset Condition

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

Asset Segment	Average Condition	Average Condition Rating	Condition Source
Fire	11%	Very Poor	Age-Based
General Government	10%	Very Poor	Age-Based
Parks & Recreation	27%	Poor	Age-Based
Public Works	36%	Poor	Age-Based
Social & Family Services	30%	Poor	Age-Based
	27%	**Poor**	**Age-Based**

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



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

Current Approach to Condition Assessment

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

- Staff complete regular visual inspections of machinery & equipment to ensure they are in state of adequate repair
- The Town use hours used (in operation) as a proxy, to schedule maintenance to various types of machinery & equipment

4.6.3 Estimated Useful Life & Average Age

The estimated useful life for machinery and equipment assets has been assigned according to a combination of established industry standards and staff knowledge. The average age of each asset is based on the number of years each asset has been in-service. Assessed condition may increase or decrease the average service life remaining.

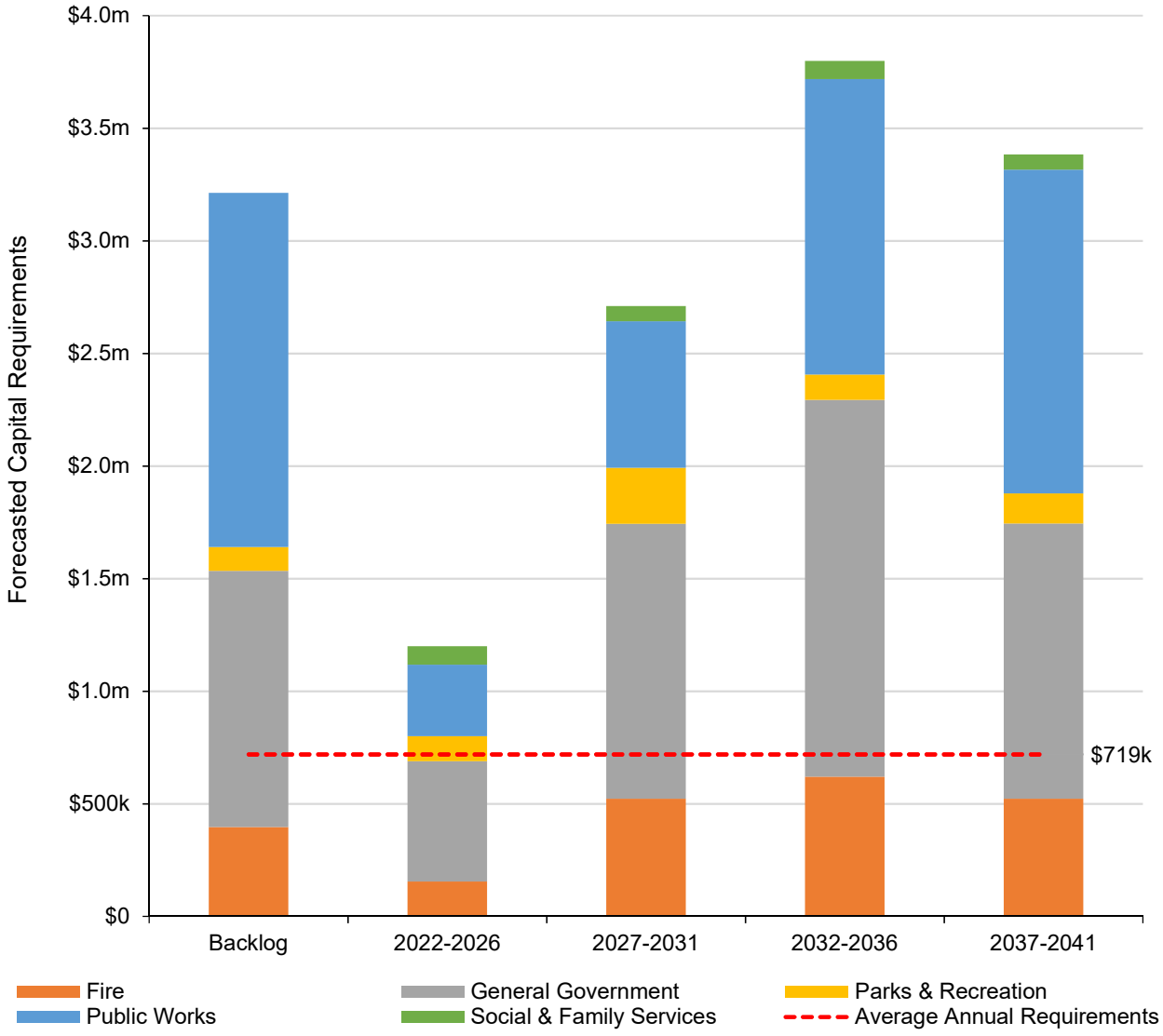
Asset Segment	Average Estimated Useful Life (Years)	Average Age (Years)
Fire	7	12.5
General Government	7	12.8
Parks & Recreation	15	13.4
Public Works	18	13.7
Social & Family Services	10	6.1

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

4.6.4 Lifecycle Management Strategy

Forecasted Capital Requirements

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



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

4.6.5 Risk & Criticality

Machinery and equipment are considered a non-core asset category. As such, the Town has until July 1, 2024, to identify asset risk and determine asset criticality.

4.6.6 Levels of Service

Machinery and equipment are considered a non-core asset category. As such, the Town has until July 1, 2024, to determine the qualitative descriptions and technical metrics that measure the current level of service provided.

4.6.7 Recommendations

Replacement Costs

- All replacement costs used in this AMP are based on the inflation of historical costs. Staff should continue to update replacement values whenever more accurate information is available – every 1-2 years

Condition Assessment Strategies

- Identify condition assessment strategies for high value and high-risk equipment.
- Review assets that have surpassed their estimated useful life to determine if immediate replacement is required or whether these assets are expected to remain in-service. Adjust the service life and/or condition ratings for these assets accordingly.

Risk Management Strategies

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

Levels of Service

- Begin measuring current levels of service in accordance with the metrics that the Town has established in this AMP. Additional metrics can be established as they are determined to provide meaningful and reliable inputs into asset management planning.
- Work towards identifying proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

4.7 Land Improvements

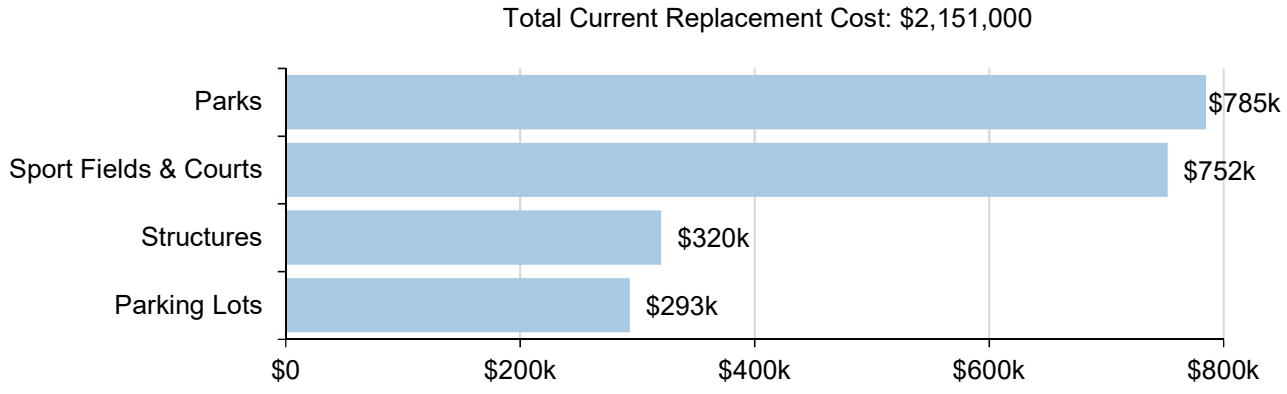
Hearst owns a variety of land improvement assets that are considered land improvements. This category includes:

- Parking lots for municipal facilities
- Parks
- Sport Fields & Courts
- Miscellaneous structures

4.7.1 Asset Inventory & Replacement Cost

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

Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost	Annual Capital Requirement
Parking Lots	5	CPI	$293,000	$15,000
Parks	24	CPI	$785,000	$41,000
Sport Fields & Courts	11	CPI	$752,000	$38,000
Structures	11	CPI	$320,000	$111,000
			$2,151,000	**$111,000**



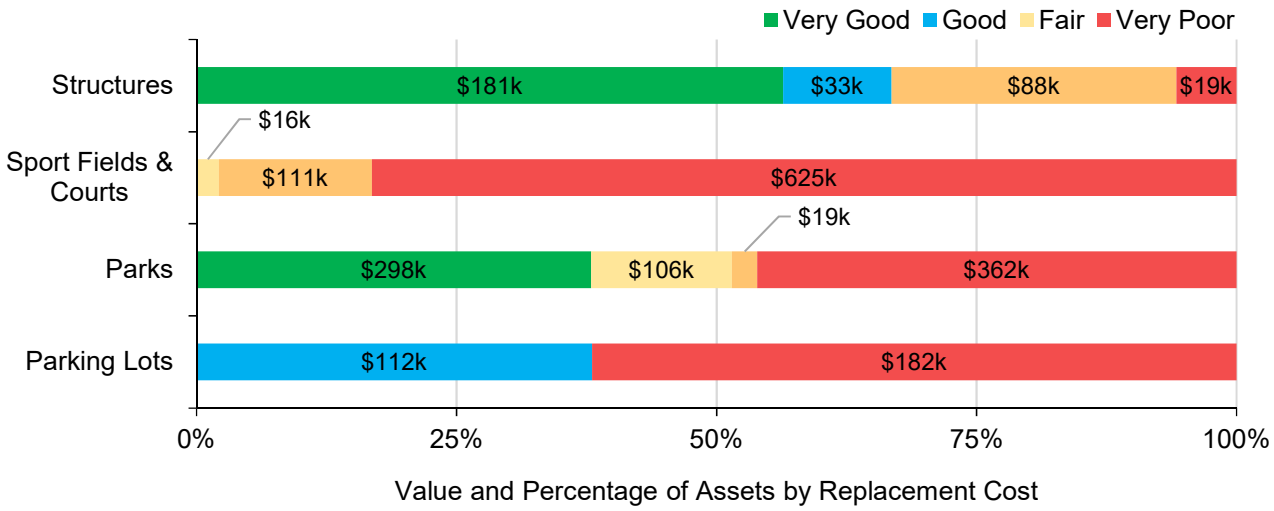
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to accurately represent realistic capital requirements.

4.7.2 Asset Condition

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

Asset Segment	Average Condition	Average Condition Rating	Condition Source
Parking Lots	28%	Poor	Age-Based
Parks	40%	Fair	Age-Based
Sport Fields & Courts	6%	Very Poor	Age-Based
Structures	67%	Good	Age-Based
	31%	**Poor**	**Age-Based**

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



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

Current Approach to Condition Assessment

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

- Playgrounds are subject to weekly visual inspections during the summer months, by utilizing internal resources
- Play structures are inspected internally, for CSA compliance
- Staff complete ad hoc visual inspections of the Town's sports fields, courts, and various structures

4.7.3 Estimated Useful Life & Average Age

The estimated useful life for land improvements assets has been assigned according to a combination of established industry standards and staff knowledge. The average age of each asset is based on the number of years each asset has been in-service. Assessed condition may increase or decrease the average service life remaining.

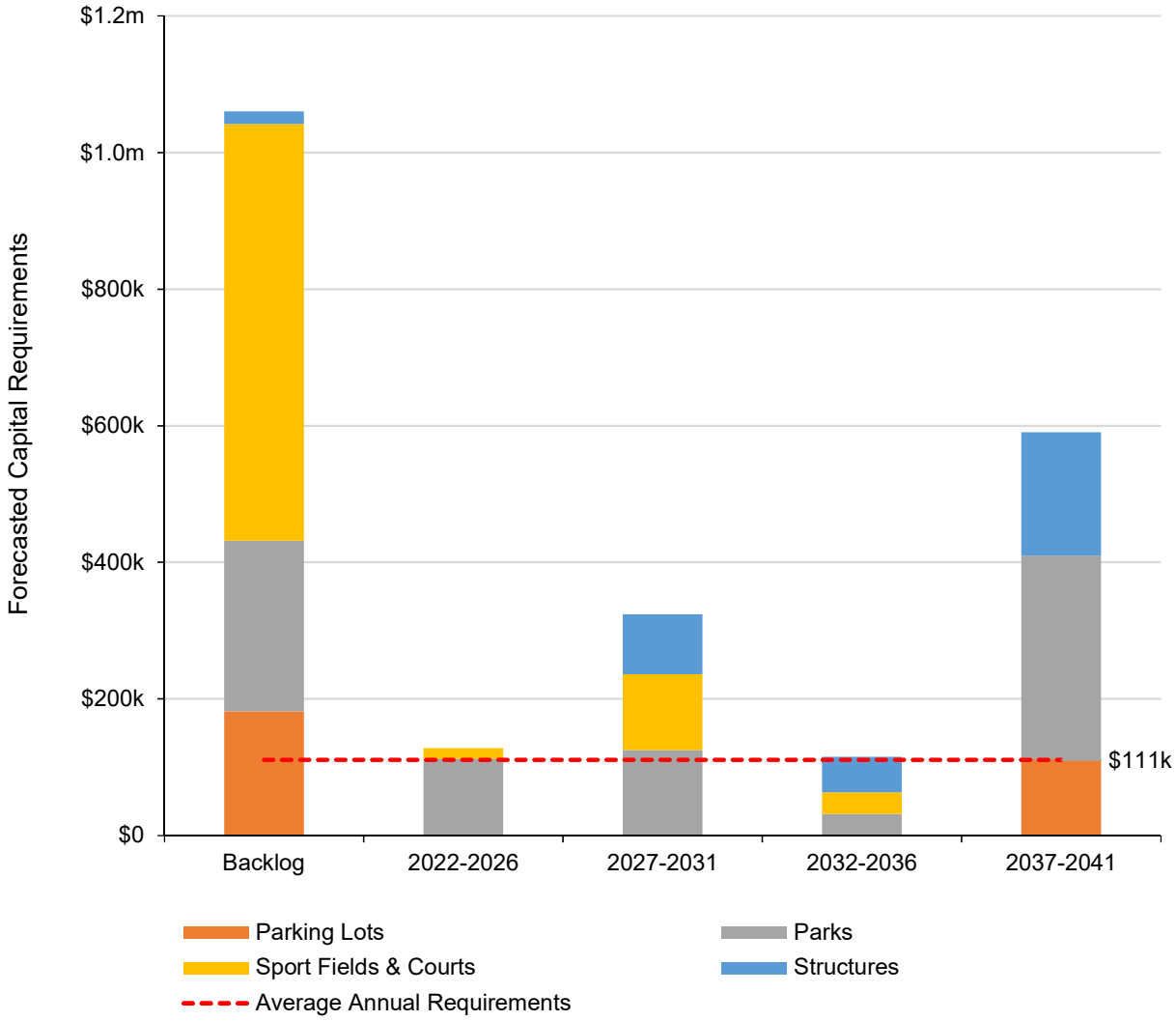
Asset Segment	Average Estimated Useful Life (Years)	Average Age (Years)
Parking Lots	20	17.6
Parks	20	15.8
Sport Fields & Courts	20	25.6
Structures	19	5.1

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

4.7.4 Lifecycle Management Strategy

Forecasted Capital Requirements

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



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

4.7.5 Risk & Criticality

Land Improvements are considered a non-core asset category. As such, the Town has until July 1, 2024, to identify asset risk and determine asset criticality

4.7.6 Levels of Service

Land improvements are considered a non-core asset category. As such, the Town has until July 1, 2024, to determine the qualitative descriptions and technical metrics that measure the current level of service provided.

4.7.7 Recommendations

Replacement Costs

- All replacement costs used in this AMP were based on the inflation of historical costs. These costs should be evaluated to determine their accuracy and reliability. Replacement costs should be updated according to the best available information on the cost to replace the asset in today's value.

Condition Assessment Strategies

- Identify condition assessment strategies for high value and high-risk assets.
- Review assets that have surpassed their estimated useful life to determine if immediate replacement is required or whether these assets are expected to remain in-service. Adjust the service life and/or condition ratings for these assets accordingly.

Risk Management Strategies

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

Levels of Service

- Begin measuring current levels of service in accordance with the metrics that the Town has established in this AMP. Additional metrics can be established as they are determined to provide meaningful and reliable inputs into asset management planning.
- Work towards identifying proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

5 Analysis of Rate-funded Assets

Key Insights

- Rate-funded assets are valued at $53.7 million
- 43% of rate-funded assets are in fair or better condition
- The average annual capital requirement to sustain the current level of service for rate-funded assets is approximately $1.0 million
- Critical assets should be evaluated to determine appropriate risk mitigation activities and treatment options

5.1 Water Network

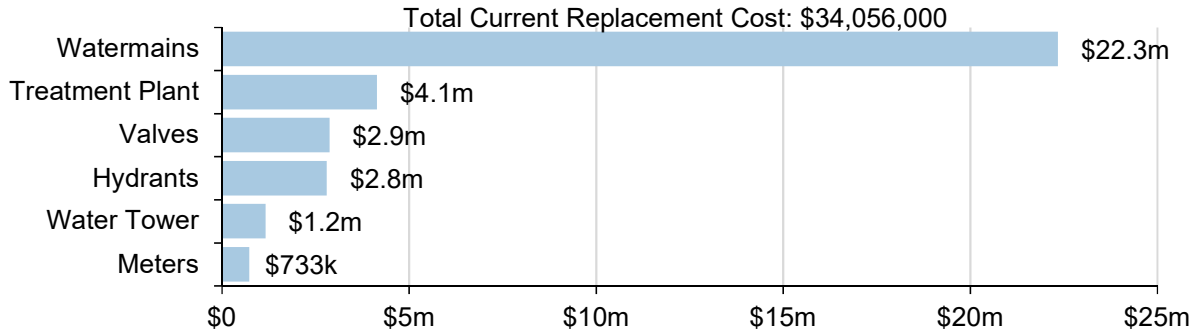
The Town's water network is comprised of linear infrastructure and various vertical assets, including:

- Chambers
- Hydrants
- Hydrants Valves
- Valves
- Treatment Plant
- Meters
- Watermains
- Water Tower

5.1.1 Asset Inventory & Replacement Cost

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

Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost	Annual Capital Requirement
Hydrants	246	User-defined	$2,799,000	$56,000
Meters	1,922	CPI	$733,000	$74,000
Treatment Plant	1	CPI	$4,141,000	$148,000
Valves	370	User-defined	$2,874,000	$57,000
Water Tower	1	CPI	$1,162,000	$43,000
Watermains	47 KM	Cost per unit	$22,346,000	$329,000
			$34,056,000	**$706,000**



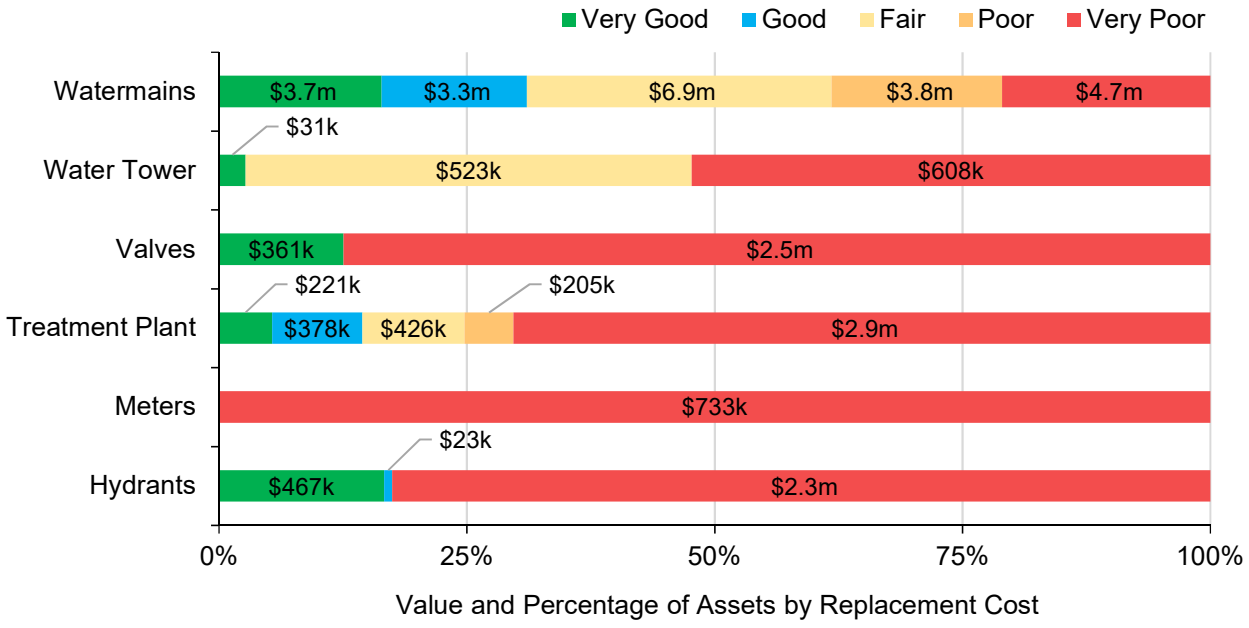
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to accurately represent realistic capital requirements.

5.1.2 Asset Condition

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

Asset Segment	Average Condition	Average Condition Rating	Condition Source
Hydrants	15%	Very Poor	Age-Based
Meters	0%	Very Poor	Age-Based
Treatment Plant	17%	Very Poor	Age-Based
Valves	12%	Very Poor	Age-Based
Water Tower	25%	Poor	Age-Based
Watermains	47%	Fair	Age-Based
	36%	**Poor**	**Age-Based**

The graph below visually illustrates the average condition for each asset segment on a very good to very poor scale. It is important to acknowledge that the condition of the Valves and Hydrants segments could be significantly underreported due to unknown in-service dates.



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

Current Approach to Condition Assessment

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

- Staff primarily rely on the age, material, and performance (leaks, noise, etc.) to determine the projected condition of water mains
- The Town utilizes external resources (OCWA) to conduct assessments on its infrastructure
- Critical vertical assets are inspected by OCWA on a frequent basis to comply with health & safety regulations and the Drinking Water Act

5.1.3 Estimated Useful Life & Average Age

The estimated useful life for water network assets has been assigned according to a combination of established industry standards and staff knowledge. The average age of each asset is based on the number of years each asset has been in-service. Assessed condition may increase or decrease the average service life remaining.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)
Hydrants	50	5.2
Meters	10	11.8
Treatment Plant	31	30.0
Valves	50	3.1
Water Tower	30	26.6
Watermains	50	36.4

The average ages for the Hydrants and Valves segments are based on the assets populated with data. In-service dates are unknown for 83% of Hydrants and 89% of Valves.

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

5.1.4 Lifecycle Management Strategy

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

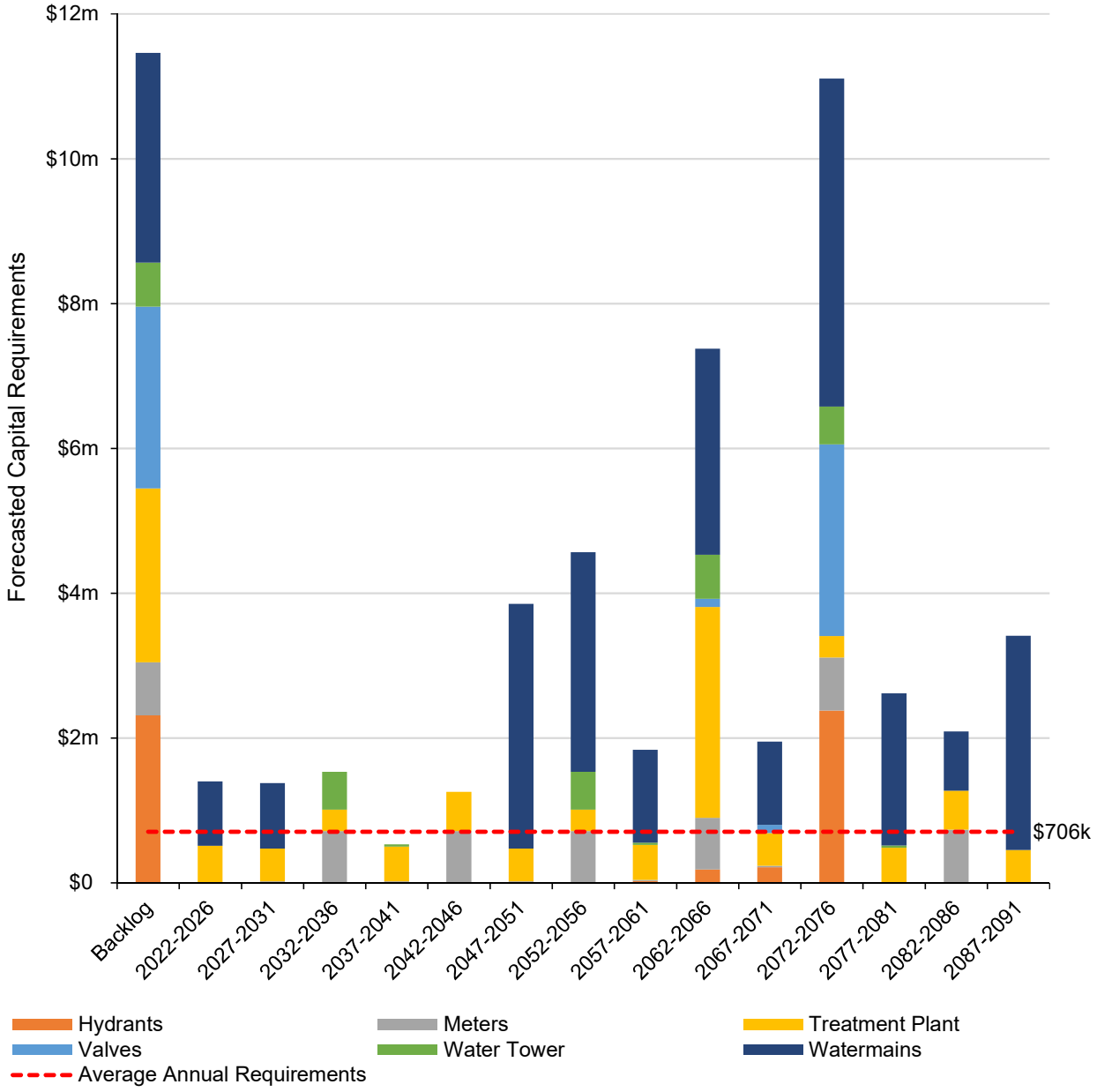
The following table outlines the Town's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance	Maintenance events are performed in accordance with industry best practices and manufacturer's specifications. An annual budget is allocated for repairs and maintenance to ensure compliance with provincial requirements. The objective is to ensure that all aspects of water treatment and distribution not only meet but also exceed the mandated standards whenever possible. Any repair and maintenance matters that arise are promptly addressed without delay.
	A scheduled inspection and maintenance program is implemented by OCWA
Rehabilitation	Both pumps and hydrants (gaskets & seals) are rehabilitated; candidates for rehabilitation are identified by OCWA
Replacement	In the absence of mid-lifecycle rehabilitative events, most mains are simply maintained with the goal of full replacement once it reaches its end-of-life
	Replacement of mains, for the most part is reactive. However, the Town does consider age and performance

Hearst presently maintains a detailed 10-year planning horizon for replacement events within the Water Network.

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 70 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average 5-year capital requirements.



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

5.1.5 Risk & Criticality

Risk Matrix

The following risk matrix provides a visual representation of the criteria used in the table below, to determine the risk rating of each water network asset.

This is a high-level model developed for the purposes of this AMP and Town staff should review and adjust the risk model 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 water network are documented below:

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost
Service Life Remaining (%)	Pipe Diameter
Pipe Material	

The identification of critical assets allows the Town 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.

Risks to Current Asset Management Strategies

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

Lifecycle Management Strategies

While Hearst promptly addresses any Water Network issues, a formal lifecycle management plan is not currently in place. There are activities that could be implemented to prolong the lifespan of water network assets. One viable option is the proactive rehabilitation of water mains through the utilization of trenchless activity technologies.

Staff Cognizance and Capacity

Town staff currently lacks redundancy measures, as staff with extensive knowledge of Hearst's infrastructure is limited. Consequently, any unexpected and prolonged absence of such personnel would have a severe adverse impact on the Town. Moreover, the available time of these staff members to complete their own tasks is constrained when they become the sole point of contact for all information and consultation.

Presently, the staff members are operating at full capacity. Adhering to new and evolving legislative and regulatory requirements mandated by the government can impose additional strain on the existing staff of the Town.

Asset Data Confidence

In the absence of recent condition assessments, the evaluation of asset condition and thus risk prioritization within the Manholes and Catch Basin segments predominantly relies on age-based criteria. However, due to the unavailability of in-service dates for the majority of these assets, it leads to the understating of the condition and the resulting risk ratings.

5.1.6 Levels of Service

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

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2022)
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal water system	See Appendix B
	Description, which may include maps, of the user groups or areas of the municipality that have fire flow	See Appendix B
Reliability	Description of boil water advisories and service interruptions	On occasion, water service interruptions may occur due to unexpected main breaks, maintenance activities, or water infrastructure replacement. Staff makes every effort to keep service interruptions to a minimum. The Town experienced 3 boil water advisories in 2022. All were related to the reconstruction contract of St-Laurent Street

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2022)
Scope	% of properties connected to the municipal water system	91%
	% of properties where fire flow is available	83%
Reliability	# of connection-days per year where a boil water advisory notice is in place compared to the total number of properties connected to the municipal water system	0.72
	# of connection-days per year where water is not available due to water main breaks compared to the total number of properties connected to the municipal water system	0
Performance	Average annual capital reinvestment rate vs. target reinvestment rate	1.08% : 2.07%
	% assets in good / very good condition	25%
	% assets in poor / very poor condition	52%

5.1.7 Recommendations

Asset Inventory

- The Town's water network inventory does not include in-service dates or estimated ages for Hydrants or Valves. With no available condition assessment data, reported condition is purely age-based. This causes a distortion of asset condition reporting and the resultant replacement strategy based on risk ratings. Therefore, it is important to prioritize the development of a comprehensive inventory of the water network, including in-service dates or estimated ages, to address this issue effectively.

Replacement Costs

- Gather accurate replacement costs and update on a regular basis to ensure the accuracy of capital projections.

Condition Assessment Strategies

- Identify condition assessment strategies for high value and high-risk water network assets.

Lifecycle Management Strategies

- Implement lifecycle management strategies wherever practical, and regularly evaluate their effectiveness to assess the impact on cost, condition, and risk.

Risk Management Strategies

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

Levels of Service

- Continue to measure current levels of service in accordance with the metrics that the Town has established in this AMP. Additional metrics can be

established as they are determined to provide meaningful and reliable inputs into asset management planning.

- Work towards identifying proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

5.2 Sanitary Network

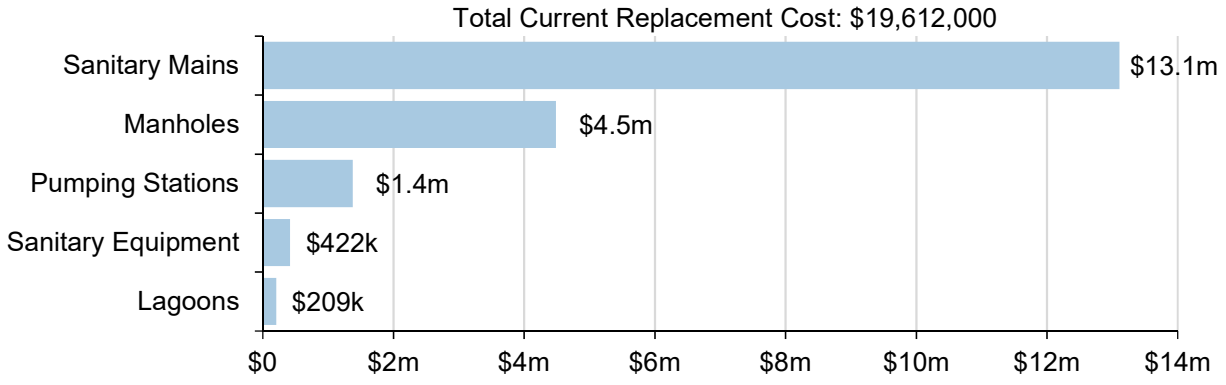
The sanitary network is comprised of various facilities and infrastructure, including:

- Mains
- Manholes
- Pumping Stations
- Lagoons
- Machinery & Equipment

5.2.1 Asset Inventory & Replacement Cost

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

Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost	Annual Capital Requirement
Lagoons	3	CPI	$209,000	$6,000
Manholes	449	User-defined	$4,490,000	$60,000
Pumping Stations	19	CPI	$1,380,000	$38,000
Sanitary Equipment	8	CPI	$422,000	$22,000
Sanitary Mains	44 KM	Cost per unit	$13,111,000	$207,000
			$19,612,000	**$332,000**



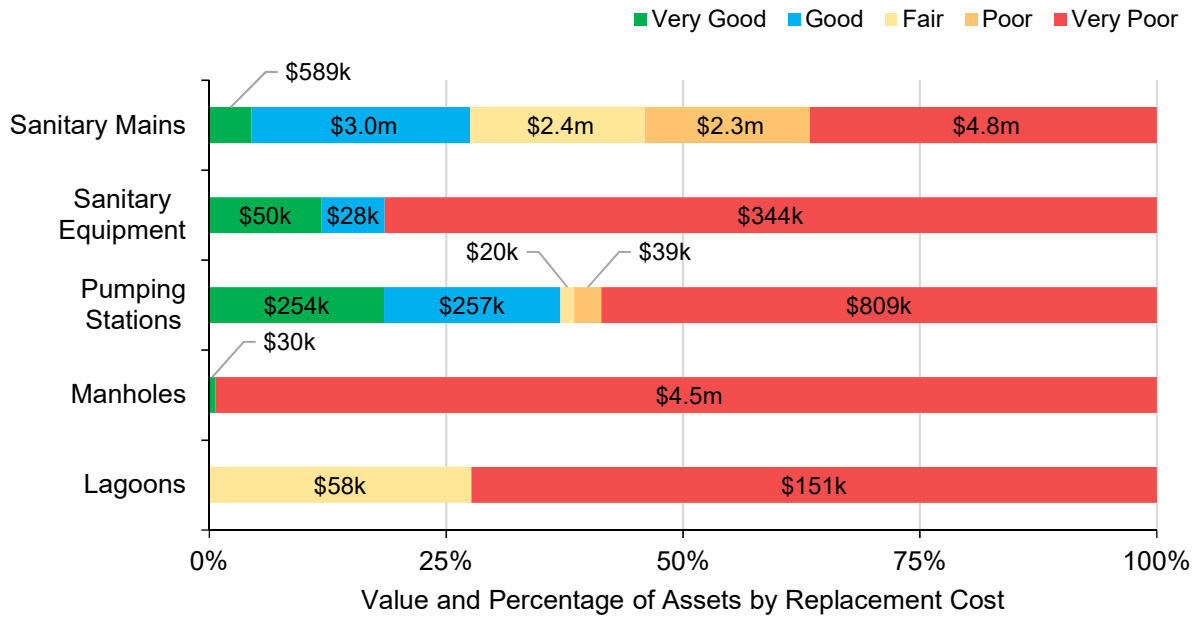
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to accurately represent realistic capital requirements.

5.2.2 Asset Condition

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

Asset Segment	Average Condition	Average Condition Rating	Condition Source
Lagoons	19%	Very Poor	Age-Based
Manholes	1%	Very Poor	Age-Based
Pumping Stations	30%	Poor	Age-Based
Sanitary Equipment	15%	Very Poor	Age-Based
Sanitary Mains	37%	Poor	Age-Based
	27%	**Poor**	**Age-Based**

The graph below visually illustrates the average condition for each asset segment on a very good to very poor scale. It is important to acknowledge that the condition of the Manholes segment could be significantly underreported due to unknown in-service dates.



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

Current Approach to Condition Assessment

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

- CCTV inspections are completed for sanitary mains on a regular cycle (100% of network every 10 years)
- Pumping stations and lagoons receive an external weekly visual inspection
- Manholes receive an annual visual inspection as part of the Town's pipeline maintenance program
- Machinery and equipment go through monthly testing and inspection

5.2.3 Estimated Useful Life & Average Age

The estimated useful life for sanitary network assets has been assigned according to a combination of established industry standards and staff knowledge. The average age of each asset is based on the number of years each asset has been in-service. Assessed condition may increase or decrease the average service life remaining.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)
Lagoons	30.8	39
Manholes	Unknown	75
Pumping Stations	31.3	38
Sanitary Equipment	25.4	19
Sanitary Mains	40.2	50

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

5.2.4 Lifecycle Management Strategy

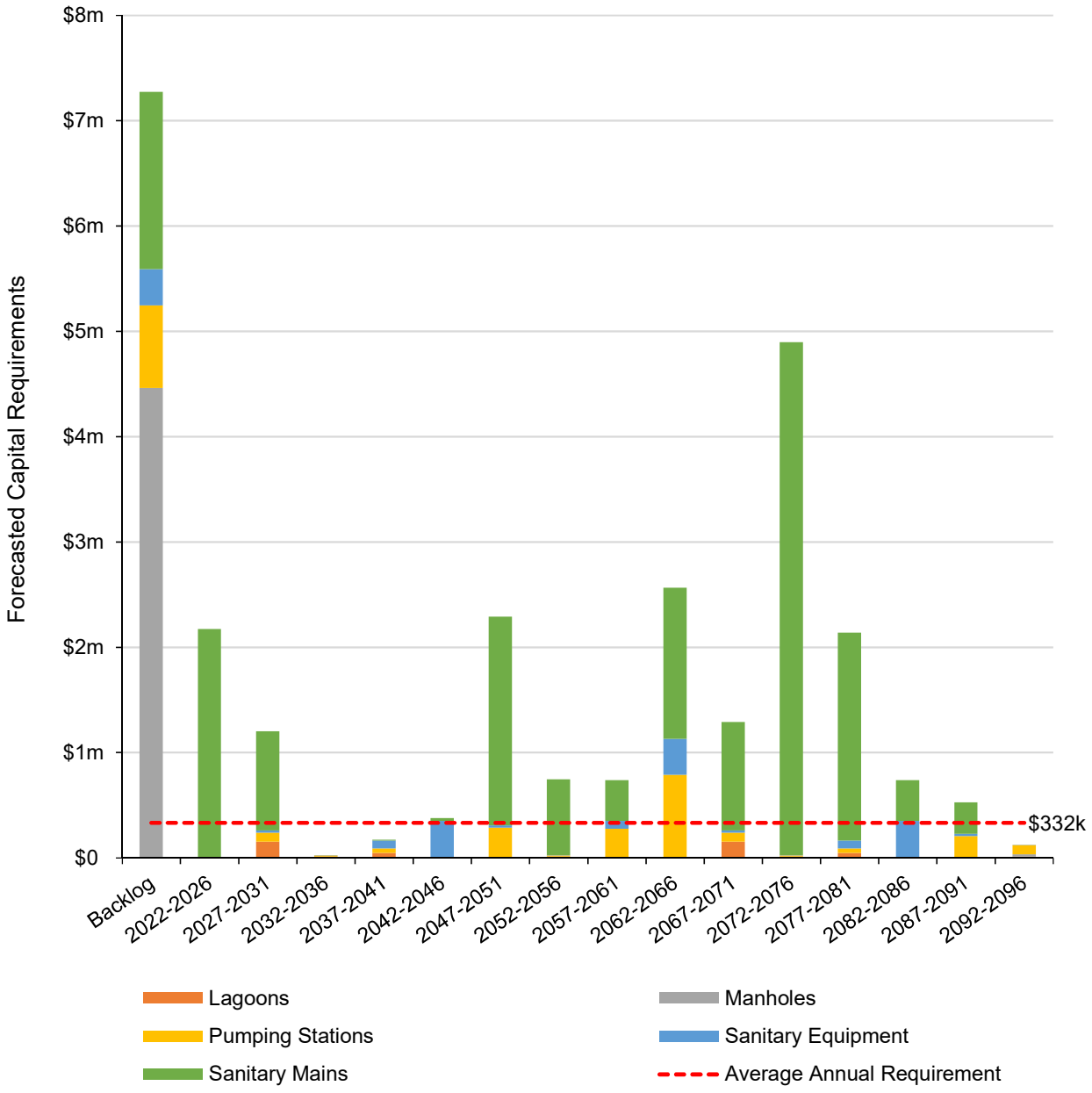
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance	Main flushing is completed on 100% of the network annually
	Annual manhole and sewer pipeline maintenance is conducted and accounts for much of the Town's operational budget
	Periodic pressure testing may be employed to identify deficiencies and potential leaks.
Rehabilitation	Trenchless re-lining of specific forcemains.
Replacement	In the absence of mid-lifecycle rehabilitative events, most mains are simply maintained with the goal of full replacement once it reaches its end-of-life.
	The Town does consider age, performance and energy consumption when identifying candidates for replacement/reconstruction

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 70 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average 5-year capital requirements.



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

5.2.5 Risk & Criticality

Risk Matrix

The following risk matrix provides a visual representation of the criteria used in the table below, to determine the risk rating of each sanitary network asset.

This is a high-level model developed for the purposes of this AMP and Town staff should review and adjust the risk model 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 sanitary network are documented below:

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost
Service Life Remaining (%)	Pipe Diameter
Material	

The identification of critical assets allows the Town 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.

Risks to Current Asset Management Strategies

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

Lifecycle Management Strategies

While Hearst promptly addresses any Sanitary Network issues, a formal lifecycle management plan is not currently in place. There are activities that could be implemented to prolong the lifespan of sanitary network assets.

Staff Cognizance and Capacity

Town staff currently lacks redundancy measures, as staff with extensive knowledge of Hearst's infrastructure is limited. Consequently, any unexpected and prolonged absence of such personnel would have a severe adverse impact on the Town. Moreover, the available time of these staff members to complete their own tasks is constrained when they become the sole point of contact for all information and consultation.

Presently, the staff members are operating at full capacity. Adhering to new and evolving legislative and regulatory requirements mandated by the government can impose additional strain on the existing staff of the Town.

Asset Data Confidence

In the absence of recent condition assessments, the evaluation of asset condition and thus risk prioritization within the Manholes segment predominantly relies on age-based criteria. However, due to the unavailability of in-service dates for the majority of these assets, it leads to the understating of the condition and the resulting risk ratings.

5.2.6 Levels of Service

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

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2022)
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal wastewater system	See Appendix B
Reliability	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	The Town does not have any combined sewer assets in their inventory.
	Description of the frequency and volume of overflows in combined sewers in the municipal wastewater system that occur in habitable areas or beaches	The Town does not have any combined sewer assets in their inventory.
	Description of how stormwater can get into sanitary sewers in the municipal wastewater system, causing sewage to	The largest contributor to ground water infiltration in the sanitary sewer system is the foundation sub-drain protecting every household from hydrostatic

Service Attribute	Qualitative Description	Current LOS (2022)
	overflow into streets or backup into homes	pressure. Spring saturation and heavy rainfall will impact sewer flows. Infiltration is also possible through manhole covers, manhole joints and pipe connection, although at a much reduced amount. There are currently six (6) sanitary overflows protecting the municipal system, all located at sewage pumping stations. Two (2) pumping stations are not equipped with overflows.
	Description of how sanitary sewers in the municipal wastewater system are designed to be resilient to stormwater infiltration	A yearly maintenance is performed to the sanitary collection system. Manholes are inspected and repaired when required. The majority of the current collection system is comprised of gasketed PVC pipe, thereby minimizing joint infiltration.
	Description of the effluent that is discharged from sewage treatment plants in the municipal wastewater system	Effluent refers to water pollution that is discharged from a wastewater treatment facility, and may include suspended solids, total phosphorous and biological oxygen demand. The Environmental Compliance Approval (ECA) for both the Cecile Sewage Treatment Lagoon and the Hearst Sewage Treatment Lagoons identifies the effluent criteria, the activities permitted and operational requirements for the municipal wastewater lagoons.

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2022)
Scope	% of properties connected to the municipal wastewater system	90%
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	0
	# of connection-days per year having wastewater backups compared to the total number of properties connected to the municipal wastewater system	0
	# of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system	0.0032
Performance	Average annual capital reinvestment rate vs. target reinvestment rate	1.01% : 1.69%
	% assets in good / very good condition	22%
	% assets in poor / very poor condition	66%

5.2.7 Recommendations

Asset Inventory

- The Town's network inventory does not include in-service dates or estimated ages for Hydrants or Valves. With no available condition assessment data, reported condition is purely age-based. This causes a distortion of asset condition reporting and the resultant replacement strategy based on risk ratings. Therefore, it is important to prioritize the development of a comprehensive inventory of the water network, including in-service dates or estimated ages, to address this issue effectively.

Condition Assessment Strategies

- Identify condition assessment strategies for high value and high-risk water network assets.

Risk Management Strategies

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

Lifecycle Management Strategies

- A trenchless re-lining strategy is expected to extend the service life of sanitary mains at a lower total cost of ownership and should be implemented to extend the life of infrastructure at the lowest total cost of ownership.
- Evaluate the efficacy of the Town's lifecycle management strategies at regular intervals to determine the impact cost, condition and risk.

Levels of Service

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

- Work towards identifying proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

6 Impacts of Growth

Key Insights

- Understanding the key drivers of growth and demand will allow Hearst to plan for new infrastructure more effectively, and the upgrade or disposal of existing infrastructure
- Population is projected to decrease by approximately 4%, from 2021 to 2036
- The costs of growth should be considered in long-term funding strategies that are designed to maintain the current level of service

6.1 Description of Growth Assumptions

The demand for infrastructure and services will change over time based on a combination of internal and external factors. Understanding the key drivers of growth and demand will allow Hearst 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.

6.1.1 Official Plan of the Hearst Planning Area (2017)

The Official Plan was initially adopted by the Ministry of Municipal Affairs and Housing in 2007. To meet regulatory requirements, set forth by the *Provincial Policy Statement, 2014*, the Official Plan was updated in 2017.

It serves as a policy document that provides guidelines for development activities in the Town of Hearst, the Township of Mattice-Val Côté, and five unorganized townships in the surrounding areas. The Official Plan has three functions:

1. It reflects changes that have occurred and trends that have developed in the Hearst Planning Area;
2. Addresses policy changes that came into effect as a result of the release of the *Growth Plan for Northern Ontario, 2011* and the implementation of the *Provincial Policy Statement, 2014; and*
3. Sets out the approaches of Hearst and Mattice-Val Côté Councils for building sustainable economies

The Official Plan serves as the basic guide for the Planning area until 2027, at which time the Planning Board and Councils will hold public meetings to determine the need for a revision of the plan.

Section 5.1.2.2 of the Official Plan indicates that by 2036, Hearst has a target population of 5,960 persons. However, Hearst is expected to have a decrease of 9.1%, bringing the total population count to approximately 4,609 in 2036.

Year	2006	2011	2016	2021	2036
Population	5,620	5,090	5,070	4,794	4,609

With a declining and aging population, the demand for affordable housing (5.1.3.1 [iii]) will increase as the Town will have to accommodate the needs of its residents.

Hearst Council will continue to work with government and agencies such as the Cochrane District Social Services Administration Board (CDSSAB) to promote programs that assist homeowners to repair their dwelling units or make them accessible, and to create new housing units that respond to the needs of seniors.

6.1.2 Economic Development Plan (2020)

Hearst's Economic Development Plan was first drafted in 2003 and went through a review and update in 2020. It outlines four main strategies and objectives:

1. Focusing Council's processes and assets;
2. Collaborating by forging partnerships at regional and provincial levels;
3. Supporting target business sectors; and
4. Developing social infrastructure

An example of the Economic Development Plan in action can best be seen by the examining the Hearst Community Improvement Plan (CIP). The CIP was adopted by Council in January of 2009 via by-law 04-09. It was then amended in July of 2019 by by-law 48-19.

The purpose of the CIP is to address infrastructure deficiencies and facilitate beautification projects in the following sections:

1. The downtown area;
2. The highway commercial area (Front Street); and
3. The highway industrial area (Highway 11)

The plans within the CIP help to promote existing businesses (modern signage), make Hearst more walkable, promote its heritage, via branding, and create a more modern streetscape design. The CIP, in conjunction with the Economic Development Plan, set forth both objectives and strategies, along with tangible steps and processes to achieve its goal of increased economic prosperity.

6.2 Impact of Growth on Lifecycle Activities

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

Planning for forecasted population growth (seniors 65+) may require the expansion of existing infrastructure and services. As growth-related assets are constructed or acquired, they should be integrated into Hearst's AMP. While the addition of residential units will add to the existing assessment base and offset some of the costs associated with growth, Hearst 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 maintain the current level of service.

7 Financial Strategy

Key Insights

- The Town is committing approximately $2,563,000 towards capital projects per year from sustainable revenue sources
- Given the annual capital requirement of $8,798,000, there is currently a funding gap of $6,234,000 annually when the proposed lifecycle strategy scenarios are implemented
- For tax-funded assets, we recommend increasing tax revenues by 2.6% each year for the next 20 years to achieve a sustainable level of funding
- For the sanitary network, we recommend increasing rate revenues by 1.1% annually for the next 15 years to achieve a sustainable level of funding
- For the water network, we recommend increasing rate revenues by 1.7% annually for the next 15 years to achieve a sustainable level of funding

7.1 Financial Strategy Overview

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

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

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

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

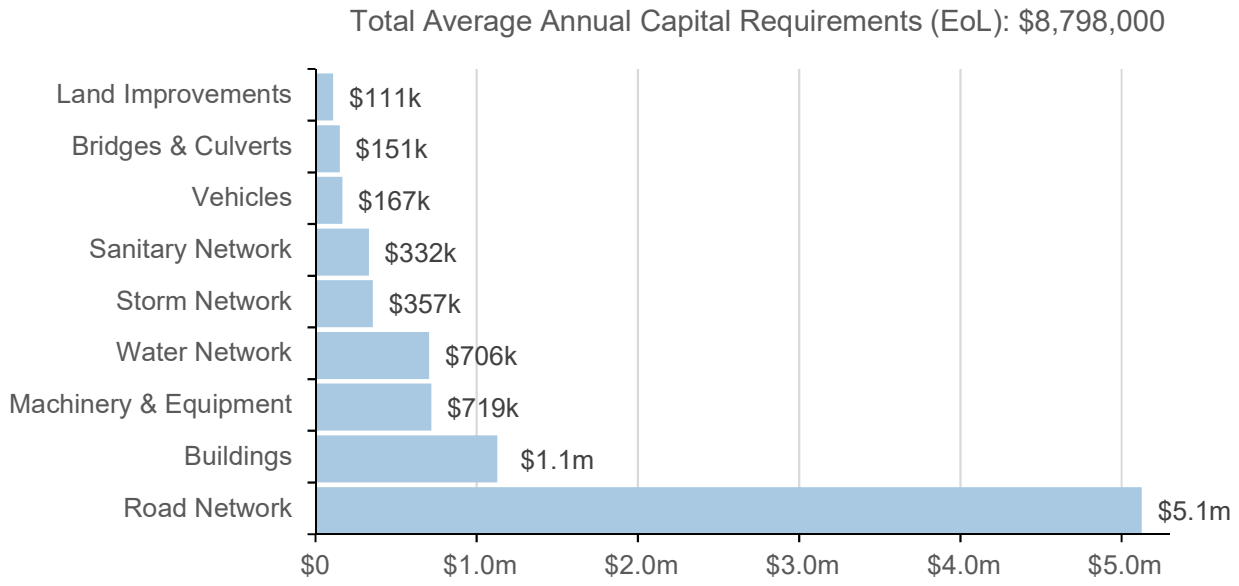
If the financial plan component results in a funding shortfall, the Province requires the inclusion of a specific plan as to how the impact of the shortfall will be managed. In determining the legitimacy of a funding shortfall, the Province may evaluate a Town's approach to the following:

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

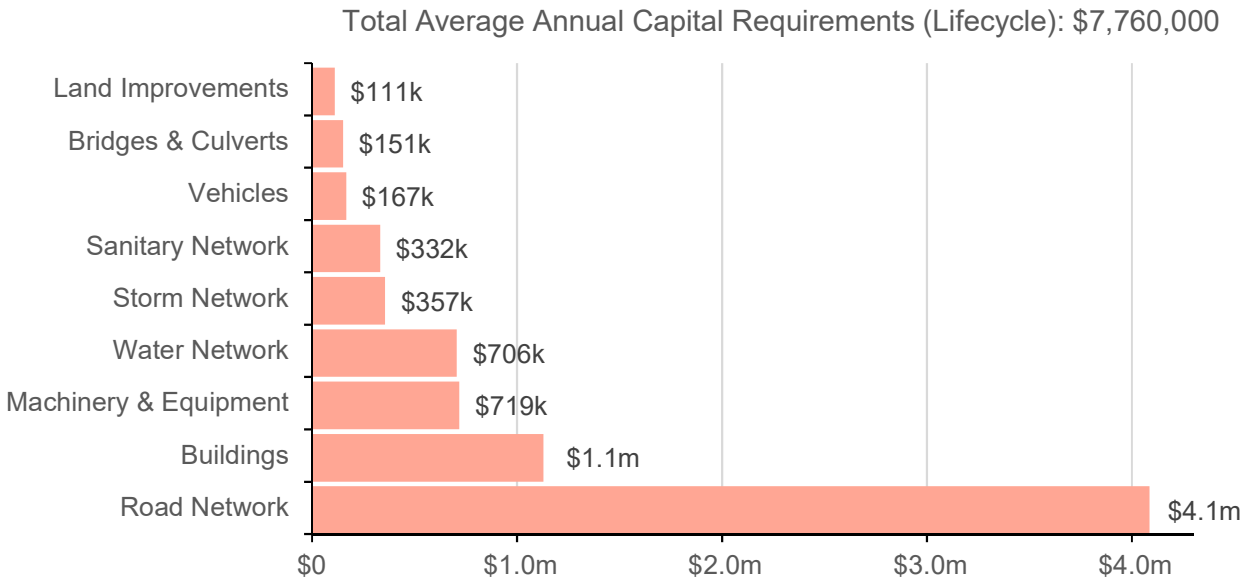
7.1.1 Annual Requirements & Capital Funding

Annual Requirements

The annual requirements represent the amount the Town should allocate annually to each asset category to meet replacement needs as they arise, prevent infrastructure backlogs and achieve long-term sustainability. In total, the Town must allocate approximately $8.8 million annually to address capital requirements for the assets included in this AMP.



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



However, for the road network, a proposed lifecycle management strategy has been developed to identify capital costs that could be realized through strategic rehabilitation and renewal of the Town's roads. The development of these strategies allows for a comparison of potential cost avoidance if the strategies were to be implemented. The following table compares two scenarios for the road network:

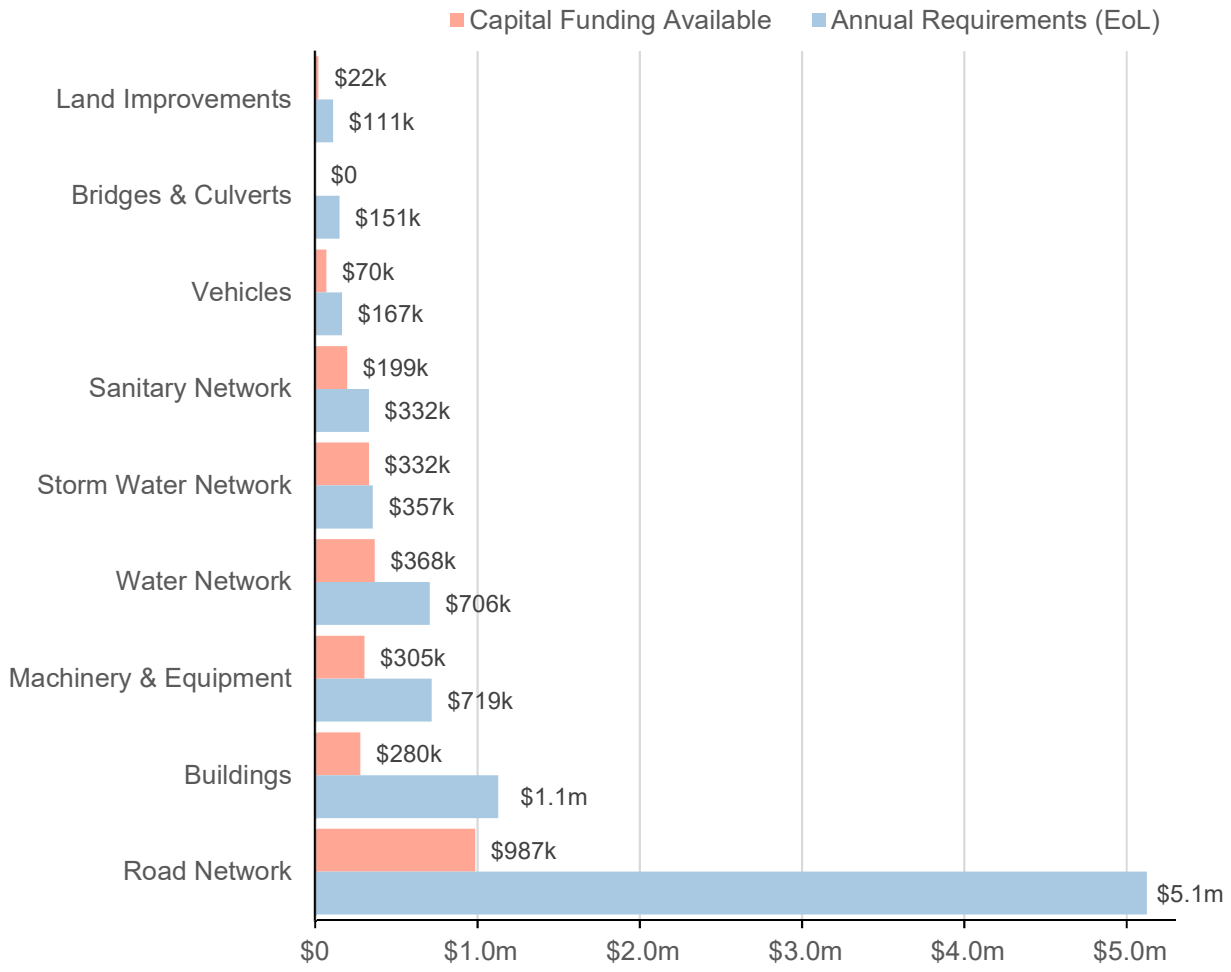
1. **Replacement Only Scenario**: Based on the assumption that assets deteriorate and – without regularly scheduled maintenance and rehabilitation – are replaced at the end of their service life.
2. **Lifecycle Strategy Scenario**: Based on the assumption that lifecycle activities are performed at strategic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

Asset Category	Annual Requirements (Replacement Only)	Annual Requirements (Lifecycle Strategy)	Difference
Road Network	$5,125,000	$4,087,000	$1,038,000

The implementation of a proactive lifecycle strategy for roads leads to a potential annual cost avoidance of $1,038,000 for the road network. This represents an overall reduction of the annual requirements by 20%. As the lifecycle strategy scenario represents the lowest cost option available to the Town, we have used this annual requirement in the development of the financial strategy.

Annual Funding Available

Based on a historical analysis of sustainable capital funding sources, the Town is committing approximately $2,563,000 towards capital projects per year from sustainable revenue sources. Given the annual capital requirement of $8,798,000, there is currently a funding gap of $6,235,000 annually.



7.2 Funding Objective

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

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

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

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

7.3 Financial Profile: Tax Funded Assets

7.3.1 Current Funding Position

The following tables show, by asset category, Hearst's average annual asset investment requirements, current funding positions, and funding increases required to achieve full funding on assets funded by taxes. The average annual requirement for the Road Network is based on the previously mentioned lifecycle strategy scenario.

Asset Category	Avg. Annual Requirement	Annual Funding Available				Annual Deficit
		Taxes	Gas Tax	OCIF	Total Available	
Road Network	4,087,000	52,000	322,000	613,000	987,000	3,100,000
Stormwater Network	357,000	332,000	0	0	332,000	25,000
Bridges & Culverts	151,000	0	0	0	0	151,000
Buildings	1,129,000	280,000	0	0	280,000	849,000
Machinery & Equipment	719,000	305,000	0	0	305,000	414,000
Land Improvements	111,000	22,000	0	0	22,000	89,000
Vehicles	167,000	70,000	0	0	70,000	97,000
	6,721,000	**1,061,000**	**322,000**	**613,000**	**1,966,000**	**4,725,000**

The average annual investment requirement for the above categories is $6,721,000. Annual revenue currently allocated to these assets for capital purposes is $1,966,000 leaving an annual deficit of $4,725,000. Put differently, these infrastructure categories are currently funded at 29.7% of their long-term requirements.

7.3.2 Full Funding Requirements

In 2022, Town of Hearst had annual budgeted tax revenues of $7,181,000. As illustrated in the following table, without consideration of any other sources of revenue or cost containment strategies, full funding would require the following tax change over time:

Asset Category	Tax Change Required for Full Funding
Road Network	43.2%
Storm Water Network	0.3%
Bridges & Culverts	2.1%
Buildings	11.8%
Machinery & Equipment	5.8%
Land Improvements	1.2%
Vehicles	1.4%
	65.8%

Our recommendations include capturing the above changes and allocating them to the infrastructure deficit outlined above. The table below outlines this concept and presents several options:

	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	4,725,000	4,725,000	4,725,000	4,725,000
Change in Debt Costs	N/A	N/A	N/A	N/A
Resulting Infrastructure Deficit	4,725,000	4,725,000	4,725,000	4,725,000
Tax Increase Required	65.8%	65.8%	65.8%	65.8%
Annually	**10.7%**	**5.2%**	**3.5%**	**2.6%**

7.3.3 Financial Strategy Recommendations

Considering all the above information, we recommend the 20-year option. This involves full CapEx funding being achieved over 20 years by:

a) Increasing tax revenues by 2.6% each year for the next 20 years solely for the purpose of phasing in full funding to the asset categories covered in this section of the AMP.
b) Allocating the current Gas Tax and OCIF revenue as outlined previously.
c) Reallocating appropriate revenue from categories in a surplus position to those in a deficit position.
d) Increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

Notes:

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

Although this option achieves full CapEx funding on an annual basis in 20 years and provides financial sustainability over the period modeled, the recommendations do require prioritizing capital projects to fit the resulting annual funding available. Current data shows a capital requirement backlog of $43.4 million for the Road Network, $12.2 million for Buildings, $1.1 million for Land Improvements, $3.2 million for Machinery & Equipment, $5.7 million for the Storm Water Network and $695,000 for Vehicles.

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

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

7.4 Financial Profile: Rate Funded Assets

7.4.1 Current Funding Position

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

Asset Category	Avg. Annual Requirement	Annual Funding Available				Annual Deficit
		Rates	To Operations	OCIF	Total Available	
Water Network	706,000	1,189,000	-821,000	0	368,000	338,000
Sanitary Network	332,000	818,000	-619,000	0	199,000	133,000
	1,038,000	**2,007,000**	**-1,440,000**	**0**	**567,000**	**471,000**

The average annual CapEx requirement for the above categories is $1,038,000. Annual revenue currently allocated to these assets for capital purposes is $2,007,000 leaving an annual deficit of $471,000. Put differently, these infrastructure categories are currently funded at 54.6% of their long-term requirements.

7.4.2 Full Funding Requirements

In 2022, Hearst had annual budgeted sanitary revenues of $818,000 and annual water revenues of $1,189,000. As illustrated in the table below, without consideration of any other sources of revenue, full funding would require the following changes over time:

Asset Category	Rate Change Required for Full Funding
Water Network	28.4%
Sanitary Network	16.3%

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

	Water Network				Sanitary Network			
	5 Years	**10 Years**	**15 Years**	**20 Years**	**5 Years**	**10 Years**	**15 Years**	**20 Years**
Infrastructure Deficit	338,000	338,000	338,000	338,000	133,000	133,000	133,000	133,000
Rate Increase Required	28.4%	28.4%	28.4%	28.4%	16.3%	16.3%	16.3%	16.3%
Annually	**5.2%**	**2.6%**	**1.7%**	**1.3%**	**3.1%**	**1.6%**	**1.1%**	**0.8%**

7.4.3 Financial Strategy Recommendations

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

a) increasing rate revenues by 1.1% for the sanitary network and 1.7% for the water network each year for the next 15 years solely for the purpose of phasing in full funding to the asset categories covered in this section of the AMP.
b) increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

Notes:

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

Although this option achieves full CapEx funding on an annual basis in 15 years and provides financial sustainability over the period modeled, the recommendations do require prioritizing capital projects to fit the resulting annual funding available. Current data shows a capital requirement backlog of $11.5 million for the Water Network and $7.3 million for the Sanitary Sewer Network.

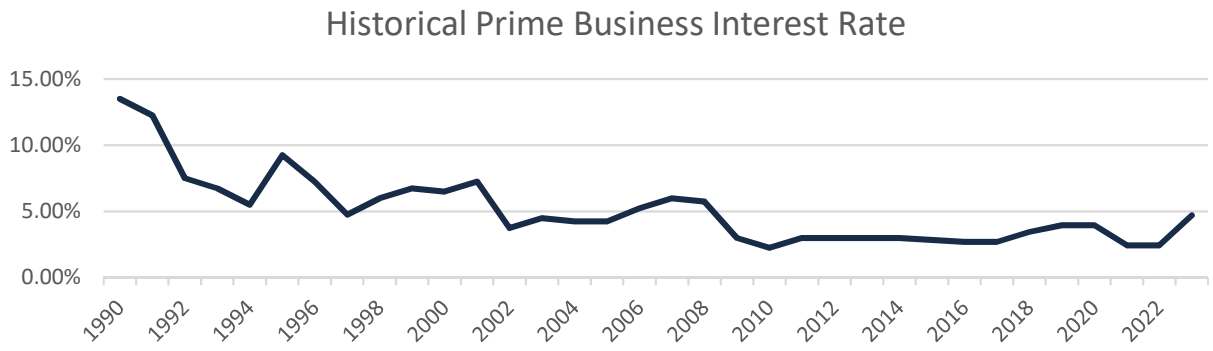
Prioritizing future projects will require the current data to be replaced by condition-based data. Although our recommendations include no further use of debt, the results of the condition-based analysis may require otherwise.

7.5 Use of Debt

Debt can be strategically utilized as a funding source within the long-term financial plan. The benefits of leveraging debt for infrastructure planning include:

a) the ability to stabilize tax and user rates when dealing with variable and uncontrollable factors,
b) equitable distribution of the cost and benefits of infrastructure over its useful life,
c) a secure source of funding,
d) the ability to proceed with projects sooner than waiting to save enough in cash or grants to pay for the project all at once and,
e) flexibility in cash flow management.

However, there needs to be consideration given to the fact that interest rates have been rising. To mitigate increasing commodity prices and inflation, interest rates have increased quickly and therefore, sustainable funding models that include debt need to incorporate the realized risk of increasing rates. The following graph shows the historical changes to lending rates.



A change in 15-year rates from 4% to 6% would change the premium from 35% to 54%. Such a change would have a significant impact on a financial plan.

For reference purposes, the following table outlines the premium paid on a project if financed by debt. For example, a $1M project financed at 4.0%[3] over 15 years would result in a 35% premium or $350,000 of increased costs due to interest payments. For simplicity, the table does not consider the time value of money or the effect of inflation on delayed projects.

[3] As of February 2023, the municipal Infrastructure Ontario rates for 15-year money is 4.3%.

Interest Rate	Number of Years Financed					
	5	10	15	20	25	30
7.0%	22%	42%	65%	89%	115%	142%
6.5%	20%	39%	60%	82%	105%	130%
6.0%	19%	36%	54%	74%	96%	118%
5.5%	17%	33%	49%	67%	86%	106%
5.0%	15%	30%	45%	60%	77%	95%
4.5%	14%	26%	40%	54%	69%	84%
4.0%	12%	23%	35%	47%	60%	73%
3.5%	11%	20%	30%	41%	52%	63%
3.0%	9%	17%	26%	34%	44%	53%
2.5%	8%	14%	21%	28%	36%	43%
2.0%	6%	11%	17%	22%	28%	34%
1.5%	5%	8%	12%	16%	21%	25%
1.0%	3%	6%	8%	11%	14%	16%
0.5%	2%	3%	4%	5%	7%	8%
0.0%	0%	0%	0%	0%	0%	0%

There is currently $0 of debt outstanding for the assets covered by this AMP with corresponding principal and interest payments of $0, well within its provincially prescribed maximum of $2.75 million

The revenue options outlined in this plan allow Hearst to fully fund its long-term infrastructure requirements without the use of debt.

7.6 Use of Reserves

7.6.1 Available Reserves

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

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

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

Asset Category	Balance on December 31, 2022
Road Network	0
Stormwater Network	0
Bridges & Culverts	0
Buildings	2,008,000
Machinery & Equipment	0
Land Improvements	0
Vehicles	0
Total Tax Funded:	**2,008,000**
Water Network	108,000
Sanitary Network	158,000
Total Rate Funded:	**266,000**

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

a) breadth of services provided
b) age and condition of infrastructure
c) use and level of debt
d) economic conditions and outlook
e) internal reserve and debt policies.

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

7.6.2 Recommendation

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

8 Appendices

Key Insights

- Appendix A identifies projected 10-year capital requirements for each asset category
- Appendix B includes several maps that have been used to visualize the current level of service
- Appendix C provides additional guidance on the development of a condition assessment program

Appendix A: 10-Year Capital Requirements

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

Road Network											
Segment	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Curbs	$4.7m	$279k	$377k	$429k	$327k	$0	$749k	$0	$0	$645k	$0
Paved Roads	$26.9m	$1.1m	$2.4m	$1.7m	$1.4m	$0	$14.6m	$0	$1.6m	$6.4m	$2.4m
Sidewalks	$11.0m	$558k	$520k	$430k	$757k	$230k	$1.9m	$0	$0	$1.3m	$0
Streetlights	$434k	$27k	$0	$0	$13k	$20k	$0	$0	$44k	$31k	$0
Surface Treated Roads	$344k	$0	$140k	$0	$0	$872k	$458k	$0	$0	$0	$0
Total	**$85.2m**	**$43.4m**	**$1.9m**	**$3.4m**	**$2.6m**	**$2.5m**	**$1.1m**	**$17.8m**	**$0**	**$1.6m**	**$8.4m**

Bridges & Culverts											
Segment	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Bridges	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Culverts	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

Storm Network											
Segment	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Catch Basins	$4.5m	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Manholes	$1.2m	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Storm Mains	$83k	$0	$0	$140k	$404k	$0	$0	$960k	$9k	$291k	$0
Total	**$5.7m**	**$0**	**$0**	**$140k**	**$404k**	**$0**	**$0**	**$960k**	**$9k**	**$291k**	**$0**

Buildings											
Segment	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Cemetery	$15k	$10k	$66k	$7k	$0	$108k	$0	$0	$0	$0	$0
Claude Larose Recreation Centre	$10.2m	$73k	$197k	$157k	$292k	$136k	$456k	$524k	$1.2m	$288k	$115k
Day Care Centre	$120k	$0	$0	$0	$0	$99k	$0	$0	$0	$2.2m	$1k
Firehall	$488k	$0	$69k	$0	$0	$0	$0	$46k	$11k	$6k	$128k
Public Works Garage	$21k	$7k	$31k	$0	$0	$0	$0	$0	$0	$0	$2.4m
Rene Fontaine Municipal Airport	$235k	$4.2m	$42k	$0	$0	$0	$0	$177k	$0	$0	$0
Tourism Kiosk	$102k	$0	$138k	$0	$7k	$0	$0	$0	$0	$1.0m	$3k
Town Hall	$1.0m	$0	$906k	$371k	$11k	$20k	$5k	$0	$0	$5k	$44k
Total	**$12.2m**	**$4.3m**	**$1.4m**	**$535k**	**$310k**	**$363k**	**$461k**	**$748k**	**$1.2m**	**$3.5m**	**$2.7m**

Vehicles											
Segment	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Fire	$433k	$0	$0	$0	$0	$33k	$267k	$0	$316k	$0	$13k
Parks & Recreation	$94k	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Public Works	$168k	$0	$105k	$39k	$253k	$39k	$0	$47k	$503k	$0	$0
Total	**$2.3m**	**$695k**	**$0**	**$105k**	**$39k**	**$253k**	**$73k**	**$267k**	**$47k**	**$819k**	**$0**

Machinery & Equipment											
Segment	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Fire	$397k	$23k	$6k	$109k	$4k	$12k	$392k	$6k	$109k	$4k	$12k
General Government	$1.1m	$162k	$196k	$77k	$56k	$44k	$720k	$153k	$256k	$52k	$41k
Parks & Recreation	$107k	$71k	$18k	$0	$10k	$11k	$2k	$16k	$121k	$109k	$0
Public Works	$1.6m	$4k	$67k	$171k	$15k	$60k	$107k	$274k	$59k	$11k	$199k
Social & Family Services	$0	$23k	$28k	$4k	$13k	$14k	$19k	$16k	$12k	$14k	$8k
Total	**$3.2m**	**$284k**	**$314k**	**$361k**	**$98k**	**$141k**	**$1.2m**	**$465k**	**$557k**	**$189k**	**$260k**

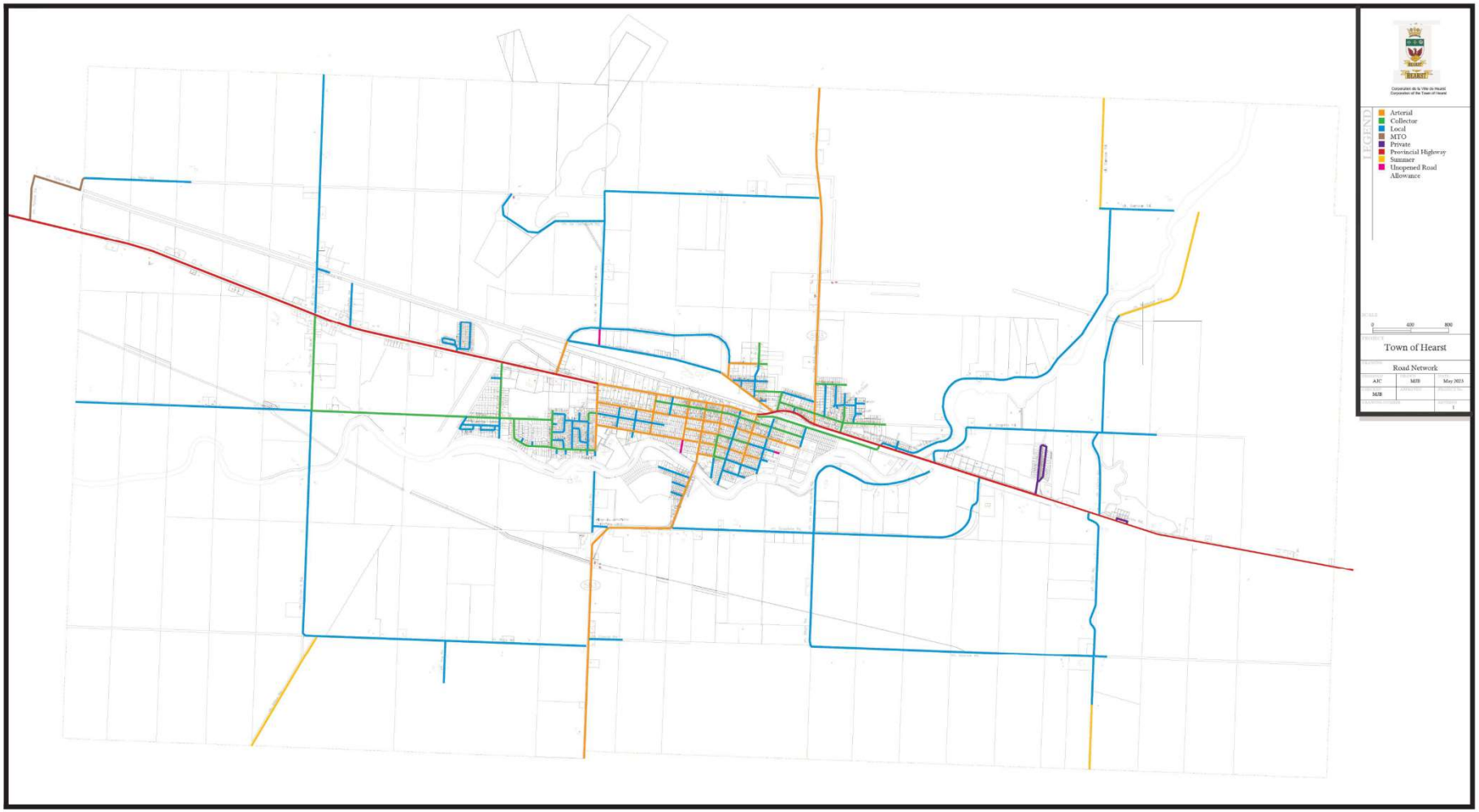
Land Improvements											
Segment	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Parking Lots	$182k	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Parks	$249k	$38k	$40k	$5k	$16k	$14k	$0	$19k	$0	$0	$106k
Sport Fields & Courts	$610k	$0	$0	$0	$15k	$0	$0	$0	$0	$111k	$0
Structures	$19k	$0	$0	$0	$0	$0	$0	$0	$0	$88k	$0
Total	**$1.1m**	**$38k**	**$40k**	**$5k**	**$31k**	**$14k**	**$0**	**$19k**	**$0**	**$198k**	**$106k**

Water Network											
Segment	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Hydrants	$2.3m	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Meters	$733k	$0	$0	$0	$0	$0	$0	$0	$0	$0	$18k
Treatment Plant	$2.4m	$6k	$503k	$0	$0	$0	$0	$0	$0	$205k	$249k
Valves	$2.5m	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Water Tower	$608k	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Watermains	$2.9m	$261k	$0	$0	$219k	$409k	$0	$432k	$473k	$0	$0
Total	**$11.5m**	**$267k**	**$503k**	**$0**	**$219k**	**$409k**	**$0**	**$432k**	**$473k**	**$205k**	**$267k**

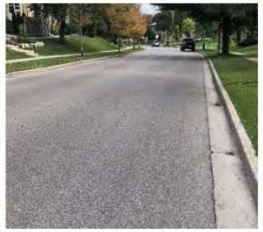
Sanitary Network											
Segment	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Lagoons	$0	$0	$0	$0	$0	$0	$151k	$0	$0	$0	$0
Manholes	$4.5m	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Pumping Stations	$786k	$0	$0	$0	$0	$0	$0	$39k	$0	$0	$48k
Sanitary Equipment	$344k	$0	$0	$0	$0	$0	$0	$0	$10k	$0	$12k
Sanitary Mains	$1.7m	$737k	$1.3m	$0	$41k	$122k	$43k	$192k	$377k	$329k	$0
Total	**$7.3m**	**$737k**	**$1.3m**	**$0**	**$41k**	**$122k**	**$194k**	**$231k**	**$387k**	**$329k**	**$60k**

Appendix B: Level of Service Maps

Road Network Map



Road Network - Road Class Pavement Condition

Condition	Images that illustrate the different Pavement Quality Index Levels			
	Local Roads	Collector	Primary Collector	Arterial
Very Good Condition 1 (PQI 80 – 100)	PQI = 80 	PQI = 80 	PQI = 80 	PQI = 80 
Good Condition 2 (PQI 60 – 79)	PQI = 60 	PQI = 60 	PQI = 60 	PQI = 60 
Fair Condition 3 (PQI 40 – 59)	PQI = 40 	PQI = 40 	PQI = 40 	PQI = 40 

Road Network - Road Class Pavement Condition (cont'd)

Condition	Images that illustrate the different Pavement Quality Index Levels			
	Local Roads	**Collector**	**Collector**	**Arterial**
Poor Condition 4 (PQI 20 – 39)	PQI = 20 	PQI = 22 	PQI = 22 	PQI = 22 
Very Poor Condition 5 (PQI 0 – 19)	PQI = 18 	PQI = 18 	N/A	PQI = 19 

Bridges and Culverts - Bridge Condition

Condition	Images of the condition of bridges and how this would affect use of the bridges
Very Good Condition 1 (BMS RATING 10)	Overall Condition Rating - 9.0 
Good Condition 2 (BMS RATING 8.0–9.9)	Overall Condition Rating - 6.2 
Fair Condition 3 (BMS RATING 6.0-7.9)	Corrosion and flaking steel 

Condition	Images of the condition of bridges and how this would affect use of the bridges
Poor Condition 4 (BMS RATING 3.0-5.9)	Full perforation of wrought iron arch member 
Very Poor Condition 5 (BMS RATING 1.0-2.9)	Shear ties on reinforcing steel in columns severed due to corrosion. 

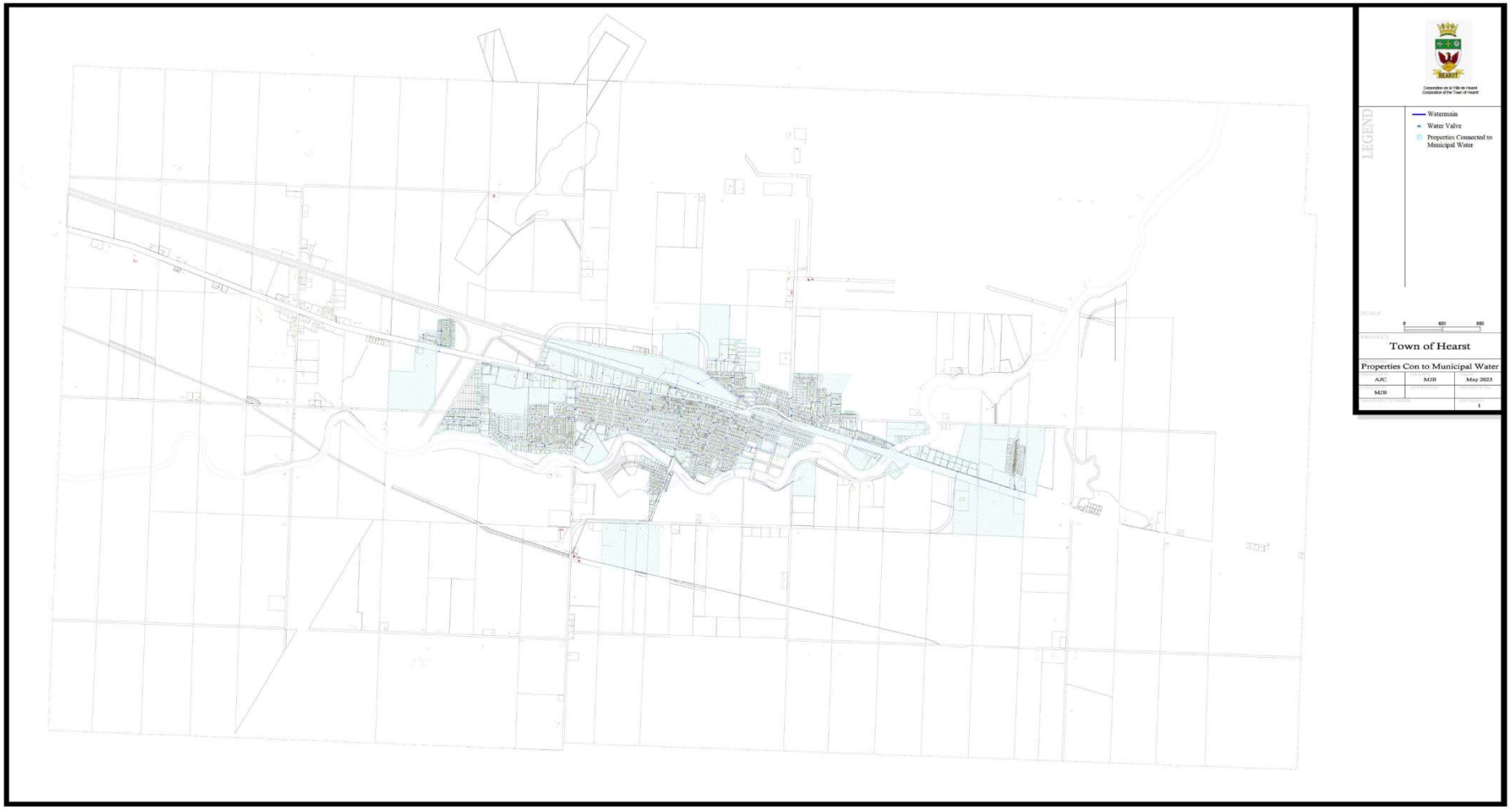
Bridges and Culverts - Culvert Condition

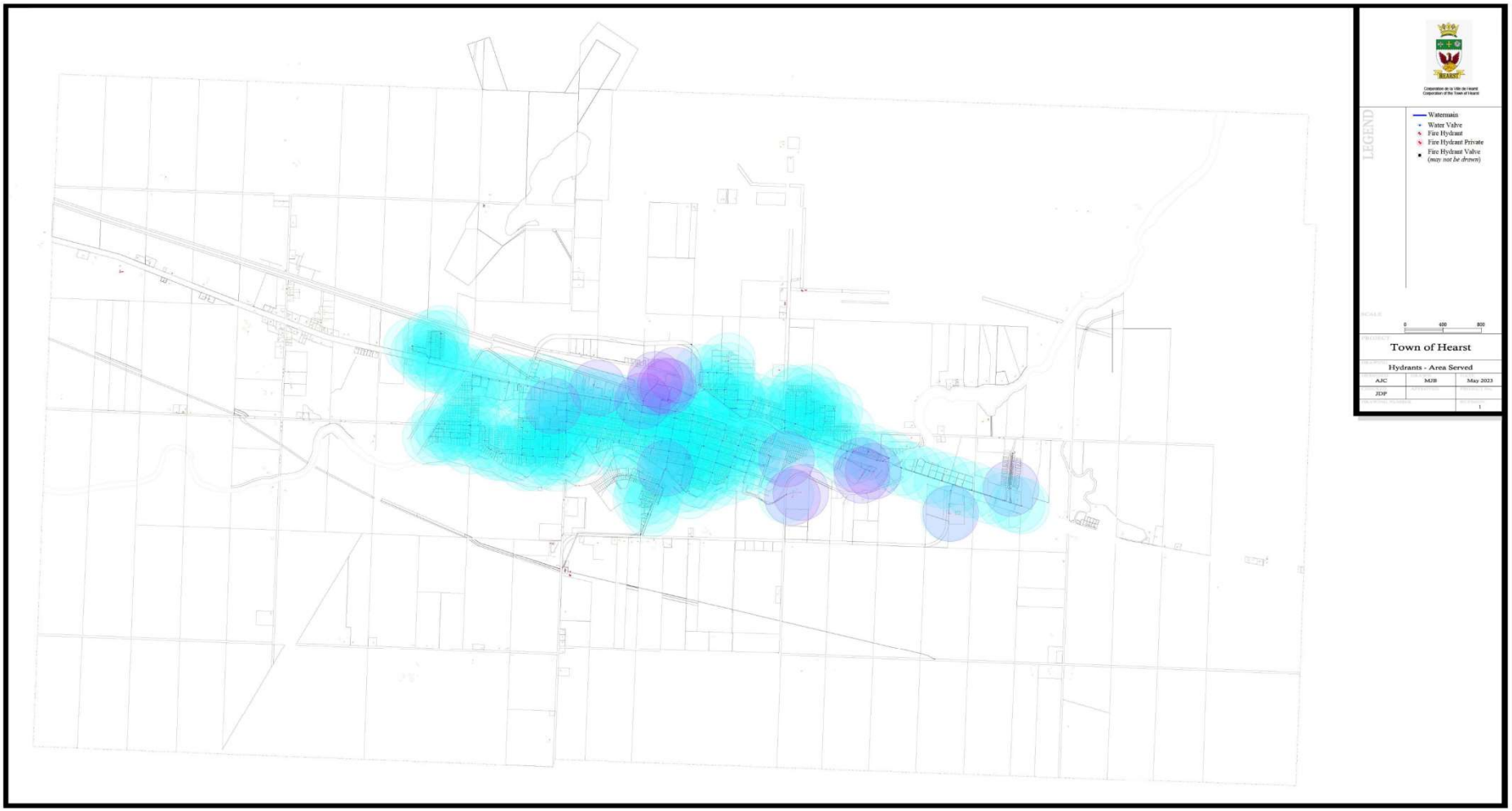
Condition	Images of the condition of culverts and how this would affect use of the culverts
Very Good Condition 1 (BMS RATING 10)	Almost New Condition 
Good Condition 2 (BMS RATING 8.0–9.9)	No repairs required for the foreseeable future 
Fair Condition 3 (BMS RATING 6.0-7.9)	Acceptable Condition and components generally functioning as intended 

Condition	Images of the condition of culverts and how this would affect use of the culverts
Poor Condition 4 (BMS RATING 3.0-5.9)	Presence of distresses or significant deterioration with components not functioning as intended 
Very Poor Condition 5 (BMS RATING 1.0-2.9)	Danger and collapse. Replacement or repairs required as soon as possible 

Stormwater Network Map

Water Network Maps




Corporation de la Ville de Hearst
Corporation of the Town of Hearst
LEGEND
Watermain
Water Valve
Fire Hydrant
Fire Hydrant Private
Fire Hydrant Valve
(may not be drawn)
0
400
800
Town of Hearst
Hydrants - Area Served
AJC
MJB
May 2023
JDP
1

Sanitary Network

Appendix C: Condition Assessment Guidelines

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

Condition data is vital to the development of data-driven asset management strategies. Without accurate and reliable asset data, there may be little confidence in asset management decision-making which can lead to premature asset failure, service disruption and suboptimal investment strategies. To prevent these outcomes, the Town'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 Town'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 Town 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 Town 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 Town 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 Town should prioritize the collection of assessed condition data based on the anticipated value of this data in decision-making. The International Infrastructure Management Manual (IIMM) identifies four key criteria to consider when making this determination:

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

The preparation of this project was carried out with assistance from the Government of Canada and the Federation of Canadian Municipalities. Notwithstanding this support, the views expressed are the personal views of the authors, and the Federation of Canadian Municipalities and the Government of Canada accept no responsibility for them.